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Biological Diversity and the States: Implementing the Biodiversity Convention in the USA

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Introduction

The protection of species and their ecosystems has become an issue of international importance. Although several other treaties address issues of wildlife management in a piecemeal fashion, the Biodiversity Convention, opened for signature at the 1992 Rio Conference on the Environment and Development (UNCED), is the first to establish substantial expectations that signatory nations will protect species diversity regardless of species rarity or economic value. The institutional and ecological implications of managing wildlife as a common pool resource has finally reached the national and international policy agendas.

Most nations which are organized into federal systems implement their treaties either through federal legislation which is binding upon their constituent parts or through recognition by the central government of state laws as sufficient for treaty compliance (M. Chandler 1993, 156-157). The United States policy is that treaty obligations are implemented primarily through federal legislation. However, under the U. S. Constitution, some policy issues are within the constitutional purview of the states rather than the national government, and treaties which address such issues ~~gener~~al legal and constitutional difficulties during implementation (M. Chandler, 155). generate

Wildlife management is one area which is traditionally left primarily to the states. The U. S. Department of Interior regulations affirm the state role:

> (a) International conventions have increasingly been utilized to address fish and wildlife issues having dimensions beyond national boundaries. The authority to enter into such agreements is reserved to the President by and with the advice and consent of the Senate. However, while such agreements maybe valuable in the case of other nations, **in a Federal system such as ours sophisticated fish and wildlife programs already established at the State level may be weakened or not enhanced.**
>
> (b) To ensure that effective fish and wildlife programs already established at the State level are not weakened, **the policy of the Department of the Interior shall be to recommend that the United States negotiate and accede to only those international agreements that give strong consideration to established State programs designed to ensure the conservation of fish and wildlife populations** (24 C.F.R. § 24.5 [1991]. [emphasis added]

Most recently the Biodiversity Convention caused difficulties for the United States' policy. The United States' objections to the Biodiversity Convention were based on patent and intellectual property rights, financing, biotechnology, and jobs (BNA 1992, 414). These concerns were sufficient that the United States initially refused to sign the Convention. In addition to these concerns, however, efforts to resolve the federal question permeated the negotiations (M. Chandler, 157-158). In its statement at the end of the Convention negotiations, the United States reiterated its position:

> ...[The] United States has a tightly woven system of state and federal programmes in fish and wildlife management.... The United States does not intend to disrupt its existing federal and state authorities. Indeed our Government is committed to expanding and strengthening these relationships. Should the United States become a Party to this Convention,its intent would be to meet its conservation obligations through existing federal laws and would look forward to continued cooperation with the various states in this regard (UNEP 1992, 35).

However, the United States Senate has not ratified the Convention and is unlikely to do so with the current Republican majority. This does not mean that American wildlife managers can ignore international biodiversity issues. The United States is party to several other treaties with wildlife management obligations (e.g., the Convention on International Trade in Endangered Species [CITES]), and the problem of state sovereignty in the face of federal treaty obligations will continue to affect state wildlife management.

While in theory the power of the federal government over wildlife is considerable, in practice the states have been allowed a great deal of latitude in regulating wildlife. Several factors affect the rate and effectiveness of state implementation strategies: the compliance mechanisms chosen by the federal government, the institutional relationships already in place for intergovernmental cooperation, and the organizational structures of the states' wildlife management systems. This paper analyzes the cooperative strategies for wildlife management which have evolved between American federal and state governments and examines possible state-level institutional change which would enhance national response to any new treaty obligations under the Biodiversity Convention.

Part I describes the history of federal-state relationships in managing the nation's wildlife. It begins with the erosion of the state ownership doctrine and concludes with the passage of the Federal Aid in Wildlife Restoration (Pittman-Robertson) Act of 1937.[1] This act is the primary vehicle for federal-state cooperation in wildlife management.

In Part II, I discuss the current status of federal-state cooperative efforts in wildlife management. Although several other federal laws, most notably the Endangered Species Act, affect state management options, the primary cooperative regime is Pittman-Robertson. This section describes the current institutional structure of state agencies and their relationship with the U.S. Department of Interior Fish and Wildlife Service (FWS).

Part III assesses the potential effectiveness of the existing regime in complying with the demands and expectations of the Biodiversity Convention. Biological diversity may provide economically important benefits in the future but it will certainly impose economic costs in the present. Fortunately, the examples set by the federal aid programs for wildlife

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[1]This paper does not address either coastal or freshwater fisheries management, so the Federal Aid in Sport Fish Restoration Act of 1950 (Dingell-Johnson Act), which is the analog to Pittman-Robertson, is not discussed, except incidentally where policies or financial data include both fisheries and wildlife.

and sport fish provide a vehicle for funding state wildlife diversity programs which may prove politically acceptable. Although state policymaking has been seen in the past as less effective and more susceptible to influence than national policymaking, stable sources of state wildlife management revenue, the relative political independence of wildlife agencies, and well-established agency and interest group expertise indicate a strong role for state management in protecting biological diversity.

I

State Ownership Doctrine

In the United States, traditional ownership of wildlife was vested in state governments through the transfer of the powers of the English sovereign to the colonies and hence to the states. Simply put, the state ownership doctrine assigns the property rights in wildlife to the state in which the wildlife is found. The state then holds this property in trust for the citizens (Martin v. Waddell, 41 U.S. [Pet.] 234 [1842]).

American jurists in the nineteenth century based this doctrine on their understanding of English common law, which Blackstone asserted gave all rights in wildlife to the sovereign. Although the American courts legitimized the state ownership doctrine, the law from which it was drawn was not settled even in England. English game laws had been designed partly to protect class privileges; Blackstone, whose Commentaries (1766) were tremendously influential in the United States, favored easing restrictions on hunting. Fortunately for America, this view fit frontier conditions and the need to encourage new settlements (Lund 1980, 21; Tober 1981, 146-147).

The state ownership doctrine evolved as states sought to protect their dwindling game resources. It "enabled state governments to insulate their fish and game somewhat from the commercial demand that was inexorably destroying them.... Making state property out of fish and game, like granting fictive citizenship to corporations, was government's way of collecting a wide range of inter-related problems under a single relatively manipulable [sic] legal abstraction" (McEvoy 1986, 117-118).

The apogee of the state ownership doctrine was reached in Geer v. Connecticut (1896). A Connecticut law prohibited interstate transportation of game which had been lawfully killed in Connecticut; Geer charged that this was an unconstitutional interference with interstate commerce. The state argued that because it owned the game, it could assign a qualified property right to anyone who killed or captured the game, and the property right qualification might include a rule requiring only domestic consumption. The United States Supreme Court ruled that the state had the power to regulate game for two reasons. First, as trustee for the people, it had ownership of the game, and second, under the police power, the state could protect the state food supply.

