A Guide for Fishermen and Others Interested in Participating in Cooperative Research in the Northeast Region

WORKING TOGETHER: DEVELOPING A COOPERATIVE RESEARCH PROJECT AND PROPOSAL

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INTRODUCTION

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Cooperative research is a partnership between commercial and recreational fishermen, marine scientists, resource managers and others working together to increase the quality and quantity of information available to support more effective marine resource management decisions.

Background

The success of fisheries management decisions is often limited by the quality and relevance of the information on which those decisions are based. For most of the modern era of fisheries management, decisions have been based solely, or at least primarily, on scientific information collected by Federal and state agencies, universities, and other scientific institutions. Fishery scientists and technicians often conduct research with little input from fishermen. The on-the-water experience and expertise of fishermen was characterized as "anecdotal" and overlooked in the fishery management process, particularly when it appeared to be inconsistent with information collected through more traditional scientific means. However, in recent years, "cooperative research" has begun to effectively capitalize on the knowledge and skills of experienced fishermen to collect and analyze information and incorporate the results directly in the fishery management process.

The primary mission of cooperative research is to enhance the science used in fisheries management and build partnerships among commercial and recreational fishermen, scientists from NOAA Fisheries Service and other institutions, and government fishery managers. When scientists work onboard fishing vessels, they gain access to a fisherman's knowledge, experience and perspectives of marine resources. When fishermen work with scientists, they learn how scientific methods differ from fishing operations. Most importantly, this partnership creates a climate of trust and support between the participants.

Purpose

In recent years, opportunities for cooperative research have expanded in the Northeast. Although there are more research programs dedicated to supporting cooperative research than in the past, funding remains limited. Competition for these limited funds has increased as the cooperative research funding programs receive more and more proposals. Each year, many good ideas for cooperative research are left unfunded because the proposals do not fully satisfy the requirements of the grant programs. While the requirements and process associated with submitting a proposal may appear to be complex, they ensure that all proposals are evaluated in an objective and fair manner.

The increase in competition for limited research funds means that successful cooperative research proposals must be well thought-out, clearly articulate a link to management and issues, and address all required elements of the cooperative research program. This guide is intended to provide the fishing community with a better understanding of the cooperative research process, help interested fishermen get more involved in cooperative research, and assist members of the fishing industry with preparing successful proposals for cooperative research funding.

Overview

There are several different ways in which fishermen can become involved in cooperative research. Some fishermen find it rewarding to have their vessel used as a research platform, giving them new insight into the scientific process, while other fishermen want to directly engage with scientists in the development and execution of research. Still others want to pursue their own research ideas. When considering whether to become involved in cooperative research, a fisherman must first find a partner that complements his or her skills and with whom the fisherman can collaborate effectively. Members of the fishing industry may find it most valuable to have a partnership with a scientist. For scientists, it is important to establish a strong working relationship with a member or members of the fishing industry. Understanding the motivation of both parties to participate in research is key in establishing and maintaining effective cooperative research partnerships.

Results and Examples

There have been a number of successful cooperative research projects conducted in the Northeast Region over the past few years that cover a wide range of topics. The results of these projects may be characterized as having direct, indirect, ancillary, or intangible benefits to fisheries management. While many of these projects have had a direct impact on fishery management decisions, perhaps the most important result is also the most intangible: better communication and collaboration among managers, scientists, and fishermen. The following list of results identifies some of the benefits gained from recent cooperative research projects conducted in the Region.

Direct Benefits

- The development of a raised footrope trawl to target whiting for use in the inshore Gulf of Maine fishery.
- The incorporation of a haddock separator trawl for use in the multispecies fishery in the eastern U.S./Canada area.
- Data from the industry-based Maine/New Hampshire trawl survey has been used in a stock assessment model for American lobster, the latest monkfish stock assessment, in setting specifications for Atlantic herring, documenting the recruitment and abundance of Atlantic menhaden, determining the 2004-2005 fishing season for Northern shrimp, and in the design of a video survey assessment for Jonah crab.

Indirect Benefits

- Research involving an experimental shrimp fishery in an area of high groundfish concentration to determine if a shrimp fishery could occur and not exceed a 5 percent bycatch allowance of groundfish.
- Research to determine the stock structure of whiting in the Gulf of Maine, Georges Bank, and the Mid-Atlantic Bight using genetic analyses.

Ancillary Benefits

- The industry-based survey of cod has been used to: (1) supply data for a fecundity study of Gulf of Maine cod; (2) collect cod otoliths for a comparative study with archaeological samples from Native American sites in southern Maine; (3) analyze isotope and DNA and RNA/DNA ratios of cod and haddock; and (4) study fecundity of rainbow smelt and yellowtail flounder.

Intangible Benefits

- The establishment of collaborative partnerships between fishermen and scientists has resulted in numerous cooperative research projects.
- Enhanced understanding of the cooperative research process resulting from preliminary investigative sessions. For example, the Northeast Cooperative Research Partners Program (CRPP) funded a research proposal that involved a series of scoping meetings with fishermen and the fishing industry to discuss cooperative research focused on bycatch reduction techniques.
- Improved understanding and acceptance of the scientific process that must be used to establish fishery management regulations.

HOW TO USE THIS GUIDE

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Introduction

This guide is organized according to a general process that a fisherman or other industry member might follow to participate in a cooperative research project. Typically, getting involved in cooperative research begins with an idea to address a specific fishery management problem. For example, someone may have an idea for a new gear design that would improve catch efficiency or reduce bycatch. Once an idea for a research project has been identified, he or she would seek out a research partner (often a scientist) with whom there is a shared interest. The next step would be to find appropriate sources of funding for the project, and to prepare and submit a research proposal. Following review and selection, successful researchers receive financial support and begin to conduct the project. Following the completion of the project, reports must be written and approved by the funding agency. After the results of the project are approved, they need to be communicated to the fishing industry, other scientists, fishery managers, and the public.

To highlight this process, the guide is structured as follows:

- The chapter titled "Selecting a Topic" represents the first step in this process.
- There is a chapter titled "Establishing Good Partnerships" and one called "Finding a Source of Funding."
- There is a chapter dedicated to "Preparing a Grant Proposal."
- Finally, there is a chapter called "What to Do Once Funding Selections are Made."

The process represented by the sequential order of the chapters is by no means the only way to become involved in cooperative research, but these are generally the steps involved, even if some are skipped or are taken out of this order. For the purposes of organizing this guide, this chronology seemed the most appropriate; if the individual is new to cooperative research, continue to review the chapters in this order. However, each chapter stands on its own related to its particular topic.

In addition to these chapters, there are appendices that provide detailed information designed to complement and expand upon what is presented in this guide. The appendices provide more specific guidance on issues such as getting the appropriate permits for research projects, preparing a budget, specific information regarding potential funding sources, and contact information. These appendices are available upon request from the NOAA Fisheries Service Northeast Region at 978-281-9300, and are available on the website at: www.nero.noaa.gov/statefedoff/coopresearch/guidelines.

