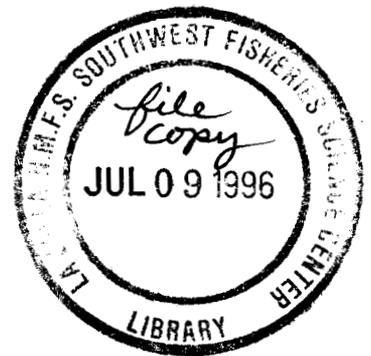


National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southwest Region and
Fisheries Science Center

**A Plan for
Establishing a System to Deliver
Sociological and Cultural Information to
Support Fishery Management, Recovery
of Protected Species, and
Coastal Ecosystem Health**

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**National Marine Fisheries Service
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Introduction

The National Marine Fisheries Service has established a policy for increasing the quality and quantity of sociological and cultural data and information, mainly in support of fishery management.¹ As part of this policy, the Assistant Administrator has called for the completion of Regional plans and the identification and commitment of resources for installing improved socio-cultural data collection and analysis efforts in each of the Regions.²

The Southwest Region and Fisheries Science Center, presently under severe budget constraints, cannot, in FY 1994, identify nor commit funds for installing a socio-cultural research and management program.³ Another complicating factor is the fact that there are no sociologists or anthropologists on the staffs of the Region or Center.

Despite the present funding condition of the Region and Center, this plan has been prepared for establishing a socio-cultural information system in anticipation of the day when funding of the Southwest Regional programs will reach its optimum.

This planning document outlines some of the socio-cultural issues in the Region's fisheries and the need for improved information to help resolve them. The approach to be taken, when

¹ See Memorandum of December 17, 1993 from Rolland. A. Schmitt to Regional and Science Directors on NMFS Policy on the Use of Social Impact Assessments in Fishery Management Planning with attachments.

² The term "socio-cultural" is used in this plan to encompass all the joint subjects and specialized disciplines of the sciences of Sociology and Anthropology as applied to research and management of fisheries, protected species, and habitat. However, the term does not refer to Economics, which is considered a separate discipline for purposes of this plan.

³ See, for example, memorandum from Southwest Science Director to Regional Director of February 2, 1994, Program Cutbacks as a Result of Budget Reductions.

funds are available, to design and install a first-class socio-cultural information system is laid out and constitutes the body of the plan. The outlook for funding and implementing the system is provided as are the next steps to be taken to bring the plan to fruition.

I. The need for a Socio-cultural Information System in the Southwest Region

I.1 General Background

The need for socio-cultural information in support of fishery management is rooted in the social impact analysis requirements of the National Environmental Policy Act (NEPA) and the Magnuson Fishery Conservation and Management Act (MFCMA). Both acts, among others, require agencies to determine the social impacts on those who may be affected by a proposed action.

The NEPA calls for the integrated use of social sciences in assessing impacts on the human environment. It also requires the identification of methods and procedures which insure that presently non-quantifiable environmental amenities and values be given appropriate consideration.⁴

Furthermore, the MFCMA requires, when a system for limiting access to a fishery to achieve optimum yield is deemed necessary, that the Secretary of Commerce and the Fishery Management Councils consider, in-depth, the economic and social impacts of the system.⁵

In addition to social impact assessments (SIAs) required to satisfy the demands of governing acts and laws, common sense requires that the NMFS and the Fishery Management Councils take into account the socio-cultural aspects of any proposed significant action, including the initiation of planning for such action; success will depend on it.

II.2 Examples of Specific Socio-cultural Fisheries Issues in Southwest Regional Fisheries

The need for socio-cultural information within various fisheries in the Southwest Region covers a wide spectrum of

⁴ Interorganizational Committee on Guidelines and Principles, 1993, *Guidelines and Principles for Social Impact Assessment*, c/o IAIA, Box 70, Belhaven, NC 27810 (40 pages), page 5.

⁵ *ibid.*, page 5

issues. The fisheries of California, Hawaii, American Samoa, Guam and the Northern Mariana Islands (NMI) present a rich bed of socio-cultural issues that range from Native American and Pacific Islander rights to consumer preferences and from data collection and law enforcement to individual quota allocations. All of these issues may influence the success or failure of fishery management schemes.

