

NOAA Technical Memorandum NMFS-SEFC-4



HOW TO PREPARE FISHERY MANAGEMENT PLANS

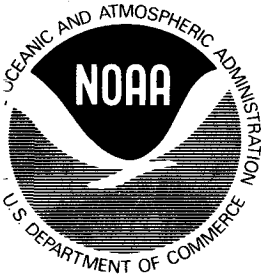


T. J. Costello and Lynn M. Pulos

March 1979

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Center
Miami, Florida 33149

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U.S. DEPARTMENT OF COMMERCE

Juanita M. Kreps, Secretary

National Oceanic and Atmospheric Administration

Richard A. Frank, Administrator

National Marine Fisheries Service

Terry L. Leitzell, Assistant Administrator for Fisheries

This TM series is used for documentation and timely communication of preliminary results, interim reports, or similar special purpose information. Although the memos are not subject to complete formal review, editorial control, or detailed editing, they are expected to reflect sound professional work.

INTRODUCTION

The Fishery Conservation and Management Act of 1976 (Public Law 94-265) defined specific procedures for managing fish stocks within the U.S. Fishery Conservation Zone (FCZ). Key requirements of the act are that a Fishery Management Plan be developed for each of our major fisheries, and that these plans be comprehensive documents, covering all of the important aspects required for long-range fishery management. Categories that must be included in each plan to meet legal requirements of Public Law 94-265 were published in the Federal Register dated July 18, 1977, and these requirements may be updated as required by new executive orders or new legal interpretations of the law. The standard suggested format is shown on pages 3 to 17 of this booklet. Sample pages from a management plan, written following the suggested format, are also included. Clearly, Fishery Management Councils are extended a great deal of latitude in formulating the format of Fishery Management Plans. The plan simply must be appropriate for the fishery being covered.

The obligation to proceed with assemblage of Fishery Management Plans falls primarily on the eight Fishery Management Councils appointed following implementation of Public Law 94-265. The Councils, wisely, have called upon

experts from a variety of sources to provide the biological, fishery, sociological, legal, and economic information required for each plan. Organizationally, this requires formation of "Task Teams" assigned the specific task of drafting management plans. This booklet is an assemblage of suggestions designed to improve the efficiency of task teams so they can function in an orderly manner when drafting management plans.

From our experience, a task team leader can benefit a great deal by asking each team member to follow specifically the form and format defined in the following outline, or any well-defined format given by the task team leader. The goal is to have each member submit his or her assigned section of the management plan draft to the task team leader in a form requiring a minimum of editorial changes. It is important to understand that this booklet imposes no obligation on task teams drafting management plans. The booklet is simply a series of suggestions based on our experience in writing fishery management plans.

FORMAT & CONTENT

FISHERY MANAGEMENT PLAN

1. COVER SHEET

Provide a cover sheet for the purpose of ready identification of the plan, the subject fishery, and the responsible Council(s). (See sample page 28)

2. SUMMARY (Also see page 49)

Provide a concise statement or number for each step and subdivision of this format. For example:

- (5) (iv) Estimate of MSY 386,363 kg (850,000 lb.)
- (12) (v) Specification of OY 363,636 kg (800,000 lb.)
- (13) (ii) Time and area restrictions. None

3. TABLE OF CONTENTS

List in order of occurrence all items contained in the plan and give page numbers. Follow this with a listing of all figures and tables (in their order of occurrence) contained in the plan. Give the title of each figure and table and the page number.

4. INTRODUCTION

Describe the development (or amendment) of the plan by the responsible Council(s) and the overall management objectives.

5. DESCRIPTION OF THE STOCK(S) COMPRISING THE MANAGEMENT UNIT *

- (i) Species or group of species comprising the unit and their distribution. Provide a biological description and the geographical distribution of the species or group of species comprising the management unit as identified by the Council.
- (ii) Abundance and present condition. Assess and specify the present abundance and biological condition of the stock(s).
- (iii) Trophic relationships. Describe the relationship of the stock(s) with fish, animals, or plants, including discussions of relevant food chain and predator-prey relationships.
- (iv) Estimate of MSY. Specify the MSY of the stock(s) based upon the best scientific information available. Summarize the information used in making the specification.
- (v) Probable future condition. Specify the probable future condition of the stock(s), if present conditions and trends continue.

6. DESCRIPTION OF HABITAT OF THE STOCK(S) COMPRISING THE MANAGEMENT UNIT

- (i) Condition of the habitat. Describe the habitat factors affecting its productivity, and probable future condition, if present conditions and trends continue.
- (ii) Habitat areas of particular concern. Identify and describe the habitat areas which are of particular concern because of a requirement in the life cycle of the stock(s), e.g., spawning grounds, nurseries, migratory routes, etc. Identify those areas which are currently or potentially threatened with destruction or degradation.

*The term, Management Unit, is used in various connotations. The term may refer to a single species being managed or to a group of species associated in one fishery. Management unit may also be used in defining the geographic limits set for a management plan. For example, the stone crab management plan restricted consideration of stone crab management to the Florida west coast.

- (iii) Habitat protection programs. Describe programs to protect or restore the habitat of the stock(s) from destruction or degradation, including the relationship of any approved Coastal Zone Management Programs in the affected State(s). The plan should be consistent with such approved program(s) in accordance with the Coastal Zone Management Act.

7. FISHERY MANAGEMENT JURISDICTION, LAWS, AND POLICIES

- (i) Management institutions. Identify and describe the institutions which have fishery management authority over the stock(s) throughout their range.
- (ii) Treaties or international agreements. Identify and describe applicable treaties with foreign nations or international fishery agreements which affect the management unit, either directly by control of fishing or indirectly by control of fishing for a related stock, e.g., a predator or prey of the subject stock(s).
- (iii) Federal laws, regulations, and policies. Identify and describe the impact of any applicable Federal laws, regulations, and policies upon the management unit or fishing thereon.
- (iv) State laws, regulations, and policies. Identify and describe the impact of any applicable State laws, regulations, and policies upon the management unit or fishing thereon.
- (v) Local and other applicable laws, regulations, and policies. Identify and describe the impact of any local and other applicable laws, regulations, and policies upon the management unit or fishing thereon.

8. DESCRIPTION OF FISHING ACTIVITIES AFFECTING THE STOCK(S) COMPRISING THE MANAGEMENT UNIT

- (i) History of exploitation. Summarize the historical fishing practices, both foreign and domestic. Identify past user groups, vessel and gear types and quantities, and fishing areas.
- (ii) Domestic commercial and recreational fishing activities. A complete description of current domestic fishing activities involving the management unit is required including commercial, recreational and subsistence. The description shall include where applicable.
- (A) Participating user groups;
 - (B) Vessels and fishing gear;
 - (C) Employment in recreational and commercial sectors;
 - (D) Fishing and landing areas utilized throughout the range of the stock;
 - (E) Conflicts among domestic fishermen involving competition for fishing areas, gear damage, etc.;
 - (F) Amount of landings/catches;
 - (G) Assessment and specification of the U.S. harvesting capacity; and
 - (H) Assessment and specification of the extent to which, on an annual basis, U.S. fishing vessels will harvest the optimum yield as specified by the Council.

Detailed tables may be included in the Appendix.

(iii) Foreign fishing activities. The description of current foreign fishing activities shall include, where applicable:

- (A) Participating nations;
- (B) Vessels, harvesting and support, and fishing gear;
- (C) Fishing and landing areas, and
- (D) An enumeration of landings and value as distributed among the stock(s) comprising the management unit.

(iv) Interactions between domestic and foreign participants in the fishery.

