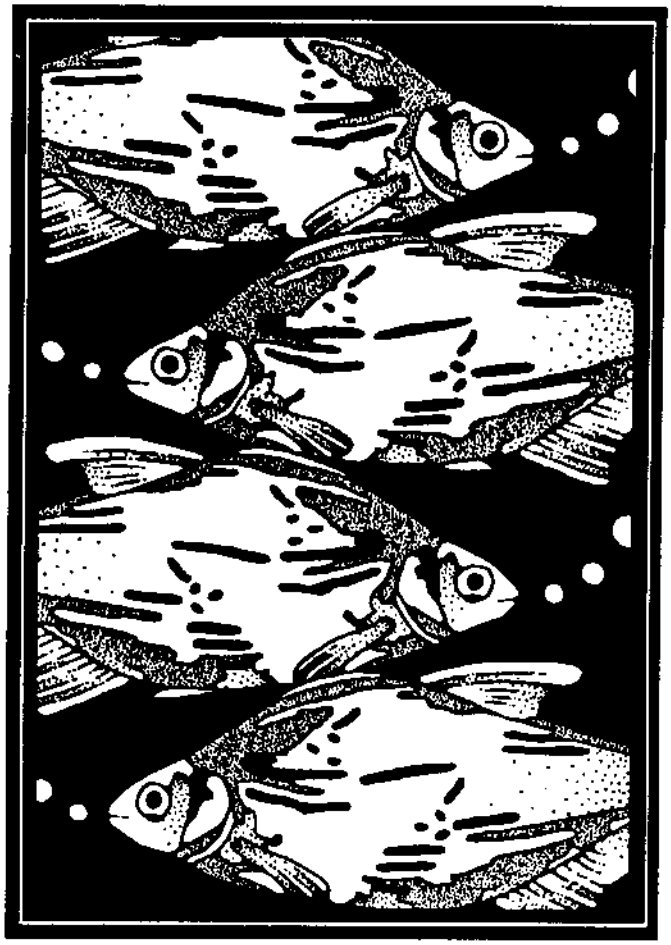
A Report On

Social Science Research in U.S. Marine Fisheries



Edited by

J.M. Gates
Elizabeth Gibbs
Carole Jaworski

This publication is the result of research partially funded by NOAA Office of Sea Grant, U.S. Department of Commerce, under Grant #NA 89 AA-D-SG-082. The U.S. Government is authorized to produce and distribute reprints for governmental purposes notwithstanding any copyright notation that may appear hereon.

Additional copies of this publication are available from:

Publications
Rhode Island Sea Grant
University of Rhode Island
Bay Campus
Narragansett, RI 02822-1197

Printed on recycled paper P 1361 RIU-W-92-005 ISBN 0-938412-36-1

$2.50

A Report On
SOCIAL SCIENCE RESEARCH in U.S. MARINE FISHERIES

Edited by

J.M. Gates

Elizabeth Gibbs

Carole Jaworski

Summary of a Workshop at
The University of Rhode Island
W. Alton Jones Campus
January 9-10, 1992

SECTION **ONE**

INTRODUCTION

This report summarizes priorities for social science research in fisheries. The priorities were developed at a workshop held at the W. Alton Jones Campus of the University of Rhode Island (URI) in January 1992. The workshop was organized jointly by social science researchers at URI and by the Atlantic Offshore Fishermen's Association. Support for the workshop was received from the Rhode Island Sea Grant Program and the Office of the Chief Economist, National Oceanic and Atmospheric Administration.

We are all indebted to the panelists for their service and to the rapporteurs—S. Hanna, T. Wellman, M. Hall-Arber, N. Bender, and D. Lipton—who summarized discussions that were fluid and wide-ranging in content. The notes of rapporteurs are available at cost (see below). The workshop planning committee—R. Allen, J. Sutinen, R. Pollnac, and L. Alexander—gave sound advice, for which I am grateful.

The summary that appears in this report reflects a "sifting" process that was made possible through the assistance of M. Hall-Arber, B. McCay, and L. Mortensen. Further discussions with P. Logan, J. Sutinen, R. Pollnac, L. Mortensen, and S. Pooley resulted in the priorities that appear below. For the discussions that appear, I am indebted to T. Hennessey, J. Sutinen, P. Logan, and M. Feeney.