Although the present plan emphasizes fishery management, it must be noted that there are analogous socio-cultural issues associated with protected species conservation and fisheries habitat preservation as well. It may be possible to deal with these issues under the same or similar planning mechanism proposed for fishery management but this has not been thought out at this stage.

One of the requirements of the Fishery Management Councils and NMFS is the establishment of baseline social and cultural information. While some information is available from other State and Federal agencies, baseline social information specifically related to fisheries in the Southwest Region is limited and would need to be collected, tabulated and archived. This baseline information, in many cases, may serve as the standard against which further more detailed analyses would be compared.

In addition to the need for baseline information, other important socio-cultural issues exist. Selected examples of socio-cultural information needs associated with particular Fishery Management Plans (FMPs) are as follows:

II.2.1 Western Pacific Pelagics Fishery Management Plan

- An understanding of the social and cultural dimensions of the pelagic longline fleet, especially those items associated with multi-vessel ownership and fishing operation decisions, is believed to be necessary to evaluate properly the fishery management decisions taken by the council.

- Large swings from year to year in the effort applied in the Northern Mariana Islands' pelagic fishery is making it difficult to analyze the data from the fishery and to ensure its accuracy. The problem is thought to have its roots in recent changes in the social patterns of participation and fleet ownership, mixed with local economic changes.

II.2.2 Western Pacific Bottomfish and Seamount Groundfish Fishery Management Plan

- Socio-cultural information is required to assess the probable effects of proposed changes in the Northwestern Hawaiian Islands limited entry program. Significant socio differences among components of the fishery need to be evaluated with respect to the proposed changes so that impacts can be evaluated correctly.

- Social dynamics of the American Samoa bottomfish fishery appear to be affecting the amount of participation and the economics of the fishery. One of the objectives of the FMP is to preserve the social and economic values associated with this small-scale combination commercial, recreational, and subsistence fishery. For this reason, it is important for the Council to understand the social dynamics so it can better assess the changes, determine opportunities for future harvests, and act to change the FMP if required.

II.2.3 Western Pacific Crustacean FMP

- From past experience, the Council realizes that instituting ITQs in a fishery can result in serious effects on some components of that fishery. However, because the Total Allowable Catch of lobsters has now been reduced significantly the implementation of ITQs may be desirable to a majority. Nevertheless, social-cultural research, to determine the social impact assessment, will be required.

II.2.4 West Coast Groundfish Fishery Management Plan

. The Pacific Council is continually involved in allocation controversies. The Council and its analysts tend to categorize impacts on fishes according to the gear type used and species targeted with little consideration of the ability of individuals to move between the groups to which allocations are being made. Do gear/species categories simply reflect past economic investments in the fisheries or are there real skill and value differences among the groups? Are these skill and value differences such that the barriers to movements between fisheries are more than a matter of capital investment? Which fisheries have greater differences between them and which less? How do commercial fishing options compare to other employment options available in coastal communities? The answers to such questions may not only aid the Council in evaluating the impacts of allocational decisions, but may also aid the government in formulating relief plans where fisheries have been placed under severe restrictions. These research questions apply to the other FMPs as well.

. The implementation of a license limitation program and consideration of IQ programs raise questions as to how harvest rights may be redistributed after initial issuance. This redistribution issue is generally addressed in terms of the relative efficiency of potential buyers and sellers. What factors other than efficiency affect the decision to buy or sell? Factors to consider might include access to capital markets and nonpecuniary value placed on fishing (e.g., lifestyle).

II.2.5 West Coast Salmon Fishery Management Plan

. What are the social effects of closing sections of the coast to salmon fishing for an entire year? How do fishers and communities adjust to the situation? Are activities in other fisheries increased? Is nonfishing employment a realistic option? Are fishers forced to travel greater distances from home to pursue fishing income?

II.2.6 Northern Anchovy Fishery Management Plan

. What social and cultural factors might play a role in gaining international cooperation on fishery management--in particular, the cooperation of Mexico in management of the northern anchovy fishery?

III Socio-cultural Impacts and Some Principles for Dealing with Them in Fishery Research and Management

The identification of socio-cultural issues, or the realization that socio-cultural situations exist that can influence the success of fishery management, is a first step toward planning. However, in addition, the Southwest regional plan must consider some principles for handling socio-cultural data and information and then prepare to design a system that will embrace such principles and attack the problems at hand in an efficient manner. Fortunately, a great deal of work has been done to lay out the foundation for social impact assessment, strategic planning, and ethical application of the results. We need only borrow from these disciplines to plan, design and establish a cost-effective socio-cultural data collection, analysis and information delivery system.

