

PROCEDURAL PLAN FOR POLICY FORMULATION & AN OUTLINE FOR THE
TERRITORIAL FISHERIES MANAGEMENT AND
DEVELOPMENT PLAN FOR GUAM

Prepared by: Bureau of Planning
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A PROCEDURAL PLAN FOR
POLICY FORMULATION

AND

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PLAN FOR GUAM

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GUAM MARINE FISHERIES
ADVISORY COUNCIL

revised

AUGUST, 1979

A PROCEDURAL PLAN FOR POLICY FORMULATION

A. Purpose

The Guam Marine Fisheries Advisory Council has three basic objectives: (1) to serve as an open forum for informational exchange, (2) to resolve pressing issues related to fisheries development and management, and (3) to formulate the government's policies on fisheries and to present them to the Governor in a Fisheries Management and Development Plan.

This procedural outline represents the Council's strategy for accomplishing the third objective. Because of the rather wide diversity of fisheries resources in waters surrounding Guam (See Table No. 1), and the differing development and management needs among these various resources, policy decisions specific to each type of resources are necessary. Clearly, policies appropriate to developing tuna resources, for example, will be different from those for deepwater shrimp.

B. Statement of Principle

The Territory of Guam, by virtue of its geographical location, its environmental richness, its social and cultural heritage, its level of economic development, and its business, labor, technical, and educational resources, has the potential for the development of a diverse, broad-based, and economically productive fishery industry.

For the Territory to realize the greatest benefits from the development of its fishery resources, it is essential that opportunities for participation in the fishery industry be open to all sectors of Guam's population. This broad participation can best be achieved by the encouragement of sound, balanced development among various scales of fishery endeavors:

- (1) small-scale subsistence, artisanal, and recreational fisheries,
- 2) medium-scale, locally-based commercial fisheries, and
- 3) large-scale industrial fisheries involving considerable capital investments.

In formulating its Fishery Development and Management Plan, the Guam Marine Fisheries Advisory Council will be guided by this principle of balanced development to assure the citizens of Guam abundant opportunities of participation in Guam's fishery industry.

C. The Content of Fishery Policies

A fishery policy, dealing with a particular, definable fishery resource (or group of similar resources) should address itself to three major questions:

- (1) whether or not a fishery for that particular resource should be established (or expanded if a fishery already exists);
- (2) whether or not there is a need for stock management measures; and

- (3) whether or not additional information is required to resolve questions 1 and 2.

D. Implementation of Fishery Policies

The action which can be taken by the Guam Marine Fisheries Advisory Council to implement its policy decisions will depend upon the extent to which the Council can influence action by relevant government agencies, legislative action, and monetary appropriations. At the very least, the Council should take action in the following areas:

- (1) Should a decision be made to encourage the establishment or expansion of a fishery, the Council should provide interested private concerns and appropriate governmental agencies with all relevant information on the nature of the resource and the best methods for its development. The Council should work with the Governor and the Legislature to encourage appropriate legislation to facilitate the development of the fishery. The Guam Economic Development Authority and other lending institutions should be encouraged to make loans available to qualified individuals and businesses who wish to engage in the fishery.
- (2) If the Council concludes that the fishery resource is in need of management, appropriate guidelines and regulations should be formulated and presented to the Governor for transmittal to the Legislature.
- (3) If insufficient information is available to the Council to make decisions regarding development or management of the resource, the Council should obtain additional information by requesting documents or testimony from relevant governmental agencies and business interests, by holding public hearings to solicit input from interested private citizens, and through encouragement and support of appropriate research by the University of Guam, the Division of Aquatic and Wildlife Resources, the Guam Environmental Protection Agency, and other research organizations.

E. Informational Needs for the Formulation of Fishery Policies

In formulating fishery policies, the Council is undertaking a critical responsibility. If the Council encourages development of fishery resources which cannot sustain economically viable fisheries, our actions may result in wasted investments, inappropriate allocation of resources, and loss of confidence in the Council's policy judgments. On the other hand, if the Council provides no encouragement for the development of resources that can be harvested profitably, we will have failed to accomplish the objectives for which the Council was established.

