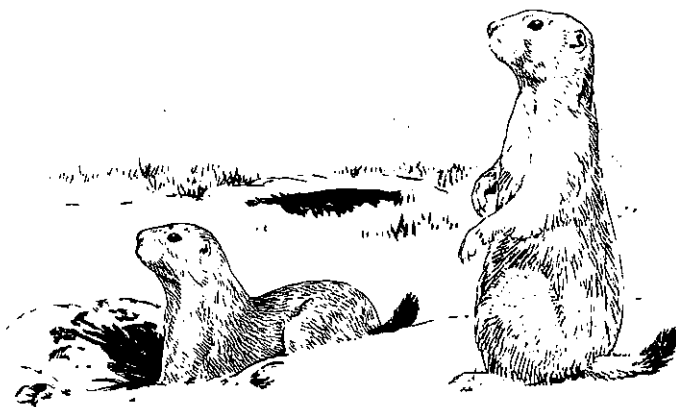




**CURRENT INVESTMENTS, PROJECTED NEEDS  
&  
POTENTIAL NEW SOURCES OF INCOME  
for  
NONGAME FISH & WILDLIFE PROGRAMS  
in the  
UNITED STATES**



**Wildlife Management Institute  
Washington, D.C. 20005**

**1975**

CURRENT INVESTMENTS, PROJECTED NEEDS,  
AND POTENTIAL NEW SOURCES OF INCOME  
FOR NONGAME FISH AND WILDLIFE PROGRAMS IN THE UNITED STATES

by

Wildlife Management Institute

In Cooperation With

Public Affairs Information Service  
The University of Missouri-Columbia

Under Contract To

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and

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## FOREWORD

The need for initiating or expanding and, in all cases, accelerating, conservation programs in the United States to assure adequate consideration of our national treasury of fish and wildlife by now is widely recognized and accepted. Quite understandably, there is not an equal level of official and public comprehension of the actions that should be taken. And by whom.

Public sensitivity to wildlife is rooted in our national history. First actions in this regard dealt with individual species and largely do so today. On February 4, 1646, the Town of Portsmouth, Rhode Island, proclaimed a close season on the hunting of deer from May 1 to November 1. Similar closures were practically universal throughout the Colonies by 1720. And some other decisions about animals, not widely popular today, also had their beginnings in our early history. Massachusetts Bay Colony in 1630, for example, authorized the payment of a bounty on wolves, with Virginia following shortly thereafter.

One of the earliest recorded animal rescue operations in North America underway about 1860 in an effort to perpetuate the declining heath hen, an original inhabitant of the coastal Northeast. State and private funds -- more than \$55,000 -- were spent to protect the dwindling flock, but these good efforts, in 1925, proved futile. Successive wildfires swept the birds' final refuge on Martha's Vineyard, destroying needed food and cover. Slowly, surely, and inevitably, the forces of nature bested man's determined efforts. Soon there was a single known survivor. Then none.

In following years, man turned his attention to other species in need -- fur seals and sea lions in Alaska, migratory birds, Key deer in Florida, nene geese in Hawaii, black bass, sea otters and the bald and golden eagles. As time passed and experience was gained, there came a realization that every animal

part of an interrelated web of soil, vegetation and water that makes up its environment or habitat. And with that realization, which unfortunately, has yet to gain full credence at the public level, many useful conservation laws emerged, culminating, most recently, in the endangered species Acts of 1966, 1969, and 1973 and the Convention on International Trade in Endangered Species of Wild Fauna and Flora. These enactments rightfully require broader and more imaginative application of fish and wildlife management than has been the case in the past.

While an important short-term objective of management programs for endangered species is to seek to prevent the extirpation of any single form of animal life, the overall effort, if ever it is to fully succeed, has an infinitely broader purpose. Up to now, man's efforts with numerous species largely have been rescue oriented. That is, halt the population decline of a species and, insofar as possible, restore it to a level where reproduction and survival exceed mortality. Then, if the cause of the species' difficulty is not habitat related, its population should increase. Deer, pronghorns, sea otters, fur seals, and many other species attest to the workability of this management option.

But the second and vastly more important objective of fish and wildlife management programs should be to prevent a population of any species from becoming so depressed as to cause it to be regarded as threatened or endangered in the first place. The attainment of this objective is to convert programs for the conservation of animals not commonly or traditionally regarded as "game" or "commercial" species from rescue missions to an ongoing program to uniformly husband all species of animals so that none, through man's ignorance, indifference or inattention, ever again reaches the state where its continued existence as a life form is in jeopardy.

The recommendations that arise out of this study are pointed toward that desirable and positive objective. They include all fish and wildlife, not just

those that may be in a threatened or endangered category. In fact, it was the opportunity to participate in such a positive project that prompted the Institute to accept this assignment despite the severe constraints of time that were imposed. If implemented at both federal and state levels, the recommendations would carry this needed and noble effort forward. And at a justifiably accelerated pace.

There are a number of things that the reader should keep in mind when paging through and thinking about this report. First -- and this is of utmost importance -- it should be remembered that the information presented herein represents the first time that such material has been solicited and summarized on a national scale. As such, it is the best available at this time. It is not, and it is not offered as being, accurate to the last detail.

As will be emphasized in the discussion, there is no uniformity at any level in accounting for the amount of money and attention given to research, management, and law enforcement for "nongame" purposes. This is not an unexpected finding. It has not been the custom of the state and federal agencies to account separately for activities devoted to nongame fish and wildlife.

So, at this point in time, the information obtained, while the best available, most likely is conservative. But more important, the information supplied by co-operating agencies and institutions provides the base from which more adequate state and national programs can be launched. With initial funding and public and official support, necessary experience can be gained to refine and more sharply direct further efforts. Therefore, the Institute considers its report and recommendations as a point of beginning. Programs for nongame species would continue to sputter along in the absence of such an initial baseline study. The report charts a route that can be followed to build toward an adequate national effort to manage nongame fish and wildlife.

A final observation. While there is an acute need for broadening and initiating programs for nongame fish and wildlife at private, state and national levels, it would be a mistake to place total reliance solely on a "new program" approach. The future of animal life is linked directly to the availability and suitability of habitat. All agencies, state and federal, having legal responsibility for animal life or their habitat should give fish and wildlife a better shake on the hundreds of millions of acres of land already in public ownership. Species of limited number or range must be given more sympathetic consideration in the agencies' use or commitment of that land. Congress should examine its many policies and actions that, through financial and technical assistance, needlessly stimulate thoughtless destruction and alteration of habitat on both private and public lands. Its record is discouraging in this regard.

And an Administration should seek and the Congress should provide authorized appropriations to energize specific programs already on the books, such as those for marine mammals and endangered species. These new authorities, which were enacted in response to public demand and demonstrated need, will remain a hollow promise unless fully and promptly implemented. And nowhere throughout the federal establishment do the agencies which administer one-third of this nation's land surface receive sufficient funding to conduct anywhere near an adequate program for the fish and wildlife resources using those lands.

Success in the area of nongame fish and wildlife, therefore, depends on a blending of the new with realignment of the old. New authorities, new programs, new funds are needed. But, by themselves, these new tools will not be enough to overcome the continuing and massive ravages of habitat by outdated and single-purpose programs.

\* \* \* \* \*

This report hews to the assignment accepted by the Wildlife Management Institute. Its text is purposely spare. As agreed with the Council on Environmental Quality and the Department of the Interior, the Institute undertook, on what is best described as a crash basis, (1) to determine the national investment in terms of dollars and man-years of attention, in species of fish and wildlife not traditionally regarded as game or subject to consumptive use; (2) to obtain estimates of the initial funding required to expand federal, state and other programs to the point where, in the eyes of those legally responsible for the well-being of such animals, more adequate attention is being given to their status and needs; (3) to identify and examine potential new sources of funds to support such programs at national and state levels; and (4) to suggest actions that, when teamed with adequate funding and authority, will enable those agencies responsible for fish and wildlife or their habitat to mount truly responsive programs.

To the many federal and state agencies, universities and colleges, and private groups that responded to our necessary questionnaires and provided information and suggestions, the Institute expresses its sincere appreciation.

Daniel A. Poole, President  
Wildlife Management Institute



## RECOMMENDATIONS

I. That a nongame fish and wildlife federal matching grant-in-aid program be authorized by Congress, with funds to be obtained from new manufacturers' excise taxes on designated items of equipment used in outdoor recreation.

Excise taxes are passed on to the consumer; hence, the purchaser of such equipment would help defray the costs of a nongame program. A federal grant program with the states offers the best mechanism for obtaining and distributing funds. Further, and equally important, a partnership state-federal nongame program can be elevated to the desired level of attention and activity more uniformly and quickly. To implement this recommendation:

A. Draft legislation and justification should be prepared and forwarded to Congress. The authorizing legislation should:

1. Establish a manufacturers' excise tax on specific items of equipment used in outdoor recreation to initially yield a minimum of \$40 million annually for a matching grant nongame program with the states.
2. Vest administrative responsibility in the U.S. Fish and Wildlife Service, an agency that for nearly four decades has administered similar federal aid programs for fish and wildlife.
3. Include these features:
  - a. Require, as a condition for state (territory) participation, enactment of enabling legislation, where lacking, comparable to the model bill distributed to the states by the Fish and Wildlife Service under date of 19 April 1974 (Appendix O).

B. Authorize a one-time appropriation of \$5 million plus additional manpower authorizations to enable the Fish and Wildlife Service to assemble staff and take immediate actions to initiate the program.

C. Base apportionments to the states and territories on area and population, with limits on the minimum and maximum amounts to be received by each. It may be desirable to give extra weight to population inasmuch as high-density settlement and development diminish fish and wildlife habitat, including that for nongame.

D. Authorize a specific percentage of each year's funds for administering the Act by the Fish and Wildlife Service. Existing Acts authorize deductions of up to eight percent for administration, a level that has proven to be more than adequate. This provision also should specifically authorize the Service to use some administrative funds for research projects that are in the interest of furthering the mutual federal-state objectives of the program.

E. Set the level of cost sharing at 75 percent federal - 25 percent state for projects within an individual state; except that when two or more states are involved in a mutual project the federal share should be increased. This follows the philosophy of the Endangered Species Act of 1973.

- F. Follow established practice in the existing Federal Aid in Fish and Wildlife Restoration Acts and the Endangered Species Act of 1973 by making a state's apportionment available for expenditure or obligation for two fiscal years. However, unlike these Acts, any of a state's apportionment remaining unexpended or unobligated at the end of the second fiscal year should revert to a special discretionary fund and remain available for two more fiscal years for assisting states whose nongame program costs exceed their regular apportionment. Any year-one money unexpended or unobligated at the end of four fiscal years should be available to the Fish and Wildlife Service to support its nongame fish and wildlife research program.
- G. Firmly limit to a maximum of 10 percent the cost of a state's nongame fish and wildlife program that may be borne by revenues traditionally received by state fish and wildlife agencies. If this is not done, there is a strong likelihood that the agencies will be forced by practical and political considerations to draw more heavily on these sources. The undesirable effect will be to place excessive demands on an already inadequate funding base, thereby harming traditional game and nongame programs alike.

No one should lose sight of the fact that the eventual success of an expanded nongame fish and wildlife program will depend entirely on creating new sources of funding. The actual percentage of costs to be borne by traditional fish and wildlife funds should be determined through consultation with the International Association of Game, Fish and Conservation Commissioners.

- H. Broaden the purposes for which nongame grant-in-aid funds may be used by the states over those eligible for assistance under the existing Federal Aid in Fish and Wildlife Restoration Acts. Law enforcement, information and education, and extension activities do not qualify for support under existing federal aid programs, nor should they. However, these important activities should be eligible in a nongame fish and wildlife program, but support should not exceed 25 percent of a state's apportionment. The greatest need is money for fundamental research and management activities.

- II. That the Administration and Congress work together in determining the additional general funding required by the Fish and Wildlife Service, National Marine Fisheries Service, U.S. Forest Service, Bureau of Land Management, and other federal resource agencies to conduct full-scale, comprehensive fish and wildlife programs.

The accomplishments of some federal agencies are dismal in this regard. Without exception, none has ever received adequate manpower authorizations and funding needed to benefit all fish and wildlife and their habitats. Until more adequate general funds become available to such agencies, the program outlined in Recommendation No. I will not accomplish maximum results.

- III. That major efforts be made through research to determine the status, trends, distribution, habitat requirements, and ecological relationships of key fish and wildlife species in major habitat types.

The knowledge to be gained is essential if management programs for all species are to be improved. A 10-year program of high priority research should be designed and implemented by state and federal agencies

to identify specific habitat requirements to be provided through management programs.

- IV. That all agencies and organizations having land and water management responsibilities identify beneficial and adverse effects of their programs on fish and wildlife, including nongame species.

Such responsibility, in part, is mandated by Section 7 of the Endangered Species Act of 1973.

- V. That all agencies and organizations having fish and wildlife responsibilities collectively strive to integrate supportive needs for all species in their programs.

- VI. That all agencies and organizations determine more precisely: (1) their current investments in nongame species and their habitats and (2) additional funds needed to enhance nongame species in existing and planned fish and wildlife programs.

Continuous refinement is essential to expanding the national nongame fish and wildlife program. Only by clearly identifying program investments, needs, and costs can adequate authorizations and appropriations be obtained.

- VII. That each state and territory evaluate, in depth, potential new sources of funds to be used to develop and intensify efforts to enhance nongame species.

State methods to obtain needed funding will vary widely because of differing philosophies and institutional arrangements. One point is certain, however, voluntary and contributory programs will not be successful in raising the quantity of funds needed. Any approach to secure funds must provide an adequate and continuous source of money.

- VIII. That a Federal Extension Service Wildlife Specialist be hired to fill the position which has been vacant for about 35 of the past 38 years.

Lack of leadership and coordination by the Federal Extension Service has hampered State Cooperative Extension Services' efforts to develop more adequate fish and wildlife programs. This is unfortunate because nearly two-thirds of the nation's land is in private ownership.

- IX. That the State Cooperative Extension Services coordinate their fish and wildlife programs more closely with each other at least on a regional basis.

Publications, films, and radio and television programs could be produced jointly with higher quality and lower costs.

- X. That those State Cooperative Extension Services not now having a Fishery and/or Wildlife Specialist take the necessary action to create, fill, and fund such a position.

- XI. That agencies and organizations intensify their efforts to salvage critical or diminishing habitats for all fish and wildlife.

- XII. That a comprehensive course on natural resources and environmental awareness be encouraged in each educational institution and be required of all students.

## PROCEDURES

Seven questionnaires were designed to seek information on current nongame programs, future needs, and financing. Questionnaire No. 1 requested information on specific sources of funds now being used for nongame fish and wildlife programs and potential new sources of funds to strengthen and broaden programs. This questionnaire was sent to 50 states and three territorial fish and wildlife agencies.

Questionnaire No. 2 requested that respondents suggest potential new sources of funds for generating additional income for nongame fish and wildlife programs. Forty-seven private conservation and allied organizations received this questionnaire.

Questionnaires No. 3, 4, 5, 6, and 7 were designed to seek specific information on (1) current nongame fish and wildlife programs and expenditures and (2) estimates of funding and manpower needs for expanded and broadened nongame programs. Questionnaire No. 3 was mailed to 50 states and three territorial fish and wildlife agencies; No. 4 to 20 federal agencies; No. 5 to 166 colleges and universities; No. 6 to Cooperative Extension Services in the 50 states, District of Columbia, Guam, Virgin Islands and Puerto Rico; and No. 7 to 25 Cooperative Fishery Units and 20 Cooperative Wildlife Research Units.

The Public Affairs Information Service of the University of Missouri-Columbia undertook, through contract, an evaluation of potential new sources of revenue. This included an examination of alternative taxable items and revenue yields which could provide adequate funding on a continuing basis to finance conservation programs, particularly those aspects concerning nonconsumptive uses of fish and wildlife.

Two primary factors made it impossible to measure comprehensively total nongame efforts on a nationwide basis. First, the time available to complete the survey was limited. Secondly, the procedures used for programming and

budgeting by various agencies and institutions made it difficult to separate game and nongame activities. This was a common thread running through the responses. Such problems were most difficult where personnel had multi-faceted responsibilities and for activities such as law enforcement.

In spite of such problems the agencies and institutions, for the most part, seriously attempted to provide useful estimates. In assembling data it was necessary, in some cases, to place a reported activity in a category other than that used by the respondents. In others, the data were lumped for meaningful comparisons.

Users of this report must recognize that this is the first substantial effort to measure the scope of nonconsumptive fish and wildlife activities on a national basis. While the information is less precise than some, including the Institute, may desire, collectively it provides an initial base from which to take stock and make plans for improvements.

## CURRENT PROGRAMS AND INVESTMENTS

The information presented in this section was supplied by the agencies, institutions and private organizations responding to the questionnaires. Brief summaries and tables are used to emphasize the important points.

### STATE AGENCY ACTIVITIES

Thirty-six states and one territory reported activities directed specifically toward nongame fish and wildlife. For all fish and wildlife activities, these agencies are investing \$176,426,734 and 9,109 man-years in 1974-75 (Table 1).

### Management

Total fish and wildlife management program investments for the 36 states and one territory during the current fiscal year are \$84,248,136 and 3,640.8 man-years (Table 1). Of these management dollars and manpower, 1.0 percent and 1.2 percent respectively are devoted to 71 nongame fish and/or wildlife projects.

Although the state and territorial agencies are devoting nearly half of their available dollars and manpower to all fish and wildlife management, about one-fourth of the nongame expenditures are management oriented (Table 1). This difference is due to the current focus on research designed to provide needed information on nongame species.

Species classified as endangered, threatened, or status undetermined in the Department of the Interior's 1973 Redbook on threatened wildlife and the recent 1974 list of endangered fauna influence the states' nongame management programs. Of 71 nongame management projects, 29 (41 percent) are concerned with species or groups of species in these categories (Table 1).

