

# Examination of State Policies on Endangered Species and Transportation Projects in the United States

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State departments of transportation have evolved many strategies for dealing with endangered species laws. It is likely that some states could develop more effective and efficient strategies if they knew other states' policies. To aid in an exchange of such information the authors developed and distributed a survey on state department of transportation strategies for dealing with endangered species. The survey involved 21 questions covering 11 policy issues. The mail-in and mail-back survey was sent to an environmental official of each of the 50 state departments of transportation. The survey response rate was outstanding—45 states provided detailed responses. A major pattern that emerged from the survey was the wide diversity of strategies for dealing with endangered species. Responses to questions regarding personnel who performed endangered species work and the effects of state endangered species laws showed wide variations in state strategies. Sixty-two species were named by the 45 responding states as one of their top three species in terms of compliance work. Most states have communities of protected plant species within their rights-of-way. Many differences in the ways that states approach protected species surveys for major corridor studies and for protected aquatic species were evident. The extent to which state departments of transportation have relocated protected species was identified. Only nine states have had projects stopped by endangered species, but most states have had projects delayed or redesigned because of endangered species. Questions regarding compliance with Section 7 of the Endangered Species Act identified national trends. Finally the unique policies of the states were identified.

Much attention has been focused on conflicts between construction projects and endangered species. This paper examines the relative difficulties that endangered species laws have caused state departments of transportation and examines states' approaches to compliance with those laws. To survey state policies a questionnaire was sent to all 50 state departments of transportation. Responses were received from 45 states. The survey responses detailed in this paper allow states to compare their policies with those of other states. Such a comparison may lead to better policy decisions regarding endangered species.

## BACKGROUND

### Federal Law

The U.S. Congress wrote the Endangered Species Act of 1973 to conserve threatened and endangered species and their physical en-

vironments. This law is regarded as the most comprehensive species protection program in the world (1). The act covers many different areas including the listing of threatened and endangered species; restrictions on the sale, importation, and "taking" of these species; and penalties for violations. The U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) are the federal agencies that administer the Endangered Species Act.

Of particular concern to transportation departments is Section 7 of the act, entitled "Interagency Cooperation." Section 7 requires federal agencies to ensure that their actions do not jeopardize the continued existence of any threatened or endangered species or adversely modify the habitats of such species. Section 7 also sets forth procedures for federal agencies to consult with FWS and NMFS about the effects of planned agency activities to ensure compliance with the Endangered Species Act. State departments of transportation must follow Section 7 requirements because a high percentage of transportation projects involve federal funding.

### State Laws

Thirty-seven states have laws protecting species that go beyond the federal protection provided by the federal Endangered Species Act (1). These laws offer varying degrees of protection. A December 1991 survey by Griffin and French (1) found that 12 states have protected species laws considered to be comprehensive (having met a set of criteria established by Griffin and French).

## SURVEY

The authors developed a 21-question survey to examine 11 policy issues. The answers to many additional questions were of interest but would have made the questionnaire too time-consuming and would jeopardize the response rate. Both "open" and "closed" question formats were used. Questions were refined by pilot testing the questionnaire on environmental staff of the North Carolina Department of Transportation. The questionnaire was sent to environmental officials of all 50 state departments of transportation. Respondents were offered a summary of survey results if they desired. The questionnaire was mailed on May 14, 1993, with a requested return date of June 30, 1993. Forty-five states responded to this questionnaire. Because of the high response rate follow-up telephone calls were not used.

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## SURVEY RESULTS

This section provides a discussion of the survey responses and their implications to policy issues. Figure 1 gives the questionnaire, with questions arranged according to the policy issue involved. Responses follow each question. A more detailed, state-by-state matrix of each state's response to the questionnaire is available from the authors.

Because species are protected under two classifications (threatened and endangered), the term *protected species* will be used in this paper.