- (A) Describe the interactions between domestic and foreign fishermen utilizing the stock(s) including gear or other conflicts. Identify any problems caused by fishermen of one nation taking as by-catch, a target fish of another nation's fishery.
- (B) Describe and enumerate the amount or tonnage of any transfers, or proposed transfers, of the stock(s) comprising the management unit from U.S. harvesters to foreign vessels.

(v) Domestic processing capacity. Assess and specify the capacity and extent to which U.S. fish processors, on an annual basis, will process the stock(s) comprising the management unit. In assessing the extent to which U.S. fish processors will process the stock(s), the following factors, as appropriate, shall be considered:

- (A) Any contracts or other agreements for the purchase of U.S. harvested fish by U.S. fish processors;
- (B) The actual ability and intent of U.S. processors to utilize that ability to process a particular species;

- (C) Considerations such as geographical proximity of harvest areas to the facilities of U.S. fish processors, especially in relation to the refrigeration/freezing capability of potential U.S. fish harvesting vessels;
- (D) Recent history of extent to which U.S. fish processors have processed particular species;
- (E) Availability and capacity of the labor force, processing machinery, freezers and cold storage facilities of the U.S. fish processors and intent and plans to increase availability or capacity of any of the above to process a particular species;
- (F) Seasonal schedules of the U.S. fish processors; and
- (G) Availability of U.S. harvesting vessels to supply the stock(s) comprising the management unit taking into consideration such things as capability of vessels to fish the species in the fishery, seasonal schedules, and relative availabilities and prices of alternative fisheries.

9. DESCRIPTION OF ECONOMIC CHARACTERISTICS OF THE FISHERY

- (i) Domestic harvesting sector. Describe the value of the catch (ex-vessel). Identify the method of value determination, especially when the value is estimated or based upon non-market pricing. The description of the economic statistics of the commercial fleet should include: gross income, investment, costs and revenues, measurement of effort, measurement of efficiency, and measurement of productivity. The description of the economic statistics of recreational fishing should include: investment, revenues, and tourism.
- (ii) Domestic processing sector. Describe the wholesale products and their values. Specify the degree of dependence of the processing sector upon products from the fishery.

- (iii) International trade. Describe the international trade in relevant fishery products. Describe and discuss existing and proposed international business arrangements affecting the stock(s).

10. DESCRIPTION OF THE BUSINESSES, MARKETS, AND ORGANIZATIONS ASSOCIATED WITH THE FISHERY

- (i) Relationship among harvesting, brokering, and processing sectors. Describe the relationships among the harvesting, brokering, and processing sectors which catch, sell, transport, and process the catch from the domestic fishery.
- (ii) Fishery cooperatives or associations. Identify the fishery cooperatives or associations involved with the fishery.
- (iii) Labor organizations. Identify the labor organizations involved with the harvesting and processing sectors.
- (iv) Foreign investment. Describe the foreign investment in the domestic sectors of the fishery.

11. DESCRIPTION OF SOCIAL AND CULTURAL FRAMEWORK OF DOMESTIC FISHERMEN AND THEIR COMMUNITIES

- (i) Ethnic character, family structure, and community organization. Describe where relevant.
- (ii) Age and education profiles of fishermen.
- (iii) Employment opportunities and unemployment rates. Identify the employment opportunities within the fishery, in other fisheries, and in non-fishing related work in the geographical area concerned. Compare the current unemployment rate among fishermen and the applicable labor force in the same geographical area. Describe the relationship of seasonality in fishing employment to alternate forms of employment, or to unemployment.

- (iv) Recreational fishing. Describe the social and cultural characteristics of fishermen who participate in the recreational sector of the fishery. Identify the social and cultural benefits generated by the recreational sector of the fishery.
- (v) Economic dependence on commercial or marine recreational fishing and related activities. Describe the economic dependence of fishermen and others on commercial or marine recreational fishing, including, fishery related activities, e.g., gear manufacture and repair.
- (vi) Distribution of income within the fishery communities. Describe the sources and distribution of income within the communities of fishermen.

12. DETERMINATION OF OPTIMUM YIELD

- (i) Specific management objectives. Each fishery management plan must specify the management objectives to be attained.
- (ii) Description of alternatives. Describe the alternative optimum yields considered and their advantages and disadvantages.
- (iii) Analysis of beneficial and adverse impacts of potential management options. In considering various conservation and management measures in order to determine which are necessary and appropriate for the conservation of the fishery resource, management of the fishery, and to achieve the optimum yield, the beneficial and adverse impacts of such measures must be analyzed. These impacts should be identified and described, to the extent possible, in summary form. Additional detail may be included in the Appendix of the plan.

(iv) Tradeoffs between the beneficial and adverse impacts of the preferred or optimal management option(s). Conservation and management measures shall be identified which are deemed by the Council to be the preferred or optimal means of achieving optimum yield. Such measures will, in all likelihood, contain or represent tradeoffs between the specific management objectives identified in the plan. It may not be feasible or possible to optimize each management objective as some may contain unavoidable conflicting aspects. The tradeoffs between the beneficial and adverse ecological, social, and economic impacts of the preferred or optimal management option(s) should be described in summary form. Detailed analyses or comparisons may be included in the Appendix of the plan.

(v) Specification of optimum yield. Each fishery management plan shall assess and specify the optimum yield determined to be the amount of fish, with respect to the yield from the fishery, which will provide the greatest overall benefit to the Nation.

13. MEASURES, REQUIREMENTS, CONDITIONS, OR RESTRICTIONS SPECIFIED TO ATTAIN MANAGEMENT OBJECTIVES

(i) Permits and fees. (Discretionary)
A plan may require a permit to be obtained from and fees to be paid to, the Secretary with respect to any fishing vessel of the United States fishing, or wishing to fish, in the fishery conservation zone, or for anadromous species or Continental Shelf fishery resources beyond such zone. The amount of fees charged domestic fishermen is to be established by the Secretary, but shall not exceed the administrative costs incurred by the Secretary in issuing permits.

- (ii) Time and area restrictions. (Discretionary) A plan may designate zones or areas where, and periods when, fishing shall be limited, or shall not be permitted, or shall be permitted only by specified types of fishing vessels or with specified types and quantities of fishing gear. These restrictions must be related to the management objectives of the plan.
- (iii) Catch Limitations
- (A) Total allowable level of foreign fishing. - Where a portion of the optimum yield can be made available for foreign fishing, the Council shall specify the total allowable level of such foreign fishing.
- (B) Types of catch limitations. (Discretionary) The plan may specify limitations on the catch of fish (based on area, species, size, number, weight, sex, incidental catch, total biomass, or other factors), which are necessary and appropriate for the conservation and management of the fishery.
- (iv) Types of vessels, gear, and enforcement devices. (Discretionary) A plan may prohibit, limit, condition, or require the use of specified types and quantities of fishing gear, fishing vessels, or equipment for such vessels, including devices which may be required to facilitate enforcement of the Act.

- (v) State, local, and other laws and policies. (Discretionary) The plan may incorporate (consistent with the National Standards, the other provisions of the Act, and any other applicable law) the relevant fishery conservation and management measures of the coastal States nearest to the fishery (or local government or other entity).
- (vi) Limited access system. (Discretionary). A plan may establish a system for limiting access to the fishery in order to achieve optimum yield if, in developing such system, the following considerations are taken into account and discussed in the plan:
- (A) Present participation in the fishery;
 - (B) Historical fishing practices in, and social and economic dependence on, the fishery;
 - (C) The economics of the fishery;
 - (D) The capability of fishing vessels used in the fishery to engage in other fisheries or other pursuits;
 - (E) The cultural and social framework relevant to the fishery; and
 - (F) Any other relevant considerations such as existing State conservation and Management measures. Any plan containing a limited entry system shall also discuss why other management measures are inadequate for conservation and management of the fishery. Limited access is a management technique that is directed at economic as well as biological objectives. This technique is used to reduce the

congestion and economic waste that often occurs from the "open access" condition of common property fisheries. Any system of limited access shall be for the purpose of conservation and management, and economic allocation shall not be its sole purpose.