SELECTING A TOPIC

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Introduction

Often fishermen and scientists have good ideas for cooperative research projects but aren't quite sure how to proceed. In these cases, they are interested in getting involved in cooperative research but want assistance in developing the idea.

Refining the Idea

Individuals need to work together to refine an idea so that it can be clearly stated and understood by others. The scientific process requires that a problem statement or hypothesis be defined. Once there is a hypothesis, keep the project as simple as possible so that it does not get overly complex, costly or unachieveable. Begin developing a scientific design that examines the hypothesis. The partners should include, or consult with, a statistician to develop analytical tools to test the hypothesis or evaluate the results and ensure that the design is scientifically sound. Working with partners, developing a description of the project, studying potential analytical methods, and anticipating the project's outcome will facilitate the development of the research proposal.

The best sources for ideas and idea development are the documents produced by the various funding agencies that identify the research topics for consideration that year. In most situations, and especially if Federal money is involved, these documents are Federal Register notices that request proposals to address specific research topics. These are known as RFPs (Requests for

Proposals) or BAAs (Broad Agency Announcements) and are distributed at different times of the year.

RFPs and BAAs identify research topics or management issues that can be addressed with cooperative research funding, and these notices can be used to generate specific ideas for a particular research proposal. In the development of a proposal, it is important to do some basic fact finding. Specifically, identify how the proposed research topic is tied to a management or science issue as identified in the RFP. In that process, think about the scope of the problem and talk with others with a common interest or knowledge of the problem.

A number of resources are available to help develop an idea for a research project. Most can be found on the Internet and a number of online resources and databases are identified in the appendices. If unable to access a computer, the library is also a good source of information. Finally, as the development of the proposal begins, it is important to contact the individuals listed in the Federal announcements for additional information and assistance.

ESTABLISHING GOOD PARTNERSHIPS

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Introduction

When considering becoming involved in cooperative research, first find a partner with complementary interests. As a member of the fishing industry, it is valuable to have a partnership with a scientist. As a scientist, it is important to establish a strong working relationship with a member of the fishing industry. This chapter will present ways to find a cooperative research partner and various aspects of partnerships that must be considered to maximize your cooperative research success.

How to be a Good Partner

What makes a good cooperative research partner? The answer to this question may seem simple and straightforward, but there are a number of reasons that partnerships may not be successful. For example, there may be limited communication between partners, which can lead to difficulties in carrying through with the project. If expectations and responsibilities are not clearly communicated from the start, the project may experience severe problems. In addition, partnerships that lack transparency and openness may deteriorate, creating an atmosphere of dissatisfaction and distrust.

However, there are a number of ways to establish a successful partnership. First and foremost, communication is absolutely necessary. All involved should have a willingness to listen to ideas, views and suggestions. After all, communication is a two-way street; each partner must be willing to stop talking and listen when necessary.

As most are aware, fishermen and scientists operate under very different constraints and business environments. As such, cooperative research partners must be open minded and possess sufficient confidence to accept critical review and take suggestions. Often, fishermen have traditional ecological knowledge about fishing grounds that may stave off disaster, loss of expensive equipment or enhance the overall research project. Conversely, scientists generally have a technical background that will lend scientific credibility to a cooperative research project. Scientific credibility is important because all research conducted for management purposes must be scientifically defensible.

To be successful, both the scientist and the fisherman need to be reliable and active participants in the cooperative research process.

How to Find a Good Partner

One of the first steps in finding a good partner is to compile a list of people to contact for further information or to consider as potential partners. Attend meetings (such as the New England Fishery Management Council's

Research Steering Committee) to learn about management's priorities, meet potential collaborators and discuss your ideas. Attend workshops, trade shows and scientific conferences to enhance your understanding and knowledge of marine science and the fisheries industry. Visit marine research institutions, universities, research consortia, commercial or recreational fishing organizations, fishing industry representatives, and government outreach coordinators such as at the NOAA Fisheries Service Regional Office, Sea Grant offices, Northeast Fisheries Science Center, Northeast Consortium, National Ocean Service offices, National Marine Sanctuary offices, regional marine fisheries councils and commissions, state coastal zone management offices, state marine fisheries agencies (or similar offices) to gain further information. If unable to visit in person, make an initial contact and proceed to write letters, make telephone calls, send e-mails, and request brochures, books or other literature.

Once there is a basic understanding of marine science research needs and the fishing industry, it's time to create a cooperative partnership. There are a number of ways that cooperative research partners can be found. For instance, organizations such as FishResearch.org provide lists of fishermen and scientists that have been or are interested in becoming involved in research projects. Many funding organizations list principal investigators, scientific partners, and fishing industry partners on their websites or in brochures. Searching these organizations' websites or contacting their coordinators may provide valuable contacts and potential partners (see appendices). For industry members, contacting universities, research institutions, Sea Grant or other academic organizations is a good way to find a scientific partner. For scientists, contacting fishing trade organizations, attending fishing industry meetings, and talking to or networking among fishermen can be useful in finding an industry partner. Always keep in mind that it is important to build partnerships with individuals or groups who understand and support the idea.

Once the partnership is established, begin planning the logistics of the proposal:

- How will the business of the project be conducted?
- Who will identify sources of funding?
- Who will fill out and submit funding applications, negotiate contracts or grants agreements, and sign as the responsible party?
- Who will manage the finances?
- Who will provide accounting of purchases, equipment inventory, and invoice or funds transfer from grants management systems?
- Who will apply for necessary permits?
- Who will acquire necessary insurance?
- Who will draft and submit progress and final reports?

The roles of all partners should be defined and agreed upon. Discuss, understand and agree on the timelines, constraints and requirements for each partner. Plan for contingencies as delays are inevitable (such as late approval of permits, bad weather, equipment breakdowns, or illness). Detailed planning and continued communication is essential for a successful project.

To conclude, cooperative research partnerships must be based on a few simple core values. These core values include trust, open and transparent communication, open mindedness, consistency, understanding, comprehensiveness, objectivity, and the mutual desire to seek truth.

TIP

Start a list of names and phone numbers of important contacts for the project.

FINDING A SOURCE OF FUNDING

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Funding may be found for a range of projects investigating various aspects of commercial and recreational fisheries. Some of the more popular funding sources are the Northeast Consortium, Northeast Cooperative Research Partners Program, and the New England and Mid-Atlantic Research Set-Aside Programs. However, there are many other sources of funding available. For a much more comprehensive list of possible source of funding, contact the NOAA Fisheries Service Northeast Regional Office. Please be sure to contact the program directly for the most up-to-date information. Each program is managed differently, so it may be worthwhile to find out about other researchers' experiences with the funding program before spending a lengthy amount of time trying to prepare a proposal.

