

# Technical Assistance And Agency Coordination On Wildlife And Habitat Conservation Issues Associated With Highway Projects In Florida

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## Abstract

Biologists with the Florida Game and Fresh Water Fish Commission coordinate with the Florida Department of Transportation on a statewide basis by providing technical assistance to identify and resolve wildlife issues during the highway project development and design phase. Major issues addressed on new highways or improvement projects include the loss of habitat, fragmentation and isolation of habitat systems, management and protection of public lands, highway mortality of listed species, wildlife taking issues involving listed species or their nests, and appropriate mitigation strategies. On major projects, our biologists work as a team member with FDOT highway design and environmental personnel in a formal partnering effort over several years to identify the scope of the problem, and determine solutions which will avoid, minimize, or mitigate impacts to fish and wildlife resources. Information from our agency's wildlife and habitat geographic information system data base is provided to FDOT for use in alignment analysis and impact assessment. Our biologists also provide input to FDOT on the justification, design, and siting of wildlife underpasses, and bridge extensions over river floodplains to maintain habitat connectivity. We annually assist in training FDOT environmental personnel in wildlife and habitat identification, impact assessment, and survey techniques. Our agency has developed and manages a statewide system of regional mitigation banks, including the 1,770-acre Platt Branch Mitigation Park in Highlands County which is used exclusively by FDOT to mitigate highway projects. Examples of the resolution of wildlife issues through mediation and partnering are the Northern Extension of Florida's Turnpike, and the Suncoast Expressway Project 1.

## Introduction

Florida, which is now the fourth most populous state, has an aggressive program for new road construction or improvements in order to accommodate growth and the 40 million tourists who visit the state annually. The Florida Game and Fresh Water Fish Commission (GFC) routinely cooperates with the Florida Department of Transportation (FDOT) in an attempt to find ways to reduce the impact of the state's transportation system on Florida's wildlife populations and habitat. Our agency provides technical assistance and performs in-depth reviews of highway projects during the planning, design, and permitting phases to determine ways to avoid, minimize, or mitigate impacts to fish and wildlife resources including species listed by our agency as endangered, threatened, or species of special concern.

Common but important issues which are addressed on large road projects include the direct loss or degradation of habitat, fragmentation and isolation of habitat systems, highway mortality of listed species, wildlife taking issues involving listed species or their nests, and appropriate mitigation strategies. On most major projects, our biologists typically work as a team member with FDOT highway

design and environmental personnel either in formal or informal partnering efforts over several years in an attempt to identify and resolve wildlife issues.

Our agency has completed a land cover map of Florida's 34 million acres, and performed modeling to identify the long-term habitat needs of many focal species on public and private lands (Cox, et. al. 1994). We have compiled an extensive wildlife and habitat geographic information system database which is used in roadway alignment analysis and impact assessment. Our data base includes point occurrence records for many listed species including wading bird rookeries, eagle nests, Florida scrub jay territories, shorebird nesting areas, and black bear roadkills. The black bear roadkill data base includes over 20 years of information on the location, sex, and age of recorded kills, and this information is routinely used in dealing with bear issues on highway projects (Gilbert and Wooding 1996). Our data base includes a statewide vegetation map with 22 land cover classes, and we have constructed statewide habitat maps for over 150 individual wildlife species by modeling habitat requirements, radio-telemetry range data, museum records, and other surveys. In addition, we have produced statewide maps of strategic habitat conservation areas which we define as lands which have a high priority for protection and acquisition but are not in public ownership. We have also produced statewide maps showing priority wetlands which are important for the support of listed wildlife species. In addition, our biologists have produced a statewide distribution map of rare and imperiled stream fishes.

Our biologists have also participated in the design, siting, and research associated with the construction of approximately 30 wildlife underpass structures in central and southwest Florida that were installed to reduce highway mortality of the Florida panther and the black bear (Roof and Wooding 1996) (Land and Lotz 1996). We have assisted FDOT engineering and environmental personnel in value engineering exercises to evaluate previously constructed wildlife underpass structures to determine better designs and reduce costs. We also review and provide recommendations on new or replacement bridge projects planned within natural areas, in an effort to encourage fill removal and insure that new bridges are designed to span major portions of the stream and floodplain. We believe that on a statewide basis, this can serve to improve habitat connectivity of important movement corridors for many wildlife species associated with riparian systems bisected by roadways.