Nongame management projects (71) are funded by a variety of sources. However, only 23 percent are financed with revenue from nonhunting and nonfishing associated sources (Table 1). Of the projects involving "other" funds, nearly

Table 1. State (36)\* and territorial (1) fish and wildlife agencies: total and nongame investments in research, management, and enforcement, 1974-75.

	Total Program		Nongame Program		No. Projects	No. Endangered Sp. Projects	No. Projects with Non-license Funds
	Dollars	Man-Years	Dollars	Man-Years			
Management							
Birds			\$ 426,034	12.2	37	19	6
Mammals			136,425	13.6	14	6	5
Fish			45,725	11.6	6	2	1
Other Species			229,005	0.9	8	2	2
Habitat			56,270	3.8	6	0	2
Subtotal	\$ 84,248,136	3,640.8	\$ 893,459	42.1	71	29	16
Research							
Birds			449,305	37.9	47	15	6
Mammals			276,700	26.3	24	10	2
Fish			563,323	31.8	25	7	3
Other Species			198,336	19.9	23	6	0
Habitat			170,100	12.5	8	0	1
Subtotal	40,550,213	2,008.0	\$1,657,764	128.4	127	38	12
Law Enforcement							
Birds			525,804	35.9	22	2	0
Mammals			155,141	9.4	12	1	0
Fish			72,370	4.2	9	0	0
Other Species			37,500	1.8	5	0	0
Habitat			14,000	1.0	1	0	0
Subtotal	\$ 51,628,385	3,460.3	\$ 804,815	52.3	49	3	0
TOTALS	\$176,426,734	9,109.1	\$3,356,038	222.8	247	70	28

\* 5 agencies were unable to provide data.

5 agencies and one territory had no specific nongame activities.

4 states and one territory did not return the questionnaire.

60 percent are financed, in part, with hunting and fishing license monies. Over-all, only 10 percent of the nongame management projects are being financed solely with funds generated independently of hunting and fishing.

#### Research

The 36 states and one territory with nongame programs have a total fish and wildlife research investment of \$40,550,213 and 2,008 man-years (Table 1). Of this, slightly more than four percent of the funds and six percent of the man-years are being used to conduct 127 nongame projects.

Nearly half the total nongame effort involves research. Projects to determine population status and distribution are most common.

Species classified as endangered, threatened, or status undetermined account for at least one-third of the current nongame research effort (Table 1). Species in these classifications also may occur in broad categories, such as raptors, identified by the agencies (Appendix I).

Nongame research also is supported primarily by hunting and fishing revenue. Of the 12 projects involving "other" funds, almost 60 percent are partially financed with funds generated through hunting and fishing activities. Thus, less than four percent of the projects are financed solely from "other" funds.

#### Law Enforcement

Total law enforcement investments in the 36 states and one territory are \$51,628,385 and 3,460.3 man-years. It is generally more difficult to identify nongame segments of enforcement since officers simultaneously enforce game and nongame laws in the field. In addition, officers in some states enforce part or all of the laws relating to pollution, recreational vehicles, and others concerned with natural resources.

Forty-nine nongame enforcement projects were identified; all being financed entirely with hunting and fishing license revenue. These projects account for nearly two percent of the funds being devoted to all enforcement. Three projects

are specifically oriented toward endangered species.

#### Benefits of Fish and Wildlife Lands to Nongame Species

State agencies uniformly stress that game programs benefit nongame species as well. While true, few states provided case history data to support their claim.

From 1937 through 30 June 1972, the 50 states acquired, developed, or managed 38.5 million acres of land for wildlife purposes. This included 1,622 waterfowl areas.

Expenditures included \$28.6 million to acquire land, \$76.1 million for habitat development, and \$16 million for research -- waterfowl being one of the primary objectives. Approximately 16 species of ducks important for hunting depend on aquatic ecosystems. In addition, some 162 species of nongame birds, plus a variety of other animals and plants also are associated with these ecosystems. Thus, the states' efforts to preserve and manage waterfowl habitat have benefited over 10 times more nongame than game species.

#### Recreational Use of Fish and Wildlife Lands

The New Hampshire Fish and Game Department acquired an 80-acre peninsula in southeastern New Hampshire in 1961. Paid for under the Federal Aid in Wildlife Restoration Program (P-R), with all money coming from the purchases of sporting firearms, ammunition, and hunting licenses, the area was developed for waterfowl hunting.

A recreational survey conducted in 1967 showed that waterfowl hunting accounted for only 16 percent of the annual use. Nonconsumptive recreational use predominated. In addition, the Department has provided the University of New Hampshire with a 100-year lease on two acres to build an estuarine laboratory.

The Kentucky Department of Fish and Wildlife Resources also provided data on consumptive and nonconsumptive uses of wildlife management areas (WMA). On the West Kentucky WMA, nonconsumptive uses are 3.5 times greater than consumptive use

The ratio is 13.9 times greater on the Central Kentucky WMA, 1.7 times greater for the Ballard WMA, and 2.1 times greater on the Higginson WMA -- all in favor of the nonconsumptive user. The New Hampshire and Kentucky fish and wildlife agencies, like most others, receive no funds other than from hunting and fishing licenses and the P-R and Federal Aid in Fisheries Restoration Program (D-J).

The general recreationist likewise derives benefits from the National Wildlife Refuge System. Within the NWR System, consisting of 356 individual refuges, 119 have been purchased either entirely or in part with duck stamp revenue. In addition, Waterfowl Production Areas have been acquired in fee title in 16 upper Midwest Wetland Management Districts. These WPA's are purchased with current annual Duck Stamp monies or with funds appropriated yearly from the \$105 million interest free loan which is chargeable against Duck Stamp income.

On these 119 refuges and 16 Wetland Management Districts, there were a reported 26,429,307 recreational use hours during fiscal year 1974. Hunting accounted for 7 percent of this use, 46 percent was fishing, and the remaining 47 percent was for bird watching, hiking, picnicking, and other general recreation.

It is readily seen that those areas purchased and placed in public ownership with hunting and fishing generated monies benefit far more individuals than just those who pay the costs. The predominant use of such areas is by general recreationists.

#### FEDERAL AGENCY ACTIVITIES

Thirteen of 20 federal agencies provided numerical data on their fish and wildlife activities (Appendix C). In addition, the Bureau of Reclamation's response was in narrative form and the Smithsonian Institution provided data on nongame research in a foreign country. The information provided by these two agencies was not used in compiling numerical data.

For all fish and wildlife management, research, and enforcement, the 13 federal agencies are investing \$116,848,742 and 2,950.5 man-years in 1974-75 (Table 2).

#### Management

All fish and wildlife management programs of the 13 federal agencies involve \$65,845,422 and 1,522.7 man-years (Table 2). Approximately 3.5 percent of the total management dollars are being directed toward nongame species in 41 projects.

Species that are endangered, threatened, or status undetermined are an important feature of federal nongame management (Table 2). Of 41 nongame management projects, 29 percent involve species in these categories. However, at the federal level, management of these species does not receive as much emphasis as in the states.

#### Research

The 13 federal agencies are devoting \$41,950,320 and 1,212.6 man-years to all fish and wildlife research (Table 2). Of the overall federal fish and wildlife research effort, between a fourth and a third is concentrated on nongame species.

The Bureau of Reclamation identified 17 nongame fish and wildlife research contracts -- 11 with universities, four with the U.S. Fish and Wildlife Service, and two with the California Department of Fish and Game. Funding or manpower levels were not given.

As with management, species listed as endangered, threatened, or status undetermined receive considerable attention in research (Table 2). These species account for 27 percent of the nongame research projects.

The Cooperative Fishery and Wildlife Research Units are an integral part of the U.S. Fish and Wildlife Service's research program. In fact, Unit staff are employees of that agency. However, since the Units are based at land grant

Table 2. Federal (13) agencies: total and nongame fish and wildlife investments in management, research, and enforcement, 1974-75.

Activity	Total Program				Nongame Program	
	Dollars	Man-Years	Dollars	Man-Years	No. Projects	No. Endangered Species Projects
Management						
Birds			\$ 1,295,460	75.9	21	6
Mammals			416,006	14.0	8	2
Fish			86,000	5.1	5	3
Other Species			49,000	2.0	2	1
Habitat			427,700	14.1	5	0
Subtotal	\$ 65,845,422	1,522.7	2,274,166	111.1	41	12
Research						
Birds			684,325	49.8	36	13
Mammals			2,077,822	87.5	30	12
Fish			555,112	28.8	25	6
Other Species			409,550	29.3	28	5
Habitat			5,044,794	183.7	16	0
Subtotal	41,950,320	1,212.6	8,771,603	379.1	135	36
Law Enforcement*						
Subtotal	9,053,000	215.2	2,264,700	90.0	4	2
TOTALS	\$116,848,742	2,950.5	\$13,310,469	580.2	180	50

\* Law enforcement data did not permit an adequate separation for groups of species.

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universities and are involved in student training, extension efforts, and to some degree in teaching courses, they are handled under educational institutions.

#### Law Enforcement

The federal agencies also experienced difficulties in identifying distinct nongame law enforcement efforts. Whereas nearly one-third of the state's total program activities involve law enforcement, the federal agencies are devoting approximately 8 percent of their efforts to this activity. This difference is not surprising since some reporting federal agencies, such as the Atomic Energy Commission and Bureau of Land Management, are not involved in law enforcement. However, these agencies are involved in management, research, or both.

Two agencies, the Fish and Wildlife Service and National Marine Fisheries Service, account for 98 percent of the nongame law enforcement investments, which are \$2,264,700 and 90.0 man-years (Table 2). These constitute 25 percent and 42 percent respectively of the total law enforcement effort. Two of the four nongame enforcement projects are oriented toward species classified as endangered, threatened, or status undetermined.

Like the states, federal law enforcement specifically for nongame fish and wildlife must be considered minimal. This is due to the broad spectrum of species dealt with during any one day by the officer in the field.

#### EDUCATIONAL ACTIVITIES

Educational institutions play an important role in the area of fish and wildlife. They conduct a substantial amount of research and train future employees for agencies with responsibilities for fish and wildlife.

#### I. UNIVERSITIES AND COLLEGES

Of the 166 colleges and universities contacted, 98 responded (Appendix D). Few of the respondents answered all questions.

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Teaching

Environmental Education

Eight-five educational institutions offer at least one course in environmental education. Two others indicate they hope to offer such a course within the next two years, while five have no plans for offering one.

Several schools maintain that their general biology and fish and wildlife courses expose students to similar information. Those expressing this opinion did not provide enrollment data or course outlines to support their belief. Therefore, whether these courses provide the information or attract the nonmajor is open to question.

Only Colorado State University and the Virginia Institute of Marine Science require all students enrolled to take an environmental course. The University of Idaho's requirements cover about 90 percent of the student body while the University of Wisconsin-Stevens Point does so for all students seeking a teaching degree.

Specific Courses on Nongame Fish and Wildlife

Twelve institutions indicated they offer one or more courses dealing entirely with nongame fish and wildlife. These courses include 28 on fish, 11 on wildlife, and two that combine fish and wildlife.

Eight institutions currently not offering coursework in nongame fish plan to do so within two years. Eighty-three indicate they have no plans to initiate such a course. Twelve institutions expect to offer 13 nongame wildlife courses within the next two years. Two others anticipate offering a course combining nongame fish and wildlife.

Although some institutions see a need for nongame courses, fiscal constraints are such that they do not anticipate implementing any in the foreseeable future.

Other respondents commented, rather emphatically, that their traditional courses in ornithology, herpetology, mammalogy and ichthyology already provide training in concepts covering nongame. While this is correct to a degree, the survey was designed to identify additional courses and emphasis on nongame species and their habitats.

Some institutions advised that they made no distinction between game and nongame. Inasmuch as they believe their regular courses are adequately treating nongame, they see no need for additional specific courses. This attitude also was reflected in answers to several other questions.

Emphasis on Nongame in Fish and Wildlife Courses

Nearly half the reporting institutions are placing greater emphasis on nongame species in their standard fisheries courses. Another 20 percent indicate that they are maintaining their present emphasis on nongame fish. However, they did not provide a measure of their present effort.

Half of the colleges and universities responding are giving greater attention to nongame wildlife in their existing wildlife courses, while another 20 percent are maintaining the same level of effort. Here too, the present level is unknown.

Several institutions do not differentiate between game and nongame species. They contend that any separation is purely artificial and therefore emphasize all species of wildlife and fish.

Some institutions report that the ecosystem approach, which emphasizes the interrelationships of all plants and animals, is being taught. One respondent indicated that nonconsumptive uses are the most important value of wildlife, thus, no additional emphasis is necessary.

Zoology and Botany Courses Required

A review of required zoology and botany courses indicates that most institutions provide a broad biological base for students majoring in fish and wild-

life. However, it was obvious that many did not require a course in plant ecology although several botany courses may be required.

#### Nongame Study Options or Degrees

Fourteen educational institutions report offering either a study option or a degree in nongame fish; 12 do so in nongame wildlife. Others, not offering this choice, consider their normal fish and wildlife coursework adequate training for work in either game or nongame.

#### Teaching Budgets

Many respondents, operating under a departmental budget, found it difficult to identify funds and man-years devoted to all fish and wildlife teaching. They often found it more difficult to determine what portion of their total teaching budget is used for nongame.

Fifty-three educational institutions are investing \$4,027,600, and 66 list 276.4 man-years for total fish and wildlife teaching (Table 3). Twenty-seven institutions invest \$811,200 in nongame teaching and 46 devote 93.8 man-years to this effort (Table 3).

#### Research

Administrative costs and grants for research are not uniformly included in departmental budgets. This inconsistency hampered efforts to identify gross expenditures for game and nongame research.

#### Research Investments

Forty-six educational institutions have \$7,075,100 available for all fish and wildlife research. Sixty-eight institutions are devoting 712 man-years to all fish and wildlife research (Table 3). Thirty-nine institutions are investing \$2,154,000 and 60 institutions 294.2 man-years in nongame research (Table 3).

Table 3. Colleges and universities: investments in total and nongame fish and wildlife programs during current fiscal year. (Data reported November 1974).

Activities	Total Fish and Wildlife Programs		Nongame Fish and Wildlife	
	Dollars	Man-Years	Dollars	Man-Years
Teaching	\$ 4,027,600 <sup>a</sup>	276.4 <sup>b</sup>	\$ 811,200 <sup>c</sup>	93.8 <sup>d</sup>
Research	7,075,100 <sup>e</sup>	712.1 <sup>f</sup>	2,154,400 <sup>g</sup>	294.2 <sup>h</sup>
TOTALS	\$11,102,700	988.5	\$2,965,600	388.0

- a. Data from 53 institutions.
- b. Data from 66 institutions.
- c. Data from 27 institutions.
- d. Data from 46 institutions.
- e. Data from 46 institutions.
- f. Data from 68 institutions.
- g. Data from 39 institutions.
- h. Data from 60 institutions.

Sixty-six colleges and universities reported the sources for \$3,330,862 presently being expended on 305 nongame research projects (Table 4). Research activities of the units are not included in these data. Approximately 50 percent of these research funds are provided by federal agencies. Private organizations and industry furnish approximately 20 percent. University, state and two other governmental units provide most of the remaining research monies. Of the \$506,499 in state grants for nongame research, 27 percent is furnished by fish and wildlife agencies (Table 4).

#### Nongame Theses Completed Between 1965 and 1974

At 38 educational institutions, 695 graduate theses were completed on nongame fish and wildlife and their habitats from 1965 through 1974 (Table 5). Compared on an average annual basis for the last 10 years, the 367 ongoing projects in 1974-75 represent over a five-fold increase in yearly nongame research projects.

### II. STATE COOPERATIVE EXTENSION SERVICES

Forty-one Cooperative Extension Services responded to the questionnaire with data for 1973-74. Not all respondents completed all questions.

There are 48 extension fish and/or wildlife specialists in 31 states and 12 marine specialists in three states. States without fish and wildlife specialists designate someone, such as the extension forester, extension range specialist, or extension entomologist, to serve as the fisheries and wildlife contact.

#### Fish and Wildlife Activities

Thirty-six Extension Services identified nongame fish and wildlife activities. Of these, 24 provided service relating to nongame fish and wildlife to 735,283 persons in 1973-74.

#### Printed Materials and Visual Aids

Thirty-six different publications dealing with nongame fish are available in 11 states. Approximately 27,550 copies are distributed during a year. Twenty-se-

Table 4. Colleges and universities (66): number of current research projects, sources of funds and expenditures on nongame species and their habitats, 1973-74.

Research Subject	Number Projects		Sources of Funds						Total
	Total	Funds Identified	Federal	State	University	Private	Other	Not Identified	
Birds	117	98	\$ 332,991	\$ 46,626	\$139,569	\$119,665	\$ 8,800*	\$10,000	\$ 657,651
Mammals	102	78	516,692	67,917	59,315	46,852	40,000**	80,000	810,776
Fish	78	74	304,600	193,700	57,300	243,040	--	--	798,640
Reptiles	10	8	12,684	72,256	--	8,050	--	8,500	101,490
Amphibians	8	7	21,200	7,000	1,700	6,000	--	--	35,900
Other Species	29	27	389,710	85,500	35,295	243,000	--	--	753,505
Habitat	23	13	65,900	33,500	12,000	61,500	--	--	172,900
TOTALS	367	305	\$1,643,777	\$506,499	\$305,179	\$728,107	\$48,800	\$98,500	\$3,330,862

\* Canadian government

\*\* City of Seattle, Washington

Table 5. Colleges and universities (38): graduate theses completed on nongame species and their habitats, 1965-74.

