AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT DATA SHEET

1. TRANSACTION CODE: [ ] A = Add, C = Change, D = Delete — Amendment Number: Original — DOCUMENT CODE: 3

COUNTRY/ENTITY: Interregional

3. PROJECT NUMBER: 936-4146

4. BUREAU/OFFICE: S&T/AGR/RNR [10]

5. PROJECT TITLE (maximum 40 characters): Fisheries Stock Assessment CRSP

6. PROJECT ASSISTANCE COMPLETION DATE (PACD): MM 09 DD 30 YY 91

7. ESTIMATED DATE OF OBLIGATION (Under "B." below, enter 1, 2, 3, or 4): A. Initial FY 85 B. Quarter [X] C. Final FY 89

8. COSTS ($000 OR EQUIVALENT $1 =)

A. FUNDING SOURCE	FIRST FY 85 B. FX	C. L/C	D. Total	LIFE OF PROJECT E. FX	F. L/C	G. Total
AID Appropriated Total	500		500	5,000		5,000
(Grant)	(500)	( )	(500)	(5,000)	( )	(5,000)
	( )	( )	( )	( )	( )	( )
Other U.S. 1. Universities	53		53	1,360		1,360
Other U.S. 2.						
Host Country	100		100	600		600
Other Donor(s)						
TOTALS	653		653	6,960		6,960

9. SCHEDULE OF AID FUNDING ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE 1. Grant	2. Loan	D. OBLIGATIONS TO DATE 1. Grant	2. Loan	E. AMOUNT APPROVED THIS ACTION 1. Grant	2. Loan	F. LIFE OF PROJECT 1. Grant	2. Loan
(1) ARON	141	876		0	-	5,000	-	5,000	-
(2)									
(3)									
(4)									
TOTALS				0	-	5,000	-	5,000	-

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each): 097 319 099 874 963 973

11. SECONDARY PURPOSE CODE: 121

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)

A. Code	R/AG						
B. Amount	5,000						

13. PROJECT PURPOSE (maximum 480 characters):

To develop and refine methods of assessing fish stocks in tropical conditions. This technology will be transferred to LDC fishery managers resulting in improved management of their fisheries.

14. SCHEDULED EVALUATIONS: Interim MM 08 YY 86 — MM 08 YY 88 — Final MM 08 YY 90

15. SOURCE/ORIGIN OF GOODS AND SERVICES: [X] 000 [ ] 941 [ ] Local [ ] Other (Specify) _____

16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a _____ page PP Amendment)

BEST AVAILABLE COPY

17. APPROVED BY — Signature: [signature] — Title: J.S. Robins, Agency Director for Food and Agriculture, S&T/FA — Date Signed: MM 05 DD 30 YY 85

18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION: MM DD YY

PROJECT AUTHORIZATION

Name of Country: Interregional

Name of Project: Fisheries Stock Assessment CRSP

Number of Project: 936-4146

1. Pursuant to Section 103 of the Foreign Assistance Act of 1961, as amended, I hereby authorize the centrally funded project entitled "Fisheries Stock Assessment Collaborative Research Support Program" involving planned obligations not to exceed $5,000,000 in grant funds over a five year period from date of authorization, subject to the availability of funds, in accordance with the A.I.D. OYB/allotment process, to help in financing foreign exchange and local currency costs for the project.

2. The project will conduct research in nine disciplines to develop technology for assessing fish stocks under tropical conditions in developing countries.

3. The contract, grant or other agreements which may be negotiated and executed by the officer(s) to whom such authority is delegated shall be subject to the following essential terms and covenants and major conditions together with such other terms and conditions as A.I.D. may deem appropriate.

a. Each developing country where research takes place shall be deemed to be a cooperating country for the purpose of permitting local cost financing.

b. Goods and services, except for ocean shipping, financed by A.I.D. under the project shall have their source and origin in a cooperating country or in the United States, except as A.I.D. may otherwise agree in writing.

c. Ocean shipping financed by A.I.D. under the project shall except as A.I.D. may otherwise agree in writing, be financed only on flag vessels of the United States.