### Policy Issue A: Difficulties in Implementing Transportation Projects

Media attention on protected species controversies may lead one to believe that these laws are a nearly insurmountable obstacle to project construction. However as indicated in the responses to Questions 1 through 3 (Figure 1), protected species have only rarely stopped projects. Thirty-six states have never had a transportation project stopped by protected species conflicts. Delays and redesign, however, are more common.

Almost all states indicated that protected species have caused delays in or redesign of projects. This shows that protected species are a concern to almost all states. With protected species policies causing delays or redesign in all but three and four states the benefits of information sharing regarding protected species policies are apparent.

The authors reviewed the responses to Questions 1, 2, and 3 to determine whether protected species conflicts are more common in any particular region of the United States, but they could not identify any regional trends. States with the most problems relating to protected species were distributed throughout the United States.

### Policy Issue B: Species Requiring the Most Compliance Work

Table 1 shows the species from each state that required the most compliance work. Table 1 provides an opportunity for information sharing between states. Projects may potentially have an impact on species that a state has not yet encountered. Occasionally FWS and NMFS may update the estimated habitat ranges for protected species. States may be required to evaluate the impacts to species recently identified within a project vicinity. A review of Table 1 will show whether other states have been dealing with these species. Coordination between states will likely save time and money.

Nine species were listed by three or more states. This indicates a high level of effort focused on these species. Coordination between states may prove beneficial to avoid duplication, to receive benefits of information sharing, and to improve protection of species.

### Policy Issue C: Determination of Species Presence on Major Corridor Studies

Protected species evaluations for major corridor studies can be expensive and time-consuming. A 32-km (20-mi) freeway project

may have 97 km (60 mi) of preliminary alternatives that must be evaluated. A state's approach to performing protected species evaluations for these projects is an important policy decision.

As shown in Figure 1 21 states identify potential habitat for protected species along all preliminary corridors, but conduct field surveys for the selected alternative only. This saves the expense of conducting a protected species field survey for each preliminary corridor.

Fewer states (12 states) conduct field surveys for all preliminary corridors. A variety of other approaches to this issue were also identified, including the following:

- Two states decide on the level of work after conferring with the local FWS office, and
- One state conducts field surveys for the most likely corridors under consideration, but determines habitat presence for all corridors.

### Policy Issue D: Compliance Work for Aquatic Species

Protected aquatic species are one of the more difficult groups of species to address. Comprehensive field surveys for these species can be very labor intensive. If an aquatic species is not found, it may simply have avoided the subject stretch of water during the field work. The survey examined whether states conduct field surveys for aquatic species or simply make assumptions regarding species presence.

As shown in Figure 1 23 states conduct field surveys for aquatic species and 12 states assume that aquatic species are present without field surveys. Those 12 states avoid costs associated with aquatic field surveys. However the costs of protecting these species (extreme sedimentation controls, longer bridge lengths, etc.) may be excessive if the protected species is not actually present.

Eight states responded differently to this issue. The following were among the other responses:

- Six states coordinate with resource agencies before deciding on field surveys, and
- Two states conduct field surveys for immobile species such as mussels, but not for mobile species such as fish.

### Policy Issue E: State Laws Affecting Transportation Projects

Some state protected species laws do not require additional compliance procedures from transportation departments. Other state protected species laws are very strict and require compliance procedures similar to those required by the federal Endangered Species Act.

Figure 1 shows that 25 states have protected species laws that affect their departments of transportation. In Florida, Michigan, and Vermont state-listed species often play a significant role in locating highway corridors.