Some comments and editorial changes have of necessity been made; I hope the intent of the contributors has been preserved. Some contributors may have to search hard to find their favorite research subjects, since I have aggregated numerous topics into what seemed to be a sensible collection. Researchers will undoubtedly be interested in greater detail than appears here—I refer them to Section Four (see below).

The report consists of three sections including this introduction. Section Two summarizes the priority areas identified. Section Three contains a listing, by priority area, of specific items that exercised workshop participants. This listing was the "raw material" from which the categories were formed. Section Four, which existed in the draft report, contained various appendices, specifically:

Appendix 1. Workshop Program **3 pages**
Appendix 2. Workshop Registrants **2 pages**
Appendix 3. Names and Addresses **8 pages**
Appendix 4. Tally of Votes on Priorities **11 pages**
Appendix 5. Other Priorities, Data Needs, Studies since MFCMA **3 pages**
Appendix 6. Rapporteur Notes by Session **17 pages**
Appendix 7. Orphan Topics by Session **4 pages**

Although Section Four is no longer part of this report, a photocopy of Section Four is available at cost from me at the following address:

J. M. Gates
Department of Resource Economics
University of Rhode Island
Kingston, RI 02881

Voice: (401) 792-4584
FAX: (401) 782-4766
E-Mail: jgates@uriacc.uri.edu

If E-Mail is acceptable to you, I can send the report in whole or in part to you, at no cost.

WORKSHOP REGISTRANTS

Allen, Richard
Anderson, James
Anderson, Lee
Bender, Norman
Brown, Gary
Burbee, Clarke
Casey, Keith
Castro, Kathy
Cheng, Hsiang-Tai
DeAlteris, Joseph
Dowdell, David
Easley, James
Fisher, Barry
Fiske, Shirley
Fricke, Peter
Gates, John
Gauvin, John
Georgianna, Dan
Gibson, Barry
Haksever, Demet
Hall-Arber, Madeleine
Hanna, Susan
Heasley, Daryl
Hennessey, Timothy
Hushak, Leroy
Kang, Yeon
Lamberte, Anthony
Lampl, Linda
Lindsay, Bruce
Lipton, Doug
Logan, Phillip
Loomis, David
McCay, Bonnie
Miller, Morton
Mortensen, Lynn
Muth, Robert
O'Leavy, E.
O'Malley, James
Pollnac, Richard
Pontecorvo, Giulio
Pooley, Sam
Roe, Richard
Rolon, Migue
Scott, Anthony
Schrank, William
Schuler, Francis
Sissenwine, Michael
Smith, Courtland
Stamps, Norbert
Stamps, Christine
Sutinen, Jon
Townsend, Ralph
Valdes-Pizzini, Manuel
Wang, Stanley
Weaver, Tom
Weiher, Rodney
Wellman, Katrina
Wilson, James

SECTION TWO

SUMMARY

The four areas listed below emerged as priority areas for social science research. The four areas identified are broad, and priorities will differ from region to region and between fisheries. Priorities for research will also differ depending on the breadth of perspective and the perceived mission of the research. Therefore, within and between the four areas, no further prioritization has been made. However, the reader will find, on examination, that some topics have information needs that presume prior or concurrent completion of other items. The four priority areas for social science research in fisheries are as follows:

PRIORITY 1

Provision of basic information for industry (commercial and recreational) and for managers

PRIORITY 2

Assessment of social, economic, and cultural aspects of fisheries under alternative public policies

PRIORITY 3

Investigation of communication, participation, and education in the management process

PRIORITY 4

Investigation of alternative institutions for fisheries governance

TABLE 1. Summary of votes by priority area and by voting group

	PRIORITY 1 Basic Information	**PRIORITY 2** Social Assessment	**PRIORITY 3** Communication and Education	**PRIORITY 4** Governance and Institutions
GROUP				
Industry	8	5	39	10
Agency	7	21	7	10
Economists	8	23	3	5
Other social scientists	7	14	4	14

DISCUSSION

Each participant received the same number of color-coded dots to "allocate" to the priority areas he or she deemed most important. Table 1 provides a summary of the votes.

The numbers in Table 1 indicate substantial agreement of participants in certain areas. Tables 2 and 3 are normalized by row sums and column sums, respectively, and can thus be interpreted as percentages.