J. S. Robins
Agency Director for Food and Agriculture
Bureau for Science and Technology

Date: 5/31/85

Clearances:
S&T/AGR/RNR:T. Gill Date 5-24-85
S&T/AGR:F. Li Date 5/27/85
S&T/PO:G. Eaton Date 5/30/85

ENVIRONMENTAL THRESHOLD DETERMINATION

TO: S&T/FA, J. S. Robins

FROM: S&T/AGR, Anson R. Bertrand

SUBJECT: Environmental Threshold Determination for:

Project Title: Stock Assessment Fisheries CRSP
Project #: 936-4146
Specific Activity: Collaborative Research Support Program
Reference: Initial Environmental/Examination (IEE) contained in (see attached sheet)

On the basis of the Initial Environmental/Examination (IEE) referenced above and attached to this memorandum, I recommend that you make the following determination:

__X__ 1. The proposed agency action is not a major Federal action which will have a significant effect on the human environment.

_____ 2. The proposed agency action is a major Federal action which will have significant effect on the human environment, and:

____ a. An Environmental Assessment is required; or

____ b. An Environmental Impact Statement is required.

The cost of and schedule for this requirement is fully described in the referenced document.

_____ 3. Our environmental examination is not complete. We will submit the analysis no later than _____ with our recommendation for an environmental threshold decision.

Approved: J S Robins

Disapproved: _____

Date: 5/31/85

Clearances:
S&T/AGR/RNR:R. Neal RHN Date 5/23/85
S&T/AGR/RNR:T. Gill Date 5-24-85
S&T/PO:G. Eaton Date 5/30/85

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AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C.

ACTION MEMORANDUM FOR THE AGENCY DIRECTOR FOR FOOD AND AGRICULTURE
BUREAU FOR SCIENCE AND TECHNOLOGY

FROM: S&T/AGR, Anson R. Bertrand

SUBJECT: CRSP - Stock Assessment Fisheries (936-4146)

PROBLEM: Your approval is required to establish a Collaborative Research Support Program (CRSP) on Stock Assessment requiring five year total A.I.D. funding of $5.0 million.

Discussion: Tropical developing countries have insufficient information on the size of fish populations being harvested and therefore are unable to make wise decisions regarding appropriate levels of fishing effort for sustaining optimum harvests. In large part, this lack of information is due to the fact that suitable methods for tropical stock assessment (determination of fish population size, growth and mortality) are not available. The purpose of this research program is to develop new techniques that LDC scientists can use to determine the population dynamics of exploited fish stocks. With ratification of the new Law of the Sea, coastal states have jurisdiction over all fisheries within 200 miles of their coastline (rather than the previous 12 miles). Therefore, many developing countries have new authority and new responsibility regarding management of ocean fisheries, but do not yet have the proven methods to enumerate fish populations or to determine optimum exploitation rates.

To provide the appropriate methods for tropical stock assessment nine interrelated subprojects will be executed including: (1) multiple-species fisheries research, (2) systematic investigation of variability in fish stocks, (3) sampling catch, (4) age/size dependent modeling and corresponding age independent modeling, (5) age-size relationships and consequences of errors, (6) application of shallow-water hydroacoustic techniques for assessment of fish stocks subject to artisanal fisheries, (7) economic and probabilistic extensions of standard fishery models, (8) empirical analyses and modeling, and (9) multispecies field studies.

The research will include collection of data, testing of models, field sampling and analysis of statistics from multispecies, tropical fisheries employing various fishing methods. Research will be done in collaboration with researchers in the Philippines and Costa Rica by the three principal universities:

Maryland, Washington, and Rhode Island. The program will be administered by the University of Maryland, which was selected as the Management Entity by the participating universities. It will have the assistance of an Executive Council and a Technical Advisory Committee. The estimated A.I.D. contribution is $5,000,000 for 5 years; university matching funds are estimated to be $1,360,000. Anticipated accomplishments resulting from this research are improved analytical methods and models and statistical procedures for use by developing countries to determine optimum amounts of fishing to sustain greatest benefits from living aquatic resources.

