

Seeking Solutions To Wildlife/Highway Conflicts Using An Advocacy-Based Approach

Jennifer D. McMurtray

Transportation and Wildlife Ecology Coordinator
Defenders of Wildlife
8175 Imber Street
Orlando, FL 32825 USA

Abstract

Transportation systems negatively impact wildlife by increasing direct and indirect mortality and by destroying, degrading and fragmenting habitat. This paper guides citizen participation in the transportation planning process, using Florida as a model. It describes Florida's transportation planning, road-building and regulatory processes, and how wildlife advocates can work within them to influence transportation decisions. Some innovative approaches to transportation planning in Florida are described.

Introduction

Transportation systems negatively impact wildlife by increasing direct and indirect mortality, by destroying, degrading and fragmenting habitat, by serving as barriers to movement and by spreading exotic species and pollutants (Trombulak and Frissell 2000). Roads impact far more than the land upon which they are built. They often start a domino effect of habitat loss by spurring development on the property which surrounds them. A new highway or expansion of an existing road can change a rural area to suburban or urban in a matter of years, and the change is permanent.

Transportation planning is not a familiar or comfortable area for most people, and not one that immediately springs to the minds of those who wish to protect wildlife or important natural areas. However, citizens can have a tremendously positive influence on wildlife and habitat by participating in transportation planning to ensure incorporation of wildlife considerations. Wildlife advocates need not oppose every new road or road expansion project, but might focus on keeping highways away from their state's most sensitive natural areas, and push to make existing roads more compatible with wildlife.

The transportation development process includes an analysis of the environmental consequences of a project. However, only the public can decide if these consequences are acceptable. The citizen wildlife advocate brings a viewpoint to the transportation planning table that usually is underrepresented or missing altogether. The citizen will care about the continued survival of wildlife in the region, having functional natural areas to visit, and maintaining a livable community, whereas transportation professionals and government staff may only be interested in getting roads built. Citizen participation is needed to achieve better government decisions.

Most people learn about transportation projects when they see the construction crews beginning to work, which is far too late to make changes. The sooner the citizen becomes involved, the greater the opportunity she/he has for improving the project. Citizen activists truly can influence government decision-making, especially when they understand the process.

The Process: How A Road Comes To Be

Planning

Each state within the United States has regulatory and road-building agencies with similar missions and structure, although the names of the agencies and specific operating procedures may vary between states. This paper uses Florida as an example of the transportation planning structure that can be found in every state.

Transportation projects are built by one of three types of entity, depending upon the agency responsible for implementation and the source of funding for the project. Transportation improvements are built by 1) counties, using county money, 2) Special authorities, using bond and toll revenues, and 3) state Departments of Transportation, using state and federal money, or sometimes in private/public partnerships. Each type of entity has a different procedure for planning and implementing road projects, and for involving the public. Projects built by any of the three can have significant impacts on important natural areas, and therefore citizen activists should monitor the activities of all three.

County road projects are planned, funded, and built by each individual county. Methodology can vary between counties and between states since procedures are not set by federal law. Contact your County Commission or Public Works Department to determine how to become involved in local transportation planning.

Special authorities, such as Bridge Authorities or Expressway Authorities can be created by a state legislature, and they operate outside of the usual transportation planning structure described below. These organizations are often created in order to build a particular bridge or highway system when it appears that the state's DOT cannot build the project as quickly as desired. They also can be created when a politician wants a particular transportation improvement despite it being unjustified. The Orlando-Orange County Expressway Authority, for example, was created to develop infrastructure in Central Florida because it could build expressways faster than could FDOT. Special authorities sell bonds to finance the projects, build roads or bridges and charge tolls to users, and repay the bonds using toll revenues. Transportation advocates need to monitor any special authorities in their area and participate in their decision-making processes.

The remainder of this section pertains to the planning and implementation of transportation projects built by state Departments of Transportation (DOT) (Figure 1).

Newcomers to transportation planning are often surprised to learn that road projects do not originate within a state's DOT. Road projects begin at the county level. In rural counties, the Board of County Commissioners approves an annual Transportation Work Program. Programs are written for a five year timeframe, but lists of projects are developed and approved annually. Each year the plan is revised by removing the first year's list (now completed), and adding the new list of projects behind existing projects, in the fifth-year slot. Counties prepare transportation plans at the same time that they prepare budgets and set taxes. In Florida this occurs June to September. In August or September each Board of County Commissioners holds a public workshop to solicit public comment, and then officially adopts the new Transportation Work Program. The Transportation Work Program is then transmitted to DOT.