Justice White, writing for the Court, affirmed the state's ability to restrict property rights in game whether the game was dead or alive: "the Police power of the state to preserve game birds as a valuable food supply...justifies a statute prohibiting the transport of

such birds beyond the state, even if interstate commerce may be remotely and indirectly affected thereby" (at 534-535).

While Geer established the states' rights to control wildlife and to prohibit its export, states still had no mechanisms to prohibit the importation of wildlife. Many states had laws restricting hunting and the sale of illegally harvested game, but they were hampered in the enforcement of their own laws by market hunters bringing in game killed in other states. Dealers charged with violating the state laws could claim their product was taken in another state, and it was virtually impossible to disprove their assertions. Solving such problems was clearly a matter of interstate commerce. In 1900, Representative Lacey of Iowa introduced a bill to remedy this problem.

The Lacey Act

In 1900, the Lacey Act provided federal sanction to state laws forbidding the importation of certain game by prohibiting interstate transportation of unlawfully killed animals. It also allowed states to assume that any dead wildlife found within the state had been killed in the state and thus was subject to state game laws. The Act provided the necessary federal assent to what was essentially a state restriction on interstate commerce.

When Representative Lacey was asked if his bill produced any state-federal conflict, Lacey replied:

> There is no difficulty whatever. The authority of the National Government begins where the State authority ends. The bill carefully avoids all conflict of this character (U.S. Congress, House 1900, 4873).

It is clear that Lacey was concerned to safeguard the state ownership of wildlife, although it is not clear if that was from conviction or because he was relying upon the ruling in Geer. The Lacey Act helped the states in their efforts to enforce existing laws, but it did nothing to regularize or to enhance protections for migratory birds. Across the nation a patchwork of hunting regulations and irregular enforcement left many species at the mercy of the casual hunter (Fox 1981; Orr 1992). Piecemeal legislation was introduced in many states, but there was no effort to coordinate the states' legislation (Orr 1992). Lobbyists such as T. Gilbert Pearson began to work toward federal regulation (Orr 1992), and in a political climate that increasingly supported centralization of governmental power (Scheiber 1986), they soon found supporters in the Congress.

The Migratory Bird Act

The first congressional attempts to establish federal control over migratory birds came in 1904 but the bill died in the Agriculture Committee; a second attempt in 1906 failed as well. Two years later, a third bill was introduced but also failed. By 1912, other interest groups had begun to rally around the cause (Belanger 1988; Fox 1981; Orr 1992). The

firearms manufacturers and dealers were interested in protecting their markets. Game associations wished to preserve their sport and successfully educated the public that some action was needed. Some advocates were moved by the plight of the disappearing species and the wanton slaughter, especially for feathers in women's hats. The reduction in bird populations was obvious, with the extinction of the passenger pigeon being perhaps the most dramatic. By expanding the bill to include insectivorous birds, agricultural interests were brought into the fold.

The Weeks-McLean Migratory Bird Act was hidden as a rider to an agricultural appropriations bill and signed by President Taft on 4 March 1913, as his administration was rushing to a close. Taft later said he thought the migratory bird provisions of the bill were unconstitutional and would have vetoed the bill had he been aware of the contents (Fox 1981, 157).

It seems clear from the debates, briefs, court rulings and contemporary commentary that everyone was agreed that game in general, and migratory birds in particular, needed protection. They also agreed that the federal acts would provide protection, yet they argued bitterly over the legislation. For the most part, the arguments were not on scientific or administrative grounds but rather on constitutional grounds. Even men who favored the policy ends were driven to object to the policy means. Several states promptly initiated law suits challenging the constitutionality of the law, and they were successful in the lower federal courts (United States v. Shauver [1914], United States v. McCullagh [1915]). However, before these cases could reach the Supreme Court, Congress found an alternative mechanism to achieve its ends.

The Migratory Bird Treaty Act

President Taft had not been alone in his misgivings over the 1913 Migratory Bird Act. Even before the bill was signed, Senator Elihu Root (New York) had proposed a resolution asking the President to negotiate a North American treaty on migratory birds, partly to provide constitutional legitimacy for the federal assumption of ownership (Belanger 1988, 22). The rapid state response challenging the Weeks-McLean bill led Senator McLean to introduce his own resolution in April 1913, only a month after his Migratory Bird Act became law. The resolution was passed, and treaty negotiations began almost at once. The treaty was signed on 16 August 1916, swiftly ratified by the Senate, and entered into force on 22 August 1916. Enabling legislation was passed in the following year, and on 3 July 1918, the Migratory Bird Treaty Act was signed by President Wilson.

Opposition to the enabling Act for the Migratory Bird Treaty was stiff (Belanger 1988, 24). Representative Huddleston of Alabama was appalled at the process. "I can not believe," he stormed on the floor of the Congress, "that what is otherwise unconstitutional as an unjustifiable invasion of powers reserved to the States may become constitutional merely because a treaty is negotiated" (U.S. Congress, House 1918, 7363).

The states moved promptly to challenge the enabling legislation in court, but the use of the treaty power to make policy complicated their arguments considerably. A test case

soon made its way to the Supreme Court. Missouri v. Holland (1920) arose against federal game warden Holland whose enforcement of the Migratory Bird Treaty Act in Missouri was interfering with the state revenues from hunting. Federal District Judge Van Valkenburg wrote that if there were no treaty, the Act would be unconstitutional, relying on United States v. Shauver and United States v. McCullagh. However, there was a treaty, and since the treaty-making power of the United States is supreme over state authority, the Migratory Bird Treaty Act was constitutional. Missouri appealed to the Supreme Court, but the Court upheld the lower court decision. Writing for the Court, Justice Holmes said:

> Here a national interest of very nearly the first magnitude is involved. It can be protected only by national action in concert with that of another power. The subject-matter is only transitorily within the state, and has no permanent habitat therein. But for the treaty and the statute, there soon might be no birds for any powers to deal with....It is not sufficient to rely upon the states. The reliance is vain, and were it otherwise, the question is whether the United States is forbidden to act. We are of the opinion that the treaty and statute must be upheld (at 435).

One conclusion which might be drawn is that the legislation was designed in part to enhance the powers of the federal government and that the policy vehicle--wildlife conservation--was to some extent irrelevant. Were it not so, we might expect some attempt to find policy alternatives that avoided awkward constitutional questions. Instead, there were no efforts to coordinate the policies even of contiguous states. In its argument before the Supreme Court, Missouri tried to find a compromise position acceptable to both the states and the national government. Article VIII of the Migratory Bird Treaty states that "[the] High Contracting Powers agree themselves to take, or propose to their respective appropriate law-making bodies, the necessary measures for insuring the execution of the present convention" (Missouri v. Holland, Missouri Brief, 97 [fiche]). State Attorney General McAllister suggested this could mean asking the state legislatures to implement the treaty. This would save the Treaty and eliminate the Migratory Bird Treaty Act. This suggestion was not even dignified by a federal rebuttal. The debate was defined as a states rights issue and, in challenging the treaty power of the federal government, the states were doomed to fail.