Our primary focus in mitigating the unavoidable impacts of large highway projects is directed toward creating large contiguous tracts of public land to increase the potential for successful habitat protection and management on a regional scale. Our agency has developed and manages 6 regional mitigation parks which total 5,700 acres to offset development impacts to listed species which occur in upland habitats. One of these includes the 1,770-acre Platt Branch Mitigation Park in Highlands County in which the land was purchased by FDOT and transferred to our agency for management as a regional mitigation bank for FDOT highway impacts. This park

contains sizeable areas of xeric oak scrub and pinelands which are managed to maintain and enhance habitat for the red-cockaded woodpecker, Florida scrub jay, gopher tortoise, southeastern American kestrel, indigo snake, and Sherman's fox squirrel.

The following projects are examples of recent partnering efforts through inter-agency cooperation to reduce impacts to fish and wildlife resources on highway projects.

#### **Partnering Efforts on Major Highway Projects—Case Histories**

##### ***Northern Extension of Florida's Turnpike***

The Northern Extension of Florida's Turnpike (NEFT) is a proposed 47-mile limited-access toll facility from I-75 in Sumter County to U.S. 98 in Levy County. The purpose of the new highway is to provide improved roadway access to the northwestern part of the state, augment the transportation network capacity, and promote tourism. From a purely transportation standpoint, the original proposed location of the roadway was the most direct and cost effective route, however the route crossed several areas of high quality sensitive habitat. Therefore, beginning in 1988, our agency began to voice opposition to several proposed alignments associated with this project, and over the next several years, worked with FDOT and other state agencies in an attempt to modify the project design to reduce impacts of the roadway on important habitats and wildlife species. Another important issue was the potential secondary impacts of this road on fish and wildlife resources as a result of residential and commercial growth in the rural Big Bend region, where some of the state's most important and largest contiguous wildlife habitat systems remain. To further complicate matters for both FDOT and the state resource agencies, during the early 1990s, while the project was still in the early planning stages, the state acquired land in the path of the western portion of the NEFT alignment to create the 43,000-acre Goethe State Forest (GSF) in Levy County.

After our initial coordination efforts with FDOT, we began to assess the potential impacts to important wildlife resources and habitat in an attempt to build a case to possibly modify the project by building a southern alignment which would avoid the GSF. Similarly, FDOT began a re-study of the western portion of the NEFT to assess the feasibility of reducing the impacts of the northern alignment across the GSF by reducing the width of the right-of-way, and co-locating the roadbed with an existing county road and an abandoned railroad ROW. After several years of coordination, FDOT and the other state agencies determined that many major issues associated with selection of the final alignment, including secondary impacts and growth management, fish and wildlife resources and habitat impacts, and management and protection of state lands, remained unresolved. To facilitate resolution of these issues, a mediator was employed. The mediation team consisted of representatives from State of Florida agencies including the Department of Environmental Protection (DEP), Department of Community Affairs, Division of Forestry (DOF), GFC, and the FDOT Turnpike District and their consultant Post Buckley, Schuh and Jernigan, Inc. The meetings were also attended by representatives of private conservation groups including the Florida Sierra Club, and the Florida Audubon Society.

Our agency focused on the value of the GSF to support the red-cockaded woodpecker (RCW), which is listed by our agency as a threatened species, and compared the impacts of the proposed northern and southern alignments. We utilized geographic information system computer-generated overlays of the northern and southern alignments as an aid in assessing and comparing the loss or possible degradation of foraging habitat, potential for habitat fragmentation, potential mortality from vehicle strikes, and reduced potential for management due to smoke drift onto the roadway from prescribed burns.

The RCW excavates a nesting cavity in living pine trees infected with red heart disease which are typically over 60 years old. The species has declined dramatically over the southeast United

States due to a forest management shift from old age saw timber to short-rotation pine pulpwood plantations. Proper management for the species requires periodic fires to maintain an open understory and sparse ground cover. At the time of purchase, the GSF was considered to be the largest contiguous area of longleaf pine flatwoods remaining in a single, private ownership in the state. This important habitat type, which is fast declining statewide due to its development potential, supports many other state listed species including the Florida black bear, southeastern American kestrel, eastern indigo snake, Sherman's fox squirrel, Florida pine snake, gopher tortoise, and the Florida mouse.

