

HANDBOOK
ON
RESEARCH AND SURVEYS

FEDERAL AID IN
FISH AND WILDLIFE RESTORATION

SEPTEMBER 1983

TO THE RESEARCHER

This handbook does not purport to instruct you how to conduct research and surveys. If you had not already learned this in academic training and experience, you would not be in your present position. However, as you carry out Federal Aid research and surveys, there are numerous requirements (presented in the Federal Aid Manual) with which you must comply. This handbook proposes methods and approaches which should aid you in meeting these requirements most effectively, and although several of them are restated here, the handbook does not add to them. It describes procedures which have proven especially useful in certain States' programs and deserve to be passed on to others. It is not expected that all of the suggestions offered will be appropriate in every project.

Certain processes are amplified, such as sound research planning, measures to minimize unnecessary duplication of research, and prompt applications of findings to management problems. Such processes not only increase the effectiveness of research and survey efforts, they also enable the public and the Congress to recognize that your research and surveys are serving the intended purposes of the program--the restoration and management of fish and wildlife.

CONTENTS

	<u>Page</u>
THE FEDERAL AID IN FISH AND WILDLIFE RESTORATION PROGRAM	1
BEFORE YOU PROPOSE A RESEARCH/SURVEY PROJECT	2
Is Research/Survey Justified?	2
Substantiality in Character and Design	2
Identifying the Problem	2
Deductive Analysis	3
Involving Key People	5
DOCUMENTING FOR FEDERAL AID	7
Projects, Studies and Jobs	7
Objectives	8
Utilizing Existing Information	10
Performing Research by Contract	13
COMPLETING THE PROJECT	15
Reports	15
Acknowledging Contributors	18
Putting Results to Work	18
RESEARCH/SURVEYS UNDER AN APPROVED CONSERVATION PLAN	19

THE FEDERAL AID IN FISH AND WILDLIFE RESTORATION PROGRAM

The Federal Aid in Fish and Wildlife Restoration programs, the first of which began in 1938, are administered by the U.S. Fish and Wildlife Service as a national effort to strengthen the ability of the States to preserve, protect, and enhance fish and wildlife resources, and to increase public enjoyment of these resources. The principal mandates under which the Federal Aid program operates are set forth by three laws--the Pittman-Robertson Act, the Dingell-Johnson Act, and the Forsythe-Chafee Act. Each of these laws is supplemented by Secretary's rules (regulations) which provide the basic standards and requirements needed to implement them. Based on these, as well as certain other laws and regulations which impose standards or restrictions, the Federal Aid Manual specifies how the Fish and Wildlife Service will administer the program in its relationship with the States.

BEFORE YOU PROPOSE A RESEARCH/SURVEY PROJECT

Is Research/Survey Justified?

Research or survey work is an investment made by your agency to solve (or help solve) a problem. There is no authority under the Federal Aid program to perform such work to satisfy academic curiosity or to fulfill a "desire to know." Hence, every such proposal should be an outgrowth of a problem which impedes (or predictably will impede) fish or wildlife restoration/management or public benefit from it.

Since it represents an investment of agency resources, actual surveys and experimentation (as opposed to library research) should not be undertaken without first considering the significance of the problem, the probability that your effort can yield a timely and effective solution, the expected costs to provide that solution, and whether there is an alternate approach that might be more cost effective.

Substantiality in Character and Design

To be approvable, each project proposed for funding under the grant programs must meet the basic standards for substantiality in character and design. The test for substantiality in character rests on the validity of the need the project proposes to address. The test for substantiality in design rests on the adequacy or quality of the approach to be used. A project meeting these standards is one which:

- a. Identifies and describes a need within the purposes of the relevant act to be utilized;
- b. Identifies the specific objectives to be accomplished based on the stated need;
- c. Utilizes accepted fish and wildlife conservation and management principles, sound design, and appropriate procedures; and
- d. Is expected to yield benefits pertinent to the identified need at a level commensurate with project costs.

Identifying the Problem

Every research proposal should be the product of a problem or need perceived by the agency. Examples of such problems are:

- Squirrel populations in the south-central district have failed to meet hunting demands since 1975.

- Fishermen in the northeast district are complaining about a decline in largemouth bass in recent years, claiming the lakes are overfished.