Having flexed its muscles over migratory birds, the federal government allowed the states much autonomy over wildlife throughout the remainder of the century, subject of course to the silken chains of federal money through such programs as the Federal Aid in Wildlife Restoration (Pittman-Robertson) Act of 1937, which redistributes a federal tax on ammunition and firearms sales to the states for wildlife restoration.[2]

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[2]The tension between the federal and state governments over wildlife continued to be argued in the courts. A major issue was control of wildlife on federal lands. The states contended that the federal government's role was that of private landowner and therefore subject to state

Federal Aid in Wildlife Restoration (Pittman-Robertson) Act

The Pittman-Robertson Act was a cooperative endeavor that drew together the same interests that supported efforts to protect migratory birds.[3] Two men served as initiators for the act: Jay N. "Ding" Darling, a nationally syndicated political cartoonist whose conservation interests had won him a job in Roosevelt's New Deal as head of the Bureau of Biological Survey, and Carl Shoemaker, a lawyer who switched to newspaper publishing and eventually was appointed as special investigator for the United States Senate Special Committee on Conservation of Wildlife Resources. Darling and Shoemaker were central figures in the founding of the National Wildlife Federation in 1936; in 1937, Shoemaker began to draft legislation to provide federal funding for wildlife restoration by allocating ten percent of the federal excise tax on sporting guns and ammunition to the states in a dedicated fund. The bill was unique: a maximum of eight percent of the funds collected could be used for administration (in fact, administration of Pittman-Robertson averages 6.3 percent [Statistical Summary 1994, Table II]), and as a condition of eligibility for federal funds, it prohibited the diversion of hunting license fees collected by the states from state fish and game department administration.[4] Thus state fish and game departments which participate in Pittman-Robertson also have a steady source of license revenue; this deceptively simple section of the law has been the basis for one of the most successful environmental laws in the country. Pittman-Robertson was signed by Franklin Roosevelt on 2 September 1937; within the first year, forty-three of the forty-eight states had passed legislation to become eligible for funding (Williamson 1987, 11).

Although the states were quick to comply with Pittman-Robertson requirements, Congress was slow to appropriate the full amount of the excise tax due to the Pittman-Robertson program. In the FY 1951 Appropriations Act, Congress finally gave Pittman-Robertson funds a "permanent-indefinite" appropriations status which automatically transferred the excise tax to the Fish and Wildlife Service (Williamson, 14).

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jurisdiction; the federal government asserted a constitutional right to manage all resources, including wildlife, on federal property. A series of court decisions upheld the federal position (Hunt v. United States [1928], New Mexico State Game Commission v. Udall [1969], Kleppe v. New Mexico [1976]).

[3]For the full story of the movement toward Pittman-Robertson, see Restoring America's Wildlife 1937-1987: The First 50 Years of the Federal Aid in Wildlife Restoration (Pittman-Robertson) Act (Washington, DC: USGPO [Department of Interior, United States Fish and Wildlife Service], 1987).

[4]...no money apportioned under this chapter to any State shall be expended therein until its legislature...shall have...passed laws for the conservation of wildlife which shall include a prohibition against the diversion of license fees paid by hunters for any other purpose than the administration of said State fish and game department. 16 U.S.C. §669e

Pittman-Robertson is unusual in its reliance on a tax which is supported enthusiastically by those subject to the tax. In the 1930's, excise taxes in general were being phased out, but the wildlife interests pushed for retention of the excise tax on arms and ammunition (Harrington 1991, 222-223). In 1950, manufacturers, sportsmen, conservation groups, and state agencies joined forces once again to defeat the repeal of the federal excise tax on arms and ammunition (Williamson, 14).

By any measure, Pittman-Robertson has been a success. Since 1937, over four million acres of land have been purchased for wildlife restoration and another forty million acres are managed under cooperative agreements. Many species, such as elk, wild turkey, wood duck, white-tailed deer, and pronghorn antelope have been restored; some have been brought back from the brink of extinction.[5]

II

Many natural resource agencies in the federal government have programs with a state component. For example, some national parks allow hunting, fishing, or trapping, and these activities are generally regulated either by the states in which the park is located or according to state regulations. The Forest Service has a State and Private Forestry Program which works with state forestry agencies, private landowners, and forest product industries to improve forest quality; some wildlife habitat is also developed, primarily in the South and Northeast (Fosburgh 1985, 308).[6] The Bureau of Land Management (BLM) makes payments to the states and counties as partial reimbursement for economic activities on BLM lands and to compensate the counties for lost property tax revenues (Barton 1987, 340). However, the major intergovernmental program for wildlife is Pittman-Robertson.

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[5]For example, in 1920, the wood duck was nearing extinction; today it is the most common breeding waterfowl on the American east coast. Pronghorn antelope increased from 25,000 or fewer in 1920 to over 750,000 today. "Restoring America's Wildlife" (brochure) 1992, 8-9).

[6]The budget for this program is not large: in 1980, it was 3.5% of the Forest Service budget, but by 1985 it had declined to 2.6%. (Calculated from data in Di Silvestro, ed., Audubon Wildlife Report 1985, Appendix M) In contrast, in 1987, 16% of the Fish and Wildlife Service budget was spent on Pittman-Robertson projects with a total of 37% ($25 million) for all the FWS federal grants-in-aid to the states (Barton 1987, 323).

At the federal level, the administration of the federal aid to states programs is "highly decentralized" (W. Chandler 1986, 184).[7] The seven FWS regional offices coordinate with the states within their regions:

> The regional federal staff reviews and approves all state grant requests, monitors the implementation of approved projects, assures state compliance with national standards and regulations, provides technical assistance to the states and maintains project records (W. Chandler, 185)

While FWS assesses the quality of individual state proposals to ensure compliance with statutory standards, it does not try to guide the state priorities on which projects are proposed. This FWS position has been determined by the agency rather than by the enabling legislation. These laws could be construed as giving the Secretary of Interior a great deal of power to influence the states in setting priorities; that he has not done so is one explanation for the program success (W. Chandler, 189). While a cynical observer of federal bureaucratic behavior might wonder if informal influences are exerted on state priorities, apparently this is not so:

> While the general accomplishments of the Federal Aid Program are universally recognized, a quantifiable assessment of its biological achievements is difficult to obtain. Even though the Pittman-Robertson and Dingell-Johnson acts specifically call for the restoration and maintenance of wildlife and fish species--clear resource objectives--the Division of Federal Aid does not keep adequate records at the national level to show precisely how the many species eligible for assistance are faring.
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> A major reason such quantitative biological data have not been collected is FWS's perception of the role of the federal aid program. FWS views it as helping the states achieve state wildlife goals. FWS officials emphasize that they do not try to guide states in setting biological conservation priorities in the Federal Aid Program. The major FWS role, say FWS officials, is to ensure that federal grant funds are used for the types of conservation activities specified by the law and to ensure that the states use effective tools, methods, and strategies in their conservation work. (W. Chandler, 188-189)

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[7]The FWS Federal Aid Program handles Pittman-Robertson, the Federal Aid in Fish Restoration (Dingell-Johnson) Act of 1950, and, to a lesser degree, the Fish and Wildlife Conservation (Forsythe-Chafee) Act of 1980. Forsythe-Chafee is focused on non-game wildlife and fish, and it has never received an appropriation. However, the planning provisions of the act have been integrated with Pittman-Robertson and Dingell-Johnson programs by FWS. (W. Chandler 1986, 184)

Since 1979, FWS has encouraged the states to administer their own programs, defining the federal role as providing technical assistance and some oversight. They view the states as increasingly capable and they are also interested in reducing the paperwork burden on the state agencies (W. Chandler, 198).