During a two-year survey, GFC biologists documented a total of 567 RCW cavity trees on the GSF, of which 197 cavity trees were grouped into 26 active clusters (Hovis 1997). Clusters are defined as groups of active and inactive cavity trees with one breeding pair of RCWs along with other birds which roost in the same area and forage together. Based on current estimates of statewide RCW populations in terms of active clusters, the GSF ranks a close second to Blackwater State Forest on state-owned land, and sixth overall considering both federal and state lands (Table 1). The importance of managing and protecting RCW habitat on public lands is underscored by the fact that over 93 percent of known active RCW sites in the state occur on public lands.

We determined that potential habitat fragmentation would occur to the extent that the roadway alignment would deter normal movement of individuals attempting to access available foraging habitat within their territory, or to disperse to augment other RCW clusters or colonize unoccupied habitat. The northern alignment has a high potential to fragment the population since it bisects the southern core group and would separate the two main core groups, which consist of 15 clusters in the north and 11 clusters in the south part of the GSF (Figure 1). The southern alignment would not fragment the current RCW population.

We also determined that the potential exists for roadkills of RCW from vehicle strikes due to their low flight pattern, and increased mortality due to predation by American kestrels and other small birds of prey along the wider turnpike alignment. We did not have published data on either direct mortality or habitat fragmentation by highways for this species, however after discussing the project with several experts in the field, we concluded that a certain level of impact from increased mortality and from decreased dispersal would occur, and these impacts would be greatest in those RCW territories located within a one mile band of the highway. Therefore, we concluded from our analysis that the northern alignment would have a high potential for increased mortality due to vehicle strikes and increased predation while the southern alignment would be low.

Prior to state acquisition, the GSF had not been intensively managed since the 1940s, and no prescribed burning was practiced for about 10 to 15 years (Dennis Hardin, DOF, personal communication). While recent surveys showed that habitat quality was less than optimal, we knew that it could be significantly improved using selective cutting and prescribed burning. We knew that smoke from prescribed fires would affect the roadway, and safety considerations could seriously reduce or restrict management capabilities. This would detrimentally affect habitat quality for the RCW, and possibly affect future population expansion. While lands within five miles of the ROW could be affected by smoke drift to the roadway, impacts to management would probably be greatest within one to two miles (Dennis Hardin, DOF, personal communication). We calculated and compared the total acres of foraging habitat which could potentially be affected by reduced burning, and determined that the impact of the northern alignment would be high while the southern alignment is low.

In addition, we concluded that additional impacts to other listed wildlife species associated with longleaf forests would probably occur due to increases in "edge effect" as a result of forest clearing, roadkills, and additional human disturbance along the expanded turnpike route compared to the existing narrow county

roads. Increased habitat edge results in reduced habitat quality for interior forest dwelling species which are replaced by more generalist species that readily invade, since they can tolerate and prefer early successional habitats. In addition, the wider disturbed corridor increases the number of avian and open land predators and provides an expanded avenue for invasion by exotic plant and animal species. Although edge effects frequently extend beyond 300 feet into adjacent forests, we used this figure to establish a zone to calculate and compare the impacts of the northern and southern alignments. Our assessment showed that the northern alignment would increase the amount of "edge effect" on the GSF by 22 percent while the southern alignment showed no effect. We also determined that the largest contiguous patch of forest cover on the GSF would be reduced by over 10,000 acres from 39,776 to 29,510 acres with the northern alignment, while no effect would occur with the southern alignment.