- (vii) Habitat preservation, protection, and restoration. A plan may propose measures which are intended to preserve, protect, and restore habitat determined to be necessary for the life functions of the stock(s). Where the Secretary does not have the authority to implement such measures, the appropriate State, Federal, or international entity will be informed by the Secretary of the findings and the proposed measures.
- (viii) Development of fishery resources. A plan may identify those fishery resources associated with the stock(s) which are underutilized or not utilized by the harvesting and processing sectors of the U.S. fishing industry. Such information may be useful in encouraging the development of such fisheries.
- (ix) Management costs and revenues. Describe the estimated governmental costs and revenues likely to be incurred and received in implementation of the proposed measures.

14. SPECIFICATION AND SOURCE OF PERTINENT FISHERY DATA

- (i) General. The plan shall specify pertinent data that shall be submitted to the Secretary by participants in the fishery. Specifications of data shall take into account the effort necessary

To collect such data. Effort should be minimized through careful selection and standardization of data elements, the periodicity of collection, record keeping, and reporting. Regulations with regard to the confidentiality of these statistics are set forth in Part 603. (Reserved)

- (ii) Domestic and foreign harvesters. The data specified shall include, but are not limited to, information as to type and quantity of gear, catch by species in numbers of fish or weight, fishing effort, fishing areas, time of fishing, number of hauls, numbers or weight of fish received by foreign vessels from U.S. harvesting vessels, and other data considered pertinent.

- (iii) Processors. The plan shall specify the data that shall be submitted by fish buyers, processors, etc., who purchase, transport, and process the catch of the stock(s). The data specified shall include, but are not limited to:
 - (A) The amount or tonnage of fish purchased, transported, and/or processed, by species.
 - (B) Locations at which fish are received and/or processed, by species.
 - (C) Limitations as to seasons, quantities, or quality standards of fish which apply to fish received and/or processed, by species.
 - (D) Disposition of the fish received or processed, by species.
 - (E) Prices paid for fish received, by species.

15. RELATIONSHIP OF THE RECOMMENDED MEASURES TO EXISTING APPLICABLE LAWS AND POLICIES

- (1) Fishery management plans. Identify and discuss the relationship of the recommended measures for the fishery to other approved fishery management plans for other fisheries prepared by a Council or the Secretary.
- (ii) Treaties or international agreements. Identify and discuss the relationship of the recommended measures for the fishery to any treaties with foreign nations or international fishery agreements which affect the stock(s) or fishing thereon.
- (iii) Federal law and policies. Identify and discuss existing applicable Federal laws and policies which may constrain implementation of the recommended measures and provision of specified fishery data.

- (iv) State, local, and other applicable laws and policies. Identify and discuss existing applicable laws and policies which may constrain implementation of the recommended measures and provision of specified fishery data.

16. COUNCIL REVIEW

Each Council must review on a continuing basis, and revise as appropriate, the assessments and specifications made regarding the optimum yield from, the capacity and extent to which U.S. fish processors will process U.S. harvested fish from, and the total allowable level of foreign fishing in, each fishery within its geographical area of authority.

17. REFERENCES

List the references cited in the plan and any others that are pertinent but not actually cited. (See page 45)

18. APPENDIX

- (i) Sources of data and methodology. Identify the sources of data presented in summary form in the plan. Detailed data, analyses thereof, and methodology may be included.
- (ii) List of public meetings and summary of proceeding. List the public meetings held in the development of the plan, with each meeting identified by location, date, number of the public attending, and a brief summary of comments received.

* * * * *

See Alphabetical Listing following for more information on Fishery Management Plan preparation. For example:

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ABBREVIATIONS

Be consistent with the use of abbreviations. Abbreviate units of measure only when used with numerals, e.g., 8 mm (millimeter), 6 m (meter), 2°C (degree Celsius), 1% (percent)

Periods are rarely used with abbreviations. Some requiring a period are: et al. (do not underline et al.), ca., vs., ibid., a.m., p.m., e.g., Jr., Sr.

Give latitude and longitude in this form: lat 33°41'N, long 118°09'W or lat 30°21'20"N.

Refer to the Council of Biology Editors Style Manual or the U.S. Government Printing Office Style Manual for complete details on abbreviations.

ACKNOWLEDGMENTS

Acknowledgments, if included, are placed at the end of the text, before the References. They should be brief; they should be made to those who have contributed substantially with materials, special technical assistance, or advice during preparation of the plan. Do not use titles such as Dr., Prof., Mr., Miss, Ms.



ACRONYMS

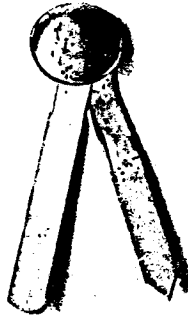
Good scientific writing is logical, clear, precise, direct, and concise, and all words should be understood. When a term or group of words is used for the first time for which there is an acronym, spell out and give the acronym in parentheses: for example, Fishery Conservation Zone (FCZ). Then use the acronym only in later text. Do not use them in abstracts or titles. DO NOT OVERUSE.



See page 17.

BINDING

The type of binding will be decided when a draft is submitted to the printer. Early drafts should use a binding that allows ease in adding, deleting, or rearranging pages. We found binding with butterfly-type fasteners (see below) best in early drafts.



CAPITALIZATION

Do not capitalize common names of marine animals. The same rule applies to plants and to organisms other than marine animals.

Do not capitalize bay, city, county, river, street, and similar words unless they form part of a name:

San Francisco Bay (the bay area)

Gulf Coast States (the gulf coast)

Gulf of Mexico (the gulf)

There are many rules governing capitalization. When in doubt refer to a dictionary, the Government Printing Office Style Manual, or the Council of Biology Editors Style Manual.

COMPOUND WORDS

Detailed information on compounds can be found in Webster's New International Dictionary and the Council of Biology Editors Style Manual. The following are compound words that occur frequently:

deep sea (used as a noun: It is found in the deep sea.)

deep-sea (used as an adj.: A deep-sea fish)

deep water (noun)

deepwater (adj.)

ex-vessel (always use a hyphen)

fresh water (noun)

freshwater (adj.)

gill net (noun)
gill-net (adj.)
gillnet (verb)
longline (noun, adj., verb)
salt water (noun)
saltwater (adj.)
seawater (noun & adj.)
shallow water (noun)
shallowwater (adj.)

CONCLUSIONS

When it is important to evaluate what has been done, the conclusions should cover the following where applicable:

1. What is shown by this work
2. Significance of the results
3. Limitations and advantages
4. Applications of the results
5. Recommendations for further work

COPYRIGHT

Read pages 133 to 136 in the Council of Biology Editors
Style Manual.

COVER

The cover should contain:

1. Title of the plan
2. Who it has been prepared for
3. The fact that it is a draft
4. Date prepared
5. Prepared by
6. Artwork, if desired

We use colored paper for our covers.

For additional information, see Cover Sample Sheet, page 28; Cover Sheet, page 3.