This section reviews the characteristics of socio-cultural impacts, identifies some of the variables, and lists some principles for conducting an analysis and for planning and decision making.

III.1 Characteristics of Socio-cultural Impacts and the Identification of Socio-cultural Variables Affected

SIA's and other similar actions that may not be impact assessments *per se* (e.g., the solicitation of opinions), seek to gain information on the human environment and culture that can be used, in an ethical way, to design or decide upon alternatives for reaching an objective - or even to modify an objective. Social impacts can vary in a great many characteristics: *desirability, scale, duration, intensity and severity*. Complication allows each characteristic to vary with a change in context - a proposed action may suit northern California's Native Americans and Oregon and California recreational and commercial fishermen just fine but be completely unacceptable in American Samoa or the Northern Mariana Islands.

Impacts might be *cumulative or counterbalancing, distributed* equally or fall only on a certain group; impacts may be *equitable or not*. In this context, some of the most important disturbances of the human environment are those associated with the phenomenon known as the *social construction of reality*. The Interorganizational Committee on Guidelines and Principles for Social Impact Assessments (ICGPSIA) states, "...the *social construction of reality* is a characteristic of almost all social groups including the agencies attempting to make changes...", such as NMFS and the Councils, "... as well as the communities affected."⁶

The characteristics of sociological impacts befall human communities in five important areas: 1) population characteristics, 2) community and institutional structures, 3) political and social resources, 4) individual and family changes, and 5) community resources.⁷ In any particular situation these variables would be subjects or candidates for data collection and research with respect to the characteristics of potential impacts previously presented.

III.2 Principles of Social Impact Planning, Assessment and Decision Making to be Incorporated into the Plan

The ICGPSIA espouses 9 principles for Social Impact Assessment (listed below) which have been augmented by the authors to include additional principles for planning and for applying the results of an SIA in an ethical way. The nine principles of SIA seem reasonable, as a starting point, to take into consideration

⁶ *ibid.*, page 8

⁷ *ibid.*, page 17

when planning specific social impact analyses in the Southwest Region/Center. The additional recommended principles to guide SW Region and Center actions result from Interactive Management planning principles and from a discussion on safeguards on the application of social research. The latter was taken from a discussion of ethical considerations in applying social and cultural research at the Fisheries Social Science Gathering which took place at the Northeast Fisheries Science Center, under the aegis of Dr. Patricia M. Clay, October 14-15, 1993.⁸

The nine principles for social impact assessment are as follows:

**III.2.1 Principles for Social Impact Assessment
from the
Interorganizational Committee on Guidelines and
Principles for SIA⁹**

1. Involve the diverse public

Identify and involve all potentially affected groups and individuals

2. Analyze impact equity

Clearly identify who will win and who will lose and emphasize vulnerability of under-represented groups

3. Focus the assessment

Deal with issues and public concerns that "really count," not those that are "easy to count"

4. Identify methods and assumptions and define significance in advance

Define how the SIA was conducted, what assumptions were used and how significance was selected

5. Provide feedback on social impacts to project planners

Identify problems that could be solved with changes to the proposed action or alternatives

6. Use SIA practitioners

⁸ Patricia M. Clay, 1993, *Fisheries Social Science Gathering: Informal Roundtables on Current Research*, NMFS, NEFSC 166 Water St., Woods Hole, MA 02543

⁹ ICGPSIA, loc cit., p. 46-47

Trained social scientists employing social science methods will provide the best results

7. Establish monitoring and mitigation programs

Manage uncertainty by monitoring and mitigating adverse impacts

8. Identify data sources

Use published scientific literature, secondary data and primary data from the affected area

9. Plan for gaps in data

III.2.2 Additional principles for Southwest Region SIAs

The list of principles for SIAs should be augmented, in the author's opinion, with two additional principles:

10. Creatively add options and alternatives to consider after the initial SIA

The SWR/SWFSC should require that a vigorous attempt be made to develop creatively additional options and alternatives to the proposed action when it has potentially significant adverse social or cultural impacts on any component of the stakeholders; development of additional options would include inviting the stakeholders themselves to submit ideas interactively, and

11. Install safeguards against unethical use of data and information

SWR/SWFSC should require that safeguards be installed to ensure that those who cooperate in the analysis by providing data, opinions, etc. are not harmed economically or personally by a) exposure of results in a public policy debate, nor b) by being taken advantage of by virtue of their cooperation and the giving of information.