Counties with populations of 50,000 or more have a Metropolitan Planning Organization, or MPO, as required by federal legislation. MPOs represent one or more counties, and are governed by a Board comprised of elected officials from the cities and county(ies) within their jurisdiction. The MPO prioritizes projects to be funded for construction and produces a five year plan called the Transportation Improvement Program (TIP). The TIP is produced annually, and always covers a five year period. They use the same procedure of adding the new year's list

of projects to the back of the plan in the fifth year slot, as described above. The TIP is then forwarded to the state DOT for execution. The MPO also produces a Long Range Plan covering a period of 20 years. In order to be built, a transportation project must be included in the MPO's Long Range Plan and TIP, as well as within DOT's Five Year Work Program.

The Florida Department of Transportation (FDOT) produces 5-, 10-, and 20-year plans, but the Five Year Work Program is the one that gets implemented, and upon which budgeting is based. FDOT's Five Year Work Program is the list of funded projects on their way to completion. Like the county and MPO plans, it encompasses all elements of transportation, including road projects, transit, aviation, seaports, rail, bicycle and pedestrian trails. FDOT has a Central Office and 8 independent Districts. The Districts create 7 separate Five Year Work Programs for the counties and MPOs within their area (the 8th District covers the Florida Turnpike only). The FDOT Central Office also compiles all the MPO and county plans into one statewide comprehensive transportation plan, which consists of policies, goals, and strategies rather than projects for implementation.

FDOT works with each MPO or County to evaluate the TIP or County Program, considering available state and federal dollars, consistency with Florida Transportation Plan, and production constraints. FDOT tries to fund projects in the order requested by the MPO or County. The priority projects are added into the Five Year Work Program as the new fifth year project list. The cost of the projects cannot exceed available funding. The new Five Year Program is considered "Tentative" until it has been reviewed by the general public at public hearings, by the Governor's Office, by the Department of Community Affairs, the Florida Transportation Commission (a DOT oversight agency unique to Florida), and by the Florida Legislature. The Legislature then passes an appropriation bill to fund the Tentative Work Program. The MPO revises its TIP based upon the Legislature's version and formally adopts it. The Tentative Work Program becomes FDOT's official Five Year Work Program of funded projects to be implemented.

Implementation

Upon making it into the Five Year Work Program, road projects are then developed within the individual DOT Districts. Whether the project is building a new road or expanding an existing one, the DOT District develops the project through design and engineering, permitting, acquisition of needed right-of-way, and finally to construction.

The first step of the process is the Project Development and Environment Study (PD&E), which examines social, economic, and environmental impacts associated with the proposed project. The PD&E study is mandated by the National Environmental Policy Act (NEPA), and its purpose is to gather information. Usually several alternatives are studied, and presented information includes environmental impacts such as wetlands, threatened and endangered species, noise, air quality, and water quality, as well as economic feasibility, social and historic impacts. All PD&E studies require a Public Involvement Program to inform and involve all interested public officials, citizens, and special interest groups. The study usually establishes the preferred alternative for the roadway or project in terms of location and design features. Sometimes the result is a decision that the proposed transportation project will not be built. Federal law requires inclusion of a "No Build" alternative, to be considered seriously along with the other choices.

NEPA requires impact statements to be written for federal actions that would significantly affect the environment. Federal actions are projects led by federal agencies, or projects led by state or local agencies which 1) use any federal funds, or 2) require a federal license or permit. Since virtually every major road project trips one or both of these requirements, state and local agencies routinely follow the NEPA guidelines and prepare impact statements. Depending upon the environmental impacts anticipated, a project's PD&E study may range from an uncomplicated Environmental Analysis to the very comprehensive Environmental Impact Statement (EIS). The lead agency for the project decides on the appropriate form of PD&E study (Orloff 1978). In the case of a state DOT leading a transportation project, the decision of which type of PD&E study to conduct requires approval from the Federal Highway Administration (FHWA). DOT's goal at this stage is to successfully finish the PD&E study and gain approval from FHWA to use federal money for completion of the chosen alternative (unless the "No Build" alternative is chosen).