Similarly, overly restrictive fisheries regulations may impede the optimal development of a fishery while inadequate stock management measures could lead to the fishery's ultimate collapse. To make the best decision, the Council needs a wide range of accurate, up-to-date information. The kinds of information needed to formulate fishery policies are as follows:

- (1) The biological potential of the resource to support the establishment or expansion of a fishery. A judgement on the biological potential of the resource should be based on stock assessment information and, where available, data on catch and effort levels in previous years of the fishery.

Information of this sort may be available from the Division of Aquatic and Wildlife Resources, the University of Guam Marine Laboratory, or the National Marine Fisheries Service. Should relevant information be currently unavailable, the Council should seek funding for specific research projects designed to obtain the necessary information.

- (2) The economic potential of the resource to support the establishment or expansion of a fishery. This judgement requires evaluation of several types of information:
 - a) the biological potential of the resource to sustain harvesting,
 - b) the evaluation of possible methods for harvesting, handling, and processing the catch,
 - c) the costs involved in harvesting, handling, and processing the catch, and
 - d) the potential market demand and value of the catch where appropriate, both local and export markets should be considered. It may be that different methods of processing the catch open up different potential markets.
- (3) The impact on the environment of various harvesting techniques or of the construction and operation of fish processing facilities.
- (4) The social and cultural impact of developing a fishery. This may be of particular importance in Guam where marine resources have been exploited in traditional ways for hundreds of years.
- (5) Legal constraints to fishery development. Federal Land Ownership, federal laws, (i.e. Jones Act, Paseo Law), local fishery regulations, the Fisheries Conservation and Management Act, and other legal issues may have considerable effect on the direction of fishery development.
- (6) The extent to which establishment or expansion of a fishery may influence other fisheries. New methods of harvesting may adversely affect previously established fisheries on a resource. Gear designed to harvest a particular resource may, incidentally, harvest other resource species.
- (7) The effect of fishery development on other economic interests. In many cases, fishery development will stimulate growth in other support sectors. In some cases, there may be competition or conflict. These issues must be considered in the formulation of fishery policies.

F. The Implementation of Fisheries Development and Management

Once the Council has considered the information available and has formulated a fishery policy and taken the necessary steps to stimulate fishery development and proper stock management, the ultimate development of the fishery is the responsibility of the private sector. Individual fishermen and private businesses can evaluate the information which the Council provides, can take

advantage of legal and economic incentives which have been made available, and then can make their own decisions, consistent with stock management regulations, on their participation in the fishery. Neither the Guam Marine Fisheries Advisory Council nor other governmental agencies should be directly involved in commercial fishing operations. The responsibility of the government, and of this Council in particular, is to establish policies which make it possible for private enterprise to develop an economically sound, productive fishery industry on Guam which will benefit the entire island.

G. Priorities for Developing Fishery Policies

Because of the wide range of potential marine resources in Guam waters, priorities must be established in the development of fishery policies. Priority should be given to those resources which fall into the following categories:

- (1) resources which have been identified by fishing cooperatives or private fishing interests as potential targets for the establishment or expansion of fisheries,
- (2) resources which have been identified as being in critical need of management, and
- (3) resources which are being presently considered, or which will be considered in the near future, for PMP's or FMP's by the National Marine Fisheries Service or the Western Pacific Regional Fisheries Management Council.

H. Preparation of Fishery Policies

To obtain the necessary input of information upon which the formulation of fishery policies is based, a Council member with specific expertise or interest in a particular resource will coordinate the compilation of information on that resource. The resources shown on Table No. 1 will be the subject areas for fishery policy formulation. The coordinator should utilize the expertise of other Council members and outside sources, as necessary, to analyze a particular resource within the below-shown framework of major factors affecting fisheries management and development. The coordinator shall call such special meetings as necessary to gather information or initiate discussion. The coordinator shall assemble the information under the below-shown framework to be concluded with recommended policies for inclusion in the Fisheries Management and Development Plan and, if necessary, resolutions to be enacted by the Council. Upon submittal of the resource report to the Council Chairman, it shall be placed on the agenda and the Council shall adopt or revise the policies, or make recommendations for further analysis of the resource.