- Nest boxes installed for bluebirds are being occupied by starlings.

Do not cite a deficiency of certain information or the "desire to know" as the problem to be pursued. The generation of new knowledge may be critical to enable the agency to carry out part of its responsibility, such as correcting a declining deer herd. The decline of the deer herd would be a legitimate problem. Getting information is one of the steps to be taken to resolve the problem.

It is important to state the problem correctly as it is perceived by the agency, avoiding assumptions that might cause you to miss the problem. For instance, in the second example above, the immediate problem is that fishermen are complaining. It remains to be confirmed that the bass have declined or that the lakes are overfished.

Deductive Analysis

Rarely is it feasible to formulate a research proposal until the parts of the problem are known and considered. When broken down into parts, an agency problem can usually yield an imposing list of potential areas of inquiry, any or all of which could be the subject of research. However, since the researcher's job is to deliver a workable solution without unnecessary cost or delay, efforts must be concentrated where the chances of success are best. To do this, a deductive analysis will be made of the problem and each part will be considered in such a way that the researcher will--

- Set aside any part whose solution would not be critical to resolving the problem.
- Eliminate from immediate research any part covered by existing knowledge.
- Prioritize those parts which should be subjected to research.

The deductive analysis may assume any of several different forms. One type is the following example pertaining to a simple hypothetical problem in squirrel management. The responses (shown in parenthesis) are hypothetical also, being intended only as illustrations of the process.

AGENCY PROBLEM: SQUIRREL POPULATIONS IN THE SOUTH-CENTRAL DISTRICT HAVE FAILED TO MEET HUNTING DEMAND SINCE 1975.

Echelon A. HAS THE DISTRICT EXPERIENCED--

1. INCREASED HUNTING PRESSURE? (No, surveys show license sales and effort have declined.)

2. DECREASED SQUIRREL POPULATIONS? (Apparently, in view of decreased harvest per unit of effort. This item is, therefore, considered in Echelon B.)

Echelon B. IS THE DECLINING SQUIRREL POPULATION RELATED TO--

1. LOWERED REPRODUCTION? (Sex and age ratios of bagged squirrels are normal and have not changed.)
2. INCREASED RATE OF MORTALITY? (Possibly, but we have no data to confirm it.)

(There is no apparent need to delve into reproduction, since sex and age ratios in the bag are normal. We should concentrate in Echelon C on factors affecting post-natal mortality.)

Echelon C. IS POST-NATAL SURVIVAL BEING AFFECTED BY--

1. INCREASED PREDATION? (Very doubtful in view of published findings elsewhere and the absence of known predators.)
2. EXCESSIVE HARVEST? (No. Harvest rates are well within safe limits.)
3. ADVERSE WEATHER? (Not known. Weather Bureau records are inconclusive.)
4. DISEASES OR PARASITES? (Perhaps. Mange is common. Incidence of other diseases is unknown. Pertinent studies are underway in neighboring State and will be available next year.)
5. AVAILABILITY OF MAST? (Unknown. State Forestry surveys indicate normal mast crops but haven't monitored removal of mast trees.)
6. AVAILABILITY OF DENS? (Possibly. Wood cutting and culling in woodlots may be removing den trees.)

This deductive analysis would at least tentatively eliminate several parts of your agency problem from the need for hands-on research. You have used your own State's surveys, published and unpublished reports (from Fish and Wildlife Reference Service and other sources), consultations with other Federal Aid researchers currently doing related work (from Current Federal Aid Research report or data base), and information from other resource agencies.

Based on this analysis, items A-1, B-1, C-1, and C-2 should be eliminated for now; a solution to the problem is most likely in items C-4, C-5, and C-6. (C-3 could be a contributing factor but it would not be subject to management except through C-5 and C-6.) Using this information, a project addressing the agency problem could be proposed. The background portion of the proposal would summarize the conclusions reached in the deductive analysis. The actual research proposed might consist of three studies, such as:

Study 1. Diseases and Parasites in Squirrels in the South-Central District.

Study 2. The Status and Trends of Mast Trees in the South-Central District.

Study 3. The Status and Trends of Squirrel Den Trees in the South-Central District.