### Policy Issue F: Personnel Performing Species Evaluations

State departments of transportation have several options regarding the personnel conducting protected species evaluations. These de-

-----Policy Issue A-----

1. Have problems related to protected species stopped transportation projects of your Department?  
often - 0\*; occasionally - 0; rarely - 9; never - 36

2. Have problems related to protected species delayed transportation projects of your Department?  
often - 1; occasionally - 18; rarely - 22; never - 4

3. Have problems related to protected species caused redesign of transportation projects of your Department?  
often - 1; occasionally - 16; rarely - 24; never - 3

-----Policy Issue B-----

4. List the three protected species which have required the most compliance work (in terms of workdays) by your Department.  
responses shown in Table 1

-----Policy Issue C-----

5. How does your Department approach Endangered Species Act compliance with regard to major highway corridor studies? Note that major studies are those which require an Environmental Impact Statement (EIS).  
species habitat identified for all corridors under consideration and field surveys conducted later for selected alternatives only - 21; field surveys conducted for all corridors under consideration prior to corridor selection - 12; other - 10

-----Policy Issue D-----

6. When transportation projects cross water resources, how does your Department comply with the Endangered Species Act with regard to aquatic species (fish, mussels, etc.)?  
conduct field surveys for threatened and endangered aquatic species - 23; assume aquatic species is present (without field surveys) and incorporate precautions into project design to minimize impacts - 12; other - 8

-----Policy Issue E-----

7. Does your state have laws requiring additional compliance procedures for your Department beyond federal Endangered Species Act requirements?  
yes - 25; no - 20

Questions 8 and 9 applied to those answering "yes" to Q. 7.

8. Does your Department perform field surveys for state-listed protected species that are not on the federal Endangered Species list?  
yes - 23; no - 1

9. How often do state-listed protected species play a significant role in decisions regarding hwy. corridor location?  
often - 3; occasionally - 11; rarely - 9; never - 2

-----Policy Issue F-----

10. What personnel does your Department use to conduct protected species evaluations?  
responses shown in Table 2

FIGURE 1 Questions and responses for policy issues A to J. (continued on next page)

decisions depend on policies regarding privatization, availability of qualified personnel, workloads, or the department's relationship with review agencies.

The survey asked about the type of personnel used by states for protected species compliance work and the percentage of work performed by each type. Table 2 shows that there is wide variation on state policies regarding this subject. Most states use a combination of in-house staff biologists and private firms. Resource agency and university staff are also used by 16 states and 5 states, respectively. One state uses resource agency staff for 100 percent of the protected species work. Other states may wish to consider these resource agency and university sources.

#### Policy Issue G: Relocation of Protected Species Communities

The negative impacts of a project may be mitigated by relocating communities of protected species; however, survey results showed that many states have not used this approach. Twenty-five states have never relocated animal species, and 19 states have never relocated plant species.

States that have never relocated protected species may wish to consider this mitigation option. Half the responding states have relocated endangered species at least once, and three states do this often. These responses indicate that relocation of species is not

- Policy Issue G-----
11. How often has your Department relocated communities of protected species discovered within the proposed alignment of transportation projects?  
 11.a. Protected animal species have been relocated. . .  
       **often - 2; occasionally - 5; rarely - 12; never - 25**  
 11.b. Protected plant species have been relocated. . .  
       **often - 2; occasionally - 8; rarely - 13; never - 19**
- Policy Issue H-----
12. Does your Dept. have a formal review process to verify that protected species commitments made during Planning/EIS are carried out in the final design plans and construction?  
       **yes - 24; no - 21**
13. On what types of projects does your Department use the formal review process referred to in Question 12?  
       **federal-aid projects - 23; 100% state-funded projects - 19;  
       state- and local-funded projects - 11**
- Policy Issue I-----
14. Does your State have populations of protected plants within highway right-of-way limits?  
       **yes - 33; no - 11**
15. Has your Department taken precautions to ensure operations (such as maintenance, mowing, or new driveways) do not impact protected plants found within highway right-of-way?  
       **mowing restrictions - 13; herbicide restrictions - 11;  
       special instructions to district personnel, construction crews, and contractors - 11; other - 10**
- Policy Issue J-----
16. When projects are found to potentially impact federally protected species, what type of consultation with the U.S. Fish and Wildlife Service/National Marine Fisheries Service (USF&W/NMF) does your Department use?  
       **responses shown in Table 2**
17. Which agency acts as the lead agency during informal consultation with the USF&W/NMF?  
       **always your Department - 29; sometimes your Department and  
       sometimes the FHWA - 9; always the FHWA - 7**
18. On federal-aid projects, how often does your Department prepare Biological Assessments for federally protected species identified by Environmental Impact Statements?  
       **always - 10; often - 13; rarely - 17; never - 4**
19. This question relates to Federal-Aid projects processed as Environmental Assessment/Findings of No Significant Impact. How often does your Department obtain concurrence from the USF&W/NMF on protected species findings prior to completion of the Environmental Assessment?  
       **always - 29; often - 11; rarely - 4; never - 1**
20. This question relates to Federal-Aid projects processed as Categorical Exclusions. How often does your Department obtain concurrence from the USF&W/NMF on protected species findings contained in Categorical Exclusions?  
       **always - 21; often - 10; rarely - 10; never - 4**
- \* = Number of states providing that response.