The mechanics of Pittman-Robertson are fairly straightforward.[8] Federal excise taxes are collected on firearms, ammunition, and archery equipment (11%) and on handguns (10%) at the manufacturer or wholesale level. The full amount of the excise tax receipts are automatically appropriated to FWS in the fiscal year following their collection. FWS then makes the funds available to the states through an equitable formula: one-half of the fund is distributed based on the ratio of the land area of the state to the total area of the country, while the second half is distributed based on the ratio of the number of paid hunting license holder per state to license holders nationwide.[9] State grants are limited to a maximum of 5% and minimum of 0.5% of any one year's total appropriation. The federal-state match for Pittman-Robertson is 75-25 for each project. Any state allocation which is not used within two years automatically reverts to the Migratory Bird Conservation Fund.

Although Pittman-Robertson as originally drafted had enormous potential for federal influence on state wildlife management decisions, subsequent amendments have broadened the powers of the state decision makers. In 1946, an amendment allowed up to one-fourth of the state's allocation of federal aid funds to be used to maintain completed projects (Belanger, 50-51). In 1955, Congress passed an amendment which permitted grant funds to be used for straightforward wildlife management (rather than discrete projects). Then in 1970, the law was amended in two important areas. First, the federal excise tax on handguns was added to the Pittman-Robertson supply with half of these revenues apportioned

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[8]While this material is drawn from a number of sources, it relies primarily on William Chandler (1986) and Belanger (1988).

Pittman-Robertson funds are allocated to the states and to the Commonwealth of Puerto Rico, Guam, American Samoa, Northern Mariana Islands and the Virgin Islands. Dingell-Johnson funds are also available to the states, Puerto Rico, the Virgin Islands, Guam, American Samoa, Northern Mariana Islands, and the District of Columbia. The focus of this paper is the state-federal relationship, but when discussing administration of Pittman-Robertson, the term "states" is used to refer to all recipients of funds, although there are some administrative differences between the states and territories.

[9]Some question arose in the late 1950's over the second allocation formula: how was the term "paid license holder" to be interpreted? Initially the federal government interpreted this as the total number of licenses sold, but some states disaggregated their licenses (separate licenses for bow hunting and muzzle loaders, or for deer and quail) to increase their share. Eventually the position of the Department of Interior prevailed: an individual license holder was only counted once regardless of how many licenses he held. (Udall v. Wisconsin, 306 F. 2d 790 [D.C. Circuit 1962] cert. denied, 371 U.S. 969 [1963])

for hunter safety programs. Second, the 1970 amendment allowed the states to substitute a "comprehensive fish and wildlife resource management" plan for individual project proposals. Finally, in 1972, sales of archery equipment were included in the tax.

Thus states have tremendous latitude in acquisition and expenditure of federal aid dollars. This federal money is a reliable source of revenue and, coupled with license fees, has led to the development of a highly competent corps of wildlife management professionals. Their autonomy has been enhanced by the organizational structure of the agencies within state government.

Many state wildlife agencies began as citizen groups of sportsmen or conservationists eager to protect their own interests. In some states, the first game wardens were authorized by state legislatures but paid by private organizations (Orr 1992). The sporting constituency wanted regulation to restrain the market hunters from demolishing stocks, although their motives often differed. Some wanted to protect their own supplies from the encroachments of out-of-state hunters, while others wanted to guard private game preserves to lure wealthy hunters (often from out of state) into their communities. Regardless of the motives of the sportsmen, the conservation interests were natural allies. The coalitions urged the creation of state fish and game agencies. Quite naturally, they also wanted to control the activities of the agencies. By the end of the nineteenth century, almost every state had established fish and game commissions (Tober, 160).[10]

Today these commissions continue in 27 states. In recent years some states have consolidated their natural resource concerns into one centralized agency; six states have boards or commissions which oversee all natural resources, while several have retained some aspect of their old wildlife commissions nested within the larger agencies. Only two states, Maine and North Dakota, have separate wildlife agencies which are not overseen by a commission.[11]

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[10]This is not meant to imply that game laws are a nineteenth century artifact (see Bean 1983, ch. 2). Regulation of hunting began in colonial days: Connecticut had statutes limiting the deer season in 1698 (Tober, 24), although enforcement of these early laws was sporadic. Some areas of the country were slower than others to develop game laws: Texas passed its first general game law in 1903, Alabama in 1907 (Tober, 142-143).

[11]These data are compiled from the 1995 Conservation Directory (Gordon 1995) and Musgrave and Stein, State Wildlife Laws Handbook (1993), supplemented by telephone interviews for clarification. Naturally, some personal judgment was used. For example, the Nevada Division of Wildlife is governed by a Board and nested in the larger Department of Conservation and Natural Resources. Because the Board apparently has complete authority over the Division, I chose to count Nevada as an autonomous agency governed by an independent commission. Vermont, on the other hand, also has a Board to oversee the Department of Fish and Wildlife, which is housed in the Agency of Natural Resources. After a long conversation with the Fish and Wildlife Commissioner's staff in which I was told the Board is ultimately

The Commissioners are appointed by their state governors, occasionally subject to confirmation by the state senate or other legislative body. Many states have distribution requirements for the commissions; in West Virginia one commissioner comes from each congressional district and the remainder from the state at large, while in Tennessee at least one commissioner must be over age 60 and one a member of a racial minority. Usually state law requires commissioners to have some expertise in fish and wildlife. Commissioners often have staggered terms, which provides even more independence from political vagaries. However, this independence may have some negative consequences:

> A wildlife agency divorced from party politics by its commission and freed by license financing from the necessity of fighting for its budget, [sic] may not have much leverage in the Governor's office (Gottschalk 1978, 298).

Although on paper the authority and responsibility of the commissions, the agency directors, and the other state natural resource agencies are clearly defined, in practice there is a great deal of informal communication, negotiation, and compromise. A commission is unlikely to overrule the recommendations of its state wildlife biologists who, in turn, are unlikely to recommend politically unrealistic policies.