PREPARING A GRANT PROPOSAL

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Introduction

Almost every available source of funding for cooperative research requires that applicants submit a formal research proposal. To be considered for funding, proposals must meet certain requirements for content and format, and be submitted prior to the application deadline. Once the application deadline has passed, all proposals are reviewed and the most appropriate are selected to receive support.

The purpose of this chapter is to provide advice on how to prepare a good cooperative research grant proposal. This chapter will identify the six basic elements of any research proposal and discuss how to best address each element.

The most important key to preparing a successful cooperative research proposal is to first obtain and carefully read the request for proposal (RFP). All of the relevant requirements for content and format, as well as the application deadline, will be included in the RFP. It is critical that you follow the instructions provided in the RFP. Any mistakes (wrong format, forgetting to include a resume, too many pages, late submission, etc.) can make the difference in having the proposal selected for funding.

This chapter will cover how to address six basic elements of almost any research proposal. However, each cooperative research program has unique aspects to it and there may be additional elements that are required for the proposal. There are two techniques to ensure the necessary elements are

6 BASIC ELEMENTS OF A PROPOSAL

1. Statement of objectives and need for the project
2. Description of the benefits and expected results from the project
3. Description of the approach and methods to be used in the project
4. Explanation of the proposed budget for the project
5. Identification of the qualifications for all people involved in the project
6. Description of the how the results of the project will be made known to the public and fishery managers

REQUEST FOR PROPOSAL

An RFP (or Request for Proposals) is a formal announcement by the funding organization that describes what types of projects they will fund, what is required to apply for a grant, how the proposals will be evaluated, and a schedule for the process. An RFP may also be called a Broad Agency Announcement (BAA), a Grant Solicitation, or, simply, a "call for proposals." Most RFPs are available on the web, or can be obtained by calling someone associated with the funding organization.

covered in any proposal. First, make a checklist of all the important aspects of the research proposal process; and, second, create an outline of the proposal by using section headings for the specific proposal elements called for in the RFP.

The next section of this chapter describes how to prepare an "Objectives and Need" section. Some RFPs may not use the words "objectives and need," but may instead talk about the proposal including a "statement of purpose." In this case, title this section of the proposal "Statement of Purpose" even though it would cover the same points as the "Objectives and Need" section would for another RFP. The idea is to make the proposal as easy as possible to review by using the same terms that the RFP uses (in other words, a reviewer looking to make sure the proposal includes a "statement of purpose" will have an easier time if there is a section called "Statement of Purpose" than if they need to decide for themselves that the section called "Objectives and Need" contains the same information).

Generally, all RFPs include a list of evaluation criteria, often with the points or weights given for each criterion (note that the evaluation criteria may be different from the program priorities). Partners should understand how the proposal will be evaluated and which elements will be most important to the reviewers. Sometimes, the evaluation criteria will match the proposal elements identified as section headings (for example, the RFP may call for a "Statement of Objectives and Need," which becomes a section heading in the proposal, and the evaluation criteria include "a clear statement of the objectives and need for the project—5 points"). Other times, the evaluation criteria may not so closely match section headings. In this case, issues raised as evaluation criteria should be clearly addressed in the proposal (for example, the RFP may call for a "Statement of Purpose," and the evaluation criteria include "a clear statement of the objectives of the project and its link to a clearly articulated management need—10 points").

Objectives and Need

The "Objectives and Need" section may also be called "Project Goals and Objectives," a "Needs Assessment," a "Statement of Need or Rationale," or something similar.

The most important thing to do in this section of the proposal is to identify an important problem (a currently unsolved problem) that needs to be addressed and to link it to a management need. For example, a project to examine a new trawl designed to separate cod and haddock is important because it could address discard problems when targeting haddock. This is linked to management objectives to reduce bycatch and to rebuild cod while maintaining a haddock fishery. To clearly define the importance of the problem and the management need (and, hence, your project), this section of the proposal should answer two questions:

1. Why does this issue matter?
2. Who cares about this issue?

PAGE LIMITS

It is very important to make sure you stay within any page limits specified in the RFP. Most RFPs include some type of page limitation, so make sure you find out what the page limit is.

Consider the page limit as a guide when trying to determine how much detail to provide on your project. If there is a limit of 15 pages, you should probably provide more detailed explanations of your project than if the limit is 3 pages.

Sometimes there is a page limit on the actual body of the proposal, but you can add additional materials in an appendix.

HYPOTHESIS TESTING

It is important to distinguish between the terms "research hypothesis" and "null hypothesis" as they are used in research proposals. The research hypothesis is quite simply what is proposed in the project. The null hypothesis, on the other hand, is used to determine the specific way in which the data will be analyzed. While the research hypothesis can be a simple statement of an initial belief, the null hypothesis is typically a very specific mathematical formula or logic statement that the statistical analysis is intended to evaluate. The purpose of the analysis is to determine whether the data indicate that the statement is "true" or "false" which, in turn, tells whether the research hypothesis is supported.

For example, a research hypothesis may state that industry can catch less cod, relative to other fish caught, with a new experimental gear design than with the standard gear. In this case, the null hypothesis is the exact opposite of what one hopes to demonstrate; the null hypothesis for this example is that there is no difference in the catch rate of cod between the new and standard gear designs. This is the distinction between a research hypothesis and a null hypothesis. The objective of testing a null hypothesis is to be able to reject it: to say that it can't be true. In this way, by rejecting as "false," the opposite of what you hope to show, you can accept your research hypothesis.

Although this may seem counter-intuitive or convoluted, the basic approach to hypothesis testing is to create a null hypothesis that represents the opposite of the initial claim, and then to try to show that the null hypothesis is unreasonable. If the results of the research can show that the null hypothesis is false, then the research hypothesis can be accepted. This analytical approach ensures a high level of scientific and statistical rigor in the experiment.

WRITING TIPS

- Avoid jargon
- Explain any terms that may be unfamiliar to a reviewer
- Spell out all acronyms the first time you use them
- Use "official" names for fish species (e.g., "witch flounder" instead of "grey sole") and BE CONSISTENT throughout the document
- Type your proposal (usually single-spaced)
- Spell-check your proposal before you submit it

In addition to addressing these points, the "Objectives and Need" section should discuss where this problem exists (is it localized to a certain geographic area—e.g., inshore Gulf of Maine—or is it widespread across the whole region?). The proposal should indicate the location where the research would be conducted and how this fits with the area most affected by this problem (e.g., is the project location representative of the area where the problem exists). To fully justify that this problem exists and is currently unsolved, you may need to cite other relevant documents and papers. These may include fishery management council documents, scientific reports (stock assessment reports are often good sources), or other papers. Try to keep background references as current as possible.