FIGURE 1 (Continued)

impossible. States considering relocation of protected species may wish to contact one of the three states that have done this often (Virginia with animals, Michigan with plants, and Utah with plants and animals).

#### Policy Issue H: Formal Processes To Verify Commitments Made for Protected Species

Commitments regarding protected species could include shifting highway alignment, limiting construction during certain seasons,

using special construction techniques, and others. Agencies usually make these commitments during the planning and Environmental Impact Statement (EIS) stage of project development. Quite often project construction begins years after the planning and EIS stage, and the personnel involved with a project may change. To ensure that commitments made during early project planning are carried through construction, many states have implemented formal review processes. The authors found that more than half the responding states (24 states) have such a formal review process in place.

**TABLE 1 Species Requiring Most Compliance Work**

SPECIES	STATES LISTING SPECIES AS REQUIRING:	
	THE MOST COMPLIANCE WORK	THE SECOND-MOST OR THIRD-MOST COMPLIANCE WORK
<u>Birds</u>		
Crane, MS Sandhill	MS	
Eagle, Bald	ID, IL, NH, WA	AK, CO, KS, LA, MN, OR OH, TX, UT, WI, WY
Falcon, Peregrine	AK	AZ, NH, WY
Murrelet, Marbled		WA
Owl, Northern Spotted	OR	AZ, WA
Plover, Piping		NE
Tern, Least	NE	OK
Vireo, Least Bell's	CA	
Vireo, Black-capped	TX	
Warbler, Golden-Cheeked		TX
Waterfowl (Unspecified)		AK
Woodpecker, Red Cockaded	GA, LA, NC, SC	FL, TN
Woodstork		GA
<u>Mammals</u>		
Bat, Big-Eared		KY
Bat, Gray	IN	KY
Bat, Indiana	KY	IL, IN, IA
Ferrett, Black Footed	WY	CO
Manatee	GA	FL
Panther, Florida	FL	
Prairie Dogs	UT	
Rat, Stephen's Kangaroo		CA
Squirrel, Northern Flying		WV
Wolf, Timber		WI
Woodrat, Eastern	PA	
<u>Reptiles</u>		
Tortoise, Desert	AZ	CA, UT
Tortoise, Gopher		AL, LA, MS
Tortoise (Unspecified)	NV	
Turtle, Spiny Soft-Shell	VT	
Turtle, Flatten Musk	AL	
<u>Fish</u>		
Cavefish, Ozark	MO	AR
Dace, Red Bellied		NE
Darter, Leopard		OK

(continued on next page)

The regulations promulgated by FHWA [23 CFR 771.129(c)] refer to this review process as a *consultation*. The survey determined that projects that receive federal aid are the most likely projects to involve a formal review. Many states also have such a procedure for 100 percent state-funded projects and for state-funded and locally funded projects.

