

North Pacific Fishery Management Council

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RFP Number 78-4

A STUDY TO DETERMINE THE EFFECTS OF HYDRAULIC CLAM HARVESTING ON THE SURF CLAM (*Spisula polynyma*) AND ON THE ECOLOGY OF THE BENTHAL ORGANISMS AND SEDIMENT IN THE EASTERN BERING SEA (BRISTOL BAY)

I. INTRODUCTION

The North Pacific Fishery Management Council is one of eight Regional Councils developed as a result of the Fishery Conservation and Management Act of 1976 (P.L. 94-265). Under provisions of the Act the Councils are to:

1. Take immediate action to conserve and manage the fisheries resources off the Coast of the U.S. and the anadromous species and Continental Shelf fisheries resources of the U.S..
2. Support and encourage the implementation and enforcement of international fishery agreements for the conservation and management of highly migratory species and to encourage the negotiation and implementation of such additional agreements as necessary.
3. Promote domestic, commercial and recreational fishing under sound conservation and management principles.
4. Provide for the preparation and implementation in accordance with National standards of fishery management plans which will achieve and maintain, on a continuing basis, the optimum yield from each fishery.
5. Encourage the development of fisheries which are currently under-utilized or not utilized by United States fishermen including bottomfish off Alaska.

The relationship of this RFP and the proposed research program is more clearly understood in terms of the above stated provisions 3, 4 and 5 which mandate the Council's to develop commercial fishing under sound conservation and management principles, to prepare and implement fishery management plans and to encourage the development of fisheries which are currently under-utilized or not utilized by United States fishermen.

In general, any fishery management plan prepared and any regulation

promulgated to implement any such plan must be consistent with the following national standards for fishery conservation and management:

1. Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery.
2. Conservation and management measures shall be based upon the best scientific information available.
3. To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.
4. Conservation and management measures shall not discriminate between residents of different States. If it comes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (a) fair and equitable to all such fishermen; (b) reasonably calculated to promote conservation; and (c) carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.
5. Conservation and management measures shall, where practicable, promote efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.
6. Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.
7. Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

The following required contents and provisions of a fishery management plan help to explain the relationship between the national standards and the development of fishery management plans, with the research problem. Among other things, the plan must contain a description of the fishery; assess and specify present and probable future conditions of the maximum sustainable yield and optimum yield from the fishery; designate zones where, and periods when, fishing shall be limited or shall be permitted only by specified types of fishing vessels or the specified types and quantities of fishing gear; establish specific 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; 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 provisions of the Act; establish a system for limiting access to the fishery in order to achieve optimum yield under certain conditions and take into account necessary habitat considerations so as to insure adequate protection of the species. All fishery management plans are required to have environmental impact statements.

A. Research Problem

The North Pacific Council must prepare a Fishery Management Plan (FMP) and Environmental Impact Statement (EIS) for eastern Bering Sea clams. This research problem deals with the Council's need to understand those changes which might occur to the benthic biocoenose as a result of hydraulic clam dredging activities. The results of this proposed study of benthic impacts and changes will not only play an integral part in understanding environmental impacts, it will also provide baseline information with which to establish an environmental assessment and a basic philosophy to use in the development of a management strategy for the fishery.

B. Statement of Purpose

The purpose of this study is to quantitatively describe the physical and biological effects and changes resulting from hydraulic clam dredging on benthic biocoenose.

C. Important Background Information

(1) Logistics

This RFP is designed to solicit only scientific proposals dealing with methodology, collection, analysis and recommendations and not with any aspect of vessel support or vessel logistics. The Contractor must however, supply all sampling equipment, labor and personal services.

(2) Required Coordination with Ongoing Research

The proposed research must be coordinated with a cooperative, Industry-Federal-State of Alaska Study which will be conducted during 1978 in the eastern Bering Sea. This study is designed to, among other things, establish the necessary 'research-scale' dredging operation from which to measure change. The following is the proposed research outline for 1978.