Research Subject	Number Theses Completed											Percent
	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	Total	
Birds	3	10	10	21	11	15	17	23	24	23	157	23
Mammals	8	8	6	17	10	16	14	20	19	17	135	19
Fish	7	11	13	16	13	18	33	24	22	9	166	24
Reptiles	4	7	6	3	2	1	2	1	6	4	36	5
Amphibians	4	3	2	6	4	5	4	1	3	1	33	5
Other species	7	8	10	6	14	17	29	21	23	17	152	22
Habitat	3	1	--	1	3	--	3	1	2	2	16	2
TOTALS	36	48	47	70	57	72	102	91	99	73	695	100.0

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states distributed 123,646 copies of 248 individual nongame wildlife publications.

Fourteen different films, with nongame fish as the subject, are available from six states. These were shown 67 times to 1,715 persons. Eighteen states have 110 separate nongame wildlife films which were viewed 1,040 times by 21,264 persons in one year.

Forty-one radio programs on nongame fish and 166 on nongame wildlife were broadcast in 15 states during the 12 months. Seven nongame fish and 59 nongame wildlife television programs were produced by 13 states during the same period.

#### Outdoor Camps

Four hundred outdoor camps having programs on nongame fish, wildlife, or both were attended by 47,572 people in 26 states in 1973-74. At these camps, 281 hours were devoted to nongame fish and 2,494 hours to nongame wildlife.

#### 4-H Club Projects

Twenty-seven states had 146 separate 4-H projects dealing with nongame species. Twenty-three states, with enrollment data, had 92,881 youths enrolled in 4-H wildlife projects in 1973-74.

Several states advise that their 4-H Club projects relate to both game and nongame species. Others responded that they provided "wildlife projects" and members could choose any species for study.

#### Wildlife Damage Assessment and Control

Methods and degree of involvement in animal damage control vary among the states. But as a general rule, the extension approach to control is to advise on or demonstrate control methods so individuals experiencing damage can solve their own problems. Fifteen states reported 1,024 control projects on nongame birds, 1,279 on nongame mammals and 161 on other nongame species for one year.

#### Consulting Services

Consulting services were provided in 17 states on 99 nongame fish projects and 2,508 nongame wildlife projects. Requests are generally handled by correspondence, phone or referral.

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Information on fish and wildlife is distributed by other methods as well. These include talks, training County Extension Agents, developing exhibits, and preparing news releases.

#### Budgets

Twenty-two Extension Services reported a one year investment of \$1,107,900 for all fish and wildlife programs (Table 6). Expenditures of \$92,700 for nongame fish and wildlife activities were reported by six states. Approximately 55 man-years for all fish and wildlife programs are expended by 30 Extension Services with 9.0 devoted to nongame fish and wildlife in 15 states. Since these estimates are not comparable between states and between game and nongame, they only represent the identifiable effort for nongame activities.

### III. FISHERY AND WILDLIFE COOPERATIVE RESEARCH UNITS

Forty-five Cooperative Research Units (hereafter referred to as Units) are located in 26 states -- 25 for fisheries and 20 for wildlife. Twenty-one Fishery Units and 19 Wildlife Units provided data.

#### Teaching

As employees of the U.S. Fish and Wildlife Service, Unit personnel may teach one senior or graduate level course per year, although not required to do so. The Unit or Assistant Unit Leader in 11 Fishery Units and 9 Wildlife Units is teaching a course in environmental education. Two Wildlife Units plan such a course in the near future.

For teaching, other than environmental education, Unit personnel are devoting \$250,450 and 23.5 man-years -- \$128,300 and 11.7 man-years for Fishery Units and \$122,150 and 11.8 man-years for Wildlife Units (Table 7). Approximately 20 percent of the Fishery Units' man-years of teaching is for nongame, as is 34 percent of the Wildlife Units'.

Table 6. State Cooperative Extension Services: investments in total and nongame fish and wildlife programs, October 1973 through September 1974.

Program	<u>Investments</u>	
	Dollars	Man-Years
All fish and wildlife	\$1,107,900 <sup>a</sup>	54.6 <sup>c</sup>
Nongame fish and wildlife	92,700 <sup>b</sup>	9.0 <sup>d</sup>

a. Data from 22 states. Other states reporting were unable to segregate data from 6 states.

b. Data from 6 states. Other states reporting were unable to segregate nongame expenditures from total program.

c. Data from 30 states.

d. Data from 15 states. Other states were unable to segregate game and nongame expenditures.

Table 7. Cooperative Fishery (21) and Wildlife (19) Research Units: investments in total and nongame fish and wildlife programs, 1974-75.

Activity	Fishery Units*		Wildlife Units**	
	Number	Man-years Dollars	Number	Man-years Dollars
Courses taught in environmental education	11		9	
Total Unit teaching program		11.7 \$ 128,300		11.8 \$ 122,15
Unit nongame teaching program		2.1 28,000		4.0 12,00
Total Unit research program		151.6 2,044,097		166.5 2,069,02
Unit nongame research program		23.5 215,190		67.2 595,29
Current nongame research projects	39		89	

\* 21 Fishery Units  
\*\* 19 Wildlife Units

# Research

The Units programmed \$4,113,120 and 318 man-years for all fish and wildlife research during 1974-75 -- \$2,044,098 and 151.6 man-years for fisheries and \$2,069,023 and 166.5 man-years for wildlife (Table 7). In addition, the universities and state fish and wildlife agencies contribute facilities, equipment, and specialized personnel assistance and consultation which are not reflected in these research expenditures. Of the Fishery Units' research budgets, 11 percent is allotted to nongame fish. In the case of the Wildlife Units' research funds, 29 percent is budgeted for nongame purposes.

The Units are currently conducting 128 individual nongame fish and wildlife research projects (Table 7). Sources of funding were identified for 118 (Table 8). For the 118 projects, \$1,293,457 is being contributed by federal agencies, state fish and wildlife agencies, universities, and private conservation organizations. The U.S. Army Corps of Engineers and the U.S. Fish and Wildlife Service account for over 60 percent of the grants. Approximately eight percent of the grant monies come from state fish and wildlife agencies. During the past 10 years (1965-74), the Units completed 131 graduate theses on nongame fish and wildlife separate from those for the universities where located (Table 9). The Units' 128 nongame research projects underway during 1974-75 represent a nine fold increase over the average number completed yearly during the past decade.

As in state and federal agency programs, endangered, threatened, and stat undetermined species receive considerable attention in the Units' fish and wildlife research activities. The Wildlife Units have 24 projects and the Fishery Units have two projects involving these species.

Table 8. Cooperative Fishery (21) and Wildlife (19) Research Units: amount and sources of funds for current nongame fish and wildlife research, 1974-75.

Research Subject	No. Projects with Funds Identified	Source of Funds							Totals
		Corps of Engineers	Fish & Wildlife Service	State Fish & Wildlife Agencies	U.S. Forest Service	Univ.	Private	Other*	
Birds	31	\$ 18,332	\$124,715	\$ 33,950	\$12,196	\$18,250	\$63,817	\$ 28,550	\$ 299,810
Mammals	27	4,583	131,301	10,788	25,436	11,000	800	17,000	200,908
Fish	17	7,000	45,155	10,000	150	34,310		15,000	111,615
Other Species	10		57,000	1,500		5,000		20,000	83,500
Habitat	21	171,261	167,266	36,833	54,706	10,733	3,000	10,000	453,799
General**	12	83,000	15,925	14,400	6,500	4,000		20,000	143,825
TOTALS	118	\$284,176	\$541,362	\$107,471	\$98,988	\$83,293	\$67,617	\$110,550	\$1,293,457

\* Includes U.S. Department of Agriculture, U.S. Geological Survey, Bureau of Land Management, National Science Foundation, Bureau of Outdoor Recreation, and state agencies other than fish and wildlife.  
 \*\* Includes studies involving nongame use, pesticides, and multispecies.

Table 9. Cooperative Fishery (21) and Wildlife (19) Research Units: completed graduate theses on nongame fish and wildlife, 1965-74.

Unit & Year	Birds	Mammals	Fish	Amphibians	Reptiles	Others	Habitat	Total
Fishery Unit								
1974			5			1	5	11
1973			7			5	2	14
1972			5			1	3	9
1971			3			5	3	11
1970			3			3		6
1969			7			1	3	11
1968			1			3	2	6
1967							2	2
1966			2				1	3
1965			3					3
Subtotal			36			19	21	76
Wildlife Unit								
1974	6	4					2	12
1973	6	3					2	11
1972	2	3			1			6
1971	1	1					1	3
1970	2							2
1969	2	3						5
1968	3				1			4
1967	2	4						6
1966	2						1	3
1965	2	1						3
Subtotal	28	19			2		6	55
TOTALS	28	19	36		2	19	27	131

## ESTIMATED NEEDS FOR BROADENING PROGRAMS

At the Institute's request, the states, territories, federal agencies, and educational institutions estimated additional annual funding, manpower, and program needs each requires to strengthen its nongame fish and wildlife programs. The current investments in nongame fish and wildlife activities indicate that the state and federal agencies presently are engaged mainly in fact finding rather than management. Until research provides better background information, any projection of future total program needs must be considered strictly preliminary.

### STATE AGENCY ACTIVITIES

The most commonly stated future program need of the 33 states and one territory is to determine population status, distribution, and habitat requirements of individual nongame fish and wildlife species. To accomplish this, \$10,826,160 and 405.7 man-years would be required annually beyond present funding and manpower levels (Table 10).

At the time the Missouri Department of Conservation presented its "Design for Conservation" to the public in 1971, the department had an annual budget for all fish and wildlife of approximately \$8.0 million. For a program that would serve the immediate needs of both consumptive and nonconsumptive users, it was estimated that an annual program budget of \$20.0 million annually would be needed.

Based on Missouri's projections, the states' estimated needs are extremely conservative. Funding needs by individual states range from \$11,000 to \$3,238,500.

### FEDERAL AGENCY ACTIVITIES

Thirteen federal agencies provided information on future needs for nongame fish and wildlife activities. In addition, the Bureau of Land Management projected its needs for an overall fish and wildlife program and are, therefore,

Table 10. Federal (13), state (33), and territorial (1) agencies: additional annual funding and manpower needs for nongame fish and wildlife programs.

Species	Federal Agencies*		State Agencies	
	Dollars	Man-Years	Dollars	Man-Years
Birds	\$ 2,974,185	166.6	\$ 3,006,200	129.5
Mammals	2,416,625	86.3	2,274,960	99.6
Fish	1,337,150	34.0	1,491,000	74.2
Other Species	507,820	26.6	2,164,000	78.4
Habitat	4,677,560	106.5	1,890,000	24.0
TOTALS	\$11,933,340	420.0	\$10,826,160	405.7

\* Bureau of Land Management not included - discussed in text.



not included in the federal nongame estimates. That estimate is \$32.0 million annually.

Estimated additional annual needs for the 13 federal agencies, excluding BLM, for nongame programs are \$11,933,340 and 420 man-years (Table 10).

#### EDUCATIONAL ACTIVITIES

##### Universities and Colleges

Additional dollars and man-years needed annually for expanded nongame fish programs were estimated by 43 colleges and universities for 1976-1978 (Table 11). Their additional annual needs average \$1,399,633 and 101.1 man-years.

For adequate nongame wildlife programs, 50 colleges and universities estimate total average annual needs of \$1,577,966, while 53 estimate 141.0 man-years.

##### State Cooperative Extension Services

Twenty-one State Cooperative Extension Services estimate an additional average annual need of \$262,500 for an adequate nongame fisheries program (Table 11). Twenty-three estimate needs of 13.7 man-years. Estimates of additional annual needs are \$544,033 (24 states) and 26.9 man-years (27 states) for an adequate nongame wildlife program.

##### Fishery and Wildlife Cooperative Research Units

Unit personnel estimate an additional average annual need of \$388,000 for nongame fish research and \$455,000 for nongame wildlife research. Additional annual research manpower needs are 33.2 man-years and 36.8 man-years for fish and wildlife research respectively (Table 11).

Table 11. Colleges and universities, State Cooperative Extension Services, and Cooperative Fishery and Wildlife Research Units: estimated additional annual funds and man-years needed to expand and broaden nongame fish and wildlife activities.

	Nongame Fish						Nongame Wildlife					
	Dollars (1,000)			Man-Years			Dollars (1,000)			Man-Years		
	1976	1977	1978	1976	1977	1978	1976	1977	1978	1976	1977	1978
Colleges and Universities	\$1,221.9 <sup>a</sup>	\$1,476.1 <sup>a</sup>	\$1,500.9 <sup>a</sup>	90.9 <sup>b</sup>	99.3 <sup>b</sup>	113.1 <sup>b</sup>	\$1,439.7 <sup>c</sup>	\$1,566.2 <sup>c</sup>	\$1,728.0 <sup>c</sup>	125.8 <sup>d</sup>	141.2 <sup>d</sup>	156.0 <sup>d</sup>
Cooperative Extension Services	227.3 <sup>e</sup>	261.3 <sup>e</sup>	298.9 <sup>e</sup>	12.7 <sup>f</sup>	13.7 <sup>f</sup>	14.6 <sup>f</sup>	482.9 <sup>g</sup>	549.9 <sup>g</sup>	599.3 <sup>g</sup>	24.2 <sup>h</sup>	27.9 <sup>h</sup>	28.5 <sup>h</sup>
Cooperative Research Units	364.0 <sup>i</sup>	394.5 <sup>i</sup>	406.0 <sup>i</sup>	29.3 <sup>i</sup>	35.1 <sup>i</sup>	35.1 <sup>i</sup>	317.0 <sup>j</sup>	423.0 <sup>j</sup>	474.5 <sup>j</sup>	31.4 <sup>j</sup>	38.1 <sup>j</sup>	40.9 <sup>j</sup>

- a. Data from 43 colleges and universities.
- b. Data from 43 colleges and universities.
- c. Data from 50 colleges and universities.
- d. Data from 53 colleges and universities.
- e. Data from 21 State Cooperative Extension Services.
- f. Data from 23 State Cooperative Extension Services.
- g. Data from 24 State Cooperative Extension Services.
- h. Data from 27 State Cooperative Extension Services.
- i. Data from 21 Cooperative Fishery Units.
- j. Data from 19 Cooperative Wildlife Units.

## POTENTIAL SOURCES OF FUNDS FOR BROADENING PROGRAMS

Some new sources and amounts of funds for financing broader, more responsive fish and wildlife programs, particularly for nongame species, have been identified and evaluated by the University of Missouri-Columbia (Appendix N). As general categories, alternative new or additional taxes examined include:

1. Excise taxes at the manufacturer's level on specific items associated with the use and enjoyment of fish and wildlife resources; for example, camping equipment, bird seed, etc.
2. License taxes for the exercise of a privilege associated with the consumptive or nonconsumptive use of fish and wildlife species or their habitats.
3. Property taxes applied to the owners and/or operators of selected types of property directly associated with consumptive or nonconsumptive uses of fish and wildlife species and their habitats.
4. Severance taxes applied to specific natural resources, where possible and feasible, to include the privilege and actual operation of extraction or removal.

Each of these general classes of taxes is, or has been, used by some states with part of the receipts applied to fish and wildlife management. Because of certain limitations on time and data, all potential new sources of funds were not evaluated completely. In addition, it was not possible to analyze each state's program requirements, alternatives and costs for satisfying those needs, as well as legal structures for securing additional funds. These analyses should be done at the state level.

Those sources with sufficient data available on the value of manufacturer's shipments were analyzed to estimate amounts of income that could be

generated at prescribed tax rates. The use of excise taxes at the manufacturer's level, in accordance with the benefits-received principle of taxation, on products or services relating to fish and wildlife seems most appropriate.

Seven new sources of additional funds, not now being taxed, but associated with outdoor recreation, were evaluated (Table 12). For these sources, the beneficiaries can be identified.

The use of products in outdoor recreation have a direct association with fish and wildlife. Most of these products are durable, although the useful life is highly variable among items. Thus, an excise tax would only raise revenue when a product is initially manufactured. On the other hand, a license or use tax applied at the state or local level would continue to generate revenue over the life of the product. In either event, the funds generated must be earmarked in basic authorities to insure that they are available on a continuing basis and used only for the intended purposes.

### Camping Equipment

The national estimated value of manufacturer's shipments of tents, sleeping bags, and lanterns and allied products was \$157.2 million in 1972. An excise tax of 10 percent on those items of camping equipment would have yielded \$15,720,000 (Table 12). Data were unavailable on other camping items to estimate excise tax revenues that could be generated and would increase total estimated tax revenues given in Table 12.

### Snow Skiing Equipment

Estimated retail sales of ski clothing, equipment, footwear, and accessories increased from approximately \$58 million in 1960-61 to \$226 million in 1969-70. Present projections indicate that retail sales will reach \$1.07 billion by the 1979-80 season.