Before the work under each study can be formulated, reports and literature will be examined in greater detail to prioritize and concentrate your efforts further. Study #1 will be coordinated with research underway in the neighboring State (see item C-4).

The deductive analysis should be in written form and should be retained as a part of the project file. During the course of the research, it should be refined and supplemented as new information becomes available.

When the research is completed, the deductive analysis becomes a very useful logic tree whereby the various contributions of information can be integrated by moving upward (inductively) through the analysis to formulate a solution to the problem.

A more thorough treatment of a similar process is presented in "Tactical Planning in Fish and Wildlife Management and Research" by Phenicie and Lyons (U.S. Fish and Wildlife Service Resource Publication No. 123). A limited supply of reprints is available and photocopies are readily obtainable through the Fish and Wildlife Reference Service.

Involving Key People

There is an inclination among many researchers to want to pursue their studies without the involvement of others. This might be a valid course of action if the purpose of the research were merely to generate scientific publications. However, under the Federal Aid program, research is performed to bring about improved management of fish and wildlife which is almost always dependent on assistance and cooperation from others. By carefully planning and arranging their involvement, you can benefit from their inputs and avoid the resistance that often develops in the absence of understanding. Administrators should have the opportunity to articulate problems and to make inputs at critical points (e.g., when the deductive analysis is completed, when conclusions and management

recommendations have been drafted, etc.). Others knowledgeable in research should assist in determining research priorities. Persons who are experiencing the problem being addressed by your research need to be involved early—they need to know you and to be informed on your research and sometimes to participate in it. Understanding, interest, and participation by the people who will be expected to put your findings into action can spell the difference between a real-world solution that is actually utilized and a theoretical proposal relegated to the file.

DOCUMENTING FOR FEDERAL AID

Projects, Studies, and Jobs

Before preparing materials to request Federal Aid funding for research, it is important to understand the scope or level of the terms "project," "study," and "job" as used in the Federal Aid program.

A Federal Aid project states and describes fully a problem or need of the agency and accounts for work necessary to resolve it. Functionally, the project serves primarily as an administrative tool for managing and tracking people, funds, and equipment directed toward solving the problem. A project may deal with a single specific problem; it encompasses no work outside that narrow area of need and expires when the documented research is finished. Projects having this scope enable the researcher to present the proposed undertaking most explicitly. Frequently, however, a project is drawn to address a broad problem area under which work on several different specific problems can be fit. Because this approach limits the number of projects in a State's program, it avoids part of the paperwork and is usually preferred by administrators. When a broad problem is addressed by the project, the specific problems are normally described at a "subproject" level.

As you analyze the problem addressed by the project or subproject, you will identify discrete subproblems, each of which is sufficiently discrete to be readily researchable but large enough that, by itself, it should yield information or a product which is useful to a manager or the agency. The inquiry into such a subproblem is termed a study. A research project consists of from one to several studies. It is at the study level of detail that research activity should be planned and documented. It is also at the study level that the Regional Director's attention is focused regarding design, accountability, etc.

When a study is further subdivided, each resulting part will normally involve a single type of task or process that must be executed to accomplish the study. When any one of these is completed, the product or results may be of value only to the researcher by resolving a portion of the study. Each of these tasks or processes is termed a job.

In addition to jobs for tasks to complete operational parts of the study, there are two specific jobs which should be standard inclusions under virtually every research study—a literature review job and a final report job. The literature review job provides the commitment and the time to determine what has been or is being done by others as described in the following section. As the study is completed, the final report job reserves the time and other resources to prepare a report of the findings. You may also utilize the final report job or a separate job to convey the results to the specific groups who have a need for them (see page 18).

Objectives

Objectives are the key to documenting and executing research and surveys. They provide the targets toward which all efforts are directed and the standards against which accomplishments are measured. The writing of good objectives is rooted in understanding the problem thoroughly, knowing exactly what is intended to be accomplished, and recognizing the limits of the time, money, and manpower available to you. Only after these have been firmly decided are you ready to formulate objectives.

Objectives are needed at each level in the documents for a research or survey proposal. At a minimum, there will be an objective for the project, for each study under the project, and for each job under each study. If it is apparent that other echelons should be inserted (e.g., a "subproject" echelon between project and study), objectives should be stated there also.