State fish and wildlife agencies are distinguished by several factors. The commission form of regulatory agency, comprised of political appointees with expertise and experience in the policy arena, is frequently found in state government, although the close and usually cordial relationship between its client groups and the fish and wildlife agency is not common. However, the most extraordinary characteristic is the state revenue source with a built-in hedge against inflation. First, state agencies receive funds from license fees which, as a condition of continuing federal fish and wildlife aid, cannot be diverted from the agency. Second, the state Pittman-Robertson revenues increase as prices rise because Pittman-Robertson revenues are taxes; the state share may fluctuate with the number of hunters, which is an additional incentive to provide an abundant, well-managed stock of game, but the agency can rely on a steady source of income. Finally, although the original source of the Pittman-Robertson allocation is tax revenue, it is--quite improbably--a tax voluntarily assumed by the taxpayers and vigorously defended against reductions by the same constituency of sportsmen, manufacturers, and conservationists.

The funds generated by Pittman-Robertson are substantial (see Appendix I, Tables I-III). In the early 1990's, a study conducted by a coalition of governmental, interest group, and academic researchers examined nine state wildlife agencies which had been identified as especially successful organizations (McMullin 1993; Nielsen 1993). Eight of these states (Arizona, Florida, Idaho, Minnesota, Missouri, New York, South Carolina, and Wyoming) had independent fish and wildlife agencies; all except Minnesota and New York had

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"advisory," I counted Vermont as not autonomous. Research over the coming year will clarify these categories.

autonomous governing commissions.[12] The percentage of each agency's FY 1991 budget which came from federal aid (Pittman-Robertson and Dingell-Johnson) ranged from 34% (Idaho) to 5.8% (Missouri).[13] If the Missouri figure is excluded, the average contribution of federal aid to each of these agency budgets is 24% (See Appendix, Table IV).

The states themselves assign a high value to the federal aid contributions to the state economies. In the 1993 Pittman-Robertson summaries provided by the states to the FWS Division of Federal Aid, each state provided an assessment of the economic benefits from hunting. This was calculated based on hunter expenditures, public benefits (sales tax, state income tax, license revenue, Pittman-Robertson revenue) and private benefits (earnings). The smallest state benefit came from the smallest state: Rhode Island estimated $12.4 million annually from hunting activities. The highest amounts were in Texas ($2.3 billion), California ($1.5 billion), and Pennsylvania ($1.3 billion).

This sort of economic claim is also the basis for proposals finally to fund the Fish and Wildlife Conservation (Forsythe-Chafee or Nongame) Act of 1980, which was reauthorized in 1986 and 1990 but has never been funded. Nongame species have been the stepchildren of state conservation efforts. While some Pittman-Robertson funds are used for nongame animals, the majority of the funds are spent on game animals, since the states feel some obligation to apply the money for the primary benefit of the citizens whose taxes have provided it (W. Chandler, 184). Supporters of the nongame initiative advocate a consumption tax on bird seed, feeders, field manuals, etc. Proponents estimate that wildlife enthusiasts spend $14.3 billion per year on equipment, feed, photography, wildlife observation, and travel to observe wildlife (National Survey 1988). (See Appendix, Table VI, for a state-by-state listing of actual nongame expenditures.) Advocates of the tax have cleverly named the proposal "The Fish and Wildlife Diversity Funding Initiative" (emphasis added). Funding Forsythe-Chafee would complete the federal aid coverage of fish and wildlife in the states and provide support for state restoration and management of the animal side of the biodiversity equation.

States have not ignored nongame programs (Cerulean and Fosburgh 1986, 632). Some states use a voluntary check-off on state income tax returns to support nongame species; unfortunately for the nongame programs, other interests have begun to use the check-off as well, thus diluting the amount given for nongame. Other mechanisms for raising money include state sales taxes, sales of special license plates, automobile registration fees, and endowments funds (Cerulean and Fosburgh, 638-639). Whatever the sources, the revenues raised for nongame wildlife are inadequate. However, if states are ever to manage

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[12]South Carolina has since reorganized its state natural resource agencies and no longer has an independent agency.

[13]Missouri has a special state sales tax for wildlife of ⅛%; this produces over $50 million per year for the Missouri Department of Conservation. The tax was approved by the voters of Missouri as a constitutional amendment in 1976.

for biological diversity, some politically acceptable way to increase nongame funding must be found.

III

The current status of wildlife management is cause for both celebration and concern. On one hand, the existing wildlife programs, which emphasize game animals, are extraordinarily successful. On the other, the strong emphasis on game animals raises issues of both effectiveness and equity.

Management of game animals is premised on providing sustainable populations of mature, harvestable animals. Hunting seasons, bag limits, and related regulations are adjusted to anticipate or to compensate for shifts in animal population. This is not necessarily an ecological approach. It does not, for example, usually incorporate predator species as a natural counterweight to overpopulation of prey; on the rare occasions where predators have been included, the agencies have paid a high political price. The recent reintroduction of wolves into Yellowstone National Park in Wyoming and the Alligator River National Wildlife Refuge in North Carolina infuriated local ranchers, although research consistently shows that wolves rarely prey on livestock and have a positive culling effect on wild deer populations. There are, of course, substantial benefits for many wild species when any habitat is improved and preserved, and endangered species do receive special considerations, but the management of habitat primarily to sustain game species may also produce less than optimal conditions for non-game species. Regardless of incidental benefits to non-game populations, the overall mission of most wildlife agencies is the provision of a sustainable hunting stock.

However, political demands to protect species diversity and habitat are increasing, especially on the international level. The Biodiversity Convention entered into force early in 1994. Originally presented at the 1992 Rio Conference, the Convention commits its signatories to conserve species of plants and animals and their habitats.[14] Many of American's allies have embraced the Convention enthusiastically. For example, the United Kingdom has been an international leader in the preservation of diversity both nationally and through foreign assistance programs such as the Darwin Initiative (Biodiversity: The UK Action Plan 1994). In a recent debate in the House of Commons, the Parliamentary Under-Secretary of State reaffirmed the Government's commitment to support biodiversity through the Wildlife and Countryside Act, the designation of sites of special scientific interest (SSSI's), and implementation of the European Community's habitats directive (House of Commons 1995).

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[14]It also requires protection of endangered species, a provision which may have led to the failure of the U.S. Senate to ratify the treaty in the summer of 1994, since ratification would have much the same effect as reauthorization of the Endangered Species Act.

The United States is already party to treaties which require some measure of domestic species and habitat protection, such as the Convention for the Protection of Migratory Birds, the International Convention for the Regulation of Whaling, CITES, and the Antarctic Treaty. Some national laws have similar implications, for example, the Marine Mammal Protection Act. However, the importance of the state governments and state laws should not be underestimated. The absence of a national program for biodiversity does not preclude state programs. In fact, biodiversity programs at the state level might be preferable for several reasons. First, states have unique technical and political knowledge about their own resources. Second, because the user pool is defined by state boundaries, it is more effective to have appropriation and funding decisions made at the state level.