Factors of Analysis

- (1) Biological Assessment of the Exploitable Fishery Resource

contact: UOG Marine Lab, DAWR, WPRFMC, BOP

- (2) Statistical Monitoring of the Fishery Catch and Effort

contact: DAWR, GFCA, GFBA, PAG

NOTE: 1 and 2 shall include an assessment of the biological potential for establishment or expansion of the fishery.

- (3) Identification and Evaluation of Techniques and Facilities for Harvesting, Handling and Processing

contact: DAWR, UOG Marine Lab, GFCA, GFBA, DOC, PAG, & Public-at-Large

- (4) Assessment of Costs of Production

contact: DOC, GFCA, DAWR, UOG Marine Lab

- (5) Marketability and Value of Resource

contact: DOC, DAWR and GFCA

Note: Analysis of factors 3, 4 and 5 should include assessment of the economic potential for establishment or expansion of the fishery and for evaluating impacts on other fisheries and other economic sectors.

- (6) Environmental Concerns

contact: GEPA, UOG Marine Lab, DAWR, BOP, PAG

- (7) Socio-cultural Concerns

contact: BOP, DPR, Public-at-Large

- (8) Legal Issues, Federal Constraints, Federal Funding, and Regional Opportunities

contact: BOP, DAWR, DOC, GEPA, PAG

The Council Chairman shall retain all policies and information to form the core of the Fisheries Management and Development Plan. The following outline represents a general guide for assemblage of the Plan, which upon completion, shall be transmitted to the Governor for his approval and action.