Estimated value of manufacturer's shipments was \$22 million in 1972 for skis. Potential revenue available from a 10 percent excise tax applied to skis

Table 12. Estimated revenues from potential manufacturers' excise taxes on some outdoor recreational products and other selected items, based on 1972 Census of Manufacturers', Industry Series, Preliminary Reports.\*

Items	Value of Shipments by Manufacturers (Millions)	Tax Rate Used	Estimated Yield (Millions)
Camping Equipment Tents (Canvases and related products)	\$ 68.1	10%	\$ 6.81
Sleeping bags	61.5		6.15
Lanterns and replacement parts	27.6		2.76
Subtotal	157.2		15.72
Snow Skiing Equipment Snow skis	22.0	10%	2.20
Subtotal	22.0		2.20
Skin Diving Equipment (Scuba) equipment-fins, mask and aqua lungs	28.2	10%	2.82
Subtotal	28.2		2.82
Recreational Vehicles Trailers (under 35 ft.)	613.9	1%	6.139
Showmobiles	167.2		1.672
Pick-up campers	105.7		1.057
Collapsible trailers	96.5		.965
Truck mounted campers	35.9		.359
All terrain vehicles (except motorcycles)	12.7		.127
Subtotal	1,031.9		10.319
Photographic Merchandise Film and plates (still and motion picture)	1,427.5	5%	71.375
Still picture equipment	614.2		30.710
Motion picture equipment	190.7		9.535
Photo flash-cubes, M type, AG type and other flash lamps	124.7		6.235
Subtotal	2,357.1		117.855
Binoculars	5.0	10%	.500

Table 12. (Continued)

Items	Value of Shipments by Manufacturers (Millions)	Tax Rate Used	Estimated Yield (Millions)
Wild bird foods	19.9	1%	.199
TOTALS	\$3,621.3		\$149.613

\* Data on manufacturers' shipments used in this table became available following submission of the University of Missouri-Columbia report. Information on retail sales volumes of items of outdoor recreational equipment are available in that report (Appendix P).

at that level in 1972 would have produced \$2,200,000 (Table 12).

#### Skin Diving Equipment

In 1972 the estimated national value of manufacturer's shipments for fins, masks, and scuba lungs was \$28.2. The estimated yield from a 10 percent excise tax in that year would have been \$2,820,000 (Table 12).

#### Recreational Vehicles

Recreational vehicles, as used here, refer primarily to items used for off-road motorized travel or mobile, temporary living quarters. Off-road equipment includes small trail bikes, snowmobiles, and all-terrain vehicles. Mobile, temporary living quarters include travel trailers, camping trailers, motor homes, and pickup campers.

Despite rapid growth between 1965 and 1973, the recreational vehicle industry experienced a significant downturn in 1973 as a result of gasoline shortages and increasing prices of petroleum products.

The estimated yield from a one percent excise tax at the manufacturer's level on selected major recreational vehicles in 1972 would have been approximately \$10,319,000 (Table 12). Data were unavailable for small motorcycles and four-wheel drive vehicles built for off-road use.

#### Photographic Merchandise

A major use of photographic equipment and related products and services is in the natural and scenic areas of the nation. To the extent that scenic beauty and its associated wildlife benefit amateur and professional photographers, it seems appropriate that a portion of the costs of preservation and management be borne directly by such users.

Manufacturer's shipments of photographic equipment and photofinishing was valued at \$2,357,100,000 in 1972. Using these data, a five percent excise tax would have generated \$117,855,000 (Table 12).

#### Binoculars

The 1972 value of manufacturers shipments of binoculars was approximately \$5 million nationally. Thus, a 10 percent excise tax could have been expected to yield approximately \$500,000 (Table 12).

#### Wild Bird Food

The estimate for 1972 manufacturers shipments of wild bird food was \$19.9 million. Data were not available to specifically identify either the quantity or value of such seed.

This market evolved approximately 15 years ago. In recent years, sales have increased five to 10 percent per year. Wild bird food is mainly composed of 50 percent millet seed. In 1972, millet sold for approximately \$2 per hundred pounds. By 1974, the price increased to approximately \$6 per hundred pounds.

Grain and transportation are the primary costs involved in wild bird food sales. Due to these factors it is not possible to project the sales of wild bird food. However, based upon 1972 data, a 1.0 percent excise tax at the manufacturer's level could have yielded \$199,000 (Table 12).

The estimated revenue from the seven categories of items discussed would have been \$149,613,000 based on the tax rates used (Table 12).

## DISCUSSION

The information received attests to the broad interest in nongame fish and wildlife. The current level of investment in the various phases of nongame by state and territorial fish and wildlife agencies (Table 1), federal agencies (Table 2), and educational institutions (Tables 3, 5, and 7) are impressive.

As noted earlier, the information is not complete for all states and territories, federal agencies or educational institutions. Needs could only be estimated (Tables 10 and 11). But the estimates have definite value in that they are the only information on this subject available at this time. They indicate the magnitude of initial effort that informed individuals believe must be made to place the national nongame fish and wildlife programs on a more adequate operational scale. Inasmuch as a major objective of this study is to quantify funding and manpower needs to expand and broaden fish and wildlife programs, the estimates are central to this discussion.

### Basic Positions

Certain basic positions are taken to facilitate useful discussion and the recommendations that logically follow. They are:

1. The public is demanding that greater attention be given to nongame fish and wildlife.  
The record of public involvement and strong support, plus federal and state legislative and administrative actions, makes this obvious.
2. Expansion of national attention to nongame fish and wildlife can be accomplished most efficiently and effectively through existing institutions and frameworks.  
The authorities and responsibilities, roles, methods of financing, division of professional attention and competence, lines of communication, and the like are well-established and already operational. Any move to create an intensive nongame effort outside of existing institutions and frameworks would be duplicative, contradictory and needlessly expensive.
3. With the partial exception of the U.S. Fish and Wildlife Service, funding for federal land management and certain other agencies should derive wholly from general appropriations.  
In the case of agencies such as the U.S. Forest Service and the Bureau of Land Management, wildlife habitat is but one resource responsibility that is funded mainly from general appropriations. The Federal and State Cooperative Extension Services are funded from several sources, but the bulk of their support comes from general appropriations. Research, including the Fishery and Wildlife Cooperative Research Units, law enforcement and information programs of the U.S. Fish and Wildlife Service -- as they pertain to nongame species -- are likewise funded from general appropriations. It should continue. Other

elements of operational nongame programs of this federal agency, as will be discussed later, can be benefited by the creation and use of a special fund.

4. Financial support needed to broaden state programs should come from a new federal grant-in-aid program similar to the Federal Aid in Fish and Wildlife Restoration Acts and from the states themselves.

In the fish and wildlife field, the record of the federal-aid approach is unequalled in accomplishment.

Through excise taxes at the manufacturer's level on certain outdoor-related products, purchasers and users are contributing to programs directly beneficial to them. Hence, there is a straight-line relationship between such taxes and those benefited.

The federal-aid approach, with its policies and standards, provides maximum opportunity for a cohesive and balanced national approach. This is both necessary and desirable. The existing Federal Aid in Fish and Wildlife Restoration Acts should not be disturbed.

5. An adequate reservoir of manpower trained in fishery, wildlife and allied biological sciences exists to staff expanded nongame programs.

The number of students graduating with bachelor's and graduate degrees from North American colleges and universities regularly exceeds demand for annual replacement and new staff.

Further, enrollment increases steadily, with fall 1974 students at 11,844, up 5 percent over 1972.

The comprehension of the graduates continues to improve as more and more institutions interject ecosystem concepts into their courses.

6. The Fishery and Wildlife Cooperative Research Units and the colleges and universities will respond, as in the past, to manpower training opportunities and research needs.

As part of an accelerated program, the units and colleges and universities will share in increased funding from their traditional supporters.

7. The estimates of program costs and manpower needs supplied by respondents, admittedly incomplete, offer a foundation for initiating an expanded nation program for nongame fish and wildlife.

The urgent need, at this point, is to design and implement a total fish and wildlife program with greater emphasis on nongame aspects. The passage of time will provide experience to refine program requirements and funding estimates.

#### Financial and Manpower Needs

According to information supplied by respondents, \$27,336,632 and 1,178.4 man-years could be used immediately in nongame fish and wildlife programs (Tab 10 and 11). Of paramount interest are the estimated additional requirements of the U.S. Fish and Wildlife Service and the state fish and wildlife agencies because direct legal authority and responsibility for the nation's fish and wildlife resources are vested at these two levels.

As discussed earlier, additional knowledgeable manpower is available now to staff expanded programs. Neither will it be a limiting factor at any future time, if salaries and associated manpower costs are included in agency funding. The major deterrent to nongame fish and wildlife programs, as well as to those for game species, is the lack of an adequate financial base.

There are two logical sources for funding nongame programs. The first, for federal multi-resource agencies like the U.S. Forest Service, the Bureau of Land Management, Tennessee Valley Authority, and National Park Service is more adequate general appropriations. Those agencies administering public lands have, under law, multi-resource responsibilities, including fish and wildlife habitat. This general responsibility is made even more specific by the Endangered Species Act of 1973, which mandates the protection of habitats that support threatened and endangered species.

Values and benefits that are created or maintained on public lands inure to the general public. As such, the costs involved should be supported from general appropriations. This is a matter of tradition.

The difficulty is that programs of federal land administering agencies are imbalanced, some more than others. Wildlife, unfortunately, seldom receives the attention accorded other resources. For agencies with imbalanced programs, the Executive and Legislative Branches must insist that wildlife be given equal attention.

As the agency bearing the principal, direct federal responsibility for fish and wildlife, the U.S. Fish and Wildlife Service's needs require separate consideration. Like other federal resources agencies, the Service has and must continue to receive general fund support for virtually all of its program elements -- national wildlife refuges, research, law enforcement, information, etc. For the most part, the general public is the beneficiary of the Service's program and the costs of its essential work should be borne by them.

General funds alone, however, have been inadequate. Many wildlife programs have not been funded fully or sufficiently. The Marine Mammals and Endangered Species Acts are recent examples.

If our recommendations are followed, the Fish and Wildlife Service would provide leadership to the states in expanding nongame programs nationwide. And it would have adequate funding to carry out part of that responsibility. Necessary grant-in-aid financing would be obtained through new excise taxes. But funding for the Service's own program must come from general appropriations.

Thirty-three states and one territory estimate that \$10,826,160 could be put to immediate use in behalf of nongame fish and wildlife. Program elements would include research, management, law enforcement, and public information. Simple extrapolation suggests that the 50 states and 3 territories would require approximately \$16,200,000 annually to defray anticipated costs of program expansion.

Available information indicates that the states were conservative in their estimates. Further, since returning the questionnaires, some states have indicated that, after giving the subject more thought, their estimates should have been higher. Thus it is reasonable to conclude that the states and territories could beneficially use no less than \$40 million annually in the first few years of an expanded program.

Missouri's "Design for Conservation" projected a 250 percent increase over current expenditures. Not all of the increase was attributed to nongame programs, of course, but the magnitude reflects the thinking of a progressive agency that deliberately undertook to scale out the cost of a comprehensive fish and wildlife program.

For its recommendations, the Institute has arbitrarily, but with reason, selected \$40 million as the minimum amount initially needed to launch nongame programs in the states and territories. This does not include the amount that

the states would be required to raise should our recommendation for a federal-aid program be adopted. That is, the states would be required to secure additional funds in an amount needed to match a percentage of the federal grant.

Further, an unknown amount in excess of that also would be needed, inasmuch as an intensified state effort for nongame fish and wildlife would require a correspondingly higher level of state financial assistance to the fishery and wildlife Cooperative Research Units and to universities and colleges for research contracts.

#### Potential Sources of Funds

The Institute contracted with the Public Affairs Information Service (PAIS), University of Missouri-Columbia, to evaluate potential new sources of funding for a national and statewide nongame program. PAIS concluded (p. 91) that "the unavailability of data and insufficient time to specify the appropriate models for estimates and projections are the major shortcomings of the study." And further, "additional study also needs to be done on the impacts of the taxes examined...."

The Institute concurs. Further refinement and analysis are needed, particularly with respect to obtaining the larger amounts of money that will be required when comprehensive nongame programs are being fully implemented. Although ultimately important, the amount of money required to support an adequate nongame program in some future year ranks second in priority to that needed to initiate action now. Based on the information at hand, the costs of doing this now are well within reach.

As the Missouri University group concludes, "The results of this study clearly indicate that there are a number of viable potential sources of new and additional revenue which would provide sufficient funds to finance new and continuing conservation programs...based solely on the analyses undertaken in this study, the general recommendations are to utilize those sources of revenue which can be

most clearly identified with the ultimate nonconsumptive users of fish and wildlife species and habitats."

The general recommendation, then, is to raise necessary funds for nongame programs by assessing costs against those who benefit most directly. This means that program costs, at least in the "start-up" phase, logically should be borne by the millions of outdoor recreationists whose enjoyment is based on natural habitat and its associated fish and wildlife. This includes hikers, campers, picnickers, bird watchers, nature photographers, and others who seek and appreciate fish and wildlife in natural areas, as well as in their communities and backyards.

It is both equitable and logical that nongame fish and wildlife programs be financed through a manufacturers' excise tax levied on specific products made for and used by outdoor recreationists. Examples of such items are tents, camp stoves (cooking and heating); sleeping bags; air mattresses; battery and fuel-fed sports lanterns; fuels for stoves and lanterns; ice chests and related cooling equipment; insulated jugs having a capacity of one quart or larger; camping and travel trailers; pick-up campers; bird houses, feeders, waterers, and foods; binoculars; and cameras, film, flash attachments and bulbs.

A number of these sources were evaluated by the University of Missouri-Columbia. The potential annual yield of taxes at a prescribed rate ranging from 1 to 10 percent would have been \$149,613,000 (Table 12). Clearly, a potential financial base exists for initiating accelerated nongame fish and wildlife programs at a minimum of \$40 million annually.

Funds from manufacturers' excise taxes on designated items would provide hardcore support for federal and state nongame programs. Expanded financial support would soon be needed at both levels, however, as research more sharply defines additional needs and responsibilities in management, law enforcement, and information and education. Estimates are needed particularly for maintaining critical habitats.



At the federal level, such costs traditionally have been borne through general appropriations. The situation is much different on the state level, where virtually all costs of modern fish and wildlife programs are borne by monies obtained from angling and hunting license purchasers. These individuals also energize the Federal Aid in Fish and Wildlife Restoration Acts through their payment of long-established manufacturers' excise taxes on equipment used mainly in their recreation -- sporting firearms, ammunition, and designated fishing gear and tackle.

As shown earlier, state fish and wildlife agencies are conducting non-game programs almost entirely with funds obtained from hunters and fishermen. While the Institute believes that it is appropriate to use some funds from these sources for nongame work, the states' ever-present need for greater funding for traditional programs must be acknowledged and respected. Further, all members of society, not solely hunters and anglers, are the beneficiaries of nongame programs. Hence, a broader cross section of society should share in the costs.

Because their legal responsibility for living organisms is being broadened in an increasing number of states, the state fish and wildlife agencies have a near-continuous need for larger funding. Inflation and rising personnel costs reduce the amount of work that can be accomplished at prevailing income levels. Therefore, if these agencies are to be more fully and actively involved in non-game programs, they must have more funds.

To date, most state legislatures have been reluctant to supplement fish and wildlife agencies' receipts with appropriations from general funds. Yet, if the agencies are expected to respond to the public's demands for nongame programs, society, the ultimate beneficiary, must make the investments. This concept is consistent with the recommendations that the identifiable beneficiaries of this work support it financially.

To be successful, the system of raising funds must be such that it yields a reliable, continuous and adequate source of money. At frequent intervals in the past, federal and state fish and wildlife agencies have launched campaigns to encourage all persons interested in fish and wildlife to voluntarily contribute funds to support special projects. Without exception, these campaigns have failed to raise more than token sums. Many failed to return expenses incurred for printing and publicity. Assuming that people want positive results, there is no substitute for a mandatory funding program.

The requirements of state agencies for funds, in excess of the proposed grants-in-aid, to expand nongame programs must not be overlooked. State legislatures must give immediate consideration to making general appropriations available for these purposes and such fund-raising programs as mandatory conservation stamps, severance taxes on mineral production, annual registration tags on recreational vehicles, fees for access to public lands, and the like. The varying situations in each state would require different approaches, doubtlessly including sources beyond those mentioned here and in Appendix N.

# APPENDICES

## Appendix A

### Response by states and territories to Questionnaires No. 1 and No. 3

Questionnaires No. 1 and No. 3 were sent to 50 states\* and three territorial fish and game agencies. Questionnaire No. 1 sought information on (1) sources of funds being used for financing ongoing non-game fish and wildlife programs and (2) proposed new sources for generating additional income for these programs.

Questionnaire No. 3 was designed to get specific information on (1) current nongame fish and wildlife programs and expenditures and (2) additional efforts and funds needed to expand these programs.

Agency	Responded to Questionnaire			
	No. 1		No. 3	
	Yes	No	Yes	No
Alabama Division of Game and Fish	X		X	
Alaska Department of Fish and Game			X	
American Samoa Marine Resources	X		X	
Arizona Game and Fish Department	X		X	
Arkansas Game and Fish Commission	X		X	
California Department of Fish and Game	X		X	
Colorado Division of Wildlife	X		X*	
Connecticut Department of Environmental Protection	X		X	
Delaware Division of Fish and Wildlife	X		X*	
Florida Game and Fresh Water Fish Commission	X		X	
Georgia Game and Fish Division	X		X	
Hawaii Division of Fish and Game		X	X	
Idaho Department of Fish and Game	X		X	
Illinois Department of Conservation	X		X	
Indiana Division of Fish and Wildlife	X		X	
Iowa Conservation Commission		X	X	
Kansas Forestry, Fish and Game Commission	X		X	
Kentucky Department of Fish and Wildlife Resources	X		X	
Louisiana Wild Life and Fisheries Commission	X		X*	
Maine Marine Department - Inland Fisheries and Game	X		X	
Maryland Wildlife Administration	X		X	
Massachusetts Division of Fish and Game	X		X	
Michigan Department of Natural Resources	X		X	
Minnesota Department of Natural Resources	X		X	
Mississippi Game and Fish Commission		X	X	
Missouri Department of Conservation	X		X	
Montana Fish and Game Department			X	
Nevada Game and Parks Commission	X		X	
Nevada Fish and Game Commission	X		X	
New Hampshire Fish and Game Department	X		X	

Appendix A, continued.

