

Florida Cooperative Extension Service  
Institute of Food and Agricultural Sciences  
School of Forest Resources and Conservation

DEPARTMENT OF WILDLIFE AND RANGE SCIENCES

Telephone: 305/370-3725

Broward County Extension  
3245 College Avenue  
Davie, Florida 33314

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## THREATS TO FLORIDA'S BIODIVERSITY (2 March 1995)

Denise Rocus, Wildlife Information Specialist  
Frank J. Mazzotti, Urban Wildlife Extension Scientist

Look at a map of Florida, and what do you see? A spider web of roadways criss-cross the state, converging on towns, from a small corner grocery store and gas station to huge metropolitan areas that sprawl for miles. A land that was once considered uninhabitable now has the fourth highest population in the country, and is expanding at a rate of over 600 people per day. (ENFO Report) But at what cost? The land that was uninhabitable because of swamps and marshes is now kept dry through a network of canals. The dense forests have been cleared to make room for developments. Coastal prairie, pine woods, hardwood hammocks, all sacrificed in the name of progress.

Yet still, part of Florida's heritage remains. Florida is one of the most species rich states in the nation. But even this biological diversity is being threatened. These roadways that allow us to maneuver around the state confine wildlife to isolated tracts of land. Our homes remain dry, but the wetlands' wildlife are struggling to survive with a new, unnatural hydrological regime. We cut down forests to build our homes and feed our growing population, but are destroying the homes and food of our native wildlife to accomplish it.

Obviously, Florida's wildlife are suffering. According to the US Fish and Wildlife Service's rankings, there are 70 endangered (not including threatened, etc.) species in Florida, giving Florida the third highest endangered species rank in the nation, behind California and Hawaii. To date efforts to preserve biological diversity have mostly been centered on preserving individual species and tracts of land. By looking at the threats to Florida's biodiversity, we may be able to come up with some additional approaches.

While viewing Florida's landscape, you may notice that natural habitats have not only been lost, but also fragmented into different size patches. Roads serve as barriers, confining many species of wildlife within the areas. In these small habitat patches, a species must carry out its life functions in that one patch, or must attempt to cross into other patches. These options have different affects depending on the specific traits of the animal in question, and the size patch in which they occur.

The Cooperative Urban Wildlife Program is a cooperative effort between the Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida and Florida Game and Fresh Water Fish Commission's Nongame Wildlife Program.

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For animals that are able to remain in a small area for their entire life cycle, a small patch may be suitable habitat. However, small, isolated areas can accommodate only a relatively few individuals of other species. For instance, small areas can hold large populations of lizards, but provide for only small populations of bobcats. In this situation, inbreeding becomes a potential problem. Individuals in one patch have few alternatives for breeding partners, as they are unable to mix and mingle with individuals from different areas, as would occur naturally. Inbreeding can be a destructive process, as it can lead to the depression of genetic diversity and reduced adaptability to a constantly changing environment.

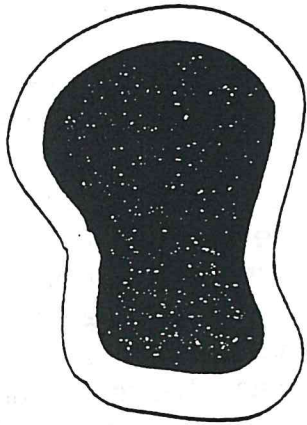
For far-ranging animals, these barriers cause even more problems. For example, very few of the remaining habitat patches are large enough to provide the spatial needs of a Florida panther or a Florida black bear. Florida panthers normally occur in densities of one panther per 50,000 acres. Hence, even in very large tracts of available land, there is still not enough habitat for more than a few individuals per tract. It is instinctive for animals such as a Florida panther to establish territories, and to avoid other panther's territories, even if this means attempting to cross some of those habitat barriers.