Many grant programs establish priority research areas for funding (these may also be called "topic areas"). Sometimes these priority areas are inherent to the program (e.g., the Monkfish Research Set-Aside Program is focused on issues related to the monkfish fishery), but other times these priority areas change from year to year. In some cases, cooperative research programs won't consider proposals that don't address a priority area, and, in other cases, such proposals may only be considered as a last resort if funds are available. Make sure to understand whether there are specific research priorities that are of highest interest to the cooperative research program that year. The "Objectives and Need" section should explain how the project addresses one or more of the priority areas. In doing so, be as specific as possible and don't try to make a case that the project addresses more priority areas than it really does. The proposal will be stronger if it is clear that it addresses one priority area really well.

Finally, use this section of the proposal to explain, as clearly as possible, what results are expected from the project. This gets back to why this project is important, but focuses not on the problem so much as the solution. Concluding the "Objectives and Need" section of the proposal with a discussion of what is expected if the project is successful creates a smooth transition into the next section of the proposal.

Benefits and Expected Results

The "Benefits and Expected Results" section may also be called the "Contribution and Relevance of the Project," the "Value or Significance of the Project," or something similar.

This section should identify the importance of the project and the benefits of the project to fisheries management and the fishing industry. The "Benefits and Results" section of the proposal could begin by completing the sentence "If successful, this project will . . ." In this section, quantify the scope of benefits expected from the project (or, if unable to quantify the benefits, at least explain the benefits qualitatively). For example, the expected benefits may be to show that cod bycatch can be reduced by 30 percent using a new gear configuration (quantitative), or the benefits may be to improve our understanding of the movement of yellowtail flounder (qualitative).

The "Benefits and Results" section should clearly explain what may be learned from the project. Explain the specific benefits to the affected segment of the fishing industry, as well as the larger benefits to fisheries management and to society as a whole. To conclude this section of the proposal, restate the research question.

TIP

When developing your project and preparing your proposal, keep in mind that most grant programs provide funding on an annual basis. If you are proposing a long-term project (e.g., the Mid-Atlantic supplemental trawl survey), you need to be prepared to apply separately for funding for each year of the project. Your proposal should explain the multi-year scope of the project, and state that you plan to re-apply each year.

Approach and Methods

The "Approach and Methods" section may also be called the "Methodology," "Project Design and Management," "Statement of Work," "Technical Approach," or something similar. This is one of the most important sections of the proposal, as this is the section that is used to explain to the reviewers how the project will be conducted. While it is always important to have a relevant research question, it is critical that the research project be designed to appropriately test that question and to provide reliable information from which you, and the users of your results, can draw reasonable conclusions. So, once the relevance and importance of the project is identified in your proposal, explain how the research will be conducted and analyzed in order to provide meaningful and usable information.

The first thing to do is to state the overall approach. This is a fairly high-level description of the "how" project will proceed. Partners should identify whether the project will be conducted in the lab, using a flume tank, or on the water using fishing vessels. For gear experiments, consider explaining whether catch rates will be analyzed, or video monitoring equipment will be used to examine how the gear performs.

> Example 1: For a project intending to collect data on the discard mortality of thorny skates, the approach might be described as collecting thorny skates in trawl nets under normal fishing operations, and transferring those skates to holding tanks for observation to monitor post-release mortality.

> Example 2: For a project intending to test the effectiveness of a skate excluder device on a groundfish otter trawl, the approach might be to have two similar fishing vessels fishing alongside one another and alternate using a standard otter trawl without the excluder device and an otter trawl with the excluder device to compare rates of skate catch relative to the catch of target groundfish.

SAMPLE SIZE

An important, but difficult, question in the design of any scientific experiment is the sample size necessary to obtain reliable results. Unfortunately, there is no simple answer to this issue. There are some complex statistical formulas that can be used to establish the appropriate sample size, but often the information required to use these methods is unavailable.

The determining factor for all experiments is the variability of the data. The greater the variability, the larger the sample size needed. However, until the data are collected, it is often impossible to estimate variability.

So, how can one determine whether 20 tows, 100 tows, or even 1,000 tows are needed? Beyond stating the obvious, that the best sample size is always more than one and less than infinity, the closest thing to a rule of thumb is to consider the size of the difference that will be measured.

If relatively small differences in the results are expected (say, 5 percent less cod caught with a new gear than with the old gear), a larger sample size is needed than if you expect to see relatively large differences (say, 50 percent less cod).

TIP

As you read through the RFP, create a CHECKLIST for yourself to help make sure that your proposal meets all the requirements of the grant program.

The checklist should include:

- any formatting requirements
- the page limit (if any)
- a list of all the required sections of the proposal
- a list of any other documents required to be submitted (résumés, contracts, partnership agreements, etc.)
- a list of the evaluation criteria
- the application deadline
- who must sign the proposal
- the number of copies to submit

Use the checklist to keep track of anything you don't want to forget as you prepare your proposal.

Example 3: For a project intending to determine the essential fish habitat for smooth skates, the approach might be described as reviewing data from NOAA Fisheries Service's surveys and from fishing vessel trip reports to determine catch rates of smooth skates by area, and then using video cameras towed behind a fishing vessel to determine the habitat characteristics of the areas where relatively high catch rates are identified.

The next thing to address in this section of the proposal is the specific methods you will use. This is the detail on the "how" of the project. While the approach describes the basic design of the project, the proposal should also provide details on the collection of data and conduct of the project. In this section, address issues such as how many tows or sets will be conducted, the duration of each tow or set, estimates of how many (or weight) of each relevant species will be collected, where and when the project will be conducted, how the experimental and the standard gear designs will alternate, etc. This section should identify the specific data that will be collected at each phase of the project, the sample size and number of replicates collected (see "Sample Size" sidebar on the previous page), how the data will be recorded (keeping in mind the need to ensure the accuracy of the data), how the data will be reviewed and maintained, and any quality control-type reviews of the data.

Next, describe the statistical analyses that will be used to test the hypothesis (see page 15 "Hypothesis Testing" sidebar). Some types of research projects may not be appropriate for statistical analysis, particularly if the purpose of the project is solely data collection or an educational workshop. However, many cooperative research projects are designed to compare the results of fishing with one type of gear, or in one area, to fishing with another type of gear or in another area. Anytime the purpose of a project is to make a comparison of some type, hypothesis testing is the process used to

TIP

When describing the geographic area you plan to conduct your project, be as specific as possible. Don't just say "the Gulf of Maine" unless you truly intend to conduct the project in all areas of the Gulf of Maine. The quarter degree "blocks" (commonly used to describe the groundfish rolling closures) are generally acceptable to describe a target research area. In some cases, smaller areas should be identified, such as a ten minute square of latitude and longitude. Also, it's helpful to provide the specific coordinates for the research area.

determine whether there are any differences between the two things that were compared. So, for projects that rely on comparisons, it is important to describe how the results will be analyzed and the basis for drawing conclusions. This should be one of the specific measures that will be included in the analysis (such as the proportion of one species caught relative to the catch of other target species).

In particular, the description of the analytical components of the project should explain how to determine whether there will be success in meeting research objectives. While a general description of the types of analysis is important, it is generally not necessary to identify the particular statistical tests that will be performed. This level of specificity is usually best decided once the data are in hand. However, discuss this section of the proposal, in particular, with any scientists that will be involved in the project.