Agency	Responded to Questionnaire			
	No. 1		No. 3	
	Yes	No	Yes	No
New Jersey Department of Environmental Protection	X			X
New Mexico Department of Game and Fish	X		X	
New York Division of Fish and Wildlife	X		X	
North Carolina Wildlife Resources Commission		X	X	
North Dakota Game and Fish Department		X	X	
Ohio Division of Wildlife	X		X	
Oklahoma Department of Wildlife Conservation		X		X
Oregon Fish Commission	X		X	
Oregon Wildlife Commission	X		X	
Pennsylvania Fish Commission	X		X	
Pennsylvania Game Commission		X	X	
Puerto Rico Administration of Natural Resources		X		X
Rhode Island Division of Fish and Wildlife	X		X	
South Carolina Wildlife and Marine Resources Department	X		X	
South Dakota Department of Game, Fish and Parks	X		X	
Tennessee Wildlife Resources Agency	X		X	
Texas Parks and Wildlife Department	X		X	
Utah Division of Wildlife Resources	X		X	
Vermont Department of Fish and Game	X		X	
Virginia Commission of Game and Inland Fisheries	X		X*	
Washington Department of Game	X		X	
Washington Department of Fisheries	X		X	
West Virginia Department of Natural Resources	X		X	
Wisconsin Department of Natural Resources	X		X	
Wyoming Game and Fish Commission		X	X**	
TOTAL***	47	10	52	5

\* Maryland, Oregon, Pennsylvania and Washington received two questionnaires.  
 \*\* Questionnaire returned without data.  
 \*\*\* One unidentified questionnaire No. 1 returned.

Appendix B

Response by private organizations to Questionnaire No. 2  
 Questionnaire No. 2 was sent to 45 private organizations. Each was requested to list new sources of funds they believed should be considered for generating additional income for nongame fish and wildlife programs.

Organization	Responded to Questionnaire
	Yes
American Fisheries Society	
American Forestry Association	
American Humane Association	X
American Ornithologists Union, Inc.	
American Society of Ichthyologists and Herpetologists	
American Society of Mammalogists	
Animal Welfare Institute	
Conservation Council for Hawaii	
Cooper Ornithological Society	
Defenders of Wildlife	
Friends of Animals, Inc.	
Friends of the Earth	
Fund for Animals, Inc.	
Guam Science Teachers Association	
Hawk Mountain Sanctuary Association	
Humane Society of U.S.	
International Council for Bird Preservation (U.S.A.)	
Izaak Walton League of America	
League of Women Voters, Inc.	
National Audubon Society	X
National Council of State Garden Clubs, Inc.	X
National Parks and Conservation Association	X
National Rifle Association of America	X
National Wildlife Federation	X
Natural History Society of Puerto Rico, Inc.	
Natural Resources Defense Council, Inc.	
North American Falconers Association	
Rachel Carson Trust for the Living Environment	
Sierra Club	
Society of American Foresters	
Society for the Preservation of Birds of Prey	X
Society for Range Management	X
Soil Conservation Society of America	X
Sport Fishing Institute	
The Nature Conservancy	X
The Wilderness Society	
The Wildlife Society	
Thorne Ecological Institute	X

Appendix B, continued

Organization	Responded to Questionnaire	
	Yes	No
Trout Unlimited		X
Urban Wildlife Research Center	X	X
Virgin Islands Conservation Society, Inc.		X
Welder Wildlife Foundation	X	
Wild Canid Survival and Research Center		X
Wilson Ornithological Society		X
Wildlife Management Institute	X	
TOTALS	13	32

Appendix C

Response by federal agencies to Questionnaire No. 4

Questionnaire No. 4 was sent to 20 federal agencies. It was designed to seek specific information on (1) current nongame fish and wildlife programs and expenditures and (2) additional efforts and funds needed to expand these programs.

Agency	Responded to Questionnaire	
	Yes	No
Agricultural Stabilization and Conservation Service	X	
Army Corps of Engineers	X	
Atomic Energy Commission	X	
Bureau of Land Management	X	
Bureau of Outdoor Recreation	X*	
Bureau of Reclamation	X**	
Department of the Air Force	X	
Department of Defense		
Department of the Navy	X	X
Department of Transportation		X
Federal Power Commission		
Fish and Wildlife Service	X	
Forest Service	X	
National Marine Fisheries Service	X	
National Park Service	X	
Office of Sea Grant	X	
Smithsonian Institution	X***	X
Soil Conservation Service	X	
Tennessee Valley Authority	X	
U. S. Marine Corps	X	
TOTALS	16	4

\* Involved only in grants to other agencies - no data provided.

\*\* Provided data in narrative form.

\*\*\* Nongame programs only in foreign countries.

Appendix D

Response by colleges and universities to Questionnaire No. 5

Questionnaire No. 5 was sent to 166 colleges and universities training fish and wildlife workers. It was designed to seek specific information on (1) current nongame fish and wildlife student training, research programs, and expenditures and (2) additional efforts and funds needed to expand these programs.

State and Educational Institutions	Responded to Questionnaire	
	Yes	No
<u>Alabama</u>		
Auburn University	X	
Tuskegee Institute		X
University of Alabama	X	
<u>Alaska</u>		
University of Alaska		X
<u>Arizona</u>		
Arizona State University	X	X
Northern Arizona University		X
University of Arizona		X
<u>Arkansas</u>		
Arkansas Polytechnic College	X	
University of Arkansas, Fayetteville		X
University of Arkansas, Little Rock	X	
University of Arkansas, Monticello	X	
University of Arkansas, Pine Bluff	X	
<u>California</u>		
California Polytechnic State University	X	
California State University, Fresno	X	
California State University, Sacramento		X
California State University, San Diego	X	
California State University, San Francisco	X	
California State University, San Jose	X	
Hopkins Marine Station of Stanford University		X
Humboldt State University	X	
Moss Landing Marine Laboratories	X	
University of California, Berkeley	X	
University of California, Davis	X	
University of California, Los Angeles		X
University of California, Santa Barbara		X
Scripps Institute of Oceanography (Univ. of Cal.)		X
<u>Colorado</u>		
Colorado State University	X	
University of Colorado	X	

Appendix D, continued.

State and Educational Institutions	Responded to Questionnaire	
	Yes	No
<u>Connecticut</u>		
University of Connecticut		X
Yale University	X	
<u>Delaware</u>		
Delaware State College		X
<u>Florida</u>		
Florida A & M University		X
Florida Atlantic University		X
Florida Institute of Technology	X	
Florida State University		X
University of Florida		X
University of Miami		X
University of South Florida		X
University of West Florida	X	
<u>Georgia</u>		
Emory University		X
University of Georgia	X	
<u>Hawaii</u>		
Bernice P. Bishop Museum	X	
University of Hawaii	X	
<u>Idaho</u>		
Idaho State University	X	
University of Idaho	X	
<u>Illinois</u>		
Eastern Illinois University	X	
Northern Illinois University	X	
Southern Illinois University, Carbondale	X	
Southern Illinois University, Edwardsville	X	
University of Illinois		X
Western Illinois University	X	
<u>Indiana</u>		
Ball State University		X
Indiana State University	X	
Purdue University	X	
<u>Iowa</u>		
Iowa State University		X
<u>Kansas</u>		
Emporia Kansas State College	X	
Kansas State College		X
Kansas State University	X	
University of Kansas		X

## Appendix D, continued.

State and Educational Institutions	Responded to Questionnaire	
	Yes	No
<u>Kentucky</u>		
Eastern Kentucky University	X	
Murray State University		X
University of Kentucky		X
University of Louisville		X
<u>Louisiana</u>		
Dillard University		X
Grambling College	X	
Louisiana State University	X	
Louisiana Tech University		X
Loyola University		X
McNeese State University	X	
Nicholls State University	X	
Northwest Louisiana University		X
Northwestern State University		X
Southeastern Louisiana University		X
Southern University, Baton Rouge		X
Southern University, New Orleans	X	
University of Southwestern Louisiana	X	
Xavier University of Louisiana	X	
<u>Maine</u>		
University of Maine	X	
<u>Maryland</u>		
Johns Hopkins University		X
University of Maryland		X
<u>Massachusetts</u>		
Southeastern Massachusetts University	X	
University of Massachusetts		X
<u>Michigan</u>		
Central Michigan University	X	
Michigan State University	X	
Michigan Technological University	X	
University of Michigan	X	
<u>Minnesota</u>		
University of Minnesota	X	
<u>Mississippi</u>		
Gulf Coast Research Laboratory	X	
Mississippi State University	X	
Mississippi Valley State University	X	
University of Southern Mississippi		X

## Appendix D, continued.

State and Educational Institutions	Responded to Questionnaire	
	Yes	No
<u>Missouri</u>		
Northeast Missouri State University		X
University of Missouri-Columbia	X	
<u>Montana</u>		
Montana State University		X
University of Montana	X	
<u>Nebraska</u>		
University of Nebraska		X
<u>Nevada</u>		
University of Nevada, Las Vegas		X
University of Nevada, Reno	X	
<u>New Hampshire</u>		
University of New Hampshire	X	
<u>New Jersey</u>		
Rutgers University		X
<u>New Mexico</u>		
New Mexico Highlands	X	
New Mexico State University	X	
University of Albuquerque	X	
<u>New York</u>		
Cornell University		X
Long Island University		X
State University, College of Environmental Science and Forestry		X
New York University	X	
State University of New York, Albany		X
State University of New York, Syracuse	X	
State University of New York, Oneonta	X	
<u>North Carolina</u>		
Duke University	X	
Johnson C. Smith University		X
North Carolina Agricultural and Technical State University	X	
North Carolina State University		X
University of North Carolina		X
<u>North Dakota</u>		
North Dakota State University	X	
University of North Dakota		X
<u>Ohio</u>		
Kent State University	X	
Ohio State University		X

Appendix D, continued.

State and Educational Institutions	Responded to Questionnaire	
	Yes	No
<u>Oklahoma</u>		
Langston University	X	X
Northeastern Oklahoma State University	X	
Oklahoma State University		X
Oral Roberts University	X	
South Central State College		X
Southeastern State University	X	
University of Oklahoma		X
<u>Oregon</u>		
Oregon State University	X	
<u>Pennsylvania</u>		
Lehigh University	X	
Millersville State College	X	
Pennsylvania State University		X
<u>Rhode Island</u>		
University of Rhode Island	X	
<u>South Carolina</u>		
Clemson University	X	
Clailin College		X
South Carolina State College	X	
<u>South Dakota</u>		
South Dakota State University	X	
University of South Dakota	X	
<u>Tennessee</u>		
Knoxville College		X
Tennessee Technological University	X	X
University of Tennessee	X	
<u>Texas</u>		
North Texas State University		X
Southwest Texas State University	X	
Stephen F. Austin State College	X	
Texas A & I University	X	
Texas A & M University	X	
Texas Christian University		X
Texas Tech University	X	
University of Texas, Arlington		X
University of Texas, Austin	X	
University of Texas, Port Aransas		X
<u>Utah</u>		
Brigham Young University	X	
University of Utah		X
Utah State University	X	

Appendix D, continued

State and Educational Institutions	Responded to Questionnaire	
	Yes	No
<u>Vermont</u>		
University of Vermont	X	
<u>Virginia</u>		
Hampton Institute		X
University of Richmond	X	
Virginia Institute of Marine Science	X	
Virginia Polytechnic Institute and State University		X
<u>Washington</u>		
University of Washington	X	
Washington State University	X	
<u>West Virginia</u>		
West Virginia University	X	
<u>Wisconsin</u>		
University of Wisconsin, Madison	X	
University of Wisconsin, Milwaukee		X
University of Wisconsin, Stevens Point	X	
<u>Wyoming</u>		
University of Wyoming		X
<u>District of Columbia</u>		
Howard University	X	
Washington Technical Institute	X	
<b>TOTALS</b>	<b>98</b>	<b>68</b>

Appendix E

Response by State Cooperative Extension Services to Questionnaire No. 6

Questionnaire No. 6 was sent to Cooperative Extension Services in 50 states, District of Columbia, Puerto Rico, Guam, and the Virgin Islands. The questionnaire was designed to seek specific information on (1) current nongame fish and wildlife extension programs and expenditures and (2) additional efforts and funds needed to expand these programs.

Extension Service	<u>Responded to Questionnaire</u>	
	Yes	No
Alabama Extension Service	X	
Alaska Extension Service		X
Arizona Cooperative Extension Service		X
Arkansas State Extension Service	X	
California State Extension Service	X	
Colorado State Extension Service	X	
Connecticut State Extension Service		X
Delaware State Extension Service		X
District of Columbia Extension Service		X
Florida State Extension Service	X	
Georgia State Extension Service	X	
Guam Extension Service		X
Hawaii Extension Service	X	
Idaho State Extension Service	X	
Illinois Extension Service	X	
Indiana Extension Service	X	
Iowa Extension Service	X	
Kansas Extension Service	X	
Kentucky Extension Service	X	
Louisiana Extension Service	X	
Maine Extension Service		X
Maryland Extension Service	X	
Massachusetts Extension Service	X	
Michigan Extension Service	X	
Minnesota Extension Service	X	
Mississippi Extension Service	X	
Missouri Extension Service	X	
Montana Extension Service	X	
Nebraska Extension Service	X	
Nevada Extension Service	X	
New Hampshire Extension Service		X
New Jersey Extension Service		X
New Mexico Extension Service	X	
New York Extension Service	X	
North Carolina State Extension Service	X	
North Dakota Extension Service	X	
Ohio Extension Service	X	
Oklahoma Extension Service	X	
Oregon Extension Service	X	

Appendix E, continued.

Extension Service	<u>Responded to Questionnaire</u>	
	Yes	No
Pennsylvania Extension Service	X	
Puerto Rico Extension Service	X	
Rhode Island Extension Service	X	
South Carolina Extension Service	X	
South Dakota Extension Service	X	
Tennessee Extension Service	X	
Texas Extension Service	X	
Utah Extension Service		X
Vermont Extension Service	X	
Virgin Islands Extension Service		X
Virginia Extension Service	X	
Washington Extension Service		X
West Virginia Extension Service	X	
Wisconsin Extension Service	X	
Wyoming Extension Service		X
TOTALS	41	13



Appendix F

Response by Cooperative Fishery and  
Wildlife Research Units to Questionnaire No. 7

Questionnaire No. 2 was sent to 25 Cooperative Fishery Units and 20 Cooperative Wildlife Research Units. The questionnaire was designed to seek specific information on (1) current nongame fish and wildlife student training, research programs, and expenditures and (2) additional efforts and funds needed to expand these programs.

Cooperative Research Unit	<u>Responded to Questionnaire</u>	
	Yes	No
<u>Fishery Units</u>		
Alabama Cooperative Fishery Unit	X	
Arizona Cooperative Fishery Unit		X
California Cooperative Fishery Unit	X	
Colorado Cooperative Fishery Unit	X	
Georgia Cooperative Fishery Unit	X	
Hawaii Cooperative Fishery Unit	X	
Idaho Cooperative Fishery Unit	X	
Iowa Cooperative Fishery Unit	X	
Louisiana Cooperative Fishery Unit	X	
Maine Cooperative Fishery Unit	X	
Massachusetts Cooperative Fishery Unit	X	
Missouri Cooperative Fishery Unit	X	
Montana Cooperative Fishery Unit	X	
New York Cooperative Fishery Unit	X	
North Carolina Cooperative Fishery Unit	X	
Ohio Cooperative Fishery Unit	X	
Oklahoma Cooperative Fishery Unit	X	
Oregon Cooperative Fishery Unit	X	
Pennsylvania Cooperative Fishery Unit	X	
South Dakota Cooperative Fishery Unit	X	
Tennessee Cooperative Fishery Unit	X	
Utah Cooperative Fishery Unit		X
Virginia Cooperative Fishery Unit	X	
Washington Cooperative Fishery Unit	X	
Wisconsin Cooperative Fishery Unit	X	
Subtotal	22	3
<u>Wildlife Units</u>		
Alabama Cooperative Wildlife Research Unit	X	
Alaska Cooperative Wildlife Research Unit	X	
Arizona Cooperative Wildlife Research Unit	X	
Colorado Cooperative Wildlife Research Unit	X	

Appendix F, continued

Cooperative Research Unit	<u>Responded to Questionnaire</u>	
	Yes	No
<u>Wildlife Units</u>		
Idaho Cooperative Wildlife Research Unit	X	
Iowa Cooperative Wildlife Research Unit	X	
Louisiana Cooperative Wildlife Research Unit	X	
Maine Cooperative Wildlife Research Unit	X	
Massachusetts Cooperative Wildlife Research Unit	X	
Missouri Cooperative Wildlife Research Unit	X	
Montana Cooperative Wildlife Research Unit	X	
New York Cooperative Wildlife Research Unit	X	
Oklahoma Cooperative Wildlife Research Unit	X	X
Oregon Cooperative Wildlife Research Unit	X	
Pennsylvania Cooperative Wildlife Research Unit	X	
South Dakota Cooperative Wildlife Research Unit	X	
Utah Cooperative Wildlife Research Unit	X	
Virginia Cooperative Wildlife Research Unit	X	
Wisconsin Cooperative Wildlife Research Unit	X	
Subtotal	19	1
TOTALS	41	4

## Appendix G

Expenditures and man-years for 40 state and one territorial fish and wildlife agencies for all fish and wildlife activities, 1974-75.