DRAFT

ENVIRONMENTAL IMPACT STATEMENT

and

FISHERY MANAGEMENT PLAN

for

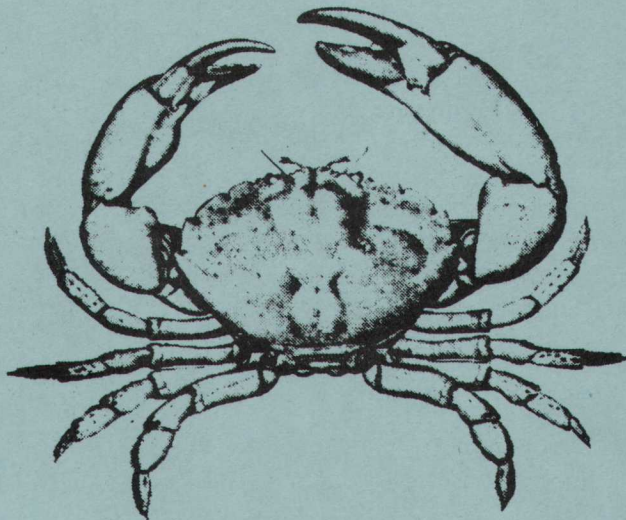
Stone Crabs

(Gulf of Mexico)

Gulf of Mexico

Fishery Management Council

Tampa, Florida



Prepared by a Gulf Council Task Team directed by the
Southeast Fisheries Center, National Marine Fisheries Service
Miami, Florida 33149

DISCUSSION

Under discussion, relate calculations, previous and related findings; discuss significance and limitations of the conclusions.

ECONOMIC IMPACT ANALYSES

U.S. Executive Order 12044 requires that all executive branch agencies prepare economic impact analyses (EIA) of rules and regulations issued either in a notice of proposed or final form rule-making. Review procedures are given in Section 5.01, Department of Commerce Administrative Order 218-6. This order implements Executive Orders 11821 and 11949.

Since Fishery Management Plans will ordinarily propose rules and regulations, an EIA will be required for each management plan.

Executive orders listed above give extensive direction on the format and content required in these EIA's. A typical EIA or economic impact review is given in the February 1, 1978 draft of the Fishery Management Plan for Spiny Lobsters (Puerto Rico and U.S. Virgin Islands). An EIA has also been prepared covering the Fishery Management Plan for Surf Clams and Ocean Quahogs--this EIA is dated October 1977. Perusal of the documents listed above will be very helpful in drafting a required EIA.

ENVIRONMENTAL IMPACT STATEMENTS

Environmental impact statements (EIS) are not included in the contents required for Fishery Management Plans. These will be written as separate documents ordinarily drafted by persons who may or may not be members of a Management Plan Task Team. The following books and guides will be very helpful to anyone obligated to draft an EIS:

BAKER, J. S., J. S. KAMING, AND R. E. MORRISON.

1977. Environmental impact statements: A guide to preparation and review. Practicing Law Institute, New York, N.Y. 334 pp.

CHEREMISINOFF, P. N. AND A. C. MORRESI.

1977. Environmental assessment & impact statement handbook. Ann Arbor Science Publishers, Michigan. 438 pp.

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
OFFICE OF POLICY DEVELOPMENT AND RESEARCH.

1975. Interim guide for environmental assessment. Field office edition. Planning Environment International, a Division of Alan M. Voorhees & Associates, Inc. Composed of 14 sections.

HEFFERNAN, P. H. AND R. CORWIN (Eds.)

1975. Environmental impact assessment. Freeman Cooper & Company, San Francisco. 277 pp.

UNITED STATES DEPARTMENT OF THE INTERIOR.

1978. Proposed 1978 Outer Continental Shelf oil and gas lease sale, Gulf of Mexico. Final environmental impact statement. Prepared by the Bureau of Land Management. Vol. 1 of 2.

UNITED STATES DEPARTMENT OF THE INTERIOR.

1978. Proposed 1978 Outer Continental Shelf oil and gas lease sale, Gulf of Mexico. Final environmental impact statement. Prepared by the Bureau of Land Management. Visual Graphics. Vol. 2 of 2.

UNITED STATES DEPARTMENT OF THE INTERIOR.

1978. Proposed 1978 Outer Continental Shelf oil and gas lease sale, South Atlantic. Final environmental impact statement. Prepared by the Bureau of Land Management. Vol. 1 of 3.

UNITED STATES DEPARTMENT OF THE INTERIOR.

1978. Proposed 1978 Outer Continental Shelf oil and gas lease sale, South Atlantic. Final environmental impact statement. Prepared by the Bureau of Land Management. Appendices. Vol. 2 of 3.

UNITED STATES DEPARTMENT OF THE INTERIOR.

1978. Proposed 1978 Outer Continental Shelf oil and gas lease sale, South Atlantic. Final environmental impact statement. Prepared by the Bureau of Land Management. Visual Graphics. Vol. 3 of 3.

FIGURES & TABLES

Figures and tables should be placed immediately following the point in the text where they are first mentioned.

Footnotes for figures and tables should be noted by asterisks (*, **, ***, etc.).

When referring to figures and tables in the text, capitalize and do not abbreviate (Figure 2-1; Table 4-3).

For more information, see Figure Sample, page 34; Table Sample, page 52; Tables and Figures, page 50; Legends, page 37.



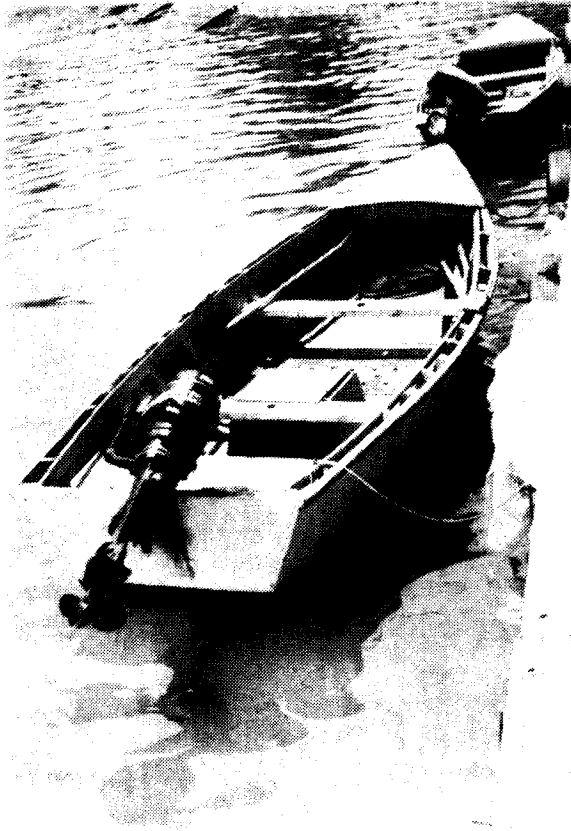


Figure 3-1. Puerto Rican "yola" type fishing boat. Similar style boats are commonly used in the U.S. Virgin Islands.

FOOTNOTES

The number of footnotes to the text should be kept to a minimum. Try to incorporate into the text references to unpublished data, personal communications, or manuscripts in preparation. Only when inclusion of peripherally related information would seriously disrupt the train of thought should the use of a footnote be considered.

If text footnotes are deemed necessary, they should be numbered consecutively and placed at the bottom of the appropriate page. They are designated in the text by a superscript number, e.g. populations¹ and at the bottom of the page with a ¹ and the explanation. Footnotes in each section start with the number 1.

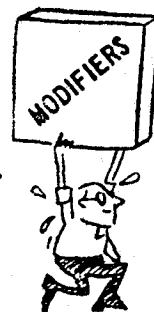
Footnotes in tables and figures should be noted by asterisks (*, **, ***, etc.).

Graphs (plotted curves, histograms, scattergrams, etc.) are preferable to tables to emphasize trends and relationships, rather than to present exact values. If possible, graphs should be self-contained and intelligible without reference to the text.