If your project is intended simply to collect data (without testing a hypothesis), describe how the data will be summarized and presented. So, for a project collecting data on the size distribution of commonly caught species, prepare size frequency distribution charts for each relevant species. For a project collecting data on discard mortality, summarize the data to indicate mortality rates observed at each of several time intervals (0 hours, 1 hour, 10 hours, 24 hours, 48 hours, etc.).

For a tagging study, present a summary of the number of individuals tagged, broken out by the size of the individuals and the area in which they were caught/released. Also, discuss the analytical techniques that will be used quantify stock mixing.

No matter the type of project proposed, often there are certain conditions or features of the project that can complicate the ability to draw conclusions. These factors can often confuse the results and include such things as the timing of spawning events, changes in weather patterns, water temperature, bottom sediment type, etc. The approach and methods section of the proposal should try to identify any potential variables that could cause the results to be difficult to interpret or limit the ability to draw conclusions. Discuss how these factors may be addressed to reduce these complications.

> **TIP**
>
> The various grant programs may have specific requirements regarding the citizenship of applicants. If you are not a U.S. citizen, you should verify that you meet any such requirements the grant program may have.

Along with all of the information described above, the approach and methods section of the proposal should include a timeline or schedule for the project, as well as a list of milestones. The timeline should identify any time allocated for conducting a pilot test or other work in advance of the primary data collection; the time windows available for at-sea data collection; the time for reviewing, summarizing, and analyzing the data; any other follow-up work you expect; time for preparing reports; and any meetings or presentations that may take place.

Budget

The "Budget" section may also be called "Funding Requirements," or something similar. The key aspect of preparing this section of the proposal is to adequately and fully justify the budget that is requested for the project. Be prepared to split the budget into at least three general categories: scientific expenses, vessel costs, and purchases of permanent equipment (if necessary). All expenses proposed must be directly relevant to the project.

Scientific expenses generally include the salaries of the primary collaborators (and possibly their students) for the time spent working directly on the project. For researchers associated with a university or other scientific institution, this is generally represented by some amount of time (weeks or

months) multiplied by the individual's weekly or monthly salary. Fishermen who are serving as primary investigators should feel encouraged to include as a scientific expense the non-fishing time spent working directly in support of the project. Thus, account for the time spent participating in the preparations for the at-sea research, and/or in the data analysis, report writing, or attending meetings to present results. In addition to the primary investigators' salaries, scientific expenses also may include the salaries or wages of technicians or graduate students participating in the project in some way (doing lab work or at-sea data collection).

The proposal must explain and justify the proposed vessel costs. In particular, it is important to explain the way in which the vessel will be compensated. This may be with a straight charter fee (for example, $2,000 per day), it may be through the sale of the catch, or it may be through some combination of the two. In addition to explaining the way in which the vessel compensation will work, it is also very important to justify these costs. The proposal should explain why the proposed costs are reasonable and necessary, and justify the use of the particular vessel(s), especially if other, less costly vessels may be available. Remember, the reviewers will likely look at several similar research proposals. If one project stands out because the proposed vessel costs are much higher than other proposals, even though the other proposals are similar in many ways, the proposal may not receive as favorable a review. This facet of proposal review should not be taken to suggest minimizing or lowballing the proposed vessel costs, just recognize that, if vessel costs are likely to be construed as "high," the reasons why these costs are appropriate for the project should be explained. To justify a budget, participating vessel owners must be prepared to disclose information about fishing operations, particularly as it relates to the proposed vessel costs. The explanation of vessel costs should address compensation of the captain and crew of the vessel, fuel costs, and any unique insurance riders that affect the vessel costs.

TIP

Some grant programs require certain minimum levels of cost-matching or sharing. For example, the Northeast Consortium requires that no more than 25% of the total budget for the project go to any participating universities or research institutions, thereby providing at least 75% of the total budget to the fishermen participants. When developing a proposal, it is very important to determine whether the grant program includes any such requirements and to address them in the proposal.

PARTS OF A BUDGET

- Personnel (salaries and wages)
- Fringe benefits (specify rate)
- Travel
- Vessel costs
- Permanent equipment
- Supplies, materials, and operating costs
- Contracts (including subcontracts)
- Overhead/Indirect costs (specify rate)

Equipment purchases are generally identified in a proposal when the researchers expect to have to buy certain gear or equipment that is necessary to complete the project but is not otherwise available to the participants. Examples might be a particular type of video camera or waterproof camera housing, particular types of fishing gear not already possessed by the participants, or special logbooks or measuring devices to be used by the crews of the participating fishing vessels. If there are any proposed equipment purchases/expenses, be clear in the proposal why any such equipment purchases/expenses are necessary for the project, and why they are special for the project (that is, why they can't be obtained or borrowed from other sources). Also, keep in mind that some things (generally, those items above a certain cost threshold, e.g., $5,000) purchased with money from the

grant may belong to the funding organization. Each grant program may have different requirements and limits regarding equipment purchases, so make sure to understand what types of purchases become the property of the funding organization, and any requirements for treating and/or disposing of such equipment.

TIP

Make sure your budget is consistent with the description of your project (the approach and methods). Don't forget to include costs for lab work, data analysis, travel to meetings, or publication costs. Also, don't include a budget entry for anything that is not explained in the description of the project.

In addition to actual expenses, many research proposals also include an amount of money to cover "overhead." Overhead expenses, also called indirect or administrative costs, are generally a requirement of the institution(s) for which the primary investigators work. Overhead is used by universities and research institutions to cover the costs of office and laboratory space and equipment (excepting specialized equipment purchased solely for one project), libraries, support staff, utilities, and other expenses necessary to the administration and support of the institution but which cannot be linked directly to a particular project in the same way as a researcher's salary. These costs are shared across all research projects, and appear as a flat percentage surcharge on top of the direct costs. Most universities, for example, charge overhead costs in the range of 30-40 percent. These costs are added to the project's budget. For example, if a project has $100,000 in direct costs (salaries, vessel charter fees, equipment purchases, etc.), and the university that employs the researcher charges a 35 percent overhead rate, then the total budget for the project would be $135,000 ($35,000 in overhead costs, plus the original $100,000). Because these overhead rates can substantially increase the total budget of a project, it is a good idea to discuss indirect costs with the other project participants to ensure that the project is structured in the most appropriate and efficient manner. Consider the following: The example noted above represents the traditional approach to research, with the university scientist(s) identified as the primary investigator. This approach means that the scientist's university charges overhead ($35,000) for the entire direct costs of the project ($100,000). Often, in these cases, the fisherman participant is considered a type of subcontractor that receives a fee for providing specific services (generally, the use of their fishing vessel). But, in some cases, it may be more appropriate to consider the fisherman as the primary investigator and the university scientist as the subcontractor. Suppose that in this example, the $100,000 in direct costs represented $30,000 in salary for the university researcher and a couple of graduate students, $5,000 in salary for the fisherman, $30,000 in vessel costs, $5,000 in travel costs, and $30,000 in equipment costs. If the university scientist is considered a subcontractor, the university would only be able to charge overhead on the $30,000 in salary for its employees, reducing the overhead charged to the project from $35,000 to $10,500. The vessel, equipment, travel, and fisherman's salary would not be part of the subcontract with the university. This approach would reduce the overall budget for the project from $135,000 to $110,500, a savings of almost $25,000.