State	Research		Management		Law Enforcement	
	Man-years	Budget	Man-years	Budget	Man-years	Budget
Alaska	136.0	\$3,799,300	30.0	\$ 939,000		\$
Alabama	32.0 <sup>1</sup>		44.0 <sup>2</sup>		155.0	
Arizona	17.0	371,964	38.2	542,400	70.0	781,390
Arkansas	35.0	700,000	106.0	2,000,000	139.0	3,000,000
California*						
Colorado	116.7	2,748,315	249.1	5,378,657	140.0	2,723,385
Connecticut*						
Delaware	4.0	65,000	23.0	893,000	17.0	350,000
Florida	46.6	770,800	81.5	2,037,900	290.0	4,482,884
Georgia**	37.0	650,000	161.0	3,210,000	200.0	4,587,931
Hawaii	22.0	294,000	21.0	297,600	27.0	358,100
Idaho	39.5	1,002,483	37.5 <sup>4</sup>	1,080,833	52.0	864,000
Illinois	169.5 <sup>3</sup>	1,548,500 <sup>3</sup>	22.0 <sup>4</sup>	308,000		
Indiana***						
Iowa	30.0	3,150,000	124.0	2,650,000	66.0	1,179,350
Kansas	125.0 <sup>5</sup>	2,493,677 <sup>5</sup>			67.0	1,081,963
Kentucky	10.4	262,500	61.4	985,000	136.0	1,750,954
Louisiana*						
Maine	9.4	308,271	31.3	754,655		
Maryland	10.0	134,632	79.0	1,000,000	96.0	1,228,430
Massachusetts	24.0	344,094	35.0	367,035		
Michigan	68.0	1,268,814	381.0	8,926,386	176.0	2,025,000
Minnesota	78.0	1,112,713	339.0	7,700,115	144.0	2,600,000
Mississippi***						
Missouri	42.0	827,000	113.0	4,017,000	105.0	1,437,000
Montana	49.0	913,331	106.0	2,533,359	96.0	1,674,678
Nebraska	14.0	333,393	78.0	1,871,314	53.0	760,441
Nevada	42.2	1,246,281	44.5	556,828	16.2	323,448
New Hampshire	11.5	256,000	68.4	1,120,017	51.0	809,322
New Jersey***						
New Mexico	33.9	833,691	63.9	1,191,462	31.0	514,852
New York	262.0 <sup>5</sup>	4,635,081 <sup>5</sup>			255.0	2,673,880
North Carolina**	24.0	820,000	88.0	1,950,000	191.0	3,031,116
North Dakota	15.0	260,880	19.0	528,350	22.0	551,580
Ohio	32.0	639,987	201.0	2,381,142	142.0	2,029,148

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CONTINUED

## Appendix G, continued.

Concluded

State	Research		Management		Law Enforcement	
	Man-years	Budget	Man-years	Budget	Man-years	Budget
Oklahoma***						
Oregon	26.0	\$ 742,301	250.0	\$ 7,170,725	111.0	\$ 1,969,518
Pennsylvania**	19.0	812,600	427.0	8,555,000	250.0	5,147,000
Rhode Island	13.5	374,000	35.0	761,000	33.0	660,000
South Carolina	33.25	798,892	58.9	1,332,944	178.0	3,090,000
South Dakota	13.0	826,000	28.0	1,103,200	76.0	1,654,800
Tennessee	39.0	494,700	82.0	3,252,200	144.0	2,253,000
Texas	189.0	2,788,021	224.0	2,786,281	326.0	5,001,262
Utah	21.0	546,134	55.0	1,860,014	72.0	1,000,000
Vermont**	7.0	200,000	10.0	150,000	50.0	600,000
Virginia*						
Washington	148.5 <sup>2</sup>	2,589,958 <sup>2</sup>	99.0 <sup>2</sup>	2,788,619 <sup>2</sup>	86.1	800,000
West Virginia**	9.0	160,000	55.0	725,000	55.0	687,500
Wisconsin	48.0	1,033,500	412.1	13,033,100	88.0	2,000,000
Wyoming*						
Puerto Rico						
Samoa	2.0	27,000 <sup>8</sup>				
Guam						
TOTALS	2,103.95	\$43,192,813	4,381.8	\$98,738,136	4,206.3	\$65,681,932

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\* Not able to provide data.

\*\* No nongame program.

\*\*\* Failed to return questionnaire.

1. Includes fish management.

2. Wildlife management only.

3. Includes wildlife management.

4. Fish management only.

5. Includes fish and wildlife management.

Appendix H

Species and habitats receiving specific attention under current state fish and wildlife agency nongame management activities.

Management Project	State	Man-Years	Sources of Funds	Costs
<b>Birds</b>				
All species	Fla., Ha., R.I., Ariz.	1.4	FW, PR	\$ 46,200
*A. Peregrine Falcon	Colo.	0.5	FW	800
*Bald Eagle	Tex., N.Y., Tenn.	0.31	FW	9,048
Bluebird	N.Y.	0.05	FW	870
*Brown Pelican	Fla.	0.05	PR	1,000
D.B. Cormorant	Ill.	0.04	FW	--
Fish-eating	Tex.	0.1	FW	1,000
**Fla. Sandhill Crane	Fla.	0.1	PR	1,000
**Golden-cheeked Warbler	Tex.	0.25	FW	1,500
G. Sandhill Crane	Colo., Mich.	0.65	FW, GF	6,500
*Kirtland's Warbler	Mich.	0.2	FW, PR	6,000
*Meme Goose	Ha.	0.5	FG	10,000
**Osprey	Wis., R.I., Tenn.	0.29	FW	3,508
*Prairie Chicken	Colo., Wis., Ill., Mich.	2.33	FW, PR	33,200
Raptors	Ida., Neb.	1.1	FW	9,800
*Red-cockaded Woodpecker	N.C., Tex., Tenn.	0.54	FW	2,408
Seabirds	Wash.	--	IRF	252,000
Shorebirds	Ida.	1.0	FW, PR	10,000
Songbirds	La., Mich., N.H.	2.23	FW, PR	17,200
Waterfowl	Mich.	0.1	FW	5,000
White Pelican	Colo.	0.5	FW	9,000
<b>Subtotal</b>		<b>12.24</b>		<b>\$426,034</b>
<b>Mammals</b>				
All species	R.I., Mich., Ariz., Tenn.	6.13	FW, PR	76,025
*Black-footed Ferret	Colo.	1.75	FW, GF	5,400
Brown Bear	Ark.	0.25	FW, PR	5,000
Elk & Moose	Mich.	0.3	FW, PR	10,000
*Rocky Mtn. Wolf	Colo.	0.38	FW, GF	500
*Grizzly Bear	Colo.	0.6	FNS	3,500
*Prairie Dog	Utah	1.3	--	30,000
Predators	Mo.	0.25	FW	2,000
*Red Wolf	Tex.	1.5	FW, GF	2,000
River Otter	Colo.	0.75	FW, GF	1,500
**Moleverine				
<b>Subtotal</b>		<b>13.59</b>		<b>\$136,425</b>
<b>Fish</b>				
All species	Mich., Tenn.	10.13	GF, FW	11,225
*Comanche Springs Pupfish	Tex.	0.08	FW	1,500
*Endangered	Mich.	1.0	GF	25,000
Interlidal fish	Ore.	0.1	FW	1,000
Mimms	Ariz.	0.25	FW	7,000
<b>Subtotal</b>		<b>11.56</b>		<b>\$ 45,725</b>

Appendix H, concluded

Management Project	State	Man-Years	Source of Funds	Costs
<b>Other species</b>				
All species	Wash., Ore., Tenn.	.25	IRF, FW, PR	\$218,880
*Alligator	S.C.	0.08	FW	4,000
*Houston Toad	Tex.	0.08	FW	2,000
Reptiles and				
Amphibians	Colo., Ariz., Tenn.	0.51	FW, GF	4,125
<b>Subtotals</b>		<b>0.92</b>		<b>\$229,005</b>
<b>Habitat</b>				
Colorado River	Utah	0.5	FW, BIM	10,500
Natural areas	Mo.	1.0	--	5,000
Plant communities	N.Y.	2.05	FW	35,870
Prairie	Ohio, Ken.	0.07	FW, PR	1,700
Woodland	Neb.	0.2	FW, PR	3,200
<b>Subtotal</b>		<b>3.82</b>		<b>\$ 56,270</b>
<b>TOTALS</b>	<b>71</b>	<b>42.13</b>		<b>\$893,459</b>

\*Endangered.  
 \*\*Threatened.  
 \*\*\*Status undetermined.  
 FW = State fish and hunting license revenue.  
 PR = Pittman-Robertson funds.  
 DJ = Dingell-Johnson funds.  
 GF = State general fund.  
 IRF = Interagency Recreation Fund.  
 FG = Federal grant.  
 BIM = Bureau of Land Management (USDI).

## Appendix I

Species and habitats receiving specific attention under current state fish and wildlife agency nongame research efforts.

Research Project	Man-years	Source of Funds	Costs
<b>Birds</b>			
All species	6.53	FW, PR	\$ 68,975
Ga., Ak., Fla., Ha., Tenn., N.Y., Ill., Mont., Mass.			
A. Peregrine Falcon Colo., Tex.	1.25	FW, PR	18,000
Arctic Peregrine Falcon	0.5	FW	8,000
*Hald Eagle	0.33	FW	3,000
*Endangered Fish-eating birds	2.23	FW, PR	28,000
*Golden-cheeked Warbler	0.75	FW	20,000
Tex.			
G. Sandhill Crane	0.2	FW	4,000
Wash.	1.0	FW, PR	2,900
Ala.	0.07	FW	500
*Heron & Egrets	0.5	FW	14,000
*Killdeer's Warbler	6.0	FW, PR	27,000
Mourning Dove	0.1	FW	500
Mute Swan	2.0	PR	30,000
*Wine Goose	0.18	FW	3,870
**Osprey	1.2	FW, PR	17,500
**Prairie Chicken	9.35	FW, PR, GF	119,310
Raptors			
Neb., Wis., Utah, S.C., Mich., Ala., S.D.			
Red-shouldered Hawk	1.0	FW	3,000
Mass.	1.0	FW, PR	35,000
Ruffed Grouse	2.3	PLP, NOAA	25,000
Wash.	0.7	FW, PR, FG	10,750
Seabirds	0.25	FW	—
Mont., Ohio			
Urban birds	0.5	PR	10,000
Ill.			
Water birds			
Ha.			
Subtotal	37.94		\$449,305
<b>Mammals</b>			
Abert squirrel	1.1	FW, PR	9,000
Utah			
All species	3.27	FW, PR	42,750
Fla., N.M., Mont., Ga.			
Black-footed Ferret	1.83	FW, PR	14,600
Tex., Neb., S.D.			
Bobcat	4.0	FW	20,000
Ark.			
Coyote	7.6	FW, PR	72,000
N.Y., Mont.			
Elk	0.5	FW	10,000
Mich.			
*Endangered	1.64	FW, PR	19,400
Fla., S.C., Mo., Ill.			
**Fisher & Marten	0.1	FW	700
Mich.			
Marine mammals	0.4	FW, PR, NOAA	50,000
Small mammals	1.5	FW, FG	11,750
Ala., Mont.			
***Swift Fox	0.2	FW, PR	1,000
Neb.			
*Timber Wolf	0.1	FW	500
Ill.			
Urban mammals	0.04	FW	—
Wild canids	4.0	FW	25,000
Ark.			
Subtotal	26.28		\$276,700

## Appendix I, continued.

Research Project	State	Man-years	Source of Funds	Costs
<b>Fish</b>				
All species	Kan., Mont., Va., Wis., R.I., S.C., Mich., Mo.	16.44	FW, DJ	\$337,973
Boatfin	Ala.	0.1	FW	1,500
Brook Stickleback	Neb.	0.4	FW	3,000
*Colo. Squawfish	Colo.	—	FW, DJ	12,000
*Comanche Springs Pupfish				
*Endangered	Tex.	0.13	FW	2,500
**Humpback Sucker	Fla., N.M., S.C., Mo.	1.4	FW, DJ	21,650
Inshore fish	Utah	3.0	FW, FWS	27,500
Inter tidal fish	Samoa	5.0	DJ	60,000
Least Chub	Ore.	0.1	FW	1,000
Lake Chubsucker	Ala.	0.1	FW	1,500
Mimosa	Utah	0.5	FW, BLM	2,500
Mingqua Darter	Neb.	0.75	FW	10,500
Shad	Mo.	0.4	FWS	12,700
Utah Chub	S.C.	3.0	DJ	65,000
Utah	Utah	0.5	DJ	4,000
Subtotal		31.82		\$563,323
<b>Other species</b>				
All species	Ore., Mich., Mont., Ga.	9.37	FW, PR	\$120,300
*Alligator	Fla., Ala., Tex., S.C.	2.77	FW	21,316
Box Turtle	Mo.	0.3	FW	4,000
Crayfish	S.D., Wis.	3.0	FW, DJ	7,200
Crustacean and Molluscs				
Desert Tortoise	Mont., Wis.	0.38	FW	4,550
*Endangered	Utah	0.3	FW, PR	2,500
Frogs	Fla.	0.25	FW	2,000
*Houston Toad	Wis.	0.5	FW	3,600
Invertebrates	Tex.	0.08	FW	2,500
Reptiles and Amphibians	Wis.	1.0	FW	5,000
Wetland insects	S.C., Mo., Mont., Wis.	1.73	FW	24,050
Wis.		0.25	FW	1,320
Subtotal		19.93		\$198,336
<b>Habitat</b>				
Aquatic	O.	6.0	FW, PR	\$ 60,000
Colorado River	Utah	0.5	DJ	6,000
Fresh water	Del., Ha.	0.6	FW, DJ	10,000
Marine	Ha.	0.1	DJ	5,000
Plant communities	Mo., Tenn.	4.5	FW, PR	71,100
Sagebrush	Mont.	0.75	FW, FG	18,000
Subtotal		12.45		\$110,100

## Appendix I, concluded.

Research Project	State	Man-years	Source of Funds	Costs
TOTALS	127	128.42		\$1,657,764

\*Endangered.  
 \*\*Threatened.  
 \*\*\*Status undetermined.  
 FW = State fish and hunting license revenue.  
 PR = Pittman-Robertson funds.  
 DJ = Dingell-Johnson funds.  
 FWS = Fish and Wildlife Service (USDI) funds.  
 BLM = Bureau of Land Management (USDI) funds.  
 GF = State general funds.  
 FG = Federal grant.  
 NOAA = National Oceanic and Atmospheric Administration (Dept. Comm.).  
 PLP = Personalized license plates (Auto).

## Appendix J

Species and habitats receiving specific attention under current federal agency nongame management efforts.

Management Project	Agency	Man-Years	Source of Funds	Costs
<b>Birds</b>				
All species	FS, SCS, CE	47.95	Federal	\$ 830,800
Bald Eagle	FS, TVA	10.01	Federal	148,500
Common loon	FS	0.2	Federal	1,000
*Condor	FS	1.0	Federal	20,000
*Endangered	FS	1.0	Federal	12,000
Golden Eagle	FS	0.2	Federal	2,000
Herons & Egrets	FS	0.1	Federal	4,700
*Kirtland's Warbler	FS	0.2	Federal	15,000
Marsh birds	FS	5.0	Federal-State	120,000
*Mexican Duck	FS	1.08	Federal	4,100
***Osprey	FS	3.0	Federal	6,475
Raptors	FS	2.7	Federal	70,900
*Red-cockaded	FS	2.0	Federal	15,000
Woodpecker	FS	0.3	Federal	17,000
Sandhill Crane	TVA	0.1	Federal	3,300
Shorebirds	FS, TVA, CE	1.1	Federal	21,685
Songbirds				
Subtotal		75.94		\$1,295,460
<b>Mammals</b>				
All species	FS, SCS	12.75	Federal	273,600
E. Woodrat	FS	0.02	Federal	1,000
*Indiana Bat	FS	0.2	Federal	6,800
Prairie Dogs	CE	0.1	Federal	1,000
Rodents	FS	--	Federal	100,175
*Timber Wolf	FS	0.3	Federal	20,800
Tule Elk	BLM	0.67	Federal	12,631
Subtotal		14.04		\$ 416,006
<b>Fish</b>				
All species	FS, SCS	3.8	Federal	78,300
*Apache & Gila Trout	FS	1.0	Federal	1,200
*Greenback Cutthroat	FS	0.2	Federal	4,000
*Kendall Warm				
Spring Dace	FS	0.1	Federal	2,500
Subtotal		5.1		\$ 86,000
<b>Other Species</b>				
*Alligator	FS	--	Federal-State	4,000
Reptiles & Amphibians	SCS	2.0	Federal	45,000
Subtotal		2.0		\$ 49,000

CONTINUED

Appendix J, concluded

Management Projects	Agency	Man-Years	Source of Funds	Costs
<b>Habitat</b>				
Aquatic (stream)	FS	0.1	Federal	\$ 1,500
Forest	CE	1.0	Federal	36,700
General	FS	3.0	Federal	300,000
Shrubs (native)	FS	5.0	Federal	70,000
Riparian	FS	5.0	Federal	19,500
Subtotal		14.1		\$ 427,700
TOTALS		111.18		\$2,274,166

\*Endangered species.  
 \*\*Threatened species.  
 \*\*\*Status undetermined.  
 BLM = Bureau of Land Management (USDI).  
 CE = Corps of Engineers.  
 FS = Forest Service (USDA).  
 SCS = Soil Conservation Service (USDA).  
 TVA = Tennessee Valley Authority.

Appendix K

Species and habitats receiving specific attention under current federal agency nongame research efforts.