An experimental fishery for subtidal clams, principally the Alaskan surf clam, Spisula polynyma, is planned in 1978 to study feasibility for future commercial harvests. The experimental fishery will be conducted as a cooperative Industry-State-Federal-University effort and will use a commercial sized hydraulic clam dredge similar to those used in the east

coast surf clam fishery. The general area of interest is located immediately north of the Alaska Peninsula in waters principally between 11 and 23 fathoms from Port Moller to the Ugashik River (Blocks 40 thru 66, Fig. 5 from Hughes, Nelson and Nelson). The experimental fishery will occur in a single ten-mile square research sanctuary area (Fig. A) located near Port Moller in waters ranging in depth from 10 to 20 fathoms. Within this area, three to five plots will be harvested at different intensities based on several theoretical coverages of the harvest area. The hydraulic dredge coverage (width of the dredge x length of all hauls in each plot) will be recorded. These plots and additional control areas will be permanently located and marked for study for the recovery period.

II. STATEMENT OF OBJECTIVES

1. An environmental assessment of the abundance and distribution of benthic fauna in the study area prior to any experimental harvest,--i.e., baseline information.
2. A determination of the acute effects of hydraulic (clam) dredge harvesting on the benthic communities of the test area.
3. An assessment and an analysis of the recovery of the target species (surf clam), dominant species (macrofauna) and benthic biocoenose after dredging.
4. A characterization and description, in terms of their relative importance, of the undisturbed sediment regime compared with a characterization of the disturbed, dredged bottom.

A. PHASE I Data Search

A data search and information synthesis must be completed within the early stages of the project identifying all data pertinent to the undertaking and analysis of environmental impacts relating to this subject.

Task 1.1

Inventory existing resource data: review all published and unpublished literature: identify recent and ongoing studies relevant to the area. The inventory must cover sediment types in the eastern Bering Sea, historic or suspected heavy metals concentration in the eastern Bering Sea, the relative distribution and abundance of general macrobenthic fauna, and related benthic ecological impacts similar to other clam fisheries in other areas; specifically including all East Coast information. In this inventory, the Contractor must contact at least the following agencies and offices to assess the existence and availability of information required in this task:

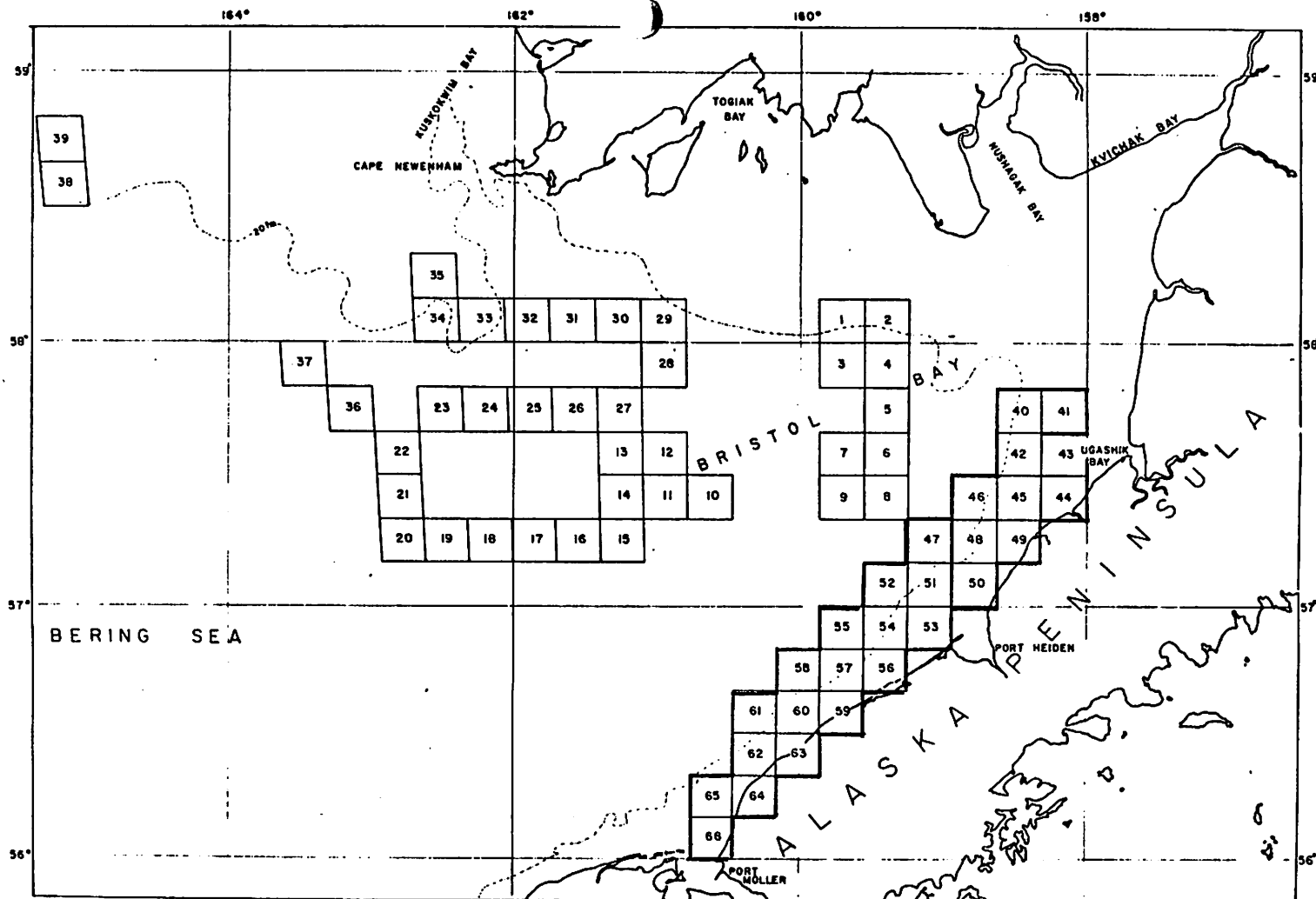
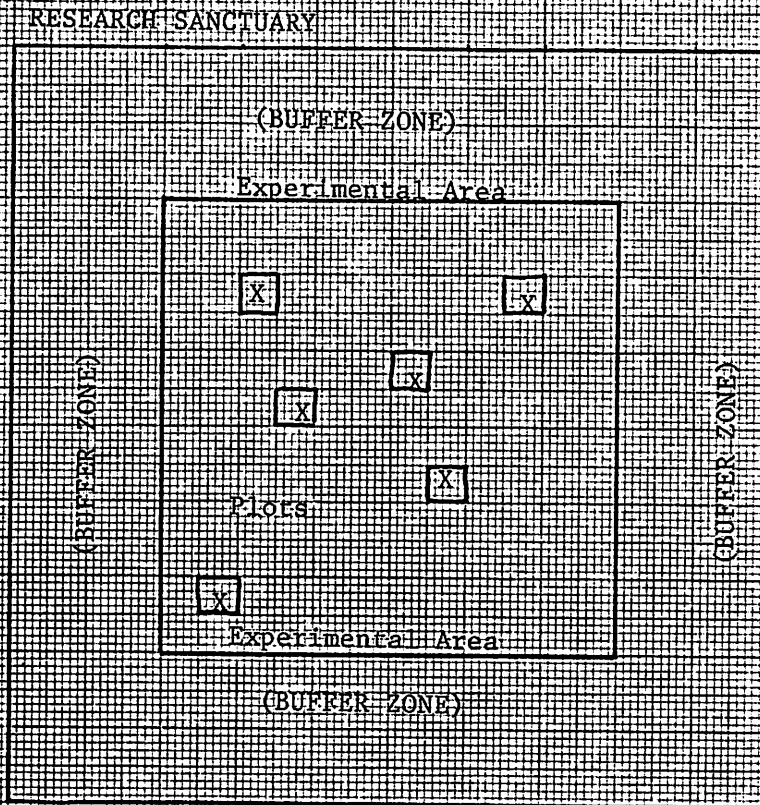


Figure 5. Location of 66-100 square mile blocks in the southeastern Bering Sea when the subtidal clam resource assessment survey was conducted.