While this may appear at first to be a good idea for all projects, this approach may not be appropriate in many cases. If the university scientist took the lead or is a full partner in the development of the project, then he or she should be recognized as such and not relegated to a subordinate role simply

RSA AND DAS ISSUES

There are two issues unique to Northeast fisheries programs that may affect how to develop a budget for a cooperative research proposal: Research set-aside (RSA) programs and days-at-sea (DAS) requirements.

There are three RSA programs in the Northeast:

1. Mid-Atlantic RSA
2. Sea Scallop RSA
3. Monkfish DAS RSA

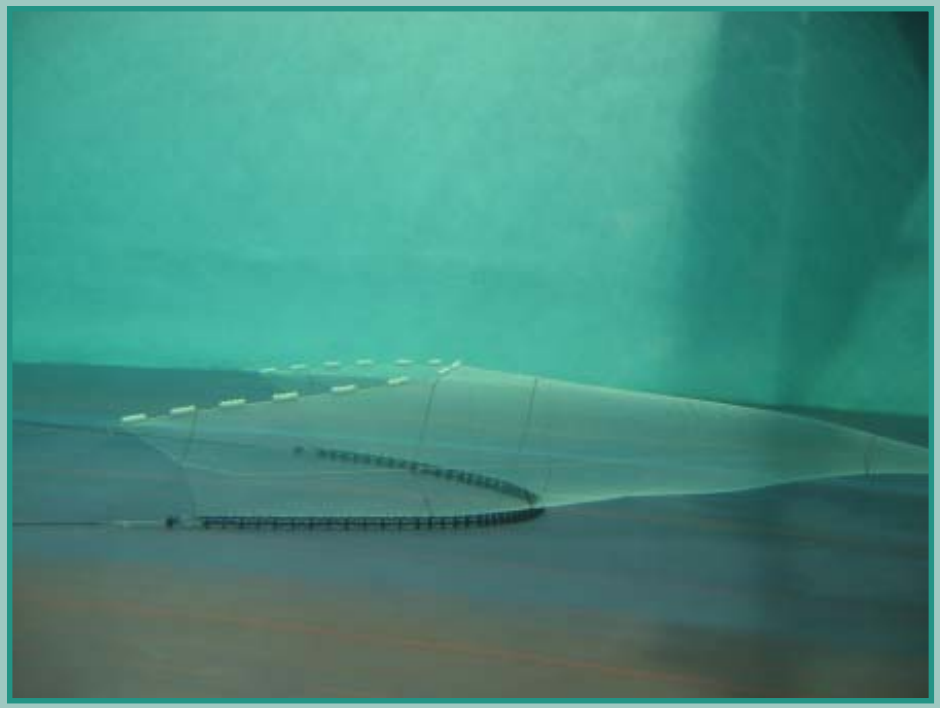
The Mid-Atlantic RSA program provides for an amount of fish (summer flounder, black sea bass, scup, squid, etc.) that may be allocated to indirectly "finance" research projects. The project participants can land and sell the allocated fish (outside of any quota restrictions) and the proceeds are used to pay for selected research projects.

The Sea Scallop RSA program provides either an amount of scallops or extra fishing trips as compensation for research. The allocated scallops (or the scallops caught on the extra trips) can be sold and the proceeds used to fund the research.

When applying to either of the Mid-Atlantic or Sea Scallop RSA program, the total cost of the project must be converted into pounds of fish, and the allocated amount of fish must later be sold and converted back to funds that are used to pay for the research. These conversions increase the complexity of developing research proposal budgets, and increase the risk associated with completing the project within the proposed budget.

The Monkfish DAS RSA adds another layer of complexity because it uses effort units (rather than pounds of fish) as the basis for funding research. Thus, to budget a project under this program, the cost of the project must be converted first to pounds of fish and then further converted into the required number of DAS. In this way, not only is the variability in the price of fish a concern, but the expected catch rates are also a concern when developing a project budget.

The DAS requirements of the Northeast Multispecies, Sea Scallop, and Monkfish FMPs impose unique restrictions on fishing vessels. An important aspect of preparing a budget for a research project involving a DAS fishery is whether the project would be likely to receive an exemption from the DAS requirements. Regardless of the fish caught or the price of fuel, or almost any other factor, it is much less costly to a vessel to participate in research with a DAS exemption than without one. Thus, the vessel costs aspects of the budget can vary greatly depending whether or not a DAS exemption may be authorized.



Due to recent tightening of the regulations for the Northeast multispecies (groundfish) fishery, DAS exemptions are rarely authorized. This must be taken into account when preparing a budget for a project affected by the groundfish regulations.

to save a few dollars. Also, this alternative approach has implications for the administration of the research funds. The person identified as the primary investigator receives the funds and must fulfill all of the requirements for the administration, disbursement, and accounting of the money received. While universities and research institutions have individuals, and in some cases whole departments, dedicated to grant administration (paid for out of the project overhead), most fishermen have little experience with this aspect of receiving financial support for cooperative research. Thus, it may simply make more sense for the scientist to administer this type of grant.

In addition to the direct and indirect costs of the project, it may be worthwhile (if applicable) to identify and document any resources utilized in support of the project for which funding is not requested. This might be time spent by a fisherman or scientist in some way in support of the project that is not reflected in the project's salary costs. This might also be any "in-kind" resources (such as fishing gear or vessel time) made available to the project for which funding is not required. Documenting in-kind resource donations in a project budget demonstrates a strong commitment to the project.

Probably the most important point to understand about preparing a budget section of a proposal is the requirement to be able to complete the project, as described, for the amount proposed in the budget. Circumstances change, particularly in fishing, but the budget section of a cooperative research proposal represents a commitment to complete the project for no more than the proposed amount. Opportunities for renegotiation are rare.

WHO OWNS THE DATA?

It can sometimes be confusing to determine who "owns" the results of a research project. Generally, whoever funds the research owns the results of the research.

In many cases, although the funding authority may own the data, the scientist who wrote the proposal and conducted the research gets the first right to publish the results. However, once those results are published, the data should be made available to the public. In fact, by submitting a research proposal to a grant program, partners are agreeing to release the results of the project to the public.

Personnel

The "Personnel" section may also be called the "Key Participants," "Qualifications of the Primary Investigators," or something similar. The basic purpose of this section is to establish that the people involved in the research project are qualified to do the work that is proposed. Usually, the personnel section will have two parts: A narrative section and a resume section.