GUIDES

For conformity, we list only four guides to help you prepare the plans:

1. An unabridged dictionary.
2. The U.S. Government Printing Office Style Manual.
3. The Council of Biology Editors Style Manual,
Washington, D.C.
4. The American Fisheries Society Special Publication
(for scientific and common names of fishes).



HEADINGS & SUBHEADINGS (Text)

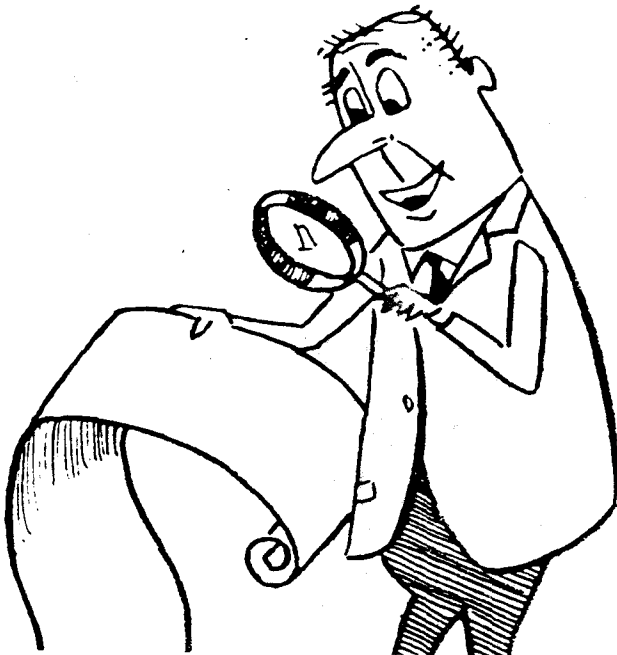
For arrangement of headings and subheadings in the text, see samples of a properly written Fishery Management Plan on pages 54 to 56.

LEGENDS
(Figures & Tables)


- . Legends for figures are placed at the bottom of the figures.
- . Legends for tables are placed at the top of the tables.
- . Legends should be typed double-spaced.
- . Begin flush left with the word Figure or Table and keep second, third lines flush left also. For example:
Figure 2-1. Arrowhead fish pots being loaded on a fishing sloop.
- . Use a period at the end of each sentence or phrase.

LINE DRAWINGS

Line drawings should be in black ink on a good grade of white paper. Letters should be large enough to be easily read. Especially consider the possibility that the drawing may be reduced before it is printed. This will require increased letter sizes and increased line widths. Avoid confusion that results from crowded illustrations.



MATERIAL & METHODS



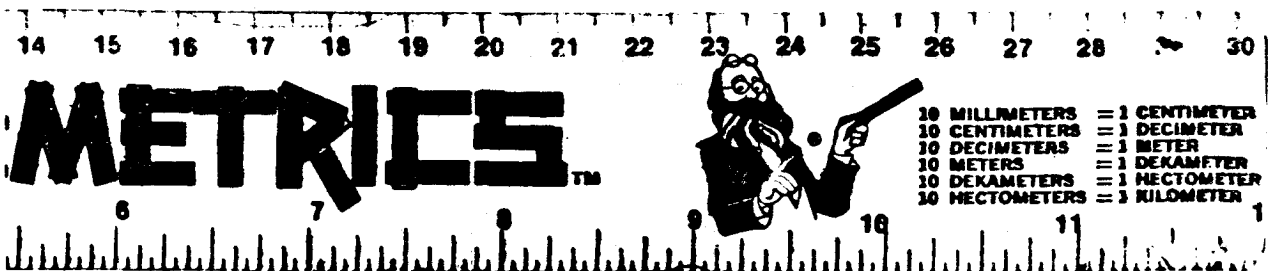
The materials used and their preparation or source should be described.

The methods used should be described in sufficient detail to enable another person to obtain the same results or assess the probable reliability of the methods used and results reported. List in logical order.

Descriptions of special apparatus belong under this heading.

MEASUREMENTS

When possible, use the metric system for units of measurement (English equivalents can be given in parentheses). Units of measurement are spelled out unless they are associated with a number: for example, centimeters, 2.54 cm (no period).



Numbers less than 10 (those not used with measurements) should be written out; 10 and over use number. However, if you use numbers of over and under 10 in the same sentence or paragraph, then for consistency use numbers: 6 fish, 12 shrimp, and 1 lobster.

If a sentence begins with a number, write it in words: Twenty-two fish were caught (not 22). If the number is a large one, recast the sentence so that it does not come at the beginning and can be written in figures.

Add a comma, e.g., 1,000, 10,000.

PERSONAL COMMUNICATIONS

Personal communications should be inserted in the text. Give the name, the affiliation, and the address (A.B. Smith, Southeast Fisheries Center, Miami, FL 33149, pers. comm.).

PHOTOGRAPHS

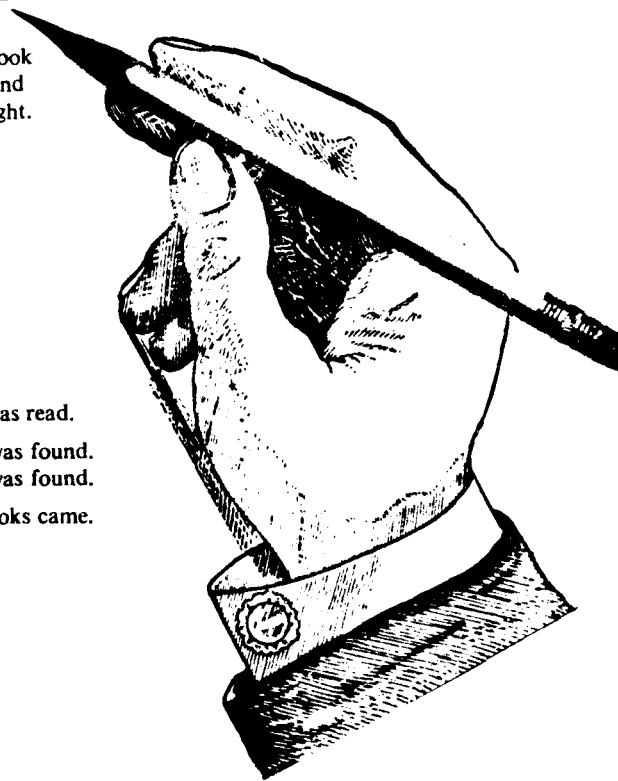
Photographs should be informative and clear. Information should accompany the photograph so the editor may acknowledge the source. So the photograph will not be lost or be inserted in the wrong place, also write in pencil on the back of the photograph information relating to it, including photographer's name.

PREFACE

- . State for whom the Fishery Management Plan was prepared.
- . List persons who were members of the team that developed the plan, including their affiliation.
- . List additional persons who assisted in developing the plan.
- . Do not use Dr., Mr., Mrs., Prof., etc.