This CRSP has been reviewed and recommended by the JCARD and the BIFAD. In his letter to Administrator McPherson of December 20, 1984, copy attached, E. T. York, Chairman of BIFAD, recommended that the Agency implement the proposal submitted by the three universities. He also stated that after extensive review, the program proposal is considered sound, and that the end product contained in this proposal has clearly defined scientific objectives.

Funds for this project totaling $500,000 are included in the Office of Agriculture's approved FY 1985 OYB. An Advice of Program Change has been submitted.

Recommendations: That you sign the attached PAF.

Attachments

1. PAF
2. Environmental Threshold Determination
3. Project Summary Overview
4. Letter, dated December 20, 1984 from E. T. York to M. Peter McPherson

Clearances:
S&T/AGR/RNR:T. Gill _____ Date 5-24-85
S&T/AGR:F. Li _____ Date 5/27/85
S&T/PO:G. Eaton _____ Date 5/30/85

Drafter: S&T/AGR/RNR, RNeal:mt:5/3/85:Wang #0678C
revised:5/20/85,5/23/85

Environmental Analysis

I. Project Description:

This project is planned to improve analytical and sampling methods for measurement of the size, mortality rates and growth rates of natural populations of fish. It will involve theoretical development of models, extensive analysis of literature and of data collected previously on fish populations, extensive sampling of natural populations using standard fishing methods, sampling of fish landings in fishing ports, measurement of fishing effort, and development and testing of improved analytical procedures for fish population studies. The results of the project will be new methods for use by developing country fishery scientists in measuring characteristics of natural fish populations as well as a manual of stock assessment methods describing these new methods and their application to tropical fish populations.

No aspect of this project will have negative environmental impact. It is largely statistical analysis, mathematical model building and testing and collection of statistics from fish populations and from the fishing industry. It involves no construction, effluents, use of pesticides, damage to natural resources or changes that have any environmental impact. Fish taken as samples for analysis will all be harvested legally using commonly accepted forms of fishing gear. Numbers taken as samples will be small and inconsequential.

Because the study is primarily theoretical and analytical in nature it will have no environmental impact other than the sampling of fish populations. The sampling will not have a negative environmental impact.

II. Recommendation:

This project will not have a direct effect on the environment and therefore a negative determination is recommended.

THE STOCK ASSESSMENT CRSP — A SEARCH FOR NEW METHODS IN FISHERIES STOCK ASSESSMENT

A PROGRAM OVERVIEW

Standard approaches to fisheries management have not materially extended stock assessment knowledge in recent years, despite extensive research in this area. This proposed research program is designed to improve stock assessment methodology and to provide stock assessment advise to fishery managers who operate under a variety of conditions on problems that range from being very simple to quite complex. The proposed research is particularly concerned with improving stock assessment methodology in small-scale fisheries, but because of the universal nature of many problems encountered in fisheries management, the best research approach appears to be one in which fisheries stock assessment is examined in toto.

The complex nature of fisheries management is embodied in questions that relate to multiple-species fisheries. Managing multiple-species fisheries is one of the most difficult tasks faced by fishery managers. This is because despite considerable theoretical development and existing collections of copious amounts of data there is still little understanding of the way in which fishery/fish ecology works. For example, in ecology there are frequent controversial debates on how competition shapes communities. In fisheries, attributing a "stock collapse" to either natural causes or to fishing, is generally an insolvable problem.

If progress in fishery management is to be made, new methods in stock assessment are needed. A program to develop new methods in fisheries stock assessment is contained within this proposal. The proposed research program is

composed of nine interrelated projects, which are listed and then briefly described as follows.

- Multiple-Species Fisheries Research
- Systematic Investigation of Variability in Fish Stocks
- Sampling Catch
- Age/Size Dependent Modeling and Corresponding Age Independement Modeling
- Age-Size Relationships and Consequences of Errors
- Application of Shallow-Water Hydroacoustic Techniques for Assessment of Fish Stocks Subject to Artisanal Fisheries
- Economic and Probabilistic Extensions of Standard Fishery Models
- Empirical Analyses and Modeling
- Multispecies Field Studies

MULTIPLE-SPECIES FISHERIES RESEARCH

Primary Host Country Institution: University of Costa Rica

Primary U.S. Institution: University of Maryland

Project Rationale: Predictive understanding of marine fish populations is not increasing yet, there is still little that is understood about biological community structure in general or of species interactions within the community. This is a critical problem in tropical small-scale fisheries where typically many species are fished simultaneously, or where effort switches among species throughout the year. Accordingly, the purpose of this project is to develop an investigatory strategy that will lead to a better understanding of multiple-species fisheries and how they relate to community and population dynamics.