FIG. 1

FRAMEWORK OF PROCEDURAL PROCESS FOR POLICY FORMULATION

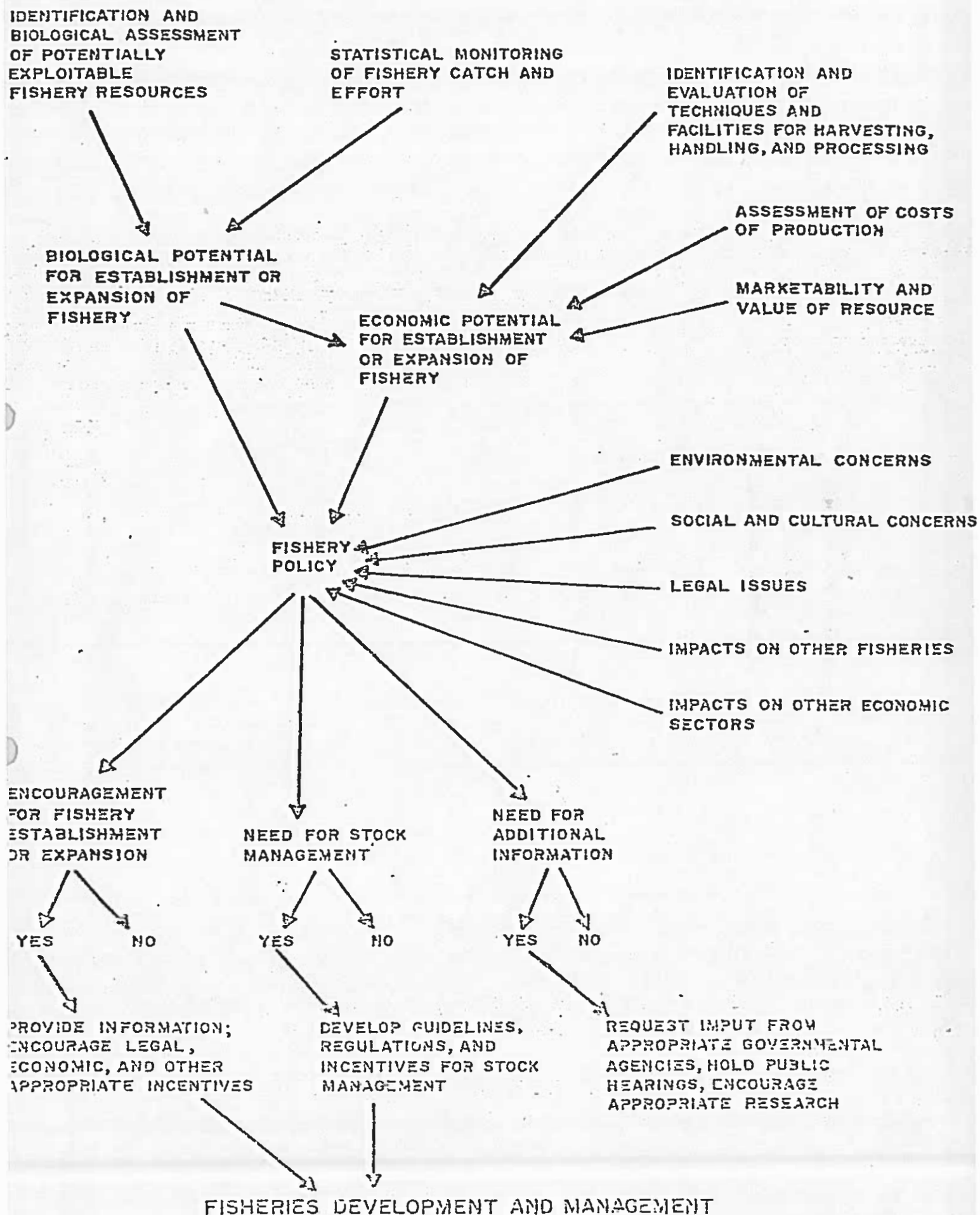


Table No. 1 - Preliminary List of Marine Resources of Economic Importance
in Guam's Territorial Waters

<u>Resources</u>	<u>Methods of Harvesting and Development</u>
1. Tunas (bluefin, yellowfin, bigeye, dogtooth)	livebait, pole-and-line, longline, purse seine, ika-shibi, cannery, transshipment
2. Pelagic Fish (skipjack tuna, mahi mahi, wahoo, billfish, sharks, jacks and others)	trolling, Potential for Air Shipment to Japan
3. Bottomfish (snappers, groupers, etc.)	bottomfishing, trapping
4. Seamount Groundfish	trawling
5. Mackerel (atulai)	night-lighting/hand-lining, pole-and- line, netting on reef
6. Seasonal Juveniles/Reef Flat mañahak - rabbitfish tiao - goatfish ii - jack aguas - mullet	surround nets, throw nets, butterfly nets, dragnets (seine).
7. Reef Fish (parrotfish, surgeonfish, rabbitfish, goatfish, wrasses, jack, etc.)	gill nets, surround nets, throw nets, drive-in nets, spearfishing, pole-and- line fish weirs, traps (illegal use of poison and explosives)
8. Aquarium Fish	net, traps
9. Lobsters and Crabs lobster - mahongan mangrove crab - admangao 7-ll crab - panglao oro fiddler crab - hagui grapsid crab - hagahof swimming crab - alimasak	net, traps, spearfishing
10. Deepwater Shrimp (Heterocarpus)	traps
11. Sea Urchins	collecting
12. Sea Cucumbers (beche-de-mer)	collecting
13. Edible Seaweeds (Caulerpa, Gracelaria)	collecting
14. Edible Shellfish (trochus, turban, conchs, clams, and oysters)	collecting
15. hard (reef) corals	collecting (for souvenirs)
16. precious corals	tangle net