Research Project	Agency	Man-years	Source of Funds	Costs
<b>Birds</b>				
All species	NPS, FWS, FS, AEC, CE	17.35	Federal	\$221,177
*A. Peregrine Falcon	NPS, FS, AEC	0.7	Federal	15,000
*Bald Eagle	NPS, FS	2.55	Federal & University	31,500
Barn Swallow	AEC	0.5	Federal	5,000
Cave Swallow	NPS	0.1	Federal	1,000
*Endangered	FS	1.5	Federal	13,500
G. Sandhill Crane	FS	0.1	Federal	2,360
Gulls & Terns	NPS	0.6	Federal	29,000
Herons & Egrets	FS	-	Federal	360
*Mexican Duck	BLM	0.38	Federal	7,779
**Osprey	NPS, FS, NA	1.87	Federal	7,500
Shorebirds	AEC, NPS	1.4	Federal	40,000
Raptors	FWS, FS, AEC, BLM	10.51	Federal & University	174,802
*Red-cockaded Woodpecker	FS	0.2	Federal	2,000
Songbirds	FS, TVA, AEC	6.55	Federal	52,400
**Spotted Owl	FS, BLM	2.88	Federal	19,505
Urban birds	TVA	2.5	Federal	38,570
Wading birds	NPS	0.03	Federal	9,000
Woodpeckers	FS	-	Federal	1,872
Woodstork	NPS	0.03	Federal	9,000
Swainson's Warbler	FS	0.01	Federal	3,000
Subtotal		49.76		\$684,325
<b>Mammals</b>				
Apert Squirrel	FS	1.0	Federal	5,000
All species	AEC, NPS, TVA, FS, FWS	9.7	Federal	87,952
*Black-footed Ferret	FS	1.5	Federal	11,800
Burros	NPS	0.25	Federal	12,000
Canids	AEC	1.5	Federal	67,500
Caribou	AEC	1.0	Federal	45,000
Cave fauna	NPS	3.0	Federal	42,000
Coyote	AEC	0.5	Federal	7,400
*Endangered	FS	1.0	Federal	20,000
**Fisher	FS	0.03	Federal	2,000
Furbearers	FS	1.5	Federal & State	7,500
**Grizzly Bear	FS, FWS	1.43	Federal	28,650
*Indiana Bat	CE	0.1	Federal	3,570
**Kaibab Squirrel	FS	5.0	Federal	5,000

CONTINUED

Appendix K, continued

Research Project	Agency	Man-years	Source of Funds	Costs
<b>Marine mammals</b>	<b>FWS, NMFS</b>	<b>37.5</b>	<b>Federal</b>	<b>\$1,296,000</b>
**Pine Martin	FS	2.2	Federal	17,300
Red Squirrel	FWS	0.85	Federal	19,150
*Rocky Mtn. Wolf	FS	0.1	Federal	2,000
Rodents	AEC	8.45	Federal	230,000
Small mammals	AEC, NA	2.5	Federal	129,000
*Timber Wolf	NPS	1.0	Federal	12,000
Treetail Bat	NPS	0.25	Federal	10,000
**True Elk	FS	3.0	State & Federal	8,000
Wolf (Mt. McKinley)	NPS	0.1	Federal	9,000
**Wolverine	FS	4.0	Federal	---
<b>Subtotal</b>		<b>87.46</b>		<b>\$2,077,822</b>
<b>Fish</b>				
*Apache & Gila Trout	FS	0.24	Federal	1,500
All species	FS, AEC, CE, NA	12.04	Federal	148,500
Barrers	TVA	1.0	Federal	7,612
Diabolo Pupfish	NPS	0.17	Federal	5,000
Endangered	FS	2.1	Federal	44,500
Estuarine species	NMFS	3.0	Federal	60,000
Fresh water	AEC	0.16	Federal	5,000
Flathead Minnow	AEC	0.1	Federal	4,000
Gambusia	AEC	0.25	Federal	10,000
Goldfish	AEC	0.5	Federal & State	30,000
*Labontan Cutthroat	FS	1.0	Federal	1,500
Trout	AEC	0.17	Federal	8,000
Marine	AEC	0.1	Federal	500
Minnows	FS	0.5	Federal	3,000
**Mudoc Sucker	FS	---	Federal	6,000
*Olympic Mudminnow	FS	2.1	Federal & State	12,000
*Palute Trout	FS	0.1	Federal	1,000
Sculpins	AEC	0.2	Federal	8,000
Shad	AEC	1.4	Federal	21,000
Shark Slough Fish	AEC	0.04	Federal	1,500
Spiny-ray fish	TVA	3.5	Federal	175,000
Stream fish	AEC	0.1	Federal	500
Suckers	AEC	0.05	Federal	1,000
*Woundfin	FS	28.82	Federal	\$ 555,112
<b>Subtotal</b>				<b>\$ 555,112</b>
<b>Other Species</b>	<b>NPS, AEC</b>	<b>5.2</b>	<b>Federal</b>	<b>35,500</b>
All species	NPS	0.13	Federal	11,000
*Alligator	FS	1.0	Federal	1,000
*Blunt-nosed Leopard Lizard	FS	1.0	Federal	1,000

CONTINUED

Appendix K, continued

Research Project	Agency	Man-years	Source of Funds	Costs
*Bog Turtle	FS	0.1	Federal	\$ 1,000
**Cheat Mtn. Salamander	FS	0.1	Federal	5,000
Invertebrates	CE	1.5	Federal	56,000
Clams	NPS, TVA, AEC	1.5	Federal	13,310
Grayfish	AEC	0.4	Federal	16,000
Crustacea	FS	0.25	Federal	2,000
*Endangered	FS	1.0	Federal	20,000
Gastropoda	AEC	1.25	Federal	20,000
Honey Bees	AEC	---	Federal	7,500
Insects (Aquatic)	AEC	1.5	Federal	80,000
Jemez Salamander	FS	3.0	Federal	3,000
Mayflies	AEC	0.5	Federal	20,000
Molluscs	NPS, TVA, AEC	2.75	Federal	25,940
Mussels	TVA	0.5	Federal	6,650
Sacramento	FS	2.0	Federal	1,000
Salamander	CE	0.5	Federal	12,000
Salamanders	AEC	1.5	Federal & University	15,000
Snakes	TVA, FS	1.1	Federal	7,650
Tennessee Cave	AEC	3.0	Federal	30,000
Turtles	AEC	0.5	Federal	20,000
Zooplankton		29.28		\$ 409,550
<b>Subtotal</b>				<b>\$ 409,550</b>
<b>Habitat</b>				
Aquatic	FS, AEC, CE	18.1	Federal	1,135,000
Endangered	FWS	31.0	Federal	927,000
Estuaries	NMFS	2.0	Federal	40,000
General	FWS	35.0	Federal	1,024,220
Preservation	FWS	82.0	Federal	1,649,568
Joshua Tree	NPS	0.25	Federal	7,000
Meadows	AEC	2.0	Federal	30,000
Ponderosa Pine	FS	0.17	Federal	500
Rangeland	FWS, BLM	2.7	Federal	46,600
Riparian	FS	1.0	Federal	3,000
Sagebrush	BLM	---	Federal	5,000
Sagebrush	NPS	1.1	Federal	6,000
Sand dunes	FS	2.0	Federal	56,000
Urban	FS	6.35	Federal	114,906
Resource Inventory	BLM	183.67		\$5,044,794
<b>Subtotal</b>				<b>\$5,044,794</b>
<b>TOTALS</b>		<b>378.99</b>		<b>\$8,771,603</b>

CONTINUED

## Appendix K, concluded

\* Endangered.  
 \*\* Threatened.  
 \*\*\*Status undetermined.  
 AEC = Atomic Energy Commission.  
 FS = Forest Service (USDA)  
 FWS = Fish and Wildlife Service (USDI).  
 NMFS = National Marine Fisheries Service (Dept. Commerce).  
 TVA = Tennessee Valley Authority.  
 BLM = Bureau of Land Management (USDI).  
 NA = Navy.  
 MC = Marine Corps.  
 CE = Corps of Engineers.  
 NPS = National Park Service.

## Appendix L

Estimated man-years and funds needed annually for nongame fish and wildlife programs by 33 state and one territorial fish and wildlife agencies, 1974.

State	Birds		Mammals		Fish		Other Species		Habitat	
	Dollars	Man-Years	Dollars	Man-Years	Dollars	Man-Years	Dollars	Man-Years	Dollars	Man-Years
Alabama	\$ 40,000	6.0	\$ 40,000	6.0						
Alaska	60,000	2.0	150,000	3.0						
Arizona					\$ 5,000	0.25	\$ 1,500	0.13		
Colorado	500,000	10.0	300,000	10.0	100,000	10.0	100,000	10.0		
Delaware	55,000	2.0							\$ 50,000	2.0
Florida	95,600	3.35	25,600	1.6			53,500	4.9		
Hawaii	42,500	1.2	42,500	1.2	42,500	1.2	42,500	1.2		
Idaho	74,000	4.0	124,000	5.5	2,000	--	24,000	5.0		
Illinois	60,000	5.0	60,000	5.0	60,000	5.0				
Iowa	85,000	7.0	10,000	1.0						
Kansas	450,000	7.0	450,000	7.0	100,000	2.0			100,000	1.0
Kentucky	25,000	2.0	5,000	1.75	30,000	2.0			20,000	2.0
Maryland	65,000	3.0	60,000	2.0	20,000	1.0	20,000	1.0		
Massachusetts	10,000	1.0	20,000	2.5	15,000	2.0				
Michigan	379,000	10.5	114,500	4.5	43,000	1.7	1,001,500	0.2	1,700,000	15.0
Minnesota	25,000	1.5	25,000	1.5						
Missouri*										
Montana	60,250	2.5	32,510	1.7	5,500	0.4	30,000	1.2		
Nebraska	12,000	1.5	12,000	1.25	18,000	1.5				
Nevada	30,000	1.5	10,000	0.5	40,000	4.0				
New Hampshire	20,000	2.0	11,000	1.0			65,000	6.0	20,000	2.0
New York	32,000	3.0	44,000	4.0			123,000	6.0		
North Dakota	--	1.0	--	0.5						
Ohio	5,000	0.5	5,000	0.5	5,000	0.5	5,000	0.5		
Oregon	100,350	9.4	100,350	9.4	15,000	1.0	100,000	9.4		
Rhode Island	11,000	1.0								
South Dakota	125,000	7.0	250,000	10.0	80,000	5.0				
Tennessee	20,000	0.6	20,000	0.6	20,000	0.6	20,000	0.6		
Texas	350,000	12.0	125,000	5.0	50,000	2.0	100,000	4.0		
Utah	114,000	9.6	116,000	9.6	800,000	32.0	74,000	6.3		



State	Birds		Mammals		Fish		Other Species		Habitat	
	Dollars	Man-Years	Dollars	Man-Years	Dollars	Man-Years	Dollars	Man-Years	Dollars	Man-Years
Vermont	15,000	0.5	10,000	0.25	15,000	0.5				
Washington	20,000	1.0	20,000	1.0	10,000	0.5	340,000	17.0		
West Virginia	70,000	2.5	87,500	1.5	15,000	1.0	40,000	0.5		
Wisconsin	18,500	2.0	5,000	0.25			24,000	4.5		
Guam	37,000	6.0								
TOTAL	\$3,006,200	129.15	\$2,274,960	99.6	\$1,491,000	74.15	\$2,164,000	78.43	\$1,890,000	24.0

\* Discussed in text.

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Estimated man-years and funds needed annually for nongame fish and wildlife programs by federal agencies, 1974.

## Appendix M

-87-

Project Needs	Agency	Research (R)	Management (M)	Enforcement (E)	Information (I/E)	Man-years	Costs
Birds							
All species	NA	M, I/E				--	\$ 30,000
*Bald Eagle	FS, TVA	R				--	32,000
Burrowing Owl	AEC	R				0.5	7,500
Curlew	AEC	R				0.1	5,000
Endangered	FS	R				6.0	60,000
Golden Eagle	FS	R				10.0	30,000
Herons	AEC, FS	R, M				1.0	75,000
Insectivorous	FS	R				4.0	70,000
Least Tern	MC	M				--	5,000
Loons & Grebes	FS	M				0.5	25,000
Mississippi Sandhill Crane	FS	M				3.0	45,000
Nongame species	AEC, FS, TVA, CE	R, M				101.5	1,571,900
***Osprey	MC	M				--	1,000
G. Prairie Chicken	FS	M				2.0	40,000
Passeriformes	FS, AEC	R				4.0	70,000
*Peregrine Falcon	FS	M				6.0	110,000
Prairie Falcon	AEC	R				0.5	7,500
Raptors	FS, AEC	R, M				9.5	312,500
*Red-cockaded							
Woodpecker	FS, MC	R, M				6.0	127,000
Songbirds	TVA, NA	R				5.75	79,135
Shorebirds	AEC	R				3.0	150,000
Urban species	TVA	R				1.0	16,650
Water birds	FS, NPS	R				0.7	54,000
Woodpecker	FS	M				1.5	50,000
Subtotal						166.55	\$2,974,185
Mammals							
All species	CE	R				2.0	50,000
Bats	FS	M				0.5	25,000
*Black-footed Ferret	FS	M				1.0	20,000
Bobcat	TVA	R				--	7,000
Canids	AEC	R				1.0	45,000
Carnivores	FS	M				1.5	125,000
Cat Family	FS	R				2.0	45,000
Desert & Woodland species							
Endangered	MC	-				--	7,500
Furbearers	FS	R				15.0	240,000
**Grizzly Bear	FS	R				2.0	20,000
Lagurus curatus	AEC	R				10.0	250,000
Marine mammals	NMFS	R				0.5	7,500
						3.0	600,000

CONTINUED

Appendix M, continued

Project Needs	Agency	Research (R) Management (M) Enforcement (E) Information (I&E)	Man-years	Costs
Microtines	AEC	R	0.5	\$ 7,500
Mastelidae	FS	R, M	6.0	118,500
Nongame	AEC, TVA, FS	R, M	30.5	552,000
*Rocky Mtn. Wolf	FS	R	4.0	100,000
Redstarts	FS, AEC	R, M	3.0	105,000
Small Mammals	TVA	R	0.75	9,975
Spotted Bat	FS	R	2.0	40,000
Tundra grazers	AEC	R	--	25,000
Urban	TVA	R	1.0	16,650
Subtotal			86.25	\$2,416,625
Fish				
Cyprinids &				
Centrarchids	AEC	R	2.0	280,000
Endangered	FS	R, M	5.0	135,000
Nongame	FS, TVA	R, I&E	17.3	239,250
Paddlefish	CE	R	6.0	300,000
Spiry-ray fish	AEC	R	1.0	45,000
Stream fish	TVA, CE	R	0.7	62,900
Warm water fish	AEC, MC	R	2.0	295,000
Subtotal			34.0	\$1,357,150
Other species				
Amphibians	AEC	R	0.5	45,000
Aquatic Insects	AEC	R	2.0	25,000
Arthropods	AEC	R	1.0	45,000
Bees	MC	M	--	2,000
Corbicula	TVA	R	1.0	26,600
Insects	TVA	I&E	--	14,000
Nongame	FS	R	17.5	238,750
Reptiles	TVA	I&E	0.5	43,000
Molluscs	TVA	R, M, I&E	2.08	35,220
Mussels	TVA	R	2.0	33,250
Subtotal			26.58	\$ 507,820
Habitat				
Aquatic	FS, AEC, MC	R, M	64.0	2,669,900
Forest	FS, TVA	R, M	10.0	106,000
Hardwood draws	FS	M	2.0	45,000

CONTINUED

Appendix M, concluded

Project Needs	Agency	Research (R) Management (M) Enforcement (E) Information (I&E)	Man-years	Costs
Hatchling channels & barrier removal	FS	M	10.0	\$ 600,000
Nongame	TVA	R	3.0	42,560
Snags	FS	M	2.0	40,000
Swamps	FS	M	5.0	125,000
Threatened species	FS	M	10.5	1,070,000
Subtotal			106.5	\$ 4,677,560
TOTALS			419.88	\$11,933,340

\* Endangered.  
\*\* Threatened.  
\*\*\* Status undetermined.  
AEC = Atomic Energy Commission.  
FS = Forest Service (USDA)  
FWS = Fish and Wildlife Service (USDI)  
NWS = National Marine Fisheries Service (Dept. Commerce).  
TVA = Tennessee Valley Authority.  
BLM = Bureau of Land Management (USDI).  
NA = Navy.  
MC = Marine Corps.  
CE = Corps of Engineers.  
NPS = National Park Service.

Appendix N

Potential taxable items and other sources from which additional funds may be generated to strengthen and broaden nongame fish and wildlife programs as suggested by state agencies and private organizations.

Item
Camping Equipment
Air mattresses
Backpacks
Camp cots
Camp stoves
Canteens
Coolers (ice chest)
Hatchets, picks, hoes, shovels
Hiking boots
Outdoor cook kits and utensils
Sleeping bags
Sport lamps - battery and fuel type
Snow Skiing Equipment
Safety helmets
Ski boots
Ski clothing
Skis and bindings
Snow shoes
Skin Diving Equipment
Face mask
Scuba lungs, valves, backpacks
Snorkles
Swim fins
Wet suits and hoods
Recreational Vehicles
Camping trailers
Canoes under 15 feet
Fifth wheels
Motor homes
Rubber boats - inflatable
Snowmobiles and trailers
Trail bikes and trailers
Travel trailers
Truck campers
Songbird Equipment
Bird feeders
Bird food
Bird houses
Bird waterers

Appendix N, continued

Item
Photographic Merchandise
Cameras, still and movie
Film, still and movie
Photoflash lamps
Photo finishing
Binoculars
Building permits
Capital gain tax on land
Development tax on use of raw land
Head tax on livestock
Insect repellent (containers of 12 ounces or less)
Nature books
Non-returnable bottles
One dollar surcharge on registration fee for boats, snowmobiles, and off-road vehicles
Personalized auto license plates
Pet foods
Soft drinks
Wildlife films
Zoo admissions
County and local government funds to match fish and wildlife license funds and new nongame funds
Income or property tax exemption for maintaining critical fish and wildlife habitats
One dollar check-off fee on federal and/or state income tax
Recreational stamp for use of state lands in absence of hunting or fishing license

Appendix N, concluded.

Item

Royalty fee on strip mining

Surcharge on electricity produced within a state and exported outside that state

Surcharge on timber sales on public lands

Use ten percent of fishing and hunting license receipts for nongame purposes

Appendix O

Model of suggested state legislation to amend the state fish and wildlife code to provide for the conservation, management, enhancement and protection of nongame wildlife and endangered or threatened species.