In the progression from project to subproject (variable) to study to job, the objectives change from broad and non-specific to narrow and specific. The project objective is the broadest, usually encompassing several management considerations that impinge on the problem described. It provides the target at the end of the planned work to resolve the problem, frequently 5 years or more in the future. The study objective normally describes the accomplishments to meet one of the management needs and covers a year or more. Each job objective is a commitment to complete one of the tasks necessary to fulfill the study objective; it usually covers a shorter period than the study.

The basic mechanical steps to writing objectives are as follows: (The example typifies a study level objective.)

1. Start with the word "to" plus an action verb.
(To quantify; to develop; to evaluate; to complete).
2. Identify the target of your action.
(To quantify mast production.)
3. Identify the target date.
(To quantify mast production during 1984.)
4. State the extent or intensity of your planned accomplishment.
(To quantify mast production during 1984 in 25 three- to five-acre woodlots.)

As you prepare each objective, be sure to:

- Keep it simple and easily understandable.
- Be as specific and quantitative as possible.
- Specify the "what" and "when"; avoid the "how" and "why."

- Keep it attainable with the time, money, and manpower available.
- Use action verbs which are accomplishment oriented (to quantify, to complete); avoid those which are process oriented (to study, to observe).

Sample Objectives

The sample objectives relate to the following problem or need:

Situation: The largemouth bass fishery in lakes of the northeastern district has declined steadily in recent years. Some local anglers believe it is due to overfishing and preliminary field data tend to support this belief. However, data also show depressed spawning and recruitment. Your agency needs to reverse the decline and restore a self-sustaining fishery. A deductive analysis indicates you should examine the need for changed harvest regulations and also consider bluegill feeding on bass spawn and fry.

Project Level Objective:

As discussed earlier (p. 7) the project may encompass a very specific problem or a broad area of management concern. If the project addresses only the specific problem, the objective might be--

To provide by 1988 recommendations for the management of lakes in the northeastern district to produce a self-sustaining largemouth bass fishery.

However, if the project addresses a broad problem area, the project objective might be--

To provide solutions to problems which obstruct or impede the management of warmwater fisheries statewide.

--and the specific problem would be treated as a subproject. The subproject objective would be the same as the first project objective given above.

Study Level Objective:

To develop by 1988 comprehensive recommendations for harvest to optimize a sustained largemouth bass fishery in northeast district lakes.

At least one other study would be carried out concurrently with this one dealing with bluegill destruction of eggs and fry.

Note that this objective stresses output (develop recommendations), is time specific (by 1988), is quantified (comprehensive recommendations), and is responsive to the problem described in the project/subproject. Note also that the results will be useful to managers.

Job Level Objective:

To record in 1985, '86 and '87 numbers, age, total length, weight, and spawning condition of largemouth bass in a 0.5-acre cove in each of Lakes X, Y, and Z by the use of rotenone.

Note that the job deals with a defined task. The results will be meaningful to the researcher but probably not to anyone else until they are combined with other job results to complete the study.

A useful device to check the completeness of a study or job objective is the "QUOTA P" test:

- QU Is the objective quantified?
- O Is it output oriented?
- T Is it time specific?
- A Is it attainable using the available time, money and manpower?
- P Does it address the problem?

Utilizing Existing Information

The most cost effective research is that which is completed by examination of literature and by consultation with others who have already dealt effectively with a similar problem. Library research must be given priority, and the completed examination of existing sources must be described in each proposal to do research.

Information already in publications can be located and examined using traditional library facilities as well as computer data bases. However, a sizable body of fish and wildlife research and survey information is available only in unpublished report form. Federal Aid reports, along with certain Federal and State publications and Cooperative Research Unit theses, are maintained in the Fish and Wildlife Reference Service. Using either telephone or letter, you may initiate a computer search of these reports by species, subject, State, etc., and obtain hard copies of needed materials. You may also utilize a terminal to examine abstracts of these reports maintained as a computer data base. Instructions for utilizing these systems are shown on page 12.