AN OUTLINE FOR THE TERRITORIAL
FISHERIES MANAGEMENT AND
DEVELOPMENT PLAN FOR GUAM

I. Introduction

- A. Historical Significance of Fisheries on Guam
- B. A Description of the Resource Base
- C. The Existing Degree of Recreational and Commercial Fishing
- D. The Emerging Regional Importance
- E. The Growth Potential for the Economy
- F. The Planning Approach
 - 1. Specific Goals and Objectives (Plan's Purpose)
 - 2. Scope of the Plan
 - a. a living marine resources which have the potential of being harvested on Guam or being landed and transshipped through Guam.
 - b. aquaculture not addressed in this Plan except in specific cases where aquaculture operations directly support or relate to a marine fishery.

II. Local Fishery-Related Agencies and Special Interest Groups
(Background Description of Functions and Responsibilities)

- A. DAgr, DAWR
- B. BOP, GCMP
- C. DPC
- D. GEPA
- E. DPR
- F. UOG Marine Lab
- G. GFCA
- H. GFBA
- I. GMFAC
- J. PAG
- K. Etc.

III. Existing Policies on Fisheries

- A. Comprehensive Development Plan Policies on Fisheries
- B. E.O. No. 78-37, Land-Use Policy on Living Marine Resources
- C. Etc.

IV. An Analysis of Existing Local Legislation and Regulatory Controls Affecting Fisheries Management and Development

- A. P. L. - Net Fishing
- B. P. L. - Coral Harvesting
- C. E. O. - Fish Weirs
- D. E. O. - Lobster Harvesting
- E. DAG Reg. Trochus Harvesting
- F. Applicable Pollution Controls Standards
- G. Etc.

V. New Territorial Fisheries Policies and Legal Strategies

- A. Development of Policy Framework (to provide a common basis for decision-making in reference to fisheries management and development)
 - 1. Policy and Discussion or Rationale
 - 2. Policy and Discussion or Rationale
 - 3. Etc.
- B. Draft Local Legislation (for amendment, consolidation or strengthening of existing regulatory mechanisms)
 - 1. Discussion and Actual Text of Proposed Bills
 - 2. Etc.
- C. Draft Federal Legislation (needed to resolve federal land acquisition issues, foreign hull restrictions and other industry constraints)
 - 1. Discussion and Actual Text of Proposed Bills
 - 2. Etc.
- D. New Roles of Local Agencies and Interest Groups (for implementing new policies and strategies and enforcing new regulatory mechanisms)

VI. Economic Strategies for Industry Development

- A. Local Small-Scale Fishery Industry Needs
 - 1. Land-Use
 - 2. Infrastructure and Facilities
 - 3. Low-Interest Loan Programs, Improved Insurance Rates, Freight Subsidies, Tax Incentives.
 - 4. Extension Service and Training

B. Large-Scale Fisheries, Transshipment, Canning or Related Operations

1. Land-Use Considerations
2. Pollution Considerations
3. Infrastructure Requirements
4. Industry Promotional Efforts

VII. Outline of Needed Research Projects (for more effective management and development of Territorial fishery resources)

A. Economic Studies

1. Marketing Studies
2. Feasibility Studies
3. Infrastructure Plans

B. Biological Studies

1. Sustainable Yields
2. Potential Marine Sanctuaries
3. Role of Wetlands as Juvenile Fish Nurseries
4. Migratory or Behavioral Patterns
5. Etc.

C. Technical Studies

1. Fish Aggregation Methods
2. Catch Techniques
3. Etc.

VIII. Bibliography

Appendices

1. Status of Regional Plans
2. Sportfish Creel Census Data
3. Fishery and Market Statistics (See Appendix No. 3)
4. Text of Existing Regulatory Mechanisms
5. Resolutions by the GMFAC, minutes, or related correspondence
6. Checklist of Fishes, Shellfish, Corals and Other Species
7. Etc.

