# *Moving Forward*

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As we begin this conference, I wanted to briefly reflect on the past and where we are headed in the future. We are all here because we want to learn more about wildlife ecology and transportation.

As this cartoon about grizzly bear reintroduction and roadkill reflects, it is sad that our humor so accurately portrays the problems with highways and endangered species management. Fortunately, the grizzly bear is a species for which highways are being considered. At this conference, you will hear about the work being done. The Grizzly Bear Recovery Program has been aware of the highway problem for years. This is also true for a number of species including our Florida panther. Roads are a part of species management plans and recovery plans.

What to do in relation to the highways is the big question. For the Florida Panther, the answer was wildlife crossings and bridge extensions on I-75 (Alligator Alley). The opportunities to cross the highway are spaced about 1 mile apart. Twenty three wildlife crossings were built as 120' wide and 8' high bridges over dry land. Thirteen hydrological bridges were extended 40' to provide a dry area for animals to pass under the bridges. The cost of these structures and the associated 40 miles of fence (chain link - 10' high with three strands of barbed wire on top) came to approximately $13 million. On SR-29, which runs perpendicular to I-75, we have constructed 3 wildlife crossings and have 3 others in the work program. These are large box culverts (24' wide and 8' high) or bridges similar to those on I-75 . The 24' wide and 8' high box culvert design used on SR-29 costed approximately $750,000 each because they were the first of their kind and not associated with a road work project. If included as part of a increased capacity project, it is estimated that they could be built for $300,000 - $500,000 depending on the site specific conditions. With the completion of these three additional crossings on SR-29 over the next couple of years, the Department will have completed measures necessary for the Panther in the Florida Panther Wildlife Refuge and Big Cypress National Preserve area. Research on the effectiveness of crossings on both I-75 and SR-29 was published in the last proceedings, "Trends in Addressing Transportation Related Wildlife Mortality", Florida Department of Transportation, FL-ER-58-96. With the four wildlife crossings planned for the US-1 project from Florida City to Key Largo, the major state and federal highways in the Florida panther population area of south Florida will have provisions for wildlife movement.

Unfortunately, some species are not that far along. Bill Ruediger and his Forest Carnivores group have an even greater challenge because of the need for more information about the locations of remaining populations and their relationship to the roads. However, I can attest that highways are part of the discussions taking place about these species and certainly will be central to management recommendations that result. Some of these species will require a great deal of research to get a handle on their relationships to highways. Bill will be telling us about the challenges presented by these species.

I am sure that most of you recognize the attendance of a number of "bear advocates" at this conference. Here in Florida, the Defenders of Wildlife are supporting a "Habitat for Bears" program that has been very successful. We also have a strong Sierra Club involvement in transportation and wildlife issues here in Florida. With help from our Florida Game and Fresh Water Fish Commission (FGFWFC) in locating the area for a crossing, we completed our first "bear crossing" on SR-46 west of Sanford, Florida. Those of you who attended the last conference or read the proceedings learned of the success of this 24' wide and 8' high box culvert structure. Similar to the crossings on SR-29, this structure costed approximately $750,000 to complete.

Since the last conference, the Department has been working with FGFWFC along with a number of other agencies, on funding research on the Ocala bear population. Funding for this research has been approved and programmed so that we can move forward to learn the relationship of highways to the Ocala bear population. The FGFWFC continues to update its "Chronic Bear Kills" report which has helped the Department locate the areas where bears are consistently being killed on highways. Terry Gilbert, FGFWFC Biologist will talk about our cooperative efforts to address wildlife issues in his presentation.

The University of Florida is also developing GIS information statewide and looking at important connections across our existing facilities for a look at the statewide perspective. The Department will be utilizing this information for prioritizing and programming future wildlife considerations. The GIS information will also be used in transportation planning when looking at new project alignments in order to avoid and minimize impacts to wildlife. You will hear more about this program at this conference.

I am sure that you can tell by the agenda that this is not strictly a bear and panther conference but rather, we have presenters who will be talking about everything from reptiles and amphibians to more exotic species (for those of us in the United States) such as those in the Australian and Netherlands papers.

The Florida Department of Transportation is funding our first structures for reptiles and amphibians on Paynes Prairie State Preserve which will be a barrier wall. Structures exist for wildlife movement under the highway. The Department is also funding a research project to look at the effectiveness of the structures. We hope to have presentations on the success of the structures at our next conference. There is a display in the exhibit hall that speaks to some of the history and need for this project.

The management of roadside vegetation is also important to wildlife. There are species that can live on our rights-of-way and there are species we need to keep away from highway since it predisposes them to the danger of being hit. For the past couple of years, the Florida Department of Transportation has contracted the Nature Conservancy to research the use and management of native vegetation along highway rights-of-way including the use of fire where adjacent public lands are managed with fire. In order to preserve important habitat for the future of Florida's wildlife, the Department has also purchased or contributed to the purchase of large areas of habitat as mitigation for impacts to wildlife.

Given that status report on progress in Florida, I would like to talk about the organization of this conference a little. This first day of the conference, we will have presentations which frame the problem so we hope to not spend a great deal of discussion time dwelling on the problem. We are all here because we know it exists or there would be no need for this conference. We spent a great deal of the last conference framing the problem.