The narrative portion of a personnel section of a proposal should summarize, in 1-2 paragraphs each, the relevant experiences of the primary participants in the research project. Each participant's role and responsibility should be clearly explained. If applicable, the Personnel Section should identify and discuss the performance of each participant in previous cooperative research projects, identifying the specific projects and the roles played. However, it is not necessary to have previously participated in cooperative research to apply for a grant.

The resume portion of a personnel section, should include a resume or curriculum vitae (CV) for each of the primary participants. Scientists associated with a university or research institution most likely will have a standard CV to include with the proposal. In addition, any fishermen heavily involved in the project should provide a resume. Although CVs can extend

to several pages, resumes should be kept to one page. The purpose of the resume is to demonstrate that partners are qualified for the work by identifying relevant past experience and training. In the resume, itemize relevant fishing experience, including places that were fished, for how long, types of vessels fished, gear types used, permits held, any U.S. Coast Guard licenses held (include the rating), any relevant certifications (include when it was obtained or last renewed), educational experience, past cooperative research experience, memberships in fishing organizations and/or Council advisory panels, and citizenship. An example resume is provided in the online appendix.

In addition to a resume or CV for each participant, it may also be useful to develop and include in the proposal a resume for each fishing vessel to be utilized in the project. A vessel resume would identify the relevant specifications and characteristics of the vessel, including size, permits, towing and cruising speeds, available gear, number of net reels, number of berths, deck space, etc. An example (and template) for creating a fishing vessel resume is available upon request with the appendices.

Although describing participants' relevant experience is an important, and most often required, element of a cooperative research proposal, people without previous experience in cooperative research should apply and can be successful. There are many ways to describe experiences and to identify relevant experience even without previous involvement in cooperative research. First and foremost is the experience as a fisherman. This is the most important qualification most fishermen have. Demonstrating involvement in fishing organizations, Council advisory panels, or other groups is important although not necessary. Participation in the Marine Resources Education Program (MREP) should also be identified if appropriate. Even tag returns demonstrate involvement and should be mentioned. These items demonstrate interest and commitment to fishery management issues, which are key aspects of cooperative research.

Dissemination of Results

The "Dissemination of Results" section may also be called the "Expected Products," "Reports," "Deliverables," or something similar. Because the purpose of all cooperative research grant programs is to improve the information upon which management decisions are based and to involve the fishing industry in the scientific process generating that information, it is very important to the overall process that the results of cooperative research projects be communicated to fisheries managers. The "Results" section of the proposal should discuss how the results of the project will be provided to fisheries managers, and the wider public at large.

There are two basic ways to communicate research results: in writing, and in an oral presentation. Whether writing a paper or making a public presentation, there will be either a scientific audience or a public audience (managers and fishermen). Plan to communicate the results of the project to address both types of audiences. For example, the scientist may decide to write a scientific paper for publication in a scientific peer-reviewed journal, so consider also making a public presentation at the Maine Fishermen's Forum,

and/or meetings of the appropriate Council. Alternatively, if results are presented at a scientific conference, consider also writing an article for Commercial Fisheries News. Discuss with the scientist collaborators the best way to make known the results of the research.

Each cooperative research program has its own requirements for the preparation and submission of reports on the project. Almost all programs require a final report, most also require interim progress reports. The proposal should acknowledge these requirements and state when partners plan to deliver all the required reports. Any timeline included in the proposal should clearly indicate the time needed to prepare and submit reports. Also, there is almost always some form of review process that the results must pass before they can be presented to a Council or state agency and accepted for use in management decisions. This review process can be time-consuming, but is important to ensure the validity of the results before they are used to justify changes to fisheries regulations. In any description of the proposed dissemination of results, take this process into account and incorporate the time that it will likely take before the information can be presented to a Council or state agency and considered for management action.

When developing the "Dissemination of Results" section of the proposal and trying to determine the best way to present the results, keep in mind the specific management problem that will be addressed. Often, thinking about the type of management problem will provide insight in deciding what presentation methods and audiences may be most appropriate.

Summary

In addition to the above six elements described, or other specific sections addressed in the proposal, most RFPs will also request that an abstract, project summary, executive summary, cover sheet, or something similar be included. These usually are the first things provided in the proposal package (after any cover letter that may be required).

Even if it is not specifically noted in the RFP, include a summary of the proposal that touches upon each element included in the proposal package. State, in one or two sentences each, the primary objective of the project, the primary management need driving the development of the project, how the project matches and furthers the goals of the grant program, what will be demonstrated with the project, the basic design behind the study, and the total amount of funding requested. Make sure to include contact information for the primary investigators, including mailing addresses, phone numbers, and email addresses.

WHAT TO DO ONCE FUNDING SELECTIONS ARE MADE

7

Introduction

Once your project is selected to receive funding, the first thing to do is to read and become familiar with the terms and conditions of the grant, contract, or award that is funding the project. As explained in some detail in the "business plan" paragraph of this section, contracts may only allow for reimbursement of goods and services that have already been received, and may have very specific reporting requirements. Grants may allow you to withdraw money at any time, including before conducting the research, but the person(s) or institutions receiving the financial assistance may be subject to frequent audits. Contact the funding agency to discuss the agreement (grant award, contract, or other arrangement) even if you feel you understand the funding conditions. It is important to discuss the expectations of the funding agency, among other things such as the format of progress reports, critical dates, and other deadlines with the funding agency after the agreement is reviewed.

Contacts and Discussions

After communicating with the funding agency, the next person to contact is the scientist, or principal investigator (PI), on the project. Discuss with the cooperative research partners the terms and conditions of the agreement and restate the roles and responsibilities that are already agreed upon in the project proposal. At this time, lay out a detailed tentative schedule for completing the project. If contracts or subcontracts for portions of the project are needed, then it is important to begin the process to arrange for these contracts as soon as possible after being selected for funding.

Regulatory Requirements

The funding has been allocated because an organization or Federal agency feels that the project has merit. The funding agency has not necessarily checked to verify that the project meets all state and/or Federal regulations. Any project that receives Federal funding is subject to the National Environmental Policy Act (NEPA), among other laws. The requirements for NEPA may have been fulfilled at the funding stage but this should be verified with the funder first. Projects that involve fishing in Federal waters may require an exempted fishing permit (EFP). This permit may be required to allow exemption from Federal fishing regulations of the Magnuson-Stevens Act, such as the mesh size of a trawl net or access to a closed area.

Even if an EFP is not needed, you should still ask the NOAA Fisheries Service Northeast Regional Office for a Letter of Acknowledgment for Scientific Research (LOA). Refer to the guidelines and flowcharts in the appendices for more details on the EFP and LOA permitting process. Be sure to include a backup research vessel in the request. The process of obtaining the proper permit under the Magnuson-Stevens Act and clearance under NEPA can be quite time consuming. Allow at least 60 days from the submission of a complete EFP package for the issuance of the EFP. Other regulatory requirements could delay this timeline. For questions on exempted fishing permits, contact the NOAA Fisheries Service Sustainable

Fisheries Division at 978-281-9315. For questions regarding the requirements of the National Environmental Policy Act, call the NEPA Team Leader at 978-281-9391.