For Federal Aid research still in progress and, therefore, not yet appearing in reports or publications, FWS provides the CFAR (Current Federal Aid Research) Report to each State annually. The same information, classified by species, author, State, and subject, and updated

throughout the year, is also maintained in a computer data base and can be accessed from computer terminals. Checking of this current research allows you to be aware of other research efforts and to contact other researchers whose current endeavors could be useful to you. Use of CFAR is strongly advised during the planning of new research and the publication of completed work. Instructions for accessing the CFAR data base appear in the front of the CFAR report. For project personnel there are no charges for its use. A password necessary for access is available through your State FA coordinator.

The Fish and Wildlife Reference Service

A computerized information retrieval system providing research information on American fish and wildlife to biologists and management personnel.

The Reference Service

- operates under a contract between the Denver Public Library and the U. S. Fish and Wildlife Service.
- provides access to selected technical reports generated by the Federal Aid in Fish and Wildlife Restoration Program, the Anadromous Sport and Fish Conservation Program, and the Cooperative Fishery and Wildlife Research Units. These reports include both unpublished and published articles, monographs, theses, and dissertations.
- refers inquiries for information outside the scope of the REFERENCE SERVICE to the Conservation Library at the central Denver Public Library and other environmental information centers.

Services

- Computerized Literature Searches
- Technical Reports in Photocopy or Microfiche
- Fish and Wildlife Thesaurus -- both alphabetical and classified
- Indexes of State Research -- Fish and Wildlife Reference Service has both fish and wildlife indexes for each state
- Quarterly Newsletter
- Referral to Alternate Information Sources

Using the Service

The office is open to the public for reference use Monday through Friday, 8 a.m. to 4:30 p.m.

Photocopy and microfiche copies of the reports in the collection are provided in lieu of loan service.

TO REQUEST A LITERATURE SEARCH: Be specific: indicate species, geographic areas, time period, and other subject requirements, including a brief description of your project.

TO REQUEST A REPORT: Indicate author, title, agency, date, project number, and MIN number (our serial number).

FEEES vary with the services provided and with the category of users -- cooperator or client. To establish cooperator status, your official agency letterhead must be used. An invoice will be sent with the material requested.

WRITE: Fish and Wildlife Reference Service
Denver Public Library Administrative Center
3840 York St. Unit I
Denver, Colorado 80205

CALL: (303) 571-4656

Service Fees*

COOPERATORS

Those receiving funding under the Federal Aid in Fish and Wildlife Restoration (PR and DJ) programs, and the Anadromous Fish Conservation program. This includes personnel of state fish and wildlife agencies, the U.S. Fish and Wildlife Service, and the Cooperative Fisheries and Wildlife Research Units.

CLIENTS

Agencies, organizations, university personnel, private companies, or individuals other than those listed as cooperators.

	COOPERATORS	CLIENTS
Literature search computer printout bibliography - per subject	No charge	\$30
State Research Index, fish or wildlife	No charge	\$10 per printout \$ 5 per microfiche
Thesaurus alphabetical and classified sections	No charge	\$10 per section
Newsletter (quarterly)	No charge	No charge
Photocopy of reports per search or Newsletter	10¢ per page over 100 pages	10¢ per page
Microfiche of reports	50¢ per fiche over 20 fiche	50¢ per fiche

All charges include postage. *These costs subject to change.

Performing Research by Contract

Under certain circumstances such as the need for specialized facilities, equipment or talents, it may be advisable to engage the services of another governmental agency or university or private party to perform research. When this occurs, it is essential that a formal written agreement be executed to assure complete understanding and agreement between the parties. The form of the agreement is often specified by State contracting procedures, precluding the need for a federally specified format. Regardless of the format used, each of the following items of information should be covered:

- (1) What is to be accomplished by the contractor? (A Study Plan can be made part of the agreement for this purpose.)
- (2) What is to be supplied by the grantee and by the contractor (consider personnel, equipment, supplies, floor space, etc.).
- (3) The method, form, and schedule of payment to the contractor and any provision for adjusting the amount up or down.
- (4) The method of confirming contractor accomplishments and the procedures for vouchering.
- (5) An assurance that equipment acquired with Federal Aid funds remains the property of the State fish and wildlife agency.
- (6) Provisions for altering, extending or terminating the contract and for recovering equipment, etc., upon completion or termination.
- (7) The date the contractor's commitment is due (perhaps with penalty* for noncompliance).
- (8) Reservations regarding patents and copyrights.
- (9) Reservations regarding publication rights.
- (10) Acknowledgement of the Federal Aid program in any publication resulting from the contract.