The second additional principle, calling for safeguards, is a very subtle but important principle. Violation of it, for example, could put information into the wrong hands where unethical exploitation of the cooperators could result. Although there are many instances where rent extraction is the ideal and socially correct thing to do it is used as an example for wrong-doing as well. The Fisheries Social Science Gathering states that "Demand studies for non-market goods are examples of analyses which, in the wrong hands, can lead to the systematic extraction of consumer surplus, supported by a misguided notion that because the unaware

consumer is discovered to be "willing" to pay, he suffers no grave damage by actually being made to pay."¹⁰

Unfortunately, it is easy to visualize just that kind of exploitation of unaware or unsophisticated persons taking place in many fishery situations if the NMFS and Councils do not practice vigilance and employ proper safeguards. Therefore, any socio-cultural plan conducted by or sponsored by NMFS SW Region/Center or the Councils should have built into it, safeguards against improper use of the information - just as we have principles and regulations against disclosure of confidential fisheries data.

One way to avoid such damage is to ensure that the subjects or stakeholders themselves are properly involved every step of the way in the planning and execution of actions that alter the socio-cultural status quo.

IV Critical Factors and a Suggested Step-by-Step Approach to be Taken to Establish a Socio-cultural Information System in the Region

IV.1 Critical Factors for Success of Planning, Design and Implementation

The planning steps set forth in Section IV.2, if taken, should lead to the design of a first-rate system for socio-cultural data collection, analysis, and information delivery that is well managed and that meets its objectives in a timely manner. The foregoing will be achieved provided that there is adequacy in the seven critical factors of the law of success and failure from the science of Generic Design.¹¹ The critical factors for success are:

1. Leadership

Coordinated leadership will be required at four levels: a) the management of the overall integration of socio-cultural sciences into the Southwest Region/Center, b) management of the overall integration into the Council systems, c) the management of the process for designing and planning the socio-cultural system, and last but not least d) socio-cultural expertise to ensure scientific soundness of the enterprise.

¹⁰ Clay, p. 6

¹¹ Warfield, John N., 1990, *A Science of Generic Design: Managing Complexity Through System Design*. Intersystems Publications, 401 Victor Way #3, Salinas, CA 93908

At present, the required leadership responsibilities are not defined. The RD/SDs and Council Chairpersons and Executive Directors, working together, need to appoint themselves or staff to these roles. This means, as well, appointing or contracting for a sociologist or anthropologist and a planner, and assigning the responsibility for overall management to a Senior Region/Center Manager and to a Senior Council Staff person. These four leaders must work together for the system to work efficiently.

2. Financial support

Financial support will be required for a) the design process, b) installation and operation of the system, and c) additions to supporting systems for additional work loads; for example, statistics, port-sampling, PacFIN, or database systems which would be required to provide additional work and the usual overhead items such as libraries, computer support, etc..

Presently there are no financial resources in the Region or Center to finance the planning/design phase nor to hire or contract for a socio-cultural scientist. Resources required for establishing a whole new scientific discipline into the Region/Center/Council culture and making it fully operational and meaningful are likely to be large. However, on the premiss that NMFS will eventually obtain the resources, several useful estimates of the requirements can be made.

We do have the experience of installing economists in the Region/Center and for planning large-scale complex programs; from that past experience we can make estimates of the costs.

Estimated Costs and Budget for Planning, Design and Installation of a Socio-cultural Information System

- The estimated total cost of planning and design is...\$150K including the cost of obtaining background information
- The estimated first year of operations...\$150-\$450K
- The estimated cost of out year annual operations...\$450-\$1,000K

These figures can be contrasted to the estimated current annual economics expenditure in the Southwest Region and Fisheries Science Center of only \$500K. A more realistic budget in keeping with the need for economic research and information, would be about \$1 million including salaries and contract funds.

It is assumed that after an initial growth period that socio-cultural research and information needs would near that for economics. However, it still remains that the Councils and NMFS would best be served by reinstating the economics budget to near optimum levels (\$900-\$1,000K) before embarking on a full-fledged socio-cultural endeavor.