Preliminary Summary of Status of Development
of Fishery on Bottomfish

Identification and Biological Assessment of Potentially Exploitable
Fishery Resources

Bottomfish are presently being harvested by Guam's fishermen. Informal input from members of the Guam Fishermen's Cooperative Association indicates that there is room for expansion in this fishery. A report prepared by the Division of Fish and Wildlife (now the Division of Aquatic and Wildlife Resources) indicates that this fishery resource has the potential for expanded harvesting, but also cautions against the possibility of overfishing in limited areas. Further stock assessment work is needed, particularly with regard to offshore banks. Because of the upcoming consideration of this fishery for an FMP by the Western Pacific Regional Fisheries Management Council, such stock assessment research needs to be undertaken soon.

Statistical Monitoring of Fishery Catch and Effort

This is being carried out by the Division of Aquatic and Wildlife Resources. Analysis of this data will also be necessary for our input to the bottomfish FMP.

Biological Potential for Establishment or Expansion of Fishery

Tentatively, there seems to be ample potential for expansion of this fishery, although more stock assessment and catch/effort data need to be obtained and analyzed. These issues are particularly critical in light of the upcoming FMP which will determine foreign allocation of this resource.

Identification and Evaluation of Techniques and Facilities for Harvesting,
Handling, and Processing

Effective harvesting techniques are presently being employed by Guam's fishermen. It may be advisable to encourage dissemination of information on these techniques so that more fishermen could participate in this fishery. Booklets or workshops in which these techniques are described and demonstrated could be produced by the Guam Fishermen's Cooperative Association, the Division of Aquatic and Wildlife Resources, and the Marine Laboratory.

A difficulty exists presently in the availability of adequate fuel, ice, and catch-handling facilities at the Agana Marina. The Council's efforts to resolve these difficulties may well be the most effective means to stimulate this fishery.

Assessments of Costs of Production

The Guam Fishermen's Cooperative Association has documented some of these costs. A thorough cost analysis would seem to be particularly valuable at this point, especially in light of the future increases in fuel costs.

Marketability and Value of Resources

Marketing has been identified by the Guam Fishermen's Cooperative Association as a major difficulty in developing bottomfishing (as well as other fisheries on Guam). Resolution of land-use difficulties at the Agana Marina may offer the best solution to this problem. Adequate demand for this resource exists.

Economic Potential for Establishment or Expansion of Fishery

The potential for expansion of the harvest of bottomfish seems to be significant once the problems of dockside facilities and marketing are resolved.

Environmental Concerns

Issues to be considered are the environmental effects of the Agana Marina development and of fish processing wastes (if these become important sources of pollution).

Social and Cultural Concerns

The species of fish harvested by bottomfishing are highly regarded by local residents and command a higher price than do pelagic trolling fishes. No particular conflicts are envisioned with traditional fishing practices.

Legal Issues

The development of a bottomfish industry on Guam will be greatly influenced by several legal issues: The Jones Act, importation regulations allowing the landing of catches by foreign fishermen, land-use regulations, and the FMP produced by the Western Pacific Fisheries Management Council. These legal issues need to be addressed and resolved.

Impacts on Other Fisheries

The problems of facilities and marketing which face bottomfishing, also face other fisheries. Resolution of these problems will generally benefit fishermen seeking a variety of resource species. As bottomfish are more desirable in the market than trolling fish, there may be competition in this area. However, many small boat fishermen harvest both resources. Since trolling fish are seasonal in their abundance and bottomfish appear to be more consistently available, fishermen have generally relied on trolling for fish when they are abundant and relying on harvesting bottomfish during other times of the year.

Impacts on Other Sectors

No adverse impacts are anticipated. Development of this fishery will enhance businesses involved in boat maintenance, fishing supplies, and seafood.

SUGGESTED FISHERY DEVELOPMENT POLICY

Encouragement for Fishery Establishment or Expansion

Tentatively, bottomfishing appears to have potential for expansion. This can best be accomplished at the present time by encouraging the implementation of appropriate dockside boat facilities at the Agana Marina and the establishment of the fish handling, processing, and retailing facilities of the Guam Fishermen's Cooperative Association. Appropriate action with regard to the Jones Act, foreign fish landings, and the Western Pacific Regional Fisheries Management Council FMP on bottomfish is also essential.