Having determined the preferred location and design features, the project proceeds to acquisition of sufficient right-of-way. Before a DOT can build a new road, add a lane, or improve an intersection, the State must own sufficient property to contain the project. Additional design and engineering work is also completed during this phase, as well as permitting. Roads require permits from State and Federal regulatory agencies. On the state level in Florida, permits are required from the appropriate Water Management District to handle stormwater treatment, flooding, and wetland impacts, possibly the Florida Fish and Wildlife Conservation Commission if endangered, threatened, or species of special concern wildlife are involved, the County(ies), and possibly one or more cities, depending on the jurisdictions through which a road project runs. Federal permits are required from the U.S. Army Corps of Engineers (USACOE) if the project involves wetlands, and the U.S. Fish and Wildlife Service (USFWS) if the project involves threatened or endangered species.

The final and most visible phase of the project is construction. Unfortunately, this is often the time when most citizens first become aware of projects, and it is the worst and weakest point at which to try to stop a project or make changes because the project is simply too far along. Each phase of a road project, from the PD&E study, through design, right-of-way acquisition, permitting and construction, takes a minimum of two years to complete, depending on the complexity of the project and availability of funds. When you see road construction crews you are looking at the end of a process that probably took at least 8-10 years and cost a significant amount of money before any asphalt touched the ground.

Points of Entry For The Citizen Activist

A citizen's ability to incorporate wildlife considerations into road planning, or to delete plans for roads through critical habitats, can be most successful when accomplished at this earliest stage of the process, which is the planning stage. Efforts made during the planning and project prioritization stages will yield the greatest results, save time and money, promote greater cooperation from agency staff, incur more positive public opinion, and prevent activists from having to assume an adversarial role. As road projects progress they become more and more difficult to redirect or stop because significant amounts of time and money have been spent in project development. Unfortunately, the planning stage usually fails to reach the people who will be most affected by the project, members of the local community.

For road projects funded and implemented by a county, a Florida activist has three important places to contribute in a proactive manner. First, cultivate relationships with County Commissioners and educate them about significant natural areas which should be protected from new roads and expansion projects. Communicate with them directly when potentially harmful projects are first proposed. Secondly, monitor the annual revisions to the County's Capitol Improvement Program and participate in the public workshop. Finally, participate in the preparation of the County's Comprehensive Plan, which occurs every 5-7 years in Florida. The Comprehensive Plan covers a 20-year period and guides how the County will grow, how land will be used, and how resources will be protected. It includes a Transportation Element, which contains the County's vision for its transportation system. Activists should consider serving on their county's Citizen Advisory Committee on the Transportation Element during the Comprehensive Plan preparation cycle, which is a wonderful opportunity to network with County staff and learn about local transportation planning.

For state- and federally-funded road projects, many opportunities exist for citizen participation. Activists should participate in the annual transportation project prioritization process, through their MPO in the case of urban areas, or through their Board of County Commissioners in the case of rural areas, that occur in Florida each August or September. MPOs are an excellent source of information about transportation needs and planned projects in the region. On the TIP, many MPOs list not only the state- and federally-funded projects but also projects to be implemented by counties or special authorities (listed for information purposes only), so MPOs are an excellent place to learn about all transportation improvements planned for the region. MPOs also have monthly meetings of their Boards, their Technical Advisory Committee (professional staff from the County and larger municipalities), and Citizen Advisory Council, all of which are open to the public and serve as an excellent source of information. When time is a limiting factor, participating in the annual TIP review workshops (in the late summer in Florida) is an excellent way to have one's opinion heard while projects are still just ideas.

For any given project, citizens should carefully study each suggested alternative and provide as much resource-based, factual information as possible to support their position. Data on natural resources, such as natural communities present, wildlife use of an area, presence and abundance of listed species, hydrology, and other facts will be more persuasive and give greater credibility in influencing projects than will a position of unsupported opposition. Similarly, enumerating very specific concerns or providing explicit suggestions to improve a project often will be received better than would a statement of general opposition.

If one's concerns were not handled satisfactorily at the MPO level, one may continue to participate during the DOT Tentative Work Plan public hearings. One may also lobby the state Legislature before passage of the appropriations bill which will fund DOT's Five Year Work Program to delete or modify problematic projects.

The PD&E phase straddles the boundary between planning and implementation. All projects within the Five Year Work Program are "on the books" as official projects, but the PD&E study does offer an escape hatch to kill bad projects through adoption of the "No Build" alternative that is a mandatory alternative considered during the analysis. The PD&E study serves as the final stage of analysis and evaluation, beyond which eventual completion of the project is almost a certainty.

