

Habitat Fragmentation and Birds

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The landscape of North Carolina has changed dramatically since the first European settlers arrived over 400 years ago. Thousands of acres of bottomland hardwoods along major river systems, vast longleaf savannas, shrub-like pocosins, open oak-hickory forests, cove, northern hardwood, open pine and spruce-fir systems in the mountains and even large prairies greeted early explorers. All of these areas held a great diversity of birds and other wildlife. Natural fires and frequent burning by Native Americans helped create a mosaic of open areas of all types and sizes interspersed within large tracts of woodlands throughout the state.

As Europeans settled the state in the 17th and 18th centuries, the natural landscape began to change drastically. Vast tracts of land were cleared to provide lumber for homes and ships, start farming operations or create livestock grazing ranges. This broke up the continuity of many of our natural systems. As the population of North Carolina grew and expanded, more habitats were permanently cleared or altered. Extensive logging operations that were not done in a sustainable manner cleared huge amounts of cypress-gum swamps, bottomland hardwoods and longleaf pine savannas. Fire suppression in the 20th century greatly reduced and altered many other natural communities. Many wetland systems were drained and filled to support farming, pine plantations, new towns and other development.

As a result of all these land-altering events, many habitats in North Carolina today are highly fragmented. This means they have become isolated into smaller pieces and often no longer function in an ecologically sound manner for many species of birds. Forests, shrubland and grasslands are now often broken up into distinct, smaller units that no longer meet the needs of many migratory or even resident birds. They are separated by large agricultural operations, sprawling towns and cities, roads, housing developments and shopping malls. Some species of wildlife thrive in these situations. Many do not. Neotropical migratory birds in particular seem sensitive to these smaller patches of habitat in which they are forced to nest and raise young. These are the birds that nest in North America, but spend our winter in Mexico, the Caribbean, and Central and South America.

Habitat fragmentation reduces the size of patches of forest, shrubland, wetlands and grasslands. This reduces the total area of contiguous habitat available to birds and increases the isolation of the habitat. It also leads to an increase in “edge” habitat that is successfully exploited by a

variety of predators that eat bird eggs and young. An “edge” is basically where two different habitat types meet, and in agricultural, suburban and even rural areas this edge is often very abrupt. Opportunistic and adaptable animals operate well in fragmented habitats such as raccoons, foxes, skunks, opossums, squirrels, rat snakes, crows, bluejays, grackles and feral and pet dogs and cats. They all impact bird populations by eating eggs, young birds and even adults. Other non-native birds like European Starlings common in urban and suburban areas compete with native cavity nesting birds for nest sites. Brown-headed Cowbirds parasitize some birds in fragmented habitats by laying their own eggs in the nests of other birds (see the fact sheet on cowbirds for more information). Non-native invasive plants like Japanese honeysuckle (*Lonicera japonica*), Chinese privet (*Ligustrum sinense*) and Japanese grass (*Microstegium vimineum*) encroach into smaller habitat fragments, limiting the growth of native plants, disrupting natural succession and limiting vegetative and structural diversity. This in turn impacts bird populations.

All of these problems together along with direct loss of habitat can put considerable pressure on landbird populations in our state and throughout the region. Overall in the southeast, predation seems to be the primary cause of bird nest failure, especially among neotropical migrants. Birds forced to compete for nesting sites in smaller and smaller fragments of habitat cause some to raise young in undesirable locations with reduced food supplies or even abandon nesting efforts altogether. These same problems are also occurring not only in breeding habitats, but also in migration stopover sites and wintering areas throughout the Americas for migratory landbirds. Characteristics of the surrounding landscape often influence affects of habitat fragmentation on bird populations.

Following is a list of scientific papers to help you learn more about fragmentation of forests, shrubland, grasslands or other habitat types and the associated impacts on birds:

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