3. Component availability

Many of the components required for the design and planning functions (room, computer support, facilitation, consensus methodologies) are already available at the Southwest Fisheries Science Center. Not so clear is the availability of other components that will be required for the design such as socio-cultural scientific expertise, experience or familiarity with Southwest regional fisheries' socio-cultural problems, socio-cultural library or data bases. A search for, and identification of these components, by knowledgeable people, working with the planner/designer will need to be conducted.

The planning and design function itself will result in the identification of the components of the program which would, of course, need to be available for the system to operate properly.

4. Design environment

The design environment must be conducive to designing and establishing a major program. This includes both the physical environment - not a major concern, because of the availability of the SWFSC's planning rooms - and the political, scientific and fishery management environment. If the latter are inimical or antagonistic to the idea of socio-cultural science entering the domain, then success will be hard to achieve.

To see the effects of a poor environment, we have only to look at the emerging role of Economics several years ago in a fishery management environment dominated by Biology and biologists. The difficulty, hostility, and indifference experienced by the Economists was not a good environment for making progress efficiently. Some would say the integration is not yet complete in terms of the disciplines working together in an efficient manner. The proper environment must be provided by the leadership for sociology and anthropology to flourish.

5. Designer participation

The designers, planners and people expected to make the socio-cultural system work must be allowed, as a matter of good planning, to participate not only in the system's design but within the system's environment. They must be allowed access to the fishery management system, for example, to participate in the early scoping of problems. Conversely, biologists, economists and fishery managers must also be allowed participation in the design of a system where eventually all three must work together in concert.

6. Documentation support

The planning system must receive adequate documentation support if its deliberations are to be conducted efficiently and if later decisions are to be made effectively. Good documentation is necessary to allow decision makers to re-trace their steps and take alternate paths, for teaching others the train of thought, and documenting decisions. Documentation includes typing, clerical, filing, and other such functions as well as computerized documentation and support during the planning sessions.

7. Processes that converge to informed agreement

The planning of a complex system is not an easy matter; many different voices must be heard. People representing different disciplines, experiences and backgrounds must be involved because no one or two individuals has the capacity to understand all aspects of the problems, yet alone the solutions. Therefore, a way must be found for the group to converge to agreement or consensus, otherwise no progress will be made. To make that progress and come to informed agreement, processes for efficient group work must be installed. The consensus seeking techniques of Interactive Management are such processes; they are designed to account for the physical and mental limitations of humans in dealing with complex matters and serve to meet the requirement.

IV.2 Recommended Planning Steps to be Taken

The following steps are recommended for establishing a socio-cultural program within the Southwest region to support fishery management, conservation of protected species, and preservation of fishery habitat. The basic strategy is to develop the system for

fishery management and then, if sufficient resources remain to ensure adequate critical factors, iterate the steps to produce additional systems or sub-systems for protected species and habitat protection.

Step 1. Procure Leadership and Financial Support

The missing critical factors of leadership and financial support must be established before the balance of the planning, design and installation can proceed. The Regional Director and Science Director in concert with Council Executives must appoint or recruit leaders in the four critical areas. In addition, and simultaneously, funds to support the planning effort must be allocated.

At present, the only possible source of funding for the effort is the proposed FY 1995 increase to NMFS' budget. If long-term funding is not assured, it may be prudent to obtain a term appointment and provide limited operational funds for a Sociologist/Anthropologist position pending the development of the plan and the determination of the cost of developing the system. If funds do not become available to restore economics work and finance the effort required to absorb a new discipline into the scientific management of fisheries then the whole fishery management enterprise should be re-examined to layout the proper balance among biology, stock assessment, economics, and social cultural concerns.

Step 2. Develop the Background Information and Intelligence about the Situation Required for Planning

After procurement of funding and leadership, the Region/Center will be able to proceed with the details required to design and install a socio-cultural system. As a beginning, a certain amount of intelligence will be required to guide the planning effort. This step will inform stakeholders and managers alike of the current situation, the problems, and the likely downstream consequences of allowing the trends, now embedded in the status quo, to continue.