Given that we all recognize the problem, the majority of this conference will present how we evaluate the problem to get the information that we need to address the problem. We will also have presentations that provide information about solutions to the problems. A new area, we will hear about is the economic side of the highway/wildlife situation. These are areas where our time can be best spent. At the end of the conference, we have a Forest Service workshop to discuss problems associated with highways

through federal lands. This will be a good opportunity to express thoughts about specific projects around the country as well as actions which will be beneficial.

Our knowledge in the area of highway/wildlife relationships is increasing daily because of the efforts of some of the people participating in this conference and others out there that have become aware of the significance of wildlife and transportation interactions. This increasing knowledge has resulted in actions by transportation officials around the world. From a few small projects for deer out west, the measures taken to address wildlife mortality have escalated to multiple crossing projects such as are underway in Banff, Canada, the Netherlands and here in Florida. Different crossing designs are being tested. We are about to build our first overpass here in Florida across I-75 at the Cross Florida Greenway in Marion County. You will hear more about that project at our next conference.

Our first conference proceedings contains papers on the successes and problems encountered in these pioneering efforts to find ways to reduce mortality in a few important natural resources areas - Banff National Park and south Florida. The landscape approach is becoming recognized by the transportation community.

However, we do have a long way to go.

This knowledge is resulting in wildlife ecology becoming a consideration in planning, project development, construction and management considerations throughout the country. Some areas are ahead of others but the momentum is headed in the right direction. I understand that the American Association of State Highway and Transportation Officials is considering a rewrite of their guidelines on wildlife ecology for Transportation Departments. Dr. Richard Forman also recently was involved in bringing some of this information together for the Transportation Research Board. As more of this information is available to the transportation community, more actions will result.

After many years, the landscape level teachings of such experts as Richard Forman (Forman and Godron 1986, Forman 1987, Forman 1995), Larry Harris (Harris 1984, Harris et al. 1996) and Reed Noss (Noss 1983, Noss and Harris 1986) have become recognized by responsible transportation and resource agencies in many areas of the world. This has resulted in large scale studies that look across political boundaries. You will hear about some of these at this conference from some of the leaders in this area of ecology. In fact, international efforts are underway to ensure the future of wide ranging species. Comprehensive planning efforts are developing which look at all of the land use plans, natural resources plans, transportation plans and the public's vision of the future they would like to see. Some areas of the country are ahead in this type of planning because of a more obvious need. Florida is a state that realizes that, it all needs to fit in order to work, largely because the rapid rate of growth requires this vision if we are to maintain our quality of life. Washington, Oregon, Texas, and many other states have also been trying to address these issues for years. Progress is being made but we long ago reached the point where natural resources are being strained. As most of us learned back in grade school, the human population of the world has now increased to the point that the world's resources are being over-utilized. Our generation has been largely responsible for the situation that has developed in the United States. We have also been the generation that recognizes the need to take action to stabilize things. There is no going back because of rising expectations of our population but stabilization toward sustainability may be possible in some areas.

We have a Governor's Commission for a Sustainable South Florida that is working on this concept for south Florida. Defining the lines and developing the plans is the challenge. Of course, this can not be done entirely by government so public education and involvement of private groups is critical to success. You will hear of the efforts of a number of these groups during our "Grass Roots" panel session. This education process is also central to what we are about here at this conference. The information about need and solutions generated at these conferences can go a long way. From communications with people around the world, I can tell you the information from the last conference already has helped spread the word.

A few things have become obvious to me over the years that I have been involved in this area of science. The first is there is a great deal going on out there that needs greater exposure. Articles are distributed throughout the literature for a diversity of topics which relate to the problem but there is a need for a central point for the transportation officials and the scientists to share this information. We hope these conferences serve that purpose. I know Europe is doing the same with their International Conference (Canters, 1997) which took place in September 1995. We have several scientists who spoke at that conference speaking at this conference to help bring some of their ideas over here and vice-versa.

I have also found that engineers are well educated people who when given the facts tend to support our efforts. It is the areas where we don't have good information that cause indecision largely because of the huge costs associated with potential solutions.

I have also learned that the problem is international in nature and even occurring in some of the less developed areas of the world. I learned of interesting research in the countries of Slovenia, Russia, Saudi-Arabia, Mexico, Spain, Africa and a number of other countries which were either not far along to report or so involved in their work that they could not attend. We will see if we can get more of these researchers at future conferences - in fact a number of them have committed to future presentations of their work. So the network continues to grow here in the United States and certainly internationally. With the strength of numbers will come improved knowledge of what needs to be done.

Finally, I would say to our sponsors, continue to support these conferences and we will do our best to bring the best information together for the benefit of all. Our audience certainly is larger than those in attendance today as once again we will be publishing a proceeding. Our last proceedings was so popular that over 1000 copies have been distributed through the joint efforts of the Florida Department of Transportation, Federal Highway Administration and the US Forest Service. The number is increasing daily as researchers around the world learn of the publication. The mailings have been international so that the information is being distributed around the world. We anticipate that the proceedings from this conference will meet with even greater demand.

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