# United States Department of the Interior

FISH AND WILDLIFE SERVICE

BUREAU OF SPORT FISHERIES AND WILDLIFE  
WASHINGTON, D.C. 20240

ACCEPTS ONLY THE NATIONAL  
BUREAU OF SPORT FISHERIES  
AND WILDLIFE

In Reply Refer To:  
FSF/SE

APR 19 1974

Dear Governor Wallace:

This is in further reference to Secretary Morton's letter of February 26 with which was enclosed a copy of the Endangered Species Act of 1973 (P.L. 93-205).

Since the scope of the new Federal Act is considerably broader than that under which most wildlife agencies historically have operated, we suspect one of the greatest stumbling blocks to early and full participation by some States will be their lack of adequate statutory authority. In view of the relatively brief "establishment period" provided in the Act and the importance of full State participation, it is imperative that satisfactory legislation be introduced in such States as soon as possible. To expedite this, personnel of the Bureau of Sport Fisheries and Wildlife, working with the International Association of Game, Fish and Conservation Commissioners (IAGF&CC) and other interested parties have drafted suggested amendments designed to bring the model State "Nongame and Endangered Species Act," developed by the IAGF&CC and the Council on State Governments, into compliance with the requirements of the new Federal law.

A copy of that model bill is attached. Enactment of such legislation should provide adequate statutory authority for a State to implement the programs necessary to enter into a cooperative agreement as provided by the Endangered Species Act of 1973. Entry into such an agreement would:

- A. preclude Federal preemption of such State's authority to regulate the "taking" of resident threatened or endangered fish or wildlife and

- B. make such State eligible to participate in the grant-in-aid provisions of the law.

The Federal Act also speaks, to some extent, to the conservation of Threatened or Endangered plants as well as animals. No such plants have been listed yet although authority is provided by the Endangered Species Act of 1973 and such lists do exist as Appendices to the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Undoubtedly Federal lists of Threatened or Endangered plants will be promulgated in the near future. Bracketed language in the enclosed model bill would provide desirable statutory authority for State participation in the conservation of such plants.

We are looking forward to working closely with your State in implementing this program.

Sincerely yours,

(Sgd) Nathaniel P. Reed  
Assistant Secretary  
of the Interior

Enclosure

Honorable George C. Wallace  
Governor of Alabama  
Montgomery, Alabama 36104

cc:  
State Fish and Game Directors  
Secretary's Reading File (2)  
Secretary's File Copy  
FW  
SE  
Directorate Reading File

FSF/SE:EBBaysinger:jml 4/17/74

## SUGGESTED LEGISLATION

Title should conform to individual State requirements.

The following is suggested: An act to amend the Fish and Game Code to provide for the conservation, management, enhancement and protection of nongame wildlife and endangered or threatened species, and to provide enforcement authority and penalties for violations of this chapter.

Section 1. Short Title. This chapter shall be known and may be

cited as "The Nongame and Endangered Species Conservation Act."

Section 2. Definitions. For the purpose of this chapter, the

term--

(a) "Conserve," "conserving," and "conservation" mean to use and the use of all methods and procedures for the purposes of increasing the number of individuals within species and populations of wildlife up to the optimum carrying capacity of their habitat and maintaining such levels. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation. Also included, when and where appropriate, is the periodic or total protection of species or populations as well as regulated taking. With respect to endangered and threatened species, the terms mean to use and the use of all methods and procedures including

but not limited to those described above which are necessary to bring any endangered or threatened species to the point at which the measures provided for such species pursuant to this Act are no longer necessary except that regulated taking as a method and procedure shall be limited to the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved.

(b) "Department" means the primary agency within the State that has statutory authority to manage wildlife populations;

(c) "Director/Commission" means the Director [the Commission] of the State agency that has statutory authority to manage wildlife population

(d) "Ecosystem" means a system of living organisms and their environment, each influencing the existence of the other and both necessary for the maintenance of life;

(e) "Endangered species" means any species whose continued existence as a viable component of the State's wild fauna [or flora] is determined to be in jeopardy. That term shall also include any species of wildlife [or plant] determined to be an "endangered species" pursuant to the Endangered Species Act;

(f) "Endangered Species Act" means the Endangered Species Act of 1973, 87 Stat. 884, as such Act may be subsequently amended;

(g) "Nongame species" means any wildlife species not legally classified a game species, furbearer, threatened species or an endangered species by statute or regulation of this State;

(h) "Optimum carrying capacity" means that point at which a given habitat can support healthy populations of wildlife species, having regard to the total ecosystem, without diminishing the ability of the habitat to continue that function;

(i) "Person" means an individual, corporation, partnership, trust, association, or any other private entity, or any officer, employee, agent, department, or instrumentality of the Federal Government, of any State or political subdivision thereof, or of any foreign government;

(j) "Species" includes any subspecies of wildlife [or wild plants] and any other group of wildlife of the same species or smaller taxa in common spatial arrangement that interbreed when mature;

(k) "Take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct;

(l) "Threatened species" means any species of wild fauna [or flora] which appears likely, within the foreseeable future, to become endangered. That term shall also include any species of wildlife [or plant] determined to be a "threatened species" pursuant to the Endangered Species Act.

(m) "Wildlife" means any member of any non-domesticated species of the animal kingdom, whether reared in captivity or not, including, without exception, any mammal, fish, bird, amphibian, reptile, mollusk, crustacean, arthropod or other invertebrate, and includes any part, product, egg, or offspring thereof, or the dead body or parts thereof.

Section 3. Findings and Declarations. The Legislature finds and declares all of the following:

(a) That it is the policy of this State to conserve species of wildlife for human enjoyment, for scientific purposes, and to insure their perpetuation as viable components of their ecosystems;

(b) That species of wildlife [and wild plants] normally occurring within this State which may be found to be threatened or endangered within the State should be accorded such protection as is necessary to maintain and to enhance their numbers;

(c) That the State should assist in the protection of species of wildlife [and wild plants] which are determined to be "threatened" or "endangered" elsewhere pursuant to the Endangered Species Act by prohibiting the taking, possession, transportation, exportation from the State, processing, sale or offer for sale or shipment within this State of such endangered species and by carefully regulating such activities with regard to such threatened species. Exceptions to such prohibitions, for

the purpose of enhancing the conservation of such species, may be permitted as set forth elsewhere in this chapter; and

(d) That adequate funding for the conservation of nongame, threatened and endangered species shall be made available to the Department annually by appropriations from the General Fund or from other sources.

#### Section 4. Nongame species.

(a) The Director/Commission shall conduct investigations on nongame wildlife in order to develop information relating to population, distribution, habitat needs, limiting factors, and other biological and ecological data to determine conservation measures necessary for their continued ability to sustain themselves successfully. On the basis of such determinations the Director/Commission shall issue proposed regulations not later than one year from the effective date of this chapter and develop conservation programs, designed to insure the continued ability of nongame wildlife deemed in need of conservation to perpetuate themselves successfully. The Director/Commission shall conduct ongoing investigations of nongame wildlife and may from time to time amend such regulations.

(b) The Director/Commission shall, by such regulations, establish such proposed limitations relating to taking, possession, transportation, exportation, processing, sale or offer for sale, or shipment as may be deemed necessary to conserve such nongame wildlife. Such regulation

shall become effective sixty days after being proposed during which period public comment shall be solicited and received. The Director/Commission may hold public hearings if deemed appropriate. On the basis of public comments received or the testimony at any such hearing the Director/Commission may make such changes in the proposed regulation as are consistent with effective conservation of nongame wildlife.

(c) Except as provided in regulations issued by the Director/Commission, it shall be unlawful for any person to take, possess, transport, export, process, sell or offer for sale or ship nongame wildlife deemed by the Director/Commission to be in need of conservation pursuant to this section. Subject to the same exception, it shall further be unlawful for any common or contract carrier knowingly to transport or receive for shipment nongame wildlife deemed by the Director/Commission to be in need of conservation pursuant to this section.

#### Section 5. Endangered or Threatened Species.

(a) Any species of wildlife [or wild plant] determined to be an endangered species pursuant to the Endangered Species Act shall be deemed to be an endangered species under the provisions of this Act and any species of wildlife [or wild plant] determined to be a threatened species pursuant to the Endangered Species Act shall be deemed to be a threatened species under the provisions of this Act: Provided, however,



that the Director/Commission may determine, in accordance with this section, that any such threatened species is an endangered species throughout all or any portion of the range of such species within this State.

(b) In addition to the species deemed to be endangered or

threatened pursuant to the Endangered Species Act, the Director/Commission shall by regulation determine whether any species of wildlife [or wild plant] normally occurring within the State is an endangered or threatened species because of any of the following factors:

- a. The present or threatened destruction, modification, or curtailment of its habitat or range;
- b. overutilization for commercial, sporting, scientific, educational or other purposes;
- c. disease or predation;
- d. the inadequacy of existing regulatory mechanisms; or
- e. other natural or manmade factors affecting its continued existence within this State.

(c) Basis for Determinations. (1) The Director/Commission shall make determinations required by subsection (b) of this section on the basis of the best scientific, commercial and other data available to him/them and

after consultation, as appropriate, with Federal agencies, other interested State agencies, other States having a common interest in the species, and interested persons and organizations. Except with respect to species of wildlife [or wild plants] determined to be endangered or threatened species under the provisions of section 5(a), the Director/Commission may not add a species to nor remove a species from any list published pursuant to subsection (d) of this section unless he has first:

- a. published a public notice of such proposed action; (Note: It is the intent of this public notice provision that some system be utilized, whether a State's existing notice system or a new system, which is designed to direct attention of the general public to a proposal. E.g., notifying a citizen's advisory committee would not be adequate public notice.)
- b. notified the Governor of any State sharing a common border with this State and in which the subject species is known to occur that such action is being proposed;
- c. allowed at least 30 days following publication for comment from the public and other interested

parties: Provided, however, that in cases where the Director/Commission determines that an emergency situation exists involving the continued existence of such species as a viable component of the State's wild fauna [or flora] he/they may add species to such lists provided he/they has/have published a public notice that such an emergency situation exists together with a summary of facts which support such determination.

(2) In determining whether any species of wildlife [or wild plant] is an endangered species or a threatened species, the Director/Commission shall take into consideration those actions, if any, being carried out or about to be carried out by the Federal Government, by other States, by other agencies of this State or political subdivisions thereof, or by any other person which may affect the species under consideration.

(d) Lists. (1) The Director/Commission shall issue regulations containing a list of all species of wildlife [and wild plants] normally occurring within this State which he determines, in accordance with subsection (a) through (c) of this section, to be endangered species and a list of all such species so determined to be threatened species. Each list shall refer to the

species contained therein by scientific and common name or names, if any, and shall specify with respect to each such species over what portion of its range it is endangered or threatened.

(2) Except with respect to species of wildlife [or wild plants] determined to be endangered or threatened pursuant to the Endangered Species Act, the Director/Commission shall, upon the petition of an interested person, conduct a review of any listed or unlisted species proposed to be removed from or added to the lists published pursuant to paragraph (1) of this subsection, but only if he makes and publishes a public notice that such person has presented substantial evidence which warrants such a review.

(e) Protective Regulations. Whenever any species of wildlife [or wild plant] is listed as a threatened species pursuant to subsection (d) of this section, the Director/Commission shall issue such regulations as he/they deems/deem necessary and advisable to provide for the conservation of such species. The Director/Commission may, by regulation, prohibit with respect to any threatened species of wildlife [or wild plant] any act prohibited under subsection (f) of this section.

(f) Prohibited Acts. (1) With respect to any endangered species of wildlife, it is unlawful, except as provided in subsection (g) of this section, for any person subject to the jurisdiction of this State to:

- a. export any such species from this State;
- b. take any such species within this State;

- c. possess, process, sell or offer for sale, deliver, carry, transport or ship, by any means whatsoever, any such species;
- d. violate any regulation pertaining to the conservation of such species or to any threatened species of wildlife listed pursuant to this section and promulgated by the Director/Commission pursuant to authority provided by this Act.

[(2) With respect to any endangered species of wild plant, it is unlawful, except as provided in subsection (f) of this section, for any person subject to the jurisdiction of this State to:

- a. export any such species from this State;
- b. possess, process, sell or offer for sale, deliver, carry, transport or ship, by any means whatsoever, any such species;
- c. violate any regulation pertaining to such species or to any threatened species of plant listed pursuant to this section and promulgated by the Director/Commission pursuant to authority provided by this Act]

Provided, that any endangered species of wildlife [or wild plant] which

enters the State from another State or from a point outside the territorial limits of the United States and which is being transported to a point within or beyond the State may be so entered and transported without restriction in accordance with the terms of any Federal permit or permit issued under the laws or regulations of another State.

(g) Permits. The Director/Commission may permit, under such terms and conditions as he may prescribe, any act otherwise prohibited by subsection (f) of this section for scientific purposes or to enhance the propagation or survival of the affected species.

(h) Conflicts - State and Local Laws. Any law, regulation or ordinance of any political subdivision of this State which applies with respect to the taking, importation, exportation, possession, sale or offer for sale, processing, delivery, carrying, transportation or shipment of species determined to be endangered species or threatened species pursuant to this Act is void to the extent that it may effectively (a) permit what is prohibited by this Act or by any regulation which implements this Act, or (b) prohibit what is authorized pursuant to an exemption or permit provided for in this Act or in any regulation which implements this Act. This Act shall not otherwise be construed to void any law, regulation or ordinance of any political subdivision of this State which is intended to conserve wildlife or plants.

Section 6. Conservation Programs.

(a) The Director/Commission shall establish such programs, including acquisition of land or aquatic habitat or interests therein, as are deemed necessary for the conservation of nongame, threatened or endangered species of wildlife [or wild plants]. The Director/Commission shall utilize all authority vested in the Department to carry out the purposes of this section.

(b) In carrying out programs authorized by this section, the Director/Commission shall consult with other States having a common interest in particular species of nongame, endangered or threatened species of wildlife [or wild plants] and may enter into agreements with Federal agencies, other States, political subdivisions of this State, or with private persons with respect to programs designed to conserve nongame, endangered or threatened species of wildlife [or wild plants] including, where appropriate, agreements for administration and management of any are established under this section or utilized for conservation of nongame, endangered or threatened species of wildlife [or wild plants].

(c) The Governor shall review other programs administered by him and utilize such programs in furtherance of the purposes of this Act. All other State departments and agencies shall, in consultation with and with the assistance of the Director/Commission, utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the

conservation of endangered species and threatened species listed pursuant to section 5 of this Act and by taking such action necessary to insure that actions authorized, funded or carried out by them do not jeopardize the continued existence of such endangered species or threatened species or result in the destruction or modification of habitat of such species which is determined by the Director/Commission to be critical.

Section 7. Regulations. The Director/Commission shall issue such regulations as are necessary to carry out the purpose of this chapter.

Section 8. Penalties and Enforcement.

(a) Any person who violates the provisions of subsection (c) of section 4, or any regulations issued in implementation thereof or whoever fails to procure or violates the terms of any permit issued pursuant to section 4 shall be fined not more than \$500 or be imprisoned not more than 6 months, or both.

(b) Any person who violates the provisions of subsection (f) of section 5, or any regulations issued pursuant to subsection (e) of section 5 or whoever fails to procure any permit required by subsection (g) of section 5 or violates the terms of any such permit shall be fined \$1,000 or be imprisoned not more than one year, or both.

(c) Any officer employed and authorized by the Director/Commission or any police officer of the State or of any municipality or county within the State shall have authority to conduct searches as provided by law, and to execute a warrant to search for and seize any equipment, business records, merchandise or wildlife [or wild plants] taken, used, or possessed in connection with a violation of any section of this chapter. Any such officer or agency may, without a warrant, arrest any person who such officer or agent has probable cause to believe is violating, in his presence or view, any such section, or any regulation or permit provided for by this chapter. Any officer or agent who has made an arrest of a person in connection with any such violation may search such person or business records at the time of arrest and may seize any wildlife, [wild plants,] records, or property taken, or used in connection with any such violation.

(d) Equipment, merchandise, wildlife, [wild plants,] or records seized under the provisions of subsection (c) of this section shall be held by an officer or agent of the Department pending disposition of court proceedings, and thereafter be forfeited to the State for destruction or disposition as the Director/Commission may deem appropriate: Provided, however, that prior to forfeiture, the Director/Commission may direct the transfer of wildlife [or wild plants] so seized to a qualified zoological, [botanical]

educational, or scientific institution for safekeeping, costs thereof to be assessable to the defendant. The Director/Commission is authorized to issue regulations to implement this subsection.

#### Section 9. Miscellaneous.

(a) None of the provisions of this chapter shall be construed to apply retroactively or to prohibit importation into the State of wildlife [or wild plants] which may be lawfully imported into the United States or lawfully taken and removed from another State or to prohibit entry into this State or the possession, transportation, exportation, processing, sale or offer for sale or shipment of any wildlife [or wild plant] which has been determined to be an endangered or threatened species in this State but not in the State where originally taken if the person engaging in such activity demonstrates by substantial evidence that such wildlife [or wild plant] was lawfully taken and lawfully removed from such State: Provided, however, that this subsection shall not be construed to permit the possession, transportation, exportation, processing, sale or offer for sale or shipment within this State of species of wildlife [or wild plants] determined, pursuant to the Endangered Species Act to be an endangered or threatened species, except as permitted by subsection (g) of section 5.

(b) If any provision of this chapter or the application thereof to any person or circumstance is held invalid, the remainder of this chapter, and the application of such provision to other persons or circumstances, shall not be affected thereby.

Section 10. Funding. The cost of programs established under this chapter shall be borne by the General Fund or other sources.