First, state level information on biological systems is state specific, longitudinal, and frequently incompatible with data gathered in other jurisdictions. State agencies have almost a century of administrative experience with the species and habitats in the state; their state biologists have longitudinal information on population shifts, weather patterns, water flows, flooding conditions--a myriad of data which can only be properly assessed through the lens of local experience. Even if an enormous centralized data collection process were initiated, it could never duplicate the "time and place" information gathered locally over an extended time period; the information costs are too high (Ostrom, Schroeder, and Wynne 1993, 120-122). Another impediment to multi-state data collections is data incompatibility. For example, to be comparable, biological data should be collected using the same method and timing at each collection site, and samples should be analyzed by identical processes. Data which do not meet these criteria may not be compatible even with sophisticated statistical analysis (Buck 1988). Thus, meaningful national--or even regional--data sets are difficult to accumulate.[15] Good management decisions can only be based on accurate information, and often the best data are located in state agencies; states are uniquely positioned to make sound, professional decisions about the resources within their own boundaries.

Second, state wildlife interests have access to state policy makers and agencies on a direct and intimate scale. While the literature of interest group politics might suggest the agencies become captured, the theory of successful common pool resource management suggests that this close relationship between the rule makers and the appropriators leads to better management of the resource (Ostrom 1990). Commissioners have substantive experience; they are recognized by the appropriators as competent and legitimate decisions

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[15]An extreme example is a project funded by the U.S. Geological Survey in the early 1980's to establish a national water supply model. The various geological regions of the country had accurate data on rainfall, ground water and surface water levels, and the interaction of these factors with regional geological characteristics such as soil permeability. To construct a usable model we aggregated the data to such an extent that we lost the impact of the arid deserts of the West, the rain forests of the Pacific Northwest, and the wetlands of the Southeast. It was really not possible to have a simple model for such a complex physical, chemical, and biological process.

makers. They have strong constituent support for both policy decisions and funding; this is true even in those states without a commission.

Because wildlife is legally the property of the state, held in trust for its citizens, these same citizens form the pool of appropriators. Such an appropriation pool does not exist at the national level. Citizens must purchase a license to exercise their rights to appropriate the resource (game); however, the license is not an exclusion device.[16] State resource stocks are protected not by limiting access but instead through limits on harvests and restricted seasons. This is politically astute. The legal right of citizens to hunt state wildlife is not infringed; instead, the community of appropriators approves the creation of game commissions and agencies, voluntarily assumes fees to support their work, and delegates to them the responsibility for making appropriation rules. Benefits accrue to the appropriators, but other people within the state also benefit from the wildlife programs.

Some writers classify non-hunting conservationists (e.g., hikers, bird watchers, wildlife photographers) as free-riders (e.g., Jahn and Trefethen 1978, 464). However, this is an over-simplification. First, non-hunters do not extract the resources; visual enjoyment is not consumptive. Second, they do not contribute to congestion; no wildlife observer in his right mind shares the resource domain during hunting season. The enjoyment these users get is partly the result of positive externalities; game management protects game species and their habitats which also may enhance non-game species and habitats. Third, hunters are not interested only in killing game. They too enjoy the wider pleasures of outdoor recreation. To the extent their license fees and taxes support those benefits, the un-licensed, un-taxed public might be thought of as free-riders, providing, of course, that the non-hunters do not also contribute to the preservation of game through other sources. This is not the case.

All gun, ammunition, and archery sales are not made to hunters. For example, marksman competitions, skeet shooting, and handguns for personal protection are not game related, yet the excise taxes from sales to support these activities are diverted to Pittman-Robertson. Some states provide money from general fund revenues for the game department. For FY 1991, McMullin found the following states in his sample used general fund revenues as part of the game department budget: Florida 36%, New York 7%, South Carolina 49%, Wisconsin 44% (McMullin 1993). This surely entitles the non-hunting public to the benefits of game management in those states.

Just as the need for game management was clearly understood in the early twentieth century, so is the need for species preservation understood today. While the sporting constituency may not be as supportive of non-game programs, it is certainly not opposed; the classic confrontations of species and habitat versus business interests which have erupted

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[16]This point was made clearly by the federal courts in 1983 when the state of Virginia argued that conservation interests allowed it to impose a residency requirement for licenses to fish in Virginia waters. The court ruled that Virginia clearly had no conservation interest that could override the national interest in interstate commerce because there was no limit on the number of Virginia residents allowed to have licenses (Tangier Sound 1982).

from the Endangered Species Act are not likely to occur over species diversity. Indeed, the Wildlife Diversity Funding Initiative for Forsythe-Chafee raises just this argument:

> The primary purpose of a nationwide Wildlife Diversity Program is to maintain healthy and diverse wildlife populations and habitats and to detect declines well before a species reaches the endangered level....
>
> The ounce of prevention is a nationwide Wildlife Diversity Program.
>
> The pound of cure is costly, last-ditch, endangered species programs. (Duda, 14)

Pittman-Robertson funds cannot be stretched to cover wildlife diversity programs. There are clearly enough game related programs to exhaust the funds; there were no Pittman-Robertson reversions in either 1992 or 1993 (Statistical Summary 1994, Table VII). Funding Forsythe-Chafee would solve a number of wildlife policy problems while finessing awkward issues of tax increases or unfunded federal mandates. Even though the common definition of free-riding does not apply to state wildlife management, political capital can be made by designating non-consumptive use as "free-riding." Proponents of non-game funding cheerfully embrace the "user-pays" principle as a remedy to the pejorative free-rider label if it means funding Forsythe-Chafee. It is difficult for politicians of any persuasion to oppose conservation programs funded by the special interest groups which support them. The general structure of the redistribution process has been tested through the Pittman-Robertson and Dingell-Johnson programs, and the success and longevity of the state programs using Pittman-Robertson and Dingell-Johnson funds are powerful arguments in favor of funding Forsythe-Chafee.[17] With these three programs in place, wildlife diversity responsibilities would remain with the states, where they are already constitutionally lodged.

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[17]One difference between the Wildlife Diversity Funding Initiative and Pittman-Robertson and Dingell-Johnson is the proposal to allow a maximum of 10% (rather than 8%) for administrative costs, with some increased oversight by FWS (Doig 1992, 40). The advantage to this change is not clear, while the disadvantages are many. Pittman-Robertson has operated well with the 8% limit, and a frequent objection about federal pass-through grants is how much money fails to pass through. Ten percent administration costs, regardless of the uses for which the increment is intended, is excessive. In addition, one of the strengths of Pittman-Robertson has been the cooperation and equality between state agencies and FWS. Increased oversight responsibilities for FWS are institutionally unwise.