The agencies met frequently over an eight-month period at mediation meetings to discuss and compare a number of natural resource and transportation issues including endangered species, wetlands, protection of state lands and resource management, transportation cost, and travel routes. These issues were arranged in a matrix to compare the alignments. The agencies concluded that while the northern alignment was more direct and had benefits from a transportation standpoint, the southern alignment, which avoids the GSF, was superior and was chosen as the final alignment. Issues related to resource protection and management on the GSF were particularly important to the decision. The agencies also agreed to a final alignment which bypasses the Ross's Prairie State Forest located in Marion County. The agencies agreed to continue the partnering process during the completion of the design phase of the project to establish the scope of mitigation for impacts to wetland and upland habitats, wildlife including listed species, recreational access to state lands, management of state lands, and the need for wildlife crossings. In addition, the agencies will convene a workshop to formulate a plan to be sent to the Governor's Office within one year to protect the integrity of the US-19 corridor and to prevent adverse secondary impacts to important resources within the Big Bend region of the state from development pressures caused by the new turnpike facility.

#### North Suncoast Parkway Project 1

The Suncoast Parkway, Project 1 is a proposed multi-lane, limited access toll facility which runs 44 miles north through Hillsborough, Pasco, and Hernando counties. The tollroad would serve as a high capacity, high speed facility connecting the Tampa Bay area with destinations north. The project would also help alleviate traffic congestion on US-41 and US-19, where the level of service has been greatly reduced due to residential and commercial development. Since about 1988, our agency's consistent recommendation conveyed in several agency letters was to improve US-19 by adding additional lanes within a previously disturbed corridor, in lieu of constructing a parallel facility with a new road alignment through a rural area where habitat loss and wildlife impacts would be high. An Environmental Impact Statement was prepared by FDOT District 7, and eventually approved by the Federal Highway Administration. In 1993, FDOT's Turnpike District requested that state and federal agencies participate in a formal partnering effort help identify and resolve issues in their area of responsibility, and determine a strategy to assist FDOT in properly designing the road to avoid, minimize, or mitigate environmental impacts.

Agencies involved with the partnering effort included the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, Southwest Florida Water Management District, Florida Game and Freshwater Fish Commission, DEP, along with the FDOT District 7, FDOT Turnpike District and their consultant Berryman and Henigar. Early in the process, the group reached consensus on the following team

objectives which provided a framework for the group in meeting project goals:

- Avoid impacts where possible
- Minimize impacts
- Successful mitigation or compensation of impacts
- Early identification of environmental issues
- Thorough and timely coordination
- Maintain coordination throughout project
- Serve the public by being environmentally and economically sensitive
- Build an environmentally engineered facility
- Maintain a good, honest public image
- Serve the public

From our agency's point of view, the main issues we wanted to focus on were the loss of upland and wetland habitat within the right-of-way footprint, and habitat loss and degradation from secondary development which will occur due to construction and use of the road. Since the road would be built through a somewhat rural area, but in fairly close proximity to the large population center in the Tampa Bay area, the potential is high for increased growth through improved access provided by the new road. Another issue was impacts to species listed by our agency as threatened or species of special concern including the Florida scrub jay, Sherman's fox squirrel, sandhill crane, Florida black bear, Florida mouse, gopher tortoise, and eastern indigo snake. Also, the potential was high for the roadway to fragment the habitat of many species since the alignment crossed the Anclote and Pithlachascotee Rivers, and several smaller streams and drainages in addition to important upland areas.

Some members of the partnering task force met frequently over about a two-year period, both in the office and the field, to discuss issues and progress, attempt to resolve any outstanding conflicts, report on the progress of assigned responsibilities, and maintain coordination and communication. A consensus began to develop early on among the group in terms of common goals for avoidance and mitigation of impacts, and the task then became one of how to structure the correct mix of the components in the mitigation package to insure that federal and state permit requirements would be met.

Avoidance and minimization was achieved since resource agencies were regularly consulted and approved the design for each habitat crossing. Impacts were reduced by narrowing the ROW within wetland areas. Also, hundreds of acres of natural upland habitat types, including 108 acres of wetlands, will be conserved within the ROW limits due to limited clearing and grubbing specifications, as well as specific design changes in the roadway and bike trail footprints and profiles. In addition, a reevaluation of alignments resulted in a change which reduced upland habitat impacts by 129 acres and wetland impacts by 29.6 acres.

FDOT acquired the Serenova parcel and the Anclote River Ranch, totaling 10,168 acres which will be placed in public ownership and managed by the Southwest Florida Water Management District. This tract of uplands and wetlands contains some of the highest quality and diverse vegetative and faunal communities on two of the largest intact parcels remaining in close proximity to the project area.