There is substantial agreement among "agency" representatives, "economists," and "other social scientists" participating, in that roughly one-half of their votes were cast for priority area 2—"assessment of social, economic, and cultural aspects of fisheries under alternative public policies" (see Table 2).

There is a significant difference in emphasis between these groups and industry, which cast two-thirds of its votes for topics in priority area 3—"communication, participation, and education in the management process." The comments that appear under priority area 3 are revealing. Not only is there a difference of opinion in this area; the comments by industry reveal a passion and intensity not exhibited by other groups. It is easy to rationalize this difference in terms of a divergence of interests. Clearly, unless researchers do research, they will have little to communicate about. Nevertheless, there is a need for social science research to be communicated more frequently and effectively to industry, not just to other researchers.

TABLE 2. Percent of each group's vote allocated to priority area

	PRIORITY 1 Basic Information	**PRIORITY 2** Social Assessment	**PRIORITY 3** Communication and Education	**PRIORITY 4** Governance and Institutions
GROUP				
Industry	13%	8%	63%	16%=100%
Agency	16%	47%	6%	22%
Economists	21%	59%	8%	13%
Other social scientists	18%	36%	10%	36%

TABLE 3. Percent of priority area votes from each group

	PRIORITY 1 Basic Information	**PRIORITY 2** Social Assessment	**PRIORITY 3** Communication and Education	**PRIORITY 4** Governance and Institutions
GROUP				
Industry	28%	8%	81%	22%
Agency	24%	31%	4%	22%
Economists	28%	35%	6%	28%
Other social scientists	20% **100%**	26%	8%	28%

SECTION THREE

ELABORATION OF PRIORITIES

This section explains, by example, the priorities listed in Section Two.

PRIORITY 1

Provision of basic information for industry (commercial and recreational) and managers

A. Industry structure studies

A prerequisite to provision of basic information is the conducting of industry structure studies to obtain the required data. Data needs include:

- *Demographic trends*—impacts of changing age, geographic distribution, resource allocation, large-scale economic trends, etc. Includes small business response to changing demographics.
- *Vessel economics*—cost and returns of typical vessels, including opportunity costs of labor, management, and capital.
- *Industrial forces* affecting the future of fishing enterprises and changes in support institutions (banks, insurance, suppliers, etc.).
- *Competing uses of coastal resources*
- *Interdependencies between aquaculture and capture fisheries*
- *Trade impacts*—description of trade policies and their potential effects on U.S. producers and consumers.

B. Studies on societal values and institutional structure

Determine:

- *Subsistence use.* Subsistence use of resources is of uncertain importance, but thought to be quite large and ill-represented by existing political constituencies.
- *Values, motivations, expectations.* What are the values, motivations, and expectations of the disparate elements in the fishing industry, particularly those of fishers and managers in commercial and recreational fisheries?
- *Institutional structure and adaptability* of fishing communities.

DISCUSSION

The collection of basic descriptive statistics for the fishing industries is a necessity if the objectives of the Magnuson Fisheries and Conservation Management Act (MFCMA) are to be fulfilled. In the industry panel, the point was made forcibly that there is an inversion of priorities in allocation of fisheries research funds—specifically, 10 percent of research support is allocated for social and economic research despite the fact that 90 percent of the problems are socio-economic in nature. In some cases, the problem is not a need for new data collection, but for compiling statistics from existing data series and making these series more accessible to fisheries researchers and managers. In other cases, data needs are problem-specific and will require special-purpose studies. However, the difficulty of assembling existing data forces many researchers to start from scratch and to focus on narrow, problem-specific issues. This can produce useful results but, lacking a coherent research design, the results are often out of phase with the perceived need.

The timeliness of research is also strongly influenced by the usual pattern of support for social science research. Metaphorically speaking, the usual pattern of support for social science research is like the proverbial leaking roof; when it is raining no one has time to repair the roof, but when it is sunny, no need is perceived. This pattern has existed for at least three decades, and there is no evidence of a capacity for learning. As one participant put it, "there is no central nervous system in the National Marine Fisheries Service" in the determination of social science research priorities.