**Policy Issue I: Protected Plants on Highway Rights-of-Way**

Some protected plants grow in habitats found within highway rights-of-way. This presents problems for state departments of transportation because even routine maintenance can "take" a protected species. Thirty-three states report knowledge of communities of protected plants within highway rights-of-way. The list of techniques for avoiding impacts is broad, with mowing restrictions, herbicide restrictions, and special instructions to field personnel the most popular.

Other means of protection were also identified, including the following:

- Limits on salt application (1 state),
- Erection of signs or fencing indicating sensitive areas and required precautions (5 states),
- Elimination of other competing vegetation (1 state),
- Registration of protected plant communities with the Nature Conservancy (1 state), and
- Special conditions for resurfacing projects or encroachment permits (2 states).

**Policy Issue J: Procedures for Compliance with Section 7 of the Endangered Species Act**

The regulations for implementing Section 7 discuss both formal and informal consultations with FWS and NMFS. Table 2 shows

TABLE 1 (Continued)

SPECIES	STATES LISTING SPECIES AS REQUIRING:		
	THE MOST COMPLIANCE WORK	THE SECOND-MOST OR THIRD-MOST COMPLIANCE WORK	
Darter, Bayou	KS	MS	
Darter, Niangua		MO	
Madtom, Neosho		ID	
Salmon, Chinook			NC
Shiner, Cape Fear			NJ
Sturgeon, Shortnose	CT, MA		
<u>Clams</u>			
Fatmucket, Arkansas	AK	AK	
Mucket, Pink			
Mussel, Dwarf Wedge		NH, NC	
Mussel, Heelsplitter		KS	
Mussel, Higgins Eye Pearly	MN, WI	AL, IL, IN, OH	
Mussels (Unspecified)	IA, TN, VA, WV		
<u>Snails</u>			
Snake River Snails		ID	
<u>Insects</u>			
Beetle, Amer. Burying	OK		
Butterfly, Mitchell's Satyr	MI		
Butterfly, OR. Silverspt		OR	
<u>Plants</u>			
Bladder-pod, Missouri	OH	MO	
Buckwheat, Steamboat		NV	
Bullrush, Eastern		PA	
Clover, Running Buffalo			
Clover, Prairie Bush		MN	
Coneflower, Tenn. Purple		TN	
Goldenrod, Houghton's		MI	
Knotweed, Blue		VT	
Ladies' Tresses		CO	
Monkshood, Northern		IA	
Pale-Painted-Cup	VT		
Pogonia, Small Whorled	NJ	PA	
Swamp Pink		NJ	
Thistle, Pitcher's		MI	
Virginia Spiraea		WV	

that most states successfully coordinate projects through informal consultations (meetings, telephone conversations, etc.). The formal consultation process involves specific correspondence leading to an official "jeopardy opinion" from FWS and NMFS. Reaching agreement through informal consultation can greatly reduce the time involved with the consultation process. Four states conduct 100 percent of their consultation with FWS and NMFS through the formal process. These states may wish to consider informal consultation.

Responses to Question 17 show that most state departments of transportation act as lead agency during informal consultations with FWS and NMFS. The regulations for implementing the Endangered Species Act require federal agencies to act as the lead agency during formal consultations, but they are silent regarding the lead agency for informal consultations. Responses to Question 17 indicate that most states interpret the law to allow them to act as the lead agency during informal consultations.

The Endangered Species Act refers to the preparation of Biological Assessments when projects are found to have a potential

impact on threatened or endangered species. Question 18 shows how often states are preparing these Biological Assessments. Twenty-one states rarely or never prepare Biological Assessments. Apparently FWS and NMFS accept other documentation as the equivalent to a Biological Assessment in these states.

The Georgia Department of Transportation (DOT) prepares shortened Biological Assessments that do not include repetitious or extraneous information such as species descriptions. Their shortened Biological Assessments focus on impact analysis, alternative analysis, and mitigation.