DIMENSIONS

- 1. Research Sanctuary 10 x 10 miles
- 2. Experimental Area 6 x 6 miles
- 3. Plots .5 x .5 miles

FIGURE A - Research Sanctuary Area and Experimental Fishing Plan (Schematic).

University of Alaska, IMS, Sea Grant
University of Washington
National Marine Fisheries Service
Alaska Department of Fish and Game
Oregon Department of Fish and Game
North Pacific Fishery Management Council
The East Coast States of New Jersey, Delaware, Virginia, Rhode
Island and Maryland
The Mid-Atlantic Fishery Management Council
New England Fishery Management Council

All contacts with agencies and formal introductions shall be arranged in consultation with the Project Officer (Executive Director). The data search must cover all sources of pertinent printed matter, such as published literature; state, local and federal government reports; thesis dissertations; university and company reports; and unofficial reports and data files.

Task 1.2

The analysis of information should identify additional data gaps and studies required to meet the needs of this proposed environmental benthic assessment and impacts study.

PHASE II Assessment Studies

The quantitative abundance and distribution of benthic fauna in the test study area prior to the experimental clam harvest must be assessed.

The Contractor will be expected to propose and identify the degree and level of sampling which must be done to provide a quantitative abundance and distribution profile of baseline data. The sampling must cover at a minimum, those dominant, major and directly related species which will be important indicators of change.

The baseline benthic abundance and distribution studies have been programmed to begin intensively in the test area only. The ability to extensively extrapolate this baseline information over the entire area of potential harvest needs also to be examined. This portion of the assessment phase should determine the homogeneity of environments and provide an initial assessment of the applicability of the test area to the total potential clam harvest area. The Contractor is expected to address this problem in sufficient detail so as to discuss the different strategies of an experimental design. Note, however, as indicated in the time schedule, that funding and the actual work for this extrapolated assessment is not authorized under this RFP and is intended, pending funding, to be included in a 1979 portion of this survey.

Special Note

The importance of this phase of the study is of paramount interest to the Council. It provides baseline assessment work from which all future recommendations for the fishery will be based. It establishes precedent for long term research and long term management and must represent the best science possible. We therefore, are looking for great detail in the philosophy of the methodology in the respective proposals as they deal with the experimental design necessary to complete the study. All proposals must address in detail:

1. The complete range and size of organisms to be sampled and the relative importance attached to the selection, including community interactions, general ecology and cost effectiveness.
2. The benthic sampling devices to be used and the rationale.
3. Methodology for continuous sampling and monitoring at site specific locations on the ocean bottom.
4. Methods for analysis of samples.

PHASE III - Impacts on the Environment

The Contractor must determine the acute and chronic effects on the benthos resulting from hydraulic dredge harvesting.

Task 3.1

The Contractor must quantitatively characterize the acute biological effects of the dredge passage over the bottom.

Task 3.2

The Contractor must quantitatively assess the impact on the benthic community as described in terms of distribution and abundance of predominant species (macrofauna) immediately after and as a direct result of dredge passage over the bottom.

Task 3.3

The Contractor must quantify biological changes in numerical abundance, biomass and also sediment characteristics over the short term (to be defined) and as direct result of dredge passage over the bottom.

Task 3.4

The Contractor must quantitatively characterize and assess the chronic or long term effects (up to 60 days) of dredge passage over the bottom on the physical and biological processes: including numerical

abundance of species of importance, biomass estimates and changes, and sediment characteristics. The Contractor must submit a research design for long term effects (longer than 2 months) but must be prepared to do the actual assessment for approximately 60 days after dredge passage.