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Appendix
1

Table I-a

WILDLIFE RESTORATION ACCOUNT RECEIPTS

Funding, by source that supports the Federal Aid in Wildlife Restoration Program

Revenue Source	Fiscal Year				TOTAL
	1939-1990	1991	1992	1993	
Sporting Arms & Ammunition	$ 1,760,716,889	$ 104,650,308	$ 100,596,878	$ 116,979,507	$ 2,082,943,582
Pistols and Revolvers (Since 1971)	411,027,159	44,850,000	39,935,861	54,848,146	550,661,166
Archery Equipment (Since 1975)	127,458,089	11,057,909	24,494,129	19,928,655	182,938,782
TOTAL	$ 2,299,202,137	$ 160,558,217	$ 165,026,868	$ 191,756,308	$ 2,816,543,530

Table I-b

SPORT FISH RESTORATION ACCOUNT RECEIPTS

Funding by source, that supports the Federal Aid in Sport Fish Restoration, Coastal Wetlands, and Clean Vessel Act programs

Revenue Source	Fiscal Year				TOTAL
	1952-1990	1991	1992	1993	
Fishing Tackle and Equipment	$ 910,087,572	$ 79,962,298	$ 76,636,000	$ 84,539,000	$ 1,151,224,870
Trolling Motors & Fishfinders	13,442,142	1,580,886	1,971,000	2,437,000	19,431,028
Motorboat fuels	292,664,000	76,032,354	73,388,000	87,213,644	529,297,998
Small engine fuels		41,000,000	49,500,000	49,913,000	140,413,000
Import Duties on Pleasure Boats & Fishing Equipment	170,374,000	27,996,000**	26,930,000**	6,787,045**	232,087,045
Interest on Investments	123,425,253	36,007,035	34,853,653	19,225,228	213,511,169
TOTAL	$ 1,509,992,967	$ 262,578,573	$ 263,278,653	$ 250,114,917	$ 2,285,965,110

* Authorized by Coastal Wetlands Planning, Protection and Restoration Act
** These figures represent Treasury estimates deposited into the Sport Fish Restoration Account

Source: Statistical Summary 1994

Appendix
2

Table II

WILDLIFE RESTORATION
APPROPRIATIONS, APPORTIONMENTS, OBLIGATIONS, AND UNOBLIGATED BALANCES

FISCAL YEAR	APPROPRIATIONS	APPORTIONMENTS	NET PROJECT OBLIGATIONS	UNOBLIGATED BALANCE
1939-73	$ 518,048,665	$ 493,111,125	$ 476,681,629	
1974	49,800,268	47,385,000	44,078,408	13,360,001
1975	56,854,672	53,470,000	53,832,941	12,955,009
1976	63,046,646	58,600,000	59,694,161	11,860,849
1977[1]	89,687,154	84,400,000	72,914,676	23,298,837
1978	67,789,316	62,900,000	66,889,825	19,142,839
1979	86,018,633	82,200,000	71,440,518	30,048,624
1980	93,974,102	89,000,000	88,190,251	32,481,038
1981	90,644,651	83,394,000	86,622,031	25,902,067
1982	121,887,999	116,960,000	114,264,758	27,855,167
1983	111,454,029	107,060,000	109,495,772	24,742,211
1984	93,708,702	88,450,000	92,288,377	16,178,876
1985	85,872,254	79,100,000	97,397,026	7,383,850
1986	120,828,516	107,471,100	115,476,506	8,796,498
1987[2]	109,687,540	108,028,900	111,024,536	12,581,446
1988	115,089,251	109,900,000	117,205,186	15,647,635
1989	126,534,070	119,000,000	127,808,465	15,971,905
1990	146,494,822	117,200,000	126,039,692	15,663,802
1991[3]	151,782,912	157,400,000	154,356,099	28,132,319
1992	160,558,217	150,600,000	158,435,665	31,026,422
1993	172,027,000	156,900,000	164,741,000	33,406,523
1994	197,856,000	182,081,113	-	-
Total	**$ 2,829,643,419**	**$ 2,654,611,238**	**$ 2,508,877,622**	

1 Includes Transition Quarter funding
2 Apportionments include amounts withheld in Fiscal Year 1986 under Gramm-Rudman-Hollings - $ 4,828,900
3 Apportionments include amounts withheld in Fiscal Year 1990 under Gramm-Rudman-Hollings - $ 17,760,000

Source: Statistical Summary 1994

Appendix
3

Table III

APPORTIONMENT OF WILDLIFE AND SPORT FISH RESTORATION FUNDS - 1994

The amounts apportioned to States by Regions.

	WILDLIFE RESTORATION	HUNTER EDUCATION	WILDLIFE TOTAL	SPORT FISH RESTORATION
Region 1				
CALIFORNIA	$5,215,645	$1,121,652	$6,337,297	$8,731,435
HAWAII	723,464	373,884	1,097,348	1,746,287
IDAHO	2,967,476	373,884	3,341,360	2,932,543
NEVADA	2,728,707	373,884	3,102,591	2,598,287
OREGON	3,589,751	617,912	4,207,663	4,189,042
WASHINGTON	2,701,971	1,058,005	3,759,976	4,223,313
GUAM	241,155	62,314	303,469	582,096
AMERICAN SAMOA	241,155	62,314	303,469	582,096
NO MARIANA IS.	241,155	62,314	303,469	582,096
Total	$18,650,479	$4,106,163	$22,756,642	$26,167,195
Region 2				
ARIZONA	$3,299,201	$796,810	$4,096,011	$3,540,028
NEW MEXICO	3,156,314	373,884	3,530,198	3,121,301
OKLAHOMA	2,784,269	683,841	3,468,110	3,404,751
TEXAS	7,234,636	1,121,652	8,356,288	8,731,436
Total	$16,474,420	$2,976,187	$19,450,607	$18,797,516
Region 3				
ILLINOIS	$2,699,352	$1,121,652	$3,821,004	$3,700,644
INDIANA	2,299,150	1,121,652	3,420,802	2,714,916
IOWA	2,476,525	603,658	3,080,183	2,392,275
MICHIGAN	6,438,900	1,121,652	7,560,552	6,691,928
MINNESOTA	4,289,890	951,134	5,241,024	6,567,391
MISSOURI	3,977,361	1,112,437	5,089,798	4,388,643
OHIO	3,262,876	1,121,652	4,384,528	4,427,374
WISCONSIN	4,648,340	1,063,456	5,711,796	5,702,903
Total	$30,092,394	$8,217,293	$38,309,687	$36,586,074
Region 4				
ALABAMA	$2,369,236	$878,412	$3,247,648	$2,649,480
ARKANSAS	2,568,256	373,884	2,942,140	2,957,066
FLORIDA	2,192,805	1,121,652	3,314,457	4,493,542
GEORGIA	2,924,474	1,121,652	4,046,126	3,272,701
KENTUCKY	2,279,475	801,173	3,080,648	2,695,508
LOUISIANA	2,280,138	917,410	3,197,548	2,957,392
MISSISSIPPI	2,392,731	559,410	2,952,141	2,347,987
NORTH CAROLINA	2,761,133	1,121,652	3,882,785	2,646,251
SOUTH CAROLINA	1,603,607	757,999	2,361,606	1,998,863
TENNESSEE	3,583,757	1,060,286	4,644,043	3,511,360
PUERTO RICO	723,464		723,464	1,746,287
VIRGIN ISLANDS	241,155	62,314	303,469	582,096
Total	$25,920,231	$8,775,844	$34,696,075	$31,858,533

The amounts apportioned to States by Regions.