Need for Stock Management

A more complete stock assessment is necessary for any decisions on this issue. In addition, the Division of Aquatic and Wildlife Resources should continue to collect and analyze catch and effort data on bottomfishing.

Need for Additional Information

Informational needs have been described in the previous sections. Additional information on the possibility of export markets should also be sought.

Preliminary Summary of Status
of Development of Fishery on Deep Water Shrimp

Identification and Biological Assessment of Potentially Exploitable
Fishery Resources

Master's thesis by Wilder (1977) provides information on abundance and distribution of deep water shrimp around Guam.

Statistical Monitoring of Fishery Catch and Effort

May be some data available from GEDA, which has lent money for a shrimp harvesting venture.

Biological Potential for Establishment of Expansion of Fishery

Potential exists for at least a small-scale fishery. Further study needed to evaluate the potential for a large-scale fishery.

Identification and Evaluation of Techniques and Facilities for Harvesting,
Handling, and Processing

Trapping appears to be the most appropriate harvesting techniques at present. Further research may identify more effective methods (e.g., trawling, etc). Shrimps are presently marketable "in the round", but heading and shelling would increase their value.

Assessment of Costs of Production

This is an area in which more information is needed. Past shrimping operations and proposed operations have not taken adequate consideration of the costs in money and time involved in harvesting enough shrimp to maintain an economically viable fishery. A proposal for research on this problem has been submitted to the Bureau of Planning by the Marine Laboratory.

Marketability and Value of Resource

A marketing study was carried out by Michael Wilder under the direction of Dr. Paul Callaghan of the University of Guam. Among its conclusions were that markets exist, but that consistent, reliable delivery to markets must be established.

Economic Potential for Establishment or Expansion of Fishery

This judgement appears to hinge on whether costs of production are within reasonable limits compared to the value of the catch harvested.

Environmental Concerns

A small-scale fishery is not expected to cause any environmental problems.

Social and Cultural Concerns

This is not a traditionally harvested food, but there seems to be no problem with its market acceptability.

Legal Issues

The problem of trap security will become important if this fishery is to develop. Consideration should be given to appropriate regulations in this area.

Impacts on Other Fisheries

No real problems are anticipated here. The ability of locally caught shrimp to compete for local markets with imported shrimp is primarily an issue to consistent availability.

Impacts on Other Economic Sectors

No problems are anticipated. Development of this fishery will stimulate business involved in boat maintenance, fishing supplies, and seafood retail market or coop outlets.

SUGGESTED FISHERY DEVELOPMENT POLICY

Encouragement for Fishery Establishment or Expansion

Policy should not discourage private investors who wish to participate in this fishery, but Council should not actively encourage loans for this fishery until further information on harvesting costs is available. Some guidelines should be drawn up for protecting trap lines against theft. Perhaps consultation with the Coast Guard is necessary to establish whether trap buoys are considered navigational hazards.

Need for Stock Management

None at the present time. Should a fishery become established, procedures for gathering catch and effort data should be instituted.

Need for Additional Information

Major need is the area of costs of harvesting. Further research on alternative harvesting strategies might be fruitful.

Fishery Statistics For Guam

In the formulation of policies, the GMFAC will require a base of information including a summary of fishery statistics for Guam consisting of the following items:

- a) total annual fish catch in pounds and/or kilogram through all years for which statistics are available;
- b) a breakdown of these annual catches by species or species groups (as appropriate);
- c) a breakdown of these annual catches by fishery type (recreational, commercial, subsistence);
- d) some indication of the reliability of the above statistics;
- e) number of registered fishing vessels on Guam for all years for which data are available;
- f) summary of on-going and projected programs for acquisition of fishery statistics;
- g) total annual fishery imports into Guam, broken down insofar as is possible by country of origin, type of fish product, etc.