In addition, when combined with the existing publicly owned Starkey Wilderness area, the acquisition will create a 28-square mile, or 18,150 acre, contiguous preserve. This will protect the headwaters of the Anclote and Pithlachascotee Rivers, provide management and protection opportunities for threatened and endangered species, and, in our opinion, partially offset secondary and cumulative impacts from roadway construction. Wildlife field surveys over a two-year period documented five federally listed species, and 16 state-listed species on the mitigation sites, including all the listed species found within the project area. Additionally, 11 state-listed plants are found in the project area, while 24 are found

on the mitigation site. Also, a total of eight structures will be installed at strategic locations to maintain habitat connectivity, provide corridors for enhanced wildlife movement, and serve as wildlife underpasses. This includes expanded bridge lengths in Pasco County over a majority of the river and floodplain of the Pithlachascotee River (528 feet), Anclote River (845 feet), Sandy Branch (240 feet), Five-mile Creek (594 feet), and the South Branch of the Anclote River (339 feet). A box culvert will also be constructed in a small creek on the Serenova property in Pasco County for aquatic species, while two 127-foot long upland bridges would be constructed within uplands in the Annutteliga Hammock area in Hernando County as wildlife underpasses.

#### Discussion

Partnering can be an effective tool or process for resource agencies to use in working with transportation departments to avoid or minimize conflicts with highways and wildlife. Closer coordination results in a better understanding by resource biologists of the road building process in terms of safety considerations, scheduling, decision making, costs, and design constraints associated with the roadbed and bridges. A better understanding may enhance the potential for agency recommendations to become an accepted part of the project design, since the recommended changes will hopefully be more cost effective and compatible with the ultimate goals of the transportation project. Partnering can work to bring together a multi-agency task force of resource managers, planners, engineers, and regulatory people which have ultimate decision making responsibility during the planning and design phase to collectively address diverse issues and achieve a more wildlife-friendly highway. In this forum, important issues and goals can be collectively identified and agreed upon, information can be quickly developed and exchanged, and the final action is a shared decision which is reached in a shorter time period at a reduced cost to the public. The downside of partnering is the enormous staff time which has to be devoted to a single project in order to be an effective member of the team, and the partnering process is structured to gain ultimate project approval while some participating agencies may still oppose the basic premise or justification of the highway.

The resource agencies should provide very early input before the budget and design of the highway is finalized in order to realistically expect major modifications for fish and wildlife purposes. On the other hand, the transportation department should have a defined process and schedule for soliciting input at appropriate times when that input can be incorporated into project plans. It is also essential to have a designated point of contact within both the resource agency and the transportation department

for consistency of review, and continuity of agency action. Our agency is currently working with FDOT on a process to identify environmentally sensitive projects during the very early planning or project inception stage and require interagency coordination to determine the scope of avoidance, minimization, or mitigation measures for ultimate project approval.

In Florida, we need research to determine a clear direction of how to realistically assess the level of mitigation needed for the impacts of road projects on wildlife resources and habitats. Many of the new highway projects are built in rural areas because of the prohibitive cost of right-of-way through developed areas, and the impacts of secondary development from residential and commercial development are many times the most serious in terms of long-term habitat loss and degradation. In addition, resource agencies need better information on the cumulative effects of roads which act as a "linear wildlife sink" in terms of the mortality of listed animals on highways and the detrimental effects on long-term population dynamics.

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**Table 1**  
**Active Red-cockaded Woodpecker Clusters on Public Lands in Florida.**

| <u>State And Federal Lands</u>       | <u>Active Clusters</u> |
|--------------------------------------|------------------------|
| Apalachicola National Forest         | 90                     |
| Eglin AFB                            | 208                    |
| Osceola National Forest              | 43                     |
| Big Cypress Nat. Preserve            | 38                     |
| Blackwater State Forest              | 29                     |
| Goethe State Forest                  | 26                     |
| Corbett Wildlife Management Area     | 23                     |
| Avon Park Air Force Range            | 21                     |
| Withlacoochee State Forest           | 19                     |
| Webb Wildlife Management Area        | 17                     |
| Camp Blanding Military Reserve       | 15                     |
| Three Lakes Wildlife Management Area | 15                     |
| Ocala National Forest                | 8                      |
| St. Marks National Wildlife Refuge   | 7                      |