	WILDLIFE RESTORATION	HUNTER EDUCATION	WILDLIFE TOTAL	SPORT FISH RESTORATION
Region 5				
CONNECTICUT	$723,464	$714,609	$1,438,073	$1,746,287
DELAWARE	723,464	373,884	1,097,348	1,746,287
MAINE	1,671,829	373,884	2,045,713	1,746,287
MARYLAND	929,661	1,039,477	1,969,138	1,869,463
MASSACHUSETTS	723,464	1,121,652	1,845,116	1,746,287
NEW HAMPSHIRE	723,464	373,884	1,097,348	1,746,287
NEW JERSEY	723,464	1,121,652	1,845,116	1,746,287
NEW YORK	4,477,924	1,121,652	5,599,576	4,555,917
PENNSYLVANIA	6,135,117	1,121,652	7,256,769	4,488,582
RHODE ISLAND	723,464	373,884	1,097,348	1,746,287
VERMONT	723,464	373,884	1,097,348	1,746,287
VIRGINIA	2,580,099	1,121,652	3,701,751	2,564,885
WEST VIRGINIA	1,777,300	373,884	2,151,184	1,746,287
DIST of COLUMBIA				582,096
Total	$22,636,178	$9,605,650	$32,241,828	$29,777,526
Region 6				
COLORADO	$3,674,619	$716,192	$4,390,811	$4,255,261
KANSAS	2,670,496	373,884	3,044,380	2,607,378
MONTANA	4,488,983	373,884	4,862,867	4,055,086
NEBRASKA	2,493,136	373,884	2,867,020	2,214,794
NORTH DAKOTA	2,028,361	373,884	2,402,245	1,746,287
SOUTH DAKOTA	2,465,629	373,884	2,839,513	2,071,197
UTAH	2,941,126	373,884	3,315,010	3,026,132
WYOMING	2,922,025	373,884	3,295,909	2,734,302
Total	$23,684,375	$3,333,380	$27,017,755	$22,710,437
Region 7				
ALASKA	$7,234,635	$373,884	$7,608,519	$8,731,436
Total Funds Apportioned:	$144,892,712	$37,388,401	$182,081,113	$174,628,717

Source: Statistical Summary 1994

Table IV
Total Annual Agency Budget and Percent Federal Aid for Selected States[1]

State	Annual Agency Budget FY 1991	% Federal Aid
Arizona	$ 34,127,858	32%
Florida	51,652,972	24
Idaho	31,507,026	34
Minnesota (1)	51,242,872	24
Missouri	92,978,244 (2)	5.8
New York (1)	30,718,000	22
South Carolina (3)	39,552,614	16
Wisconsin (4)	393,508,900	10
Wyoming	31,090,836	19

(1) State does not have a governing commission for wildlife.
(2) Missouri generates additional revenue from a conservation sales tax.
(3) South Carolina has since reorganized its state natural resource agencies and no longer has an independent wildlife agency.
(4) Wisconsin has a consolidated Department of Natural Resources; this figure is for the entire department.

[1]Data source: McMullin 1993. The percentage of federal aid includes both Pittman-Robertson and Dingell-Johnson funds.

Appendix 5 Table V Source: Duda, A Bridge to the Future, 3

Numbers, Expenditures and Percent of Population Viewing, Photographing and Studying Wildlife*

State of Residence	Number of state residents viewing, photographing and studying wildlife	Expenditures on viewing, photographing and studying wildlife	Percent of state population viewing, photographing and studying wildlife
U.S.	140,078,000	$14,267,213,000	77
ALABAMA	2,194,000	$106,336,000	73
ALASKA	297,000	$50,445,000	81
ARIZONA	1,978,000	$329,328,000	81
ARKANSAS	1,505,000	$78,491,000	86
CALIFORNIA	13,741,000	$1,775,058,000	68
COLORADO	2,167,000	$332,463,000	89
CONNECTICUT	2,002,000	$155,553,000	80
DELAWARE	379,000	$23,531,000	78
FLORIDA	6,484,000	$530,195,000	71
GEORGIA	3,464,000	$453,263,000	76
HAWAII	491,000	$123,594,000	63
IDAHO	656,000	$45,018,000	93
ILLINOIS	6,338,000	$893,439,000	73
INDIANA	3,645,000	$460,658,000	88
IOWA	2,007,000	$127,701,000	93
KANSAS	1,573,000	$68,827,000	86
KENTUCKY	2,184,000	$81,163,000	79
LOUISIANA	2,444,000	$76,873,000	75
MAINE	755,000	$67,879,000	87
MARYLAND	2,796,000	$259,816,000	81
MASSACHUSETTS	3,230,000	$332,695,000	71
MICHIGAN	5,617,000	$542,454,000	84
MINNESOTA	2,850,000	$238,650,000	92
MISSISSIPPI	1,596,000	$77,549,000	82
MISSOURI	3,319,000	$237,591,000	86
MONTANA	556,000	$69,449,000	92
NEBRASKA	1,000,000	$78,463,000	85
NEVADA	548,000	$139,800,000	75
NEW HAMPSHIRE	675,000	$85,843,000	88
NEW JERSEY	4,237,000	$535,407,000	71
NEW MEXICO	866,000	$118,504,000	81
NEW YORK	8,630,000	$492,751,000	63
NORTH CAROLINA	3,563,000	$192,207,000	74
NORTH DAKOTA	462,000	$26,973,000	94
OHIO	7,132,000	$997,726,000	90
OKLAHOMA	2,141,000	$124,131,000	96
OREGON	1,743,000	$148,707,000	87
PENNSYLVANIA	7,287,000	$451,263,000	78
RHODE ISLAND	574,000	$41,197,000	76
SOUTH CAROLINA	1,668,000	$113,138,000	69
SOUTH DAKOTA	472,000	$100,464,000	93
TENNESSEE	2,873,000	$274,374,000	79
TEXAS	8,753,000	$1,403,511,000	73
UTAH	959,000	$119,998,000	89
VERMONT	356,000	$49,330,000	89
VIRGINIA	3,646,000	$413,902,000	85
WASHINGTON	2,921,000	$300,039,000	88
WEST VIRGINIA	1,221,000	$78,308,000	82
WISCONSIN	3,142,000	$337,996,000	88
WYOMING	360,000	$85,507,000	97

* Figures based on the 1985 National Survey of Fishing, Hunting and Wildlife-Associated Recreation
Some numbers in the text vary from these because studies were conducted in different years