The PD&E process is designed to accommodate citizen participation, and is an important process in which to be involved. It offers a last chance to proactively improve or kill a project. Environmental considerations are an integral part of this stage, making it an excellent time to raise relevant wildlife, habitat, and ecosystem issues. Activists should carefully study proposed alternatives, and consider additional alternatives if those proposed seem inadequate. Professional scientists will provide information about a project's environmental impacts, but it is up to the citizens to make the value judgements and trade-offs in deciding what is best for their community and natural resources. This is also a good time to request that your state wildlife agency review the project since they may be able to provide useful technical information. Involving them before the permitting phase ensures that the project receives their full attention. Activists participating from the beginning of the PD&E study will be more effective than those becoming involved near the end. Comments should be submitted in writing in order to establish standing, should it be needed in a future legal proceeding.

As projects pass through the various steps on their way to completion, they go back to the MPO each year to compete for a high priority and continued funding. A project may complete one stage and then wait several years to receive funding for the next phase. Or completion of one phase may take many years if only partial funding is available. For projects which successfully have moved beyond the PD&E stage, expressing opposition to the MPO or DOT during the annual project prioritization process sometimes can lower the priority and delay projects, but probably will not halt them permanently.

If a project makes it through the PD&E process in a form that is still considered to be environmentally unacceptable, activists can participate in the permitting phase. All regulatory permits are obtained during a project's design phase. Activists may contact the regulatory agencies and alert them to specific environmental concerns. Regulatory staff have an obligation to try to make projects more environmentally acceptable, and they have authority to request that applicants modify projects when justified. If staff recommend approval of a permit for a project that still seems unacceptable, activists then can make their concerns known to the decision-making section of the regulatory agency (for example, the Governing Board of the relevant Water Management District, or Agency head of the USACOE or USFWS). In Florida, if a permit is granted by a regulatory agency without due consideration of a citizen's concerns, the citizen may file for a Chapter 120 hearing (Administrative Procedures Act), which freezes the project's permit until the issue can be heard and decided by a Hearing Officer appointed by the Florida Department of Administration. The Hearing Officer listens to both sides and offers an opinion regarding the project. Although there is no legal requirement to use the opinion, DOT usually tries to work out problems identified during the procedure. A Chapter 120 hearing can be used regarding any environmental permit or document approved after the planning stage and before construction.

Occasionally projects are delayed for so long that the permits originally obtained in the design phase expire. Re-application for permits offers the activist one last chance to participate in the process. Beyond the avenues

described above, the only action left to those still concerned about a transportation project is to seek legal recourse through the judicial system. Such lawsuits are expensive both in terms of time and money, and usually fail to stop a project permanently.

To summarize, road projects start as ideas but they gain momentum as they progress. Early participation is crucial to successfully incorporate wildlife considerations into transportation planning. Projects near the construction phase are like freight trains – hard to stop or even to influence the direction. Citizen activists should become involved during the planning stages, and participate fully in PD&E studies to maximize their effectiveness.

Innovative Approaches To Transportation Planning: The Florida Model

This section will describe three proactive projects undertaken in Florida to improve natural resource protection in planning future transportation projects, and to identify hotspots for wildlife and vehicle collisions on the existing road system which require correction.

First, Florida has attempted to estimate the land area necessary to maintain all its species of native vertebrates and flowering plants, and its natural community types. In 1994, the Florida Fish and Wildlife Conservation Commission (formerly the Florida Game and Freshwater Fish Commission) completed a comprehensive habitat conservation plan for the state (Cox, Kautz, MacLaughlin, and Gilbert 1994). The report describes habitat areas in Florida that should be conserved if key components of the state's biological diversity are to be maintained. In addition to land in public ownership (20% of Florida's land area), the report identified lands in private ownership recommended for additional protection, called Strategic Habitat Conservation Areas (13% of Florida's land area). The report also identified Regional Biodiversity Hot Spots where large numbers of threatened and endangered species occur. The report was expanded in 2000 to include habitat requirements of additional species (Cox and Kautz 2000). Similar comprehensive wildlife habitat mapping efforts have been done in Oregon (Heagerty et. al. 1997).