Individual animals will cross roadways for a variety of reasons, such as food and water supply and to find a mate. In fact, this has become such a common occurrence that vehicular collisions are an immediate threat to much of Florida's wildlife. As roadways are widened to accommodate higher speeds and heavy volumes of traffic, the odds of making it across successfully diminish. Collisions with an automobile have been implicated as a major cause of mortality for several of Florida's large threatened or endangered species: Florida panther, Florida black bear, Key deer, bald eagle, and American crocodile. Vehicular collisions are not only dangerous for the wildlife, but for the humans involved as well. Four hundred thirty-one vehicle collisions with animals during 1990 were considered serious enough to be reported to the Florida Department of Highway Safety and Motor Vehicles. Of these collisions, there were four human fatalities, 380 human injuries, and an average estimated property damage of \$3,395 per accident, testifying to a problem for both wildlife and humans. Mobile species are not only dodging cars, but these animals also have a greater risk of encountering pets, livestock, illegal hunting, traps, and other hazards associated with urban areas. The loss of large carnivorous far-ranging species, is not only a loss to biological diversity, but also diminishes our regard for the wildness of an area.

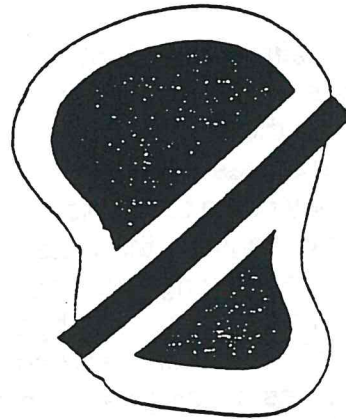
Another threat from a fragmented landscape is the expansion of native weedy species and non-native species. Though ecologists debate over the use of the term "weed" to describe faunal species, there is no doubt that there are faunal species that thrive in human enhanced areas. These weedy species often become overpopulated, and become a nuisance in the urban environment. With the loss of large native carnivores, medium-sized animals such as raccoons and opossums face little threat from predators and are able to expand their population. This increased population can cause problems for other species. For instance, the raccoon is an avid predator of eggs of endangered marine turtles, crocodiles, alligators and many native songbirds. You can start to see a type of

domino effect: the loss of contiguous habitat leads to the loss of large native carnivores, which leads to a population explosion in medium-sized mammals such as raccoons, which in turn leads to increased predation on many other native wildlife species. At this point, the foundation of the ecosystem begins to break down from the loss of biological diversity, as the loss of one species sets off chain reactions that reverberate throughout the whole system.

## Forest Edges



Forest edges are a unique habitat type that support a variety of species. Interior forests also have unique characteristics that are equally important.

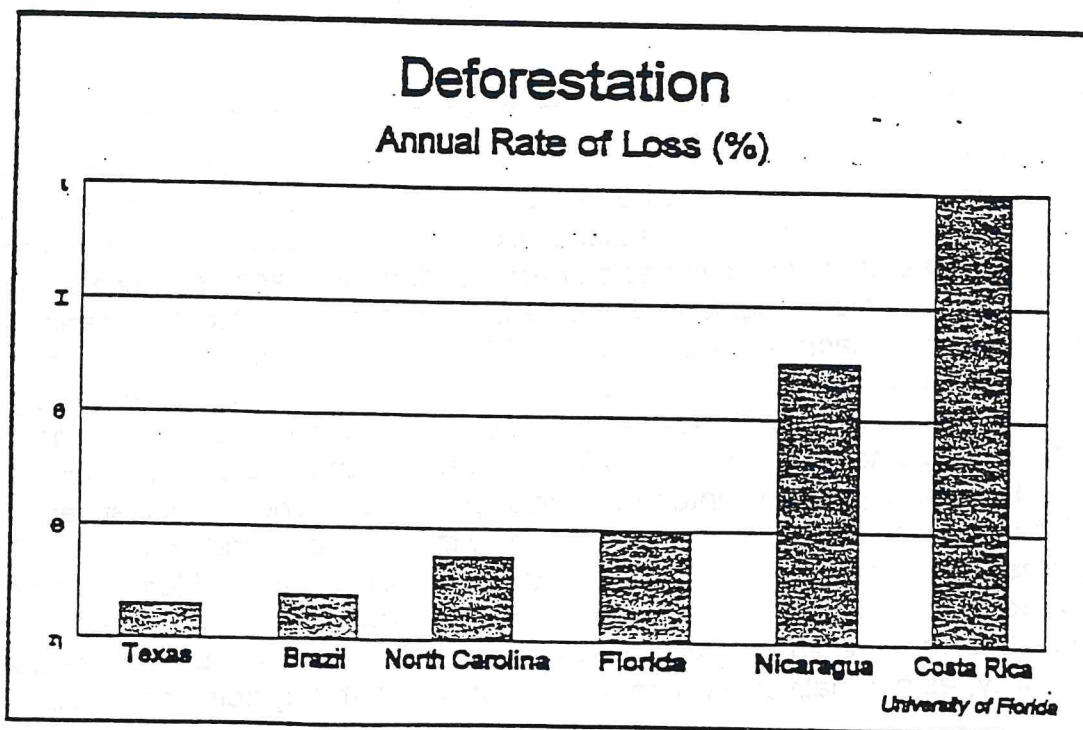


Through road construction and clearing land, much of the interior has been converted to edge. While the edge species are thriving, interior species are suffering from the loss of viable habitat.