Questions 19 and 20 provide information regarding Section 7 compliance for smaller projects (those requiring an Environmental Assessment or Categorical Exclusion rather than an EIS). Section 7 compliance is required for those projects, but regulations do not define the exact procedures for this compliance as they do for EIS-level projects. Responses to Questions 19 and 20 indicate that most states attempt to achieve concurrence regarding protected species early in the planning process, even when projects are smaller. As expected the smaller the project the less likely the

TABLE 2 Responses to Survey Questions 10 and 16

PERCENTAGE OF COMPLIANCE WORK	PERCENTAGE OF COMPLIANCE WORK						
	0%	1%-20%	21%-40%	41%-60%	61%-80%	81%-99%	100%
<b>QUESTION 10 - PERSONNEL* PERFORMING SPECIES EVALUATIONS:</b>							
IN-HOUSE BIOLOGISTS	9**	9	5	7	7	7	1
PRIVATE FIRMS	7	14	11	2	4	3	4
RESOURCE AGENCY STAFF	27	4	5	1	4	1	1
UNIVERSITY STAFF	39	2	2	0	1	0	0
<b>QUESTION 16 - TYPE OF CONSULTATION USED WITH USFWS OR NMFS:</b>							
INFORMAL CONSULTATION	4	0	2	1	4	25	7
FORMAL CONSULTATION	7	25	4	1	2	0	4

\* Seven states used other personnel for protected species work including: tribal representatives, landscape architects, environmental planners, staff archaeologists, and other environmental staff.

\*\* Number of states responding.

states will attempt early coordination for protected species. Fewer states attempt early coordination for projects requiring Categorical Exclusions than for those requiring Environmental Assessments.

**Policy Issue K: Other Unique Policies**

In an open question the authors asked respondents to explain any unique procedures or policies that the agency uses regarding protected species. Several of the more interesting explanations follow.

*Agency Coordination*

Vermont DOT holds bimonthly meetings with state and federal agencies to discuss the status of projects that are controversial because of environmental and engineering constraints.

Texas DOT has a Memorandum of Agreement with the Texas Parks and Wildlife Department. As part of this Memorandum of Agreement the Texas Parks and Wildlife Department reviews endangered species in the vicinity of projects early in the planning process to allow sufficient time for any necessary coordination.

Washington DOT participates in regional working teams for various protected species recovery plans.

*Guidance on Procedures*

Florida DOT developed an extensive *Project Development and Environmental Manual* describing the process by which transportation projects are developed to meet the requirements of federal, state, and local laws and regulations. The manual contains 49 chapters, including a chapter on wildlife and habitat impacts. District staff and consultants use the manual.

*Protected Species Reviews for Off-Site Highway Construction Activities*

Florida DOT requires protected species investigations for off-site construction activities such as new borrow pits, mixture plants, or construction field offices. Contractors must request a protected species review from Florida DOT district environmental personnel. The investigation must be completed before off-site construction activity.

*Drainage Design*

Missouri DOT has used unique drainage designs to lessen the likelihood of roadway spills entering groundwater that might harbor protected species.

**CONCLUSION**

The survey of state DOTs described here allows states to compare their practices with those of other states. Although protected species issues have reportedly stopped transportation projects in only nine states, they have caused project delays or redesign in almost all states. A wide variety of state policies regarding protected species laws is evident from the survey responses.

Does your state experience more difficulties than other states regarding protected species? How many states have compliance procedures similar to those of your state? Survey results allow transportation officials to answer these questions. The list of species requiring the most compliance work provides a useful data base that can be used to reduce duplication of effort and improve protection for species.

The survey provides an overview of many different policy issues and should spark many follow-up research questions. In particular analysts may need the degree of species protection and costs associated with different policy decisions. A time series of responses to this survey would also be helpful, revealing trends and policy shifts.

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