* Although not frequently employed, penalty provisions can eliminate most failure of contractors to deliver agreed-upon findings, reports, etc. To serve this function, terms for compliance/noncompliance must be precisely stated.

This type of agreement is not needed when research is shared between two or more grantees (e.g., two States cooperating on a study of an interstate deer herd). In such cases, a Memorandum of Understanding should be prepared and signed, showing the responsibilities each State assumes. Other needed information will appear in the project documents submitted by the participating States.

COMPLETING THE PROJECT

Reports

Two types of reports are required for every research effort:

- (1) A Performance Report is submitted each year within 3 months following the close of that year's activity. It gives the actual accomplishments as related to the study objective but it need not detail specific findings or results. It should include the name of the preparer and the date.

If a State-required report is available which contains all needed performance information, it may be submitted in place of a special performance report. However, it must be clearly marked specifying its intended purpose as a Performance Report and identifying the part(s) pertinent to performance reporting.

A sample Performance Report is shown on pp. 16 and 17. The sample does not include the preparer's name or the date.

- (2) A Final Report is submitted at the completion of each research project or study and serves at least two important functions. For the program administrator, it provides notice that the planned undertaking has been concluded and that no further work will be done on it under the project. For those who can use its results, it serves as a record of accomplishments, usually providing a summation of the findings and conclusions for the entire project or study.

Each Final Report should include: (1) identification of the research effort (show the State, the project/study title and number, and the period covered), (2) a creditable report of the results of the research, (3) a description of how it will be utilized (e.g., a section on management implications), and (4) the signature of a responsible State official. The format is not prescribed and the style may vary according to the type of research being reported and the nature of the group(s) expected to use it. If the State chooses, it may provide a copy of a publication, thesis, or manuscript which has been submitted for publication to serve as its Final Report. When a large thesis is to serve as the Final Report, you may wish to request regional permission to submit summaries or abstracts in place of part of the copies.

When other than a standard Final Report is submitted, the transmittal or cover sheet, signed by a responsible State official, should state clearly that it is intended as the Final Report. This will avoid any confusion which could interrupt the flow of project documents or payments to the State.

SAMPLE PERFORMANCE REPORT
(as submitted by Arkansas)

PERFORMANCE REPORT

STATE: Arkansas PROJECT NO.: W-56-22
PROJECT TITLE: Statewide Wildlife Research
PERIOD COVERED: October 1, 1981 through September 30, 1982
STUDY NUMBER AND TITLE: XVI - An Evaluation of the
Establishment of a Resident
Canada Goose (Branta
canadensis maxima) Population
in Arkansas

STUDY OBJECTIVE:

To evaluate the potential and feasibility of establishing a resident free flying Canada Goose population in Arkansas.

STUDY ABSTRACT

Stocking sites were selected using ground and aerial survey techniques. 600 goose eggs (Branta canadensis maxima) were obtained from Ontario, Canada and hatched at facilities near Russellville, Arkansas. Hatching success was approximately 70%. 450 pre-flight young were marked and released at preselected sites. 798 sub-adult and adult geese were obtained from Ontario, clipped, marked and released on the preselected sites. Several years of data collection will be required to adequately assess the effectiveness of this technique of establishing a resident free-flying goose population in Arkansas.

SAMPLE PERFORMANCE REPORT (continued)

A. ACTIVITY:

12 stocking sites were selected using ground and aerial survey techniques to determine suitability for sustaining an expanding goose population. 600 goose eggs were flown to Arkansas from Ontario, Canada and hatched at facilities near Russellville. 800 sub-adult and adult geese were hauled from Toronto Island, Ontario to Holla Bend Refuge, clipped, marked and released on preselected sites. An annual report was submitted summarizing work accomplished to date.

B. TARGET DATES FOR ACHIEVEMENT:

Job 1: February-July, 1982
Job 2: May, 1982
Job 3: July, 1982
Job 4: N/A
Job 5: February, 1982

C. DATE ACCOMPLISHED:

Job 1: July, 1982
Job 2: May, 1982
Job 3: July, 1982
Job 5: March, 1982

D. SIGNIFICANT DEVIATIONS:

None

E. REMARKS:

Egg hatch success approached 70%. Approximately 450 yearling birds were released in the Arkansas River Valley area. Of the 800 geese hauled from Ontario, 2 mortalities occurred during transit. The total number of birds released obtained through all sources was 1,248. Analysis and evaluation of the program success at this early stage is not feasible.