Task 3.5

The Contractor must present sampling methodology and experimental design sufficient to demonstrate the details of chronic biological and physical impacts. Also, the proposal should detail not only the experimental design, but the philosophy of the approach as well.

PHASE IV

This phase deals with a quantitative estimate and philosophical discussion of the mode and rate of recovery of the benthic fauna after clam dredging activity.

Task 4.1

A schedule must be proposed for reexamining the test fishing sites in order that the rate and subsequent mode of benthic recovery can be described.

Portions of the reexamination and continuing monitoring of the changes will lie outside the funding potential of this RFP. Specifically, all work scheduled outside the summer of 1978 will be considered separately for further funding. Therefore, the major portion of the proposal should include the reexamination of the short term changes (1 to 2 months) and should address, in general, provisions for reexamination after one year.

This portion of the proposal which addresses the mode of rate of recovery of some of the benthic fauna is expected to have major implications on management decisions which must be forthcoming for the proposed 1980 commercial fishery.

PHASE V - Coordination of Effort and Recommendations

Task 5.1

The experimental design and the results anticipated from this study must be closely coordinated with the research effort scheduled for the eastern Bering Sea in 1978. It is expected that the results from all studies during 1978 will lead to baseline statements of the reproductive biology of the clams, acute and chronic impacts of a dredge operation, including physical and biological changes and their lasting effects.

The coordination and analysis of these results in their entirety are extremely important in the development of the management strategies

and environmental considerations for the fishery management plan which must be developed regarding the Bering Sea clams.

Task 5.2

The proposal must contain recommendations for future (1979, 1980) research as stated in the long term goals of this RFP and other studies as deemed necessary by the Contractor.

III. PROJECT SCHEDULE AND DELIVERABLES

A. Schedule

The specific dates shown in the second column below are based on a start date of June 5th, 1978. Should the actual start date be delayed, the calendar dates will be adjusted by the corresponding number of days.

<u>Date</u>	<u>Event</u>
June 5, 1978	Contract Award
June 9, 1978	Post Award Briefing
June 21, 1978	Project review and conference with the Contractor, Executive Director and the North Pacific Council and its Scientific and Statistical Committee. Presentation of the Contractor required on project coordination with the joint research project and with NMFS.
September 18, 1978	Progress report. Substantial portions of information gathered for Phases I, II, III must be presented at this time.
October 9, 1978	Review of final report outline with the Executive Director.
November 20, 1978	Final report due.

B. Deliverables

Products should be delivered to Project Officer, Executive Director, North Pacific Fishery Management Council. The products will be professional quality and reproducible. The original must be one of the copies submitted. Style and format should conform to CBE Style Manual, 3rd Edition, unless the project officer, Executive Director, NPFMC specified otherwise. Further guidance or changes may be provided after the start of the contract. Copies of all raw data and papers generated by the Contractor shall be presented to the project office, Executive Director, upon

completion of the contract. The final report shall include the following sections:

Title Page
Preface
Executive Summary
Table of Contents
List of Figures
List of Tables
List of abbreviations and symbols
Acknowledgements
Introduction
Materials and Methods
Results
Discussion
Recommendations
Abstract Key Words
References

The project officer may allow combinations of sections or their omissions if requested by the Contractor.

1. A monthly management business letter shall accompany each monthly voucher. The monthly letter should be no longer than two pages. The letter must indicate the allocation of all charges by task and explain all the charges on the voucher. In addition, the letter shall contain statements about the adequacy of funds remaining to complete each task, shall indicate any changes in personnel and shall state by task the percentage of work accomplished for each task during the month. Monthly management letters are due ten days after the end of each thirty day period. Three copies are to be delivered to the Executive Director, NPFMC.