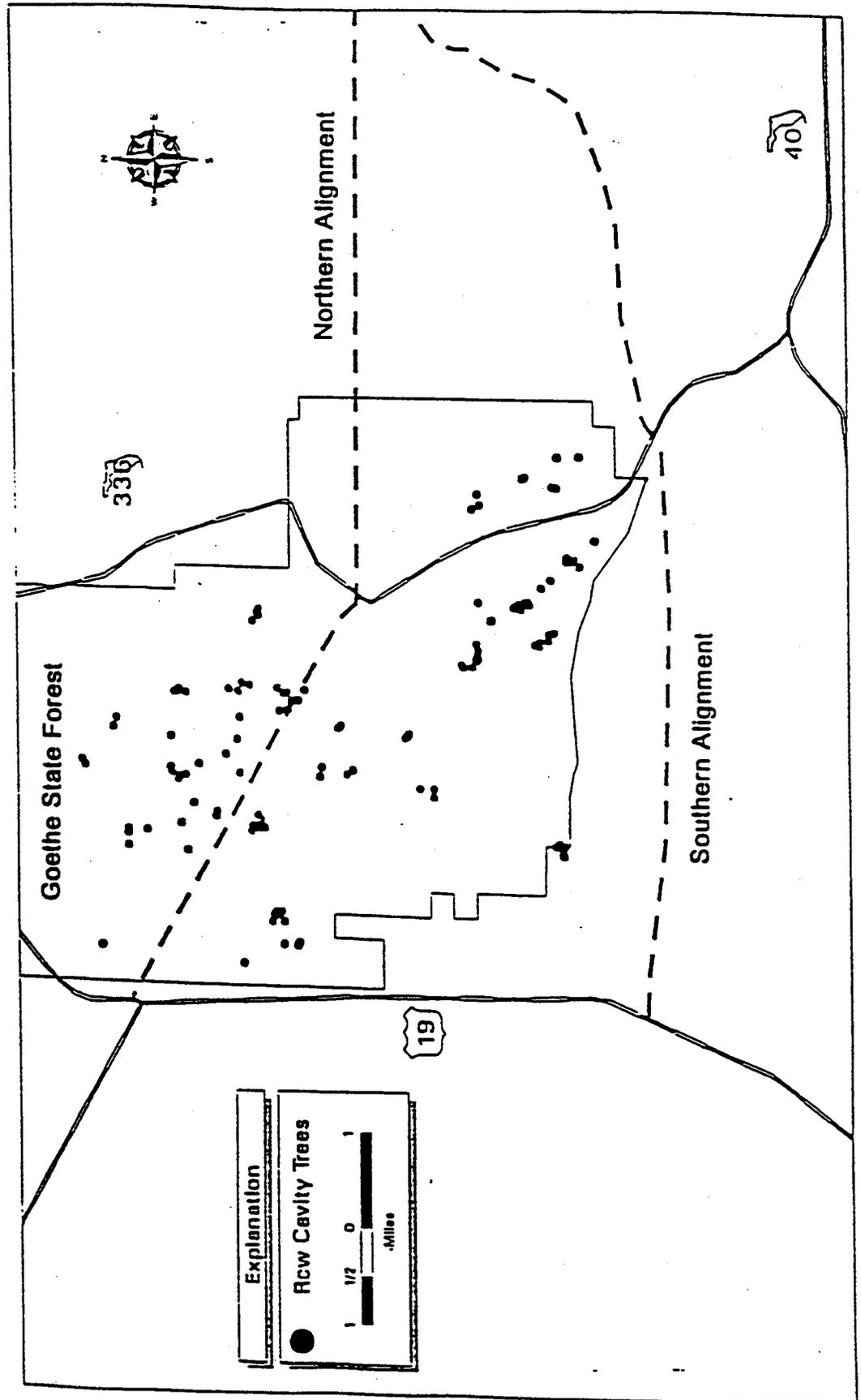


Figure 1.  
Map showing the proposed Northern and Southern alignments of the North Extension of Florida's Turnpike in the area of the Goethe State Forest.