To a considerable extent, this state of affairs reflects an ill-chosen approach to fisheries management, which resembles the command and control system of the former USSR more than the primarily decentralized markets that characterize the rest of our economy. To emulate the market approach of the larger economy in fisheries would require moving toward industry or guild-enforced (and financed) access rights. Whether society in general—and fishers in particular—wish to do so is problematic at this time, as it involves issues of societal values and institutional change (see priority 4, page 13).

It is conceivable that fisheries management is not worth the transaction costs[1] required to achieve it, even under a more sensible approach. However, it is noteworthy that in certain ports, fishers had developed guild approaches three decades ago. Such approaches were destroyed by antitrust actions of the U.S. Justice Department. This may be a case in which the structure of antitrust law conflicted with intent.

The fishing industries have also been slow to recognize the inevitability of change and are in danger of triggering potentially tragic action by an electorate and by interest groups that have little sympathy for the fishers' traditional way of life if—as seems to be the case—that way of life leads inevitably to resource depletion.

[1] The costs of designing, implementing, and enforcing the policy changes.

PRIORITY 2

Assessment of social, economic, and cultural aspects of fisheries under alternative public policies

Determine the distributional impacts (economic and noneconomic) that are associated with:

A. Transfers of harvest

When determining the impacts of management-induced transfer of fish harvest between fleets and among sectors, the following must be considered:

- Behavioral responses of fishers
- Equity impacts
- Labor mobility
- Opportunity costs of displaced labor
- Management-induced inefficiencies in harvesting and in marketing and distribution systems

B. Benefits and costs of preserving various kinds of fisheries

What are the benefits and costs—to communities and to the nation—of preserving existing fisheries?

C. Rebuilding stocks

Aspects that should be considered include the following:

- Time horizons for rebuilding
- Cost-benefit analyses of stock rebuilding measures
- Potential for "pain reduction"—reducing adverse transitory impacts on fishers[1]

DISCUSSION

"Human factors" directly affect the success (or failure) of a management scheme, as well as determine its impacts. The goal of social impact assessment is to predict the likely impacts of various actions on the human environment so that the least disruptive, least costly, and most beneficial alternatives may be selected.

In order to be able to predict the impacts of changes, however, social scientists must have detailed knowledge of the status quo and a sense of historical context. In reality, the status quo is characterized by change. Sometimes changes are cyclical or repetitive (e.g., seasonal gear changes), while at other times, change is unprecedented and unexpected. Historically, some communities have faced gradual change, while others have experienced sudden major shifts in direction.

It was pointed out under Priority 1 that social scientists who attempt to assess social, economic, and cultural aspects of fisheries are seriously hampered by the absence of long-term comparative data. If such data were made available, analyses of various public policies could focus on how the policies impact the disparate elements involved in fisheries. For example, some policies may favor captain-

[1] For example, "financing" rebuilding via relaxation of discard regulations, or via conservation investments, through which fishers can borrow against management-induced gain in value.

owners over crew members, one type of gear over another, one species over another, or they may place control of harvests in the hands of processors rather than fishers. Restrictions can leave communities deprived of employment opportunities and, in severe cases, can drive labor out of the industry. On the other hand, inefficiencies that can accompany legislation may result in unacceptable consumer costs. Unresolved management issues affect institutional support (bank loans, insurance rates, etc.).

A shopping list of data, however, will not resolve the issues raised by alternative public policies. Social scientists need to consider carefully what data is needed and how its collection could be generated so that comparison and other analyses would be fruitful. Barriers still to be overcome include the major differences among the social science disciplines in perspective, values, techniques, and theories.

The specific research topics considered high priority by participants focus principally on the potential economic and noneconomic impacts of policy changes on fishers (differentiated by fleet and sector), and on a consideration of the costs and benefits of such changes.

PRIORITY 3

Investigation of communication, participation, and education in the management process

A. Communication Studies

Evaluate and provide recommendations for improving effectiveness of communication in social science research. For example, research appropriate outreach methods for interacting with fishers and fishery managers.

B. Participation Studies

Evaluate roles and effectiveness of fishers' organizations for improving communication, organizational techniques, processes, strategic planning, and participation.

C. Education

Determine what knowledge of social sciences is needed for training in fisheries management.