2. Final report shall be camera-ready copy, single spaced, typed on one side of the page and on good quality white paper measuring 8 x 10½ inches. Specific detailed information or changes may be requested and/or provided by the Executive Director.

3. The project officer will be responsible for distribution. The Contractor shall defer all requests to the project officer.

IV. RESPONSIBILITY TO THE CONTRACTOR

The Contractor shall be responsible for all aspects of this project except ship support and shall furnish all necessary services, materials, labor, supplies and equipment. The Contractor shall submit a final report as described under conduct of the study. Selection of a Contractor will be based primarily on the results of the technical evaluation with cost also being carefully considered. Selection of the Contractor will be based specifically on Council's procurement standards Award of Contract Section. (See Article VI B.)

V. INSTRUCTION FOR PREPARATION OF PROPOSALS

A. General Instructions

Proposal should be submitted so as to have an easily distinguishable section dealing with technical aspects and a section dealing with business management. The technical proposals should not make any reference to pricing data in order that the evaluation may be made strictly on the basis of technical merit, the proposals must be specific on the technical approach proposed to satisfy the requirements and not merely paraphrasing the specifications in this RFP. One copy of the technical proposal and one copy of the cost proposal will be required for submission and signed by someone authorized to legally bind the Offerer.

B. Receiving Date and Address

Proposals should be submitted so as to be received at the address noted below not later than May 5, Friday, at 5:00 p.m. local time, 1978. Address to which proposals are to be submitted: North Pacific Fishery Management Council, P. O. Box 3136 DT, Anchorage, Alaska 99510, Attention: Administrative Officer. If hand carried, the proposals shall be received no later than the time and date listed above at: North Pacific Fishery Management Council, Suite 32, 333 W. 4th Avenue, Post Office Mall Building, Anchorage, Alaska 99501. Proposals are guaranteed confidential and envelope should be marked with the appropriate request for proposal (RFP#78-4) number.

VI. NEGOTIATIONS AND AWARD

A. Award

Award will be made to the responsible offerer in accordance with the criteria set forth in this RFP and consistent with the North Pacific Fishery Council's procurement standards and dependent on funding approval by NOAA. Issuance of this solicitation does not constitute an award commitment on the part of the government. This request does not commit the North Pacific Council to pay for costs incurred in submission of a proposal or for any other costs incurred prior to the execution of a formal contract unless specifically authorized in writing by the Executive Director. Attention is invited to the fact that a contracting officer/Executive Director, is the only individual who can legally commit or obligate the government to the expenditure of public funds should a contract result by reason of a response to this request for proposals.

B. Criteria

All proposals will be reviewed by the Council staff, members of the Council's Scientific and Statistical Committee, selected members of the Council's Advisory Panel, members of the Council's Finance Committee and

others as deemed necessary. Each proposal will be ranked against all proposals according to three categories:

1. Project feasibility, cost effectiveness including cost of of project (30 points).
2. Research design and approach (30 points).
3. Staff capability, pertinent experience of staff, balance of disciplines, and recognized expertise (40 points).

Proposals must conform to specifications of this RFP in order to be considered.

C. Level of Funding

Negotiable. The Contractor is not expected to provide logistical ship support. Approximately \$100,000 has been budgeted to do this study as NOAA will likely provide research ship capabilities in direct support of this contract. While the price of the contract is considered in the criteria for award, those proposals of significant merit will be considered at whatever the level of funding, below or above \$100,000.

VII. PROPOSAL

To aid in the evaluation of the proposals it is desired that all proposals follow the same general format. Therefore, your proposals shall at a minmum contain the information specified below in accordance with the following general format:

A. Technical

1. Table of contents
2. List of tables and drawings
3. Short introduction and summary
4. Technical discussion of approaches
5. Program organizations
6. Program schedules
7. Facilities and equipment data
8. Personnel qualifications
9. Supporting data and other information

B. Cost

1. General cost proposal
2. Cost breakdown
3. Cost form
4. Direct labor