- a) Establish a knowledgeable interdisciplinary task force of anthropologists, sociologists, fishery managers, biologists, economists, etc., lead by a planner and a social scientist to assist with the following activities.
- b) Identify important socio-cultural problems/issues and trends within each important fishery,
- c) Assess and evaluate the sources and availability of information that would help resolve some important issues,

d) Prepare background document(s) describing the socio-cultural problems and the SIA situation in the Southwest Region,

e) Provide background information and intelligence sufficient to inform managers and stakeholders on the spectrum of the socio-cultural problems, the probable down-stream effects of not addressing the problems, and the availability of data/resources for tackling the problems.

Step 3. Establish Goals and Objectives for the Socio-cultural Information System in the Southwest Region

SWR/SWFSC Directors, joined by stakeholders such as fishery managers and other interested parties and informed by the background document and task force presentations, must establish specific long-term goals and objectives for the system. The goals and objectives derived in a facilitated meeting should be structured to reveal the "priorities" and leverage to be gained by pursuit of certain of the objectives.

Step 4. Develop alternative system designs (Options Field)

The planning effort, informed by the goals and objectives set for the project by the NMFS leadership, should next engage in a process that allows for the highest probability of specifying every dimension, no more, no less, that is necessary for the system to work; i.e., meet its goals. One of the best methods for ensuring such is the case, and that important dimensions haven't been left out of consideration, is the development of an *Options Field* through facilitated group work.

Specifically, a group of sociologists/anthropologists, fishery scientists, and fishery managers, knowledgeable of the fishery situation and socio-cultural concerns, meet in facilitated group work to develop options (activities, events, or milestones) for meeting the objectives and to arrange them into an *Options Field*; i.e., a matrix of options arranged by categories (dimensions) in a particular way.

When the group is satisfied that the *Options Field* contains all necessary dimensions and that reasonable optional specifications for each dimension are available, it can make selections of options within each dimension to specify various alternative designs of the system. It is as if the *Options Field* could be viewed as a Chinese restaurant menu, with many selections (options) available under each category (dimension). One can visualize that a great many alternative Chinese meals can be generated with a menu of, say, eight categories and six options

within each category. In fact the number is 1,679,616 different meals.¹² Likewise, the socio-cultural System designers will have an opportunity to explore a large number of alternative designs and, together with Region/Center management be able to select the best one; see step 6.

Step 5. Establish criteria for choosing the best design

Region/Center management, informed by the goals and objectives and its own vision, should be asked to specify important criteria for selecting the best alternative design. The most important five or six criteria should serve well to make a choice of the best alternative from among several promising alternatives presented.

Step 6. Choose the best program design

Region/Center management, being informed by the information supplied by the design team about each candidate alternative with respect to the criteria, chooses the best alternative to be put into effect. If required, the selection process can be aided by a facilitated trade-off analysis.

The selected alternative equates to the specifications for the socio-cultural system. The system is specified when specifications have been made for each dimension (choice of option(s) in each category).

Step 7. Conduct managerial and operational planning

Once the system is specified, operational planning can take place. The activities to be carried out over the next two years can be specified in some detail, budgets can be prepared and PERT-charts can be drafted. Along with the operational planning the Region and Center, together with the Councils, may wish to establish a more detailed managerial plan to specify how the program will be monitored, reviewed and evaluated.

Step 8. Initiate the system

The system is initiated by allocating funds for the budget and taking the first steps indicated by the approved operational and managerial plans.

¹² One could eat 3 meals a day 365 days a year at such a restaurant and never eat the same meal twice for 1,533 years! However, with all these choices before us, we can somehow make choices, order our meal and go about our business. Similarly, there are a great number of alternative designs for a socio-cultural system that could be considered but choices can be made using the Options Profile and Trade-off methodologies to yield the "best" alternative.

V. Summary and Next steps

In the foregoing, we have defined some of the needs for socio-cultural work in the Southwest region. We've also identified the socio-cultural variables, set out the principles of SIA, defined the critical factors required for success, and laid out a step-by-step process for achieving the design and installation of a first-class socio-cultural information system. However, all will come to naught if the critical factors are inadequate.

At present, the critical factors of leadership and financial support are non-existent. Of the two, financial support is probably most important because, with it, the leadership issue likely could be resolved. If NMFS does receive a substantial increase in the FY 1995 budget, NMFS should set aside adequate funds to do socio-cultural strategic planning and implementation at the national and regional levels.

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