PROOFREADER'S MARKS

Instruction	Marginal Mark	In-Line Mark	Corrected Type
Delete	∩	the red book	the book
Close up	⊂	the bo ok	the book
Delete and close up	∩	the bo∩ok	the book
Restore deletion	stet	the red book	the red book
Insert in line	red	the ^{red} book	the red book
Substitute in line	red e	the black book the book	the red book the book
Insert space in line	#	the#book	the book
Equalize spacing	eq #	the ✓yellow book	the yellow book
Lead (space) between lines	ld >	→ The red book was lost.	The red book was lost.
Remove leads between lines	less #	⌒ The red book was found.	The red book was found.
Begin new paragraph	¶ ¶	^ The red book was lost. (The black book was found.	The red book was lost. The black book was found.
Run paragraphs together	run in	The black book was lost. ⌒ ⌒ The red book was found.	The black book was lost. The red book was found.
Insert 1-em quad	□	The red book	The red book
Insert 2-em quad	□□	was found	was found
Insert 3-em quad	□□□	at night.	at night.
Move to left	┌	┌ the book	the book
Move to right	└	the book └	the book
Center	┌┐	┌ the book ┐	the book
Move up	┌	┌ the book	the book
Move down	└	└ the book	the book
Align vertically	//	┌ The book was lost in the fog. ┐	The book was lost in the fog.
Align horizontally	==	The book <u>was</u> read.	The book was read.
Transpose	tr tr	The <u>found</u> book was <u>found</u> . The found book was found.	The book was found. The book was found.
Spell out	two	The ² books came.	The two books came.
Push down quad	↓	the book	the book
Reset broken letter	X	the <u>book</u>	the book



continued

Proofreader's Marks, Cont.

Instruction	Marginal Mark	In-Line Mark	Corrected Type
Turn right side up	Ⓣ	the book _Ⓣ	the book
Lowercase letter	lc.	the G reen book	the green book
Capitalize as marked	caps	the <u>g</u> ood <u>b</u> ook	the Good Book
Set in even small caps	sm.c.	<u>se</u> , <u>SD</u>	SE, SD
Set in italic type	ital.	<u>The Good Book</u>	<i>The Good Book</i>
Set in roman type	rom	the <u>book</u>	the book
Set in boldface type	bf	<u>The Good Book</u>	The Good Book
Set in lightface type	lf	the <u>book</u>	the book
Set in caps & s.c.	c + s.c.	<u>A Style Manual</u>	A STYLE MANUAL
Set in boldface italic caps & l.c.	bf ital c + lc	<u>a style manual</u>	<i>A Style Manual</i>
Wrong font; reset	wf	<u>body type</u>	body type
Reset as superscript	2	the book ²	the book ²
Reset as subscript	2	H ₂ S	H ₂ S
Insert as superscript	2	120,738 ^λ	120.738 ^b
Insert as subscript	2	H ₂ O	H ₂ O
Insert or substitute punctuation mark			
Period	Ⓣ	Read the book _λ	Read the book.
Comma	Ⓣ	Read the book _Ⓣ	Read the book.
Semicolon	Ⓣ	leaves, buds _λ and branches	leaves, buds, and branches
Colon	Ⓣ	Think _Ⓣ then decide.	Think; then decide.
Hyphen	Ⓣ	Read the following _λ	Read the following:
Apostrophe	Ⓣ	up _λ and _λ down career	up-and-down career
Double quotes	Ⓣ	Land _λ End	Land's End
Single quotes	Ⓣ	He said _λ book. _λ	He said "book."
Question mark	Ⓣ	"Don't cry _λ Fire _λ !"	"Don't cry 'Fire'!"
1-en dash	Ⓣ	Can you write _Ⓣ	Can you write?
1-em dash	Ⓣ	pages 10 _Ⓣ 15	pages 10-15
3-em dash	Ⓣ	The book _Ⓣ find it	The book—find it
Parentheses	Ⓣ	Ito, R. I. 1967. An Ito, R. I. 1970. The	Ito, R. I. 1967. An ———. 1970. The
Asterisk	Ⓣ	the book _λ a manual _Ⓣ	the book (a manual)
Dagger	Ⓣ	the book _λ	the book*
Slant line	Ⓣ	6,731 _λ	6,731†
		5 m _λ s	5 m's

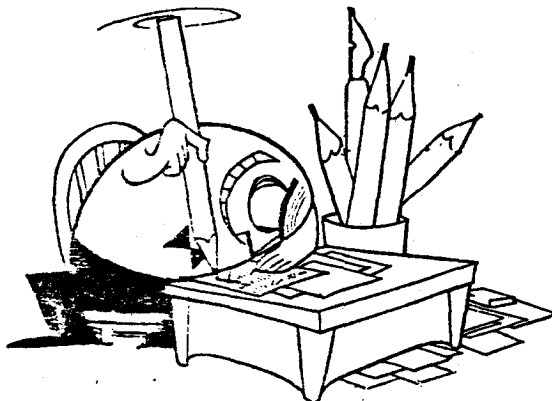
Refer to the Council of Biological Editors Style Manual for rules on punctuation. For consistency, when there are items in a series of three or more a comma should be used after each except the last. If there is a possibility of confusion use semicolons.

QUOTATIONS

Check every quotation word for word with the original. If material is copyrighted, written permission to quote should be obtained and noted in the text.

Indent each line of a long quotation 10 spaces. Show omissions by three periods (...) (ellipsis marks). If the quotation begins in the middle of a sentence show: " ... the fisheries of the Virgin Islands ... " To show that words have been omitted from the end of a sentence within quoted material use four periods. To show the omission of one or more paragraphs from quoted material, use an entire line of periods.

For information regarding quotations and quotation marks, refer to the Council of Biological Editors Style Manual.



REFERENCES

The Reference Section should contain references that are cited in the text and any others that are pertinent but not cited; when citing theses, unpublished manuscripts, in-house memos, unpublished reports, etc., list where they can be obtained (example below under References). Personal communications should be incorporated in the text.

References should be arranged alphabetically by author and chronologically with the earlier publication placed first when several publications by the same author are listed. Note particularly that no abbreviations should be used to shorten reference to where a particular paper was published. For example, if a paper was published in the Proceedings of the Gulf and Caribbean Fisheries Institute, list this publication in full not as Proc. Gulf Caribb. Fish. Inst. Follow specifically the format shown in the following samples.

REFERENCES

BEARDSLEY, G.L., T.J. COSTELLO, G.E. DAVIS, A.C. JONES,
AND D.C. SIMMONS.

1975. The Florida spiny lobster fishery: a white paper.
Florida Science 38(3):144-149.

DAVIS, G.E.

1977. Effects of recreational harvest on a spiny lobster,
Panulirus argus, population. Bulletin of Marine
Science 27(2):223-236.

References, Cont.

HEALD, E.J.

1969. The production of organic detritus in a south Florida estuary. Ph.D. Thesis, University of Miami. 110 pp. (Dr. Heald's present address: Tropical Bio Industries Development Co., 9000 SW 87 Street, Miami, FL 33176.)

SAVAGE, T., J.R. SULLIVAN, AND C.E. KALMAN.