Project Description: Addressing fishery/fish ecology problems requires a systematic and analytic study of what is known with respect to this complex system. Our research plan for accomplishing this involves both exploring the bounds of what can be learned about complex systems and systematically

evaluating the current fisheries system to try and achieve a better understanding of the way the system works. This approach is expected to contribute to advancing stock assessment theory, particularly as it relates to variability in fish stocks, recruitment, natural mortality and multiple-species interactions.

This research will be conducted at the University of Maryland, the University of Miami and the University of Costa Rica. For the first 18 months of this research project system complexity will be investigated. This will include an analysis of simple and complex ecosystems, systems architecture, problem definition and formulation of analytic approaches for these studies. Operations research methods will be employed, including artificial intelligence, expert systems and decision support systems as well as the more conventional repertoire of management science techniques. One of our initial task will be to survey the wide range of applications of operations research to fisheries management. A detailed synthesis and categorization of approaches will result. Based upon this first task, promising directions for further research will be identified and evaluated during the last six months of year two. After undergoing a thorough evaluation process by an external review panel, several of these will then be pursued during the remaining months of year two and during years three through five.

SYSTEMATIC INVESTIGATION OF VARIABILITY IN FISH STOCKS

Primary U.S. Institution: University of Maryland

Project Rationale: The purpose of this study is to systematically examine what is known about fish population variability in order to build a conceptual model of how fish stocks vary. This project will provide background information and a serve as a starting point for the "Multiple-Species Fisheries Research" project.

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Project Description: A monograph on fish-stock variability is currently being prepared to critically review what is known with respect to variability in fish stocks and to design programs to investigate the unknown areas. This project is being supported by the University of Maryland, NOAA, the French Government, and the Institut fur Meereskunde an der Universitat Kiel (West Germany). It will be carried out at no cost to the CRSP and will be completed in early 1985.

SAMPLING CATCH

Primary Host Country Institutions: University of Costa Rica/University of the Philippines

Primary U.S. Institution: University of Washington

Project Rationale: Catch and effort information is critical in stock assessments for estimating fishing mortality, variations in abundance and providing management advice. The vast number of fishermen in small-scale fisheries and the difficulties associated in contacting them make it especially difficult to collect this information. Standard sampling designs are not always feasible for aquiring "traditionally" precise information for small-scale fisheries . Therefore, new designs taking into account the realities of artisanal fisheries need to be developed. Furthermore, the concepts of decision theory need to be investigated as a means of utilizing whatever information can be collected.

Project Description: A comprehensive field study for sampling tropical small-scale fisheries will be undertaken. The study has two components. The first component is a dockside sampling program to address: (1) the selection and statistical weighting of ports and vessels to be sampled, (2) the temporal distribution of sampling, (3) the selection of samples from the catch (animals), (4) specification of sampling rates, (5) the derivation of a system to

estimate cost, precision, and accuracy of the sampling program a priori. In the second component of the field program, line transect and other sampling methods will be employed to estimate catch and effort for essentially subsistence fisheries and where large stretches of coastline need to be surveyed.

These two subprojects will be used as the basis for developing new sampling designs and a decision theoretic framework that will be applicable in circumstances when a manager may need to assemble a set of possible outcomes as if samping had been done, and consider from experience, the consequences for the fishery. The principles of decision theory will provide a new context in which to view situations where a management plan contains elements that are the "best guess."

The sampling programs will begin in year one and continue over the life of the project. In the second year it is recommended that Costa Rican and Filipino personnel be sent to the University of Washington for a year of training, and in the fourth and fifth years the entire program would be gradually taken over by statisticians and scientists from these countries.

AGE/SIZE DEPENDENT MODELING AND CORRESPONDING AGE INDEPENDENT MODELING

Primary Host Country Institutions: University of Costa