DISCUSSION

Communication was a common thread throughout the panel sessions and the priority-setting process. More thought needs to be given to a communication process for a better understanding of the fishing industry system, from sea to dock to shore to market to consumer. The macro-ecosystem of the fishing industry needs to be understood for the interrelationships of its parts: the natural resource base (water, stock, land use, air), the various sectors that interact (fish industry, small business, residential/consumer) and the factors influencing regulatory systems (local, state, federal agencies; education, research, economics, fishing industry culture).

When working on management, technical, policy, economic, or governance issues, it is important that all components involved in or impacted by a decision be identified. The representatives of these

components can design a process for analyzing an issue, and then communicate the process to others to encourage their involvement and feedback. This fosters interaction and understanding. Bringing representatives of disparate groups and disciplines together in an environment of problem solving builds trust and understanding of the fishing industry system, and of its people and culture. The group of problem solvers can then be guided through a process to analyze an issue; identify alternatives, consequences or benefits; and recommend choices or actions.

Members of the regulatory arena—in local, state, and federal agencies, and in education and research—need to improve the "user-friendliness" of the techniques and tools they use to collect information, report research results, and to develop and implement policies. Instead of using techniques that are designed for the industry to "come and talk," or conducting long surveys, they should select tools and techniques for on-site use, to "*go* and talk."

Through improved communication tools and techniques, participation processes, and interactions in the macro-ecosystem, participants in the fishing industry system—including policy, research, and education—will make significant improvements in the system to the benefit of all.

PRIORITY 4

Investigation of alternative institutions for fisheries governance

Research needed includes:

A. Benefit-cost analyses

Determine return on investment and net social benefits of fisheries management research (biological and social science).

B. Comparative analyses

Compare governance and institutional structures and apply tools of conflict resolution, mediation, and cooperation.

C. Effectiveness of fishery management

Examine whether objectives are being achieved—perhaps encourage a National Academy of Sciences study.

D. Assessment of compliance in fisheries management

- Improve or reduce cost of enforcement.
- Investigate greater involvement in management decisions as a means of increasing compliance.
- Investigate degree of property rights and access to the resource as a means of increasing compliance and lowering public costs of enforcement.

DISCUSSION:

Enforcement is a necessary and costly component of fisheries management. In the United States, fisheries enforcement is the weak link in the chain of fishery management. A general perception is that many fishery regulations are being violated and that the enforcement authorities do not have sufficient resources to thwart violators in their attempts to circumvent these regulations. Many in the industry, while seeing enforcement as often ineffectual, believe the coercive tactics used by enforcement authorities to be counterproductive, making criminals out of fishers. The workshop expressed the desire to find ways to improve the effectiveness of enforcement, while simultaneously devising more humane approaches to securing greater compliance with the regulations. To these ends, several specific research needs are identified:

1) Conduct comparative analyses of enforcement and compliance in different settings—e.g., in different fisheries, in different political and institutional settings, as well as in different social and community structures. Of particular interest would be studies of approaches taken and results found in different countries. The objective of a comparative analysis would be to identify which approaches are more effective, less costly, and more acceptable to fishers.

2) Study the existing use of enforcement resources and tactics employed by the National Marine Fisheries Service, the U.S. Coast Guard, the U.S. Fish and Wildlife Service, and state fisheries enforcement authorities. This information would be used to identify ways to improve the cost-effectiveness of enforcement in the United States.

3) Investigate voluntary compliance—the tendency of fishers to comply with regulations, not from fear of official sanctions, but for other reasons, such as a sense of obligation. The objective here is to find a cost-effective, yet humane means of securing compliance with fishery regulations.

4) Investigate how the involvement of fishers in the fishery management design and investigation process influences their compliance behavior. Specific attention should be given to the hypothesis that greater involvement improves the propensity for regulatory compliance.

5) Investigate how property rights structures are related to compliance—specifically, whether rights-based management methods tend to secure greater compliance than conventional management methods.

6) Analyze the effects of currently applied sanctions on compliance behavior. Specifically, assess the compliance effectiveness of different sanctions—such as fines, permit suspensions, and revocations—that are sometimes used in fisheries.

7) Quantitatively assess the potential impacts on compliance of increasing enforcement resources in federally managed fisheries.

8) Investigate the potential role of involving fishers in the official enforcement process.