F. RECOMMENDATIONS:

Continue study.

G. COST:

\$15,000.00

Acknowledging Contributors

An important, but sometimes overlooked, item in preparing a report or publication is acknowledgment of the party or program that provided the necessary funds. Failure to include an acknowledgement reflects poorly on the writer's professional ethics and, in the case of a grant program, can contribute to the program's termination. It is essential to identify the products of the program to enable sportsmen, manufacturers, legislators, and others to understand the program's value. If we fail to provide this understanding, we invite repeal of the Federal Aid Acts.

Acknowledgment is needed not only in publications and formal reports; it is equally important in popular articles. It is advisable to provide this information in a manner that is consistent with the intended readers, providing supplementary facts (e.g., noting that P-R funds are derived from an excise tax on sporting guns and ammunition paid by hunters and recreational shooters) where appropriate. Materials supplied for use by journalists and other authors should include acknowledgments also.

Putting Results to Work

When the research addressing a given problem is completed, the researcher is in a position to construct a solution to the problem. At this point it is advisable to refer to the deductive analysis prepared when the project began. Moving through it inductively (upward) will assist you in integrating the various parts of your research to formulate a solution and apply that solution to the problem. The first and principal responsibility is to deliver the solution to the people who need answers (the people with the problem) in a form that they will understand. The measures for conveying the results may vary widely. For instance, to relate a solution for use by a small number of area managers may require only personal consultations and/or demonstrations. To inform a professional group, the preparation of film strips or the conducting of group meetings may be needed. To transfer findings to broad segments of the public at large (e.g., bass fishermen) could require the use of media spots. This can be a complex task requiring careful planning and may even require assistance from persons outside the research field to plan for and communicate the findings. Care should be taken to assure that costs do not exceed expected benefits and that the presentation sticks to the application of project findings and does not pursue public relations purposes.

RESEARCH AND SURVEYS UNDER AN APPROVED CONSERVATION PLAN

When an approved plan--either comprehensive or modular--is in place, you can expect a very real reduction in the paperwork to be submitted for Federal approval. This is not to say that any vital steps or processes will be eliminated; every step which is essential to sound, scientific preparation will be accomplished, but perhaps at a different point in time or under different authority. Certain steps will have been completed during the planning process, precluding the need to prepare them at the time of proposing research. Other documents and overview functions will become State processes because they will be logical responsibilities of the State's administrative support system.

It is expected that the planning process will adequately cover the identification of the agency problem and the justification for addressing it. The plan may also cover all or part of the deductive analysis of the problem and the review of literature and current research. To the extent these are not covered in the plan, they should be completed and retained in State files for State use and Federal Aid review.

The Application for Federal Assistance (AFA) will specify the work units (derived from the plan) to be addressed. (See Federal Aid Manual, Chapter 14, for a discussion of planning requirements; Sec. 14.2(h) for a definition of work unit.) The AFA need not specify for Federal approval the study design or the methods to be used. Such approval is a logical responsibility of the State's administrative support system.

A Project Agreement (PA) will be submitted for each time segment of work (normally one year). A single PA will cover all work units to be carried out during that period under the AFA. The studies and jobs to be undertaken should be listed in the PA showing the estimated cost of each. Study plans and job descriptions should be completed and retained on file in the State where they will be available for review.

Certain requirements are not modified by the existence of an approved plan. Performance reports, final reports, and publications must be submitted as indicated in Sec. 13.9 of the manual. Also, any document or report which is required by law, regulation or other directive external to Federal Aid must be supplied. Most of these are covered in Chapter 17 of the Federal Aid Manual (e.g., NEPA, the Civil Rights Act, the Endangered Species Act, etc.).

The CFAR system is dependent upon data inputs which are gleaned from study outlines submitted by the States. Since study outlines are not required submissions when an approved plan is in place, the Regional Offices may request assistance from the States in assembling the needed data.