Knowing which areas within a state are of critical importance to the continued existence of threatened and endangered wildlife or rare natural communities assists the citizen advocate in picking their battles. Defenders of Wildlife (Defenders), for example, becomes involved in transportation projects that will impact public lands, Strategic Habitat Conservation Areas, or Biodiversity Hot Spots in Florida. Borrowing from the federal policy to preserve wetlands, Defenders advocates a policy of 'avoid, minimize, and mitigate' for these transportation projects. This means that road projects should avoid these significant habitat areas entirely whenever possible. Where this is not possible, projects should be sited, designed, and constructed in such a way as to minimize their negative impacts on those critical habitats that cannot be avoided. For unavoidable habitat losses, even those minimized, compensation for lost habitat should be mitigated through the permanent protection or restoration of a certain amount biologically valuable habitat elsewhere.

Secondly, the FDOT has taken a progressive approach to use natural resource mapping data when planning highway construction in order to identify and correct projects with serious environmental problems at the MPO stage. FDOT is working with local governments to implement an environmental screening analysis to address secondary and cumulative impacts. The analysis consists of a 12 point questionnaire focused heavily on natural resource mapping data compiled by various agencies, including the Florida Fish and Wildlife Conservation Commission. While the primary goal of this process is to encourage more effective mitigation, the process could also be helpful in discouraging local governments from pursuing especially damaging projects through critical natural areas.

Thirdly, FDOT funded a computer modeling effort to identify and prioritize habitat corridors where wildlife-highway conflicts are likely to occur (Harris and Smith 1999). In an effort to increase motorist safety as well as to make roads more permeable to wildlife, particularly in important wildlife corridors, the model provides the framework for integrating FDOT road projects with promotion of a statewide system of greenways and other conservation programs. Using eleven elements, such as roadkill data, known movement routes, strategic habitat conservation areas, core conservation areas, and public lands, the model helps locate areas on existing roads which

need underpasses or other structural solutions, and helps identify potential wildlife/road conflicts on planned roads. A follow-up report specified for FDOT natural resource problems present on segments of existing roads (Schaefer and Smith 2000).

Efforts such as these are helpful in locating important natural areas in Florida which will serve as the state's reservoir of biodiversity. This type of information is needed to identify those areas in which new roads or road expansion projects should not be built. It is also helpful to have an objective analysis of a state's existing road system, identification of wildlife problem areas, and a plan to correct these areas. These types of transportation planning efforts are needed in other states throughout the nation.

Conclusion

The citizen activist can greatly benefit wildlife and habitat by participating in the transportation development process at the planning and very early implementation stages. Wildlife advocates need not oppose every new road or road expansion project, but might focus on keeping highways away from their state's public lands and most sensitive natural areas, and push to make existing roads more compatible with wildlife. Citizens have a vested interest in promoting ecologically sensitive transportation projects, as they have to live with the outcome. Citizen participation can result in better government decisions.

Each state needs to identify which lands are important to the long-term survival of its native species of vertebrates, flowering plants, and natural communities. Transportation improvement projects that might affect these areas should receive the highest level of scrutiny from government staff and the citizen activist alike.

Literature Cited

- Cox, J., R. Kautz, M. MacLaughlin, and T. Gilbert. 1994. Closing the gaps in Florida's wildlife habitat conservation system. Florida Game and Freshwater Fish Commission, Tallahassee, FL. 239 pp.
- Cox, J.A. and R.S. Kautz. 2000. Habitat conservation needs of rare and imperiled wildlife in Florida. Florida Fish and Wildlife Conservation Commission, Tallahassee, FL. 156 pp.
- Harris, L.D. and D.J. Smith. 1999. Development of a decision-based wildlife underpass road project prioritization model on GIS with statewide application. Florida Department of Transportation, Tallahassee, FL. 41 pp.
- Heagerty, D.D., T. Imeson, T. Flores, C. Macdonald, F. Otley, H. Sohn, and S. Vickerman. 1997. Oregon's living landscape: strategies and opportunities to conserve biodiversity. Defenders of Wildlife, Washington, D.C. 218 pp.
- Orloff, Neil. 1978. The environmental impact statement process: a guide to citizen action. Information Resource Press, Washington, D.C. 242 pp.
- Schaefer, J. M. and D.J. Smith. 2000. Ecological characterization of identified high priority highway-ecological interface zones including inventory and evaluation of existing Florida Department of Transportation highway facilities within these zones. Florida Department of Transportation, Tallahassee, FL. 26 pp.
- Trombulak, S.C. and C.A. Frissell. 2000. Review of ecological effects of roads on terrestrial and aquatic communities. *Conservation Biology* 14:18-30.