It has been 16 years since passage of the MFCMA, which established the eight regional management councils that manage the fisheries within the Extended Economic Zone. Despite this long history, there has been no systematic comparative research to evaluate the performance of these management institutions.[1] The general impression is that certain councils have done a relatively good job in selected fisheries (e.g., the Pacific Council), while others have done a relatively poor job (e.g., the New England Council). Indeed, in the latter case, the council has designed—and, almost continuously, redesigned—groundfish regulations from the inception of the MFCMA until the consent decree of 1991, which directed the council to reduce fishing effort over five years to rebuild groundfish stocks. This faulty regulatory regime permitted—indeed encouraged—fishers to engage in behavior that has led to overfishing and serious erosion of the groundfishery.

Given these impressions, and in light of the studies of selected aspects of fishery management cited above, it was the consensus of the group that a systematic, comparative analysis of institutional performance of the councils be undertaken. This study would be oriented to questions of governance, rather than narrow management concerns. Governance refers to the institutional setting and policy process that attempts to reconcile the differing values and objectives of a variety of user groups, and then provides the means for implementing chosen objectives. Governance includes not only the laws, regulations, and programs for fishery management and conflict resolution, but also the key actors and organizations that help to develop and implement the laws and regulations. As fisher Richard Allen has argued, "we should look at the entire system of fishery governance, instead of species-by-species management, spawning areas, mesh sizes, trip limits, overfishing definition of species, and other species-specific measures." (Allen, 1992)

Governance research on fisheries would gather empirical data on council behavior to answer the following questions:[2]

- Does the institutional structure of the councils provide:

  1) relevant information for all concerned individuals and groups to express their preferences and to have them considered?

  2) the means to take into account a wide range of alternative courses of action in response to these preferences and to compare and choose among trade-offs inherent in each?

- Are the time and costs of decision-making reasonable in relation to the magnitude of the issues?
- Do the decision processes produce an awareness of the consequences from a multiplicity of perspectives?
- Do individuals participating in the system develop compatible, mutual expectations on which to base their decisions and thus reduce conflicts?

[1] For some studies that relate to this issue, see Barber and Taylor (1990); Miller (1987); Smith (1977); Turgeon (1985); Finch (1985); Wilson (1982); and Hoole, Freidheim, and Hennessey (1981), and Wooster (1988).

[2] These questions are adapted from Bish (1981).

- Is the institutional structure flexible enough to compensate for failures and to avoid damaging, irreversible actions? Can new knowledge be introduced and used, and can new problems be resolved?
- Are the institutional structures, their processes, and their outcomes regarded as fair and as promoting a high level of agreement on their resulting decisions?
- Does the institutional structure produce decisions that balance human uses with the maintenance of essential characteristics of the natural environment?

REFERENCES

Allen, R. 1992. "An open letter to persons interested in the future of Atlantic fisheries." Wakefield, RI. May 6, 1992.

Barber, W.E. and J.N. Taylor. 1990. "The importance of goals, objectives and values in the fishery management process and organization: A review." *North American Journal of Fisheries Management* 10: 365-373.

Bish, R. 1981. *The Government of Puget Sound.* Seattle: University of Washington Press.

Finch, R. 1985. "Fishery management under the Magnuson Act." *Marine Policy* 9: 170-179.

Hennessey, T. 1983. *The U.S. Fishing Industry and Regulatory Reform.* Kingston, RI: Center for Ocean Management Studies, University of Rhode Island.

Hoole, F. W., R. Friedheim and T. M. Hennessey (eds.). 1981. *Making Ocean Policy: The Politics of Government Organization and Management.* Boulder, Colorado: Westview.

Miller, M.L. 1987. "Regional fishery management councils and the display of scientific authority." *Coastal Management* 15: 309-318.

Smith, C.L. 1977. "The failure of success in fishery management." *Environmental Management* 1: 239-247.

Turgeon, D. 1985. "Fishery regulation: Its use under the Magnuson Act and Reagonomics." *Marine Policy* 9: 126-133.

Wilson, J.A. 1982. "The economical management of multispecies fisheries." *Land Economics* 58: 417-434.

Wooster, W.S. and M.L. Miller. 1988. "On fishery science and management." In: *Fishery Science and Management: Objectives and Limitations.* Wooster, W.S. (ed.). Lecture Notes on Coastal and Estuarine Studies, no. 28. Berlin; New York: Springer-Verlag.