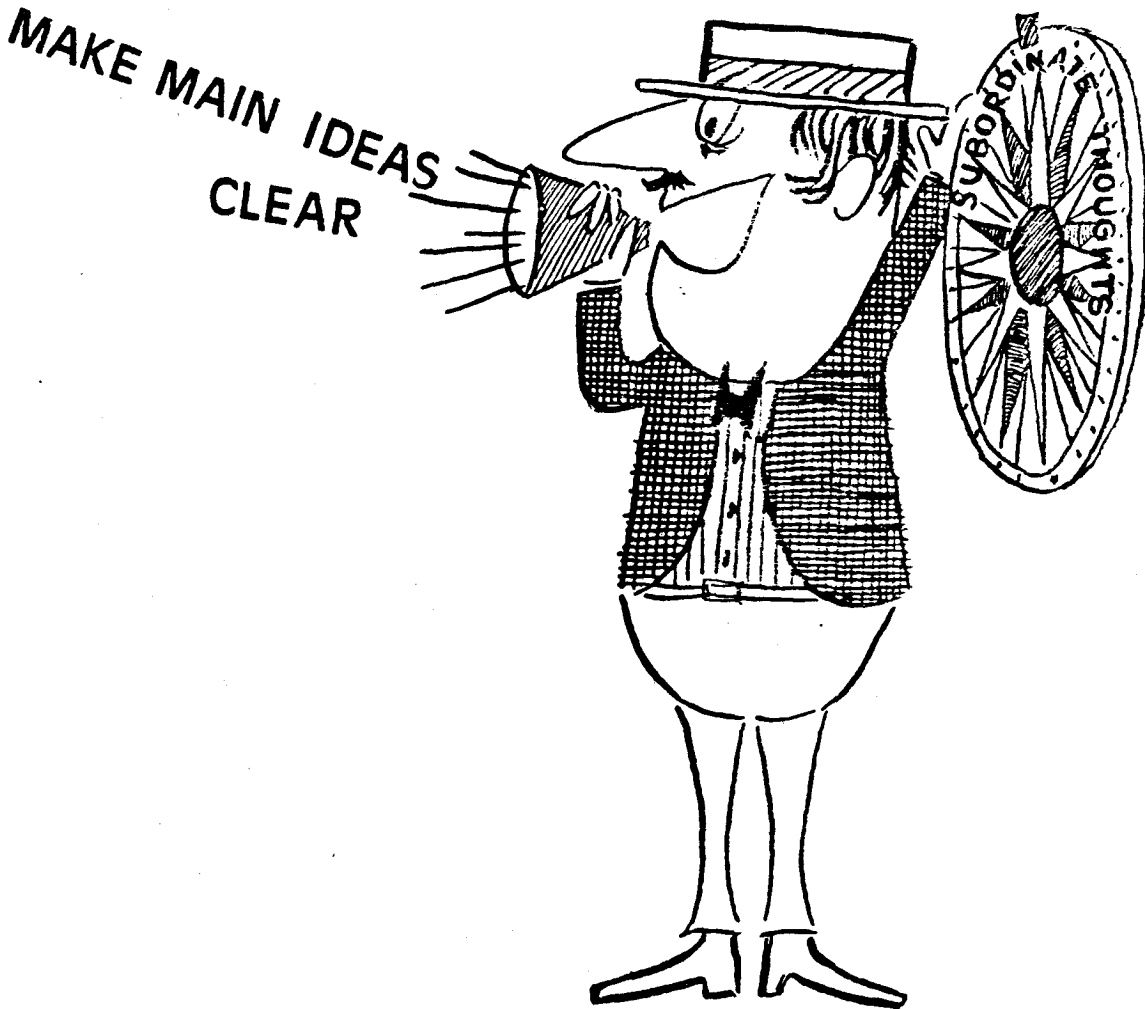
1975. An analysis of stone crab (Menippe mercenaria) landings on Florida's west coast, with a brief synopsis of the fishery. Florida Marine Resources Publication Number 13, 37 pp.

- . Authors name(s) should be in capital letters.
- . Paginate as shown in the samples.
- . The title should appear exactly as it does on material cited.
- . Check references in the text to be sure they are in the References Section.
- . References in the text should be listed Jones (1958) or (Jones, 1958), depending on the sentence structure.

For more information, refer to "References" in the Council of Biology Editors Style Manual.

RESULTS

Data in the Results Section should be introduced in as concise a manner as clarity will permit. A tabular form should be used whenever possible. Often results are best presented by tables and figures. The results should be written without interpretation--analysis belongs elsewhere in the text.



SCIENTIFIC NAMES

The scientific name of a species should be given the first time the common name is used in the text of the plan. Thereafter, use the common name alone. The common name and scientific name may appear on the title page. Both scientific name and common name should be used on the title page whenever the common name alone would cause any confusion regarding the animal being referred to. In the summary and in the introduction, use both the scientific and common name.

The common or scientific name can be used in tables and figures. Both should not be used, and the tables and figures should not contain a mixture of common and scientific names.

Set the scientific name off from the common name by commas, not parentheses. Capitalize the first letter of the scientific name and underline both the genus and the species name: for example, white shrimp, Penaeus setiferus.

An authority for the scientific and common names of fishes is the American Fisheries Society Special Publication No. 6.

STATE NAMES

Follow the Government Printing Office (GPO) Style Manual for abbreviations of the names of states in text and tables. If a mailing address is given, abbreviate the name according to the rules of the Post Office (see GPO Style Manual) and give the ZIP Code.

The Summary should be brief and self-contained. It should be intelligible without having to refer to the body of the text. Three kinds of basic information should be included:

1. What is the significance of the subject?
2. How, in general, is the subject treated?
3. What findings, conclusions, and recommendations are of major importance?

If the study deals with fishes, give both the common name and the scientific name.

Do not use footnotes or references in the Summary.

The much abbreviated Summary appropriate for Fishery Management Plans is described on page 3.



TABLE OF CONTENTS

The Table of Contents for the Fishery Management Plan should contain all the headings that introduce the text, including their page number. Also list the numbers/letters preceding the headings.

TABLES & FIGURES

Tables should be used to present exact values. If possible, they should be self-contained and intelligible without reference to the text. This means using appropriate titles, column headings, and footnotes. Values that do not contribute to the point being made should be omitted.

Tables and figures should immediately follow text reference. (For Figure Sample, see page 34; Table Sample, page 52.)

Each table and figure should be numbered with a two-digit number. The first digit designates the number of the section in which it is contained; the second digit designates the sequence number of the table or figure in that section. Therefore, Table 4-3 is the third table contained in Section 4 of the management plan, and Figure 3-5 is the fifth figure contained in Section 3 of the plan, etc.

Numbering tables and figures this way is of real assistance to whomever must assemble the entire plan, because with this system, it is unnecessary to number tables and figures sequentially throughout the entire text. This numbering also tells a reader approximately where the figure may be found in the plan if it is referred to in another section. With this system, figures and tables can be added or deleted without rearranging numbers throughout the text.

Each table and figure should have a concise legend (see Legends, page 37).

Double-space tables.

Add a line at top and bottom of table to separate from text (bottom line also serves to signal end of table).

Footnotes to tables and figures should be noted by asterisks (*, **, ***, etc.).

Abbreviations for measurements are permissible.

When referring to tables and figures in the text, capitalize and do not abbreviate, e.g., Table 2-2; Figure 6-1.

Table 5-2. Spiny lobster landings catch effort statistics in the U.S. Virgin Islands for FY 1974-1975 and FY 1975-1976.

Statistic	FY 1974-1975		FY 1975-1976	
	St. Thomas and St. John	St. Croix	St. Thomas and St. John	St. Croix
Total lobster catch (pounds)	31,200	18,400	24,283	62,262
Average annual lobster catch per boat (pounds)	200	81	172	316
Number traps per boat	16.7	10.7	17	11
Days fished each month	5.8	4.7	6	6
Pounds per year per trap	12.0	7.7	10.1	28.7
Pounds per fishing day per boat	2.9	1.4	2.4	4.4
Pounds per trap per pull*	0.17	0.14	0.14	0.40

Source: Olsen (1975) and Olsen and Sylvester (1976)

*Estimated by $\frac{\text{Pounds caught per year per boat}}{\text{Traps per boat}} \div \text{Days fished per month} \times 12$

1 pound (avoirdupois) = 0.4535 kg

TERMINOLOGY

Terms not in common use should be defined the first time they appear in the text--for example, "mariculture" (the rearing of marine aquatic animals). Quotation marks can be used around these terms or words when first used--do not repeat the marks when the term or word is used later in the text.