Appropriate Safety & Field Sampling Training

Although it is essential that the proper safety devices and field sampling equipment are ordered quickly to ensure it is available, plan to train the crew and technicians in the proper use of the equipment before leaving the dock.

Equipment

Any equipment necessary for the project should be ordered soon after the release of the funds to ensure they are available when needed. Make sure to be completely familiar with supply purchase arrangements, including timing issues, under the agreement with the funder. Large budget items may have special accounting requirements that will need to be met before the equipment can be used. Equipment is not only limited to items needed to conduct the scientific aspects of the project, but also includes such supplies as proper safety equipment necessary for all the crew that will be on the vessel during the project. Order the supplies early as some specialty supplies may take longer to order than others.

Business Plan

At this point, a detailed budget created based on the proposal and any post-proposal updates or requirements of the funding agency, as well as established contracts for work and/or vessel time, should be complete. Now comes the important step of developing a business plan that identifies how goods and services received will be paid for and recorded. Most cooperative research contracts and grants do not simply write a check for the award amount at the start of the project. For contract programs, such as the Northeast Cooperative Research Partners Program, the money from the program is only dispersed after the goods or services have been received and the expenses approved. The turnaround time for contract reimbursement can be as long as a month. This may not be a problem for the purchase of goods because the vendor may be able to provide an account that can be paid off at the end of the month. However, payment for services, such as crew time on a fishing vessel, is often expected upon returning to the dock. Delayed payment for crew services may not be an option, so it is important to look not just at how much money is needed, but when it is needed and when it will be available. For smaller purchases, a simple low-interest credit card may be the answer. For larger purchases and expectation of a drawn out repayment time, a line of credit from a bank may be a potential solution. Discuss the options available with funding agency to ensure the most appropriate approach is used.

Similar rules regarding payments and purchases may exist for grant programs as well. Grant programs may allow a portion of the funds to be withdrawn at any time; however, the program may require money to be transferred only after goods or services have been received. If audited, and receipts don't equal the amount withdrawn from the grant, the project could face serious trouble.

Vessel Scheduling

As soon as the major supply purchases and the proper permits and regulatory requirements are complete, begin to schedule a timeline for conducting the research. It is one thing to schedule around regulatory restrictions such as inshore Gulf of Maine rolling closure areas, but also be prepared for setbacks due to bad weather or other unforeseen circumstances. Keep the lines of communication open between research partners and the vessel captain. Don't assume that just because a date was set three weeks prior that the project is underway. Make sure that the roles of the scientist, vessel captain, vessel owner, and crew are well defined and understood by all prior to leaving the dock (written and signed agreements tend to work best).

Data

The objectives of many cooperative research projects revolve around the collection, analysis, and presentation of data. It is important for all participants to understand the types of data to be collected and used in the course of completing the project as well as the limitation of the data. For data collection projects, establish rigid protocols for how the data are to be collected and the format in which they should be collected. This should be very well thought out so that the data can later be put in a format that is accessible to other researchers who may want to build upon the results of the research. As part of the exercise in defining the roles of people and organizations involved in the project, establish what rights project participants have to the data, and what data, if any, will be considered confidential. After the data are collected, the analysis should involve all the participants in the project unless they have clearly stated that they are not interested. The funding agency may have specific requirements regarding the final disposition of the data at the conclusion of the project.

IF YOU ARE NOT SELECTED FOR FUNDING

Short Term

Don't Take It Personally

Funding sources are limited compared to the number of grant proposal applications. If the proposal wasn't approved for funding, it is not a personal rejection, and it doesn't necessarily mean that the project has no merit.

Don't Make Assumptions

Just because the proposal wasn't funded doesn't necessarily mean that the proposal itself was poorly written or the project was not strong. There may not have been enough resources to support all the proposals submitted. It is also possible the proposal may not have fit in with the priorities in the request for proposals.

Get Feedback From Potential Funding Agency

Contact the agency to find out the reasons why the proposal wasn't approved for funding. If the funding agency did not provide written comments explaining why the proposal was not selected, including the comments of the reviewers, request a copy of them. If the proposal is an idea that the partners would like to submit again, these comments will become very useful when adjusting the proposal. By finding out the proposal's weaknesses, the proposal can be strengthened to increase the chances for funding in the future.

Inform Team Of Rejection And The Reasons Why

Contact the principal investigators and any other people involved in the proposal if the proposal was not accepted for funding. Let them know the proposal wasn't funded and go over the reviewers comments with them.

Long Term

Keep Trying

Don't give up if you receive a rejection notice. There are many funding sources available and the proposal may fit better within the priorities of another program.

Consider Feedback, Revise and Reapply

Once feedback on the proposal is received, revise it based on the reviewers comments and reapply to the funding agency the next time a request for proposals is announced.

Seek Alternative Funding

Look for other funding sources. There are many sources of funding available. Look past the original source and find other areas where the proposal may fall into the priorities listed in the request for proposals. Don't limit the project proposals to one funding source.

Look At Success Stories

Most cooperative research programs will publish a list of the proposals that were selected for funding. Review that list as well as successful proposals from other sources to see what can be learned from them.

Network

Communicate with others investigators that are involved in cooperative research. See if there are opportunities to get involved in funded projects similar to yours.

Identify Other Research Ideas

The best way to get potential ideas for research is to get involved. This can include attending Council meetings as well as other management meetings.

Contact Trade Associations

Communicate with the appropriate fishing organizations. This can provide research topic ideas as well as potential collaborators.

Invite Agency To Trade Association Meetings

To understand better what funding agencies are looking for in a research proposal, invite a representative from the agency to an association/ organization meeting.

CONCLUSION

8

Summary

This step-by-step guide is intended to provide the background information necessary to understand the cooperative research process. In addition, it is intended to identify how to find opportunities to get involved in cooperative research. Perhaps most importantly, this guide is intended to assist members of the fishing industry in the preparation of cooperative research proposals and to obtain financial support to conduct their project. This guide outlines all the required elements of a cooperative research proposal and is intended to provide the fishing community with a better understanding of the cooperative research proposal process.

One of the most important benefits of cooperative research is the establishment of partnerships between fishermen and scientists. An increased understanding among fishermen, scientists, and managers will lead to new and improved management techniques and more viable alternatives that enhance management decisions. This guide specifies how to establish effective partnerships that result in more successful cooperative research projects. This guide also offers additional resources that fisherman and researchers may find useful in development of research topics and ideas.

An appendix accompanies this guide and is available online at: www.nero.noaa.gov/statefedoff/coopresearch/guidelines or by contacting the NOAA Fisheries Service Northeast Regional Office at 978-281-9300.

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