The threat of non-native species in Florida comes from their ability to displace native species. Most non-native species survive because of their aggressiveness and tolerance of disturbed environments, which provide artificial sources of food and shelter. Non-native species also tend to tolerate or thrive in fragmented landscapes, and as Florida's natural areas become more and more fragmented, it opens up more habitat for the species that prefer those areas. For example, forest edges (within 100 yards of an opening) are the preferred habitat of the brown-headed cowbird, a non-native species that is expanding its range, which parasitizes the nests of native songbirds. When the forest is one contiguous habitat, the area of edge habitat is very small in comparison to the area of interior forest, and the cowbird does not penetrate into the interior portions. When the forest becomes fragmented into many small patches, you end up with all edges and no interior. The cowbird has free access to the entire area and its' songbird nests. In Florida, for every one native species that is lost, ten non-native species have taken its place. (Badger pub.) While this may be an increase in species richness, it is not an increase in ecological integrity, as non-natives tend not to contribute to the system as a whole.

While Florida's native species are forced to compete with non-native species on small, isolated patches of habitat that are surrounded by roadways full of high speed traffic, they must also cope with the loss of actual acreage. Habitat loss is the most common cause of decline in wildlife populations. For instance, if ten percent of a forest is cleared, you can expect a significant percentage of that area's wildlife to disappear. Every Florida habitat, from scrub to mangrove swamp, has lost ground to urban encroachment or agriculture. Where do the inhabitants of these areas go when their homes are converted to parking lots and tomato fields? Wildlife are usually adapted only for a particular type of habitat, and when that habitat is destroyed or altered, it may not provide the same quantity or quality of food, water, and shelter. If the alterations are severe, the area may cease to be a viable habitat for species that originally occurred there.

Occasionally, alterations of habitat can occur without actually losing area. If we look at an area the size of Everglades National Park and Big Cypress National Preserve, you may wonder why those areas are unable to support their original array of species. Together they encompass over 2,200,000 acres of more or less contiguous habitat, so it doesn't fit under any of the threats listed so far. However, the alterations in the Everglades area comes from changes in the water cycle. Many animals are dependent on a natural water cycle to signal nesting and breeding times and to provide sufficient food supplies. The effects of a human regulated hydroperiod on wading birds has been devastating, especially on the Wood Stork, now an endangered species. The decline of the Wood Stork can be seen as a biological indicator, revealing the decline in the overall health of the ecosystem itself. Since Wood Storks are so visible, and there is such a wealth of information concerning their past populations, their current status can be viewed as being representative of other native wildlife that are not as easily observed, such as the fish, amphibians, and crustaceans that comprise its food source.



According to a Florida Game and Fresh Water Fish Commission study, 44% of all of Florida's vertebrates are known or suspected to be declining in number or distribution. This should be viewed as a warning that current efforts aimed at preserving species are not enough. We often hear about deforestation occurring in Brazil, but do we ever hear that Florida's forest loss rate is more than double that of Brazil? How can we hope to save Florida's wildlife if we continue to destroy that wildlife's habitat? Conservation and management is possible, but federal, state, regional, and local agencies must work together to implement an ecosystem approach, and realize that in the ecosystem, all things are interconnected. The loss of each piece of the puzzle sends out shock waves that diminish the entire landscape.

**What you can do:**

- \* Urge your state and federal representatives to support greenways, wildlife movement corridors, and more highway wildlife underpasses.
- \* Support the nongame program of the Florida Game and Fresh Water Fish Commission.
- \* Visit national, state, and local parks where resident naturalists describe local ecosystems, and look into volunteer activities at these locations.
- \* Attend public hearings concerning land and water use decisions. Become informed, then get involved.
- \* Encourage conscientious driving habits that include obeying the posted speed limits, and keeping alert to avoid hitting wildlife.
- \* Plant a refuge for wildlife in your own backyard.

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