8. MANAGEMENT REGIME

(i) Management objectives

The primary objective of this fishery management plan for spiny lobsters is to achieve optimum yield. This primary objective can be achieved by considering the following sub-objectives:

- (A) Provide for biological conditions consistent with the ability to achieve a maximum sustainable yield. These conditions are:
 - a. Maintain a sufficient supply of adult lobsters so that adequate spawning takes place and a sufficient number of recruits are produced to replenish the population.
 - b. Prevent the harvest of large numbers of very small lobsters, which would result in less than maximum production from this valuable resource and be an inefficient use of this resource.
 - c. Evaluate the contribution of closed areas, including the establishment of marine sanctuaries, in achieving maximum sustainable yield.
- (B) Promote economic efficiency of the commercial fishery by:
 - a. Maximizing the total economic return from the spiny lobster resource.

b. Creating conditions which would allow individual commercial fishermen to derive maximum individual economic return from their use of the resource.

(C) Provide for the social and cultural needs of Puerto Rican and U.S. Virgin Islands citizens by:

a. Continuing both the recreational and commercial utilization of spiny lobsters.

b. Maintaining fishing as a viable component of community activity.

c. Providing for an equitable distribution of the catch of spiny lobsters among user groups, including the commercial and recreational fishermen and other users such as underwater observers.

d. Providing for the future economic demands for spiny lobsters as a food commodity.

(D) Provide biological, economic, and social data bases for future management of the resource. This includes identification of needed scientific research and methods of accomplishing this research.

(ii) Management recommendations

In the Caribbean Council area, the spiny lobster fishery resource has been heavily utilized but it is not overfished, as indicated by the estimated levels of MSY, current catch rates (2A) and the average size of lobsters in the catch (2C).

In spiny lobster fisheries in some other areas, fishing effort has developed rapidly and economic or biological over-fishing has resulted except where management has been imposed. The possibility of over-exploitation exists for the spiny lobster resource of the Caribbean Council area because of the high value of this resource (3Ba) and the fact that demand greatly exceeds supply (3Bc). The Caribbean Council is establishing management measures that can maintain the productivity of the resource and the fishery and prevent over-fishing.

Measures which have been used to regulate or assist the development of spiny lobster fisheries throughout the world include: minimum size limit; closed areas; closed season; protection of egg-bearing female lobsters; gear restrictions; licensing of fishermen; limited entry of fishermen, daily bag limits; total catch limitations; habitat improvement; and establishment of fishery cooperatives. Each of these types of regulations or aids has been considered for this plan. The following management recommendations are established in this fishery management plan for spiny lobsters.

(iii) Size and reproductive condition

(A) Regulations

- a. Make unlawful the transportation of, or possession of, while on or above the surface of the water or land, any lobster of the species

TITLE

The title of the plan should be concise and informative. It should contain only significant words to explain the main content of the plan. Words such as "the effect of" or "observations on" or "studies on" are not needed. Avoid abbreviations.

Examples of acceptable plan titles:

Fishery Management Plan for Spiny Lobsters
(Puerto Rico and U.S. Virgin Islands)

Fishery Management Plan for Shallowwater
Reef Fish (Puerto Rico and U.S. Virgin Islands)

Fishery Management Plan for the Gulf of Alaska
Groundfish Fishery

TRADE NAMES

If trade names are used, add a disclaimer as a footnote at the bottom of the page on which a name is first mentioned. Only one disclaimer notation is needed in the text. The preferred wording is: "Reference to trade names does not imply endorsement by the National Marine Fisheries Service, NOAA."

Did you know "Dry Ice,"
"Fiberglas," and "Formalin"
are trade names?

Refer to an unabridged dictionary when in doubt.

TYPING

There are certain rules that should be followed when typing plans:

- . It is important that all contributors of text to a Fishery Management Plan use white uniform-size paper, which simplifies assembling, copying, binding, etc. (We use 8½ x 11 good quality white bond typing paper.)
- . Type on one side of paper only.
- . Allow 1" margins (top, bottom, and sides).
- . Use double spacing throughout the plan; use triple spacing above main headings.
- . Page number should be placed six lines down from top of page, 1" in from right-hand margin.
- . Start typing nine lines down from top of page (or three lines down from page number).

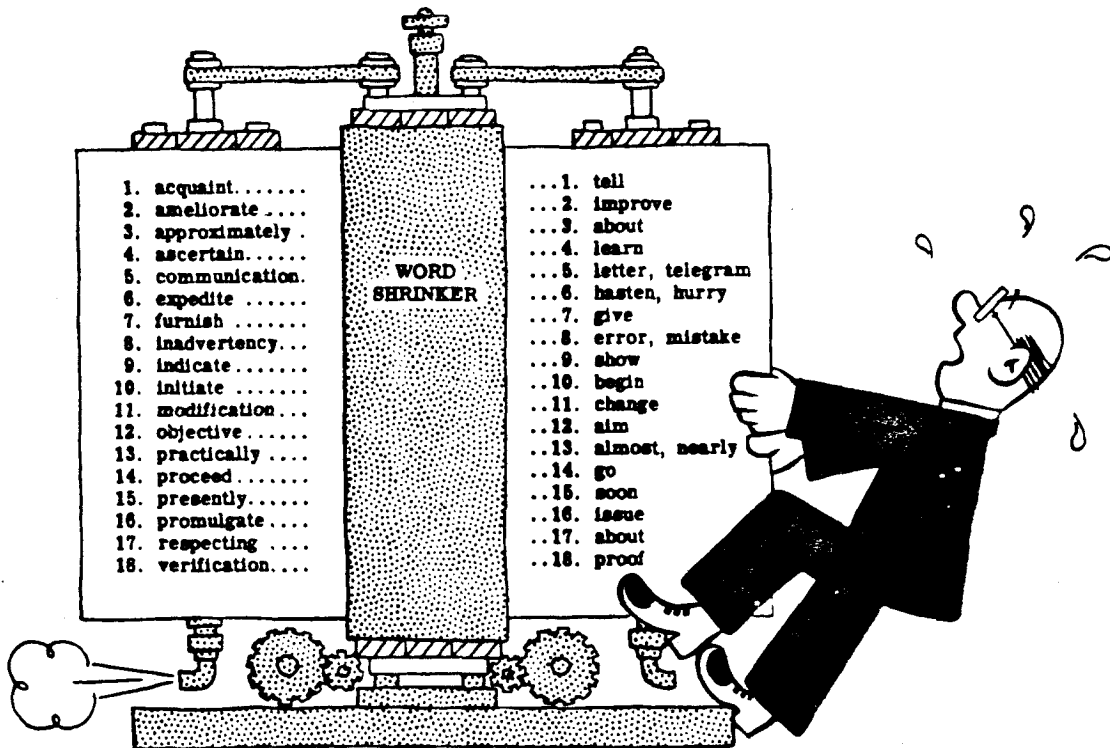
See sample text pages from a Fishery Management Plan, pages 54 to 56, 52, 34, 28.



UNDERLINING

Underline subheadings, scientific names, very few foreign words, where special emphasis is needed, or letter symbols in mathematics (again, where special emphasis is needed). Vessel names should be in all caps--not underlined (FRS OREGON II).

Put some of those king-size words through the shrinking machine. Do you see any of your favorites in the list?



Some others:

appear (seem)
 assist (help)
 determine (figure, find)
 endeavor (try)
 ensue (follow)
 inasmuch as (since)
 initial (first)
 personnel (people)
 prior to (before)

provide (give, say)
 require (need)
 reveal (show)
 subsequent (later)
 substantial (big, large, great)
 terminate (end, stop)
 thus (so, that way)
 transpire (happen)

ACKNOWLEDGMENTS

We acknowledge the useful contributions of A. E. Dammann, Scientific Adviser Caribbean Fisheries Management Council, and A. C. Jones, Southeast Fisheries Center, Miami, Fla., during the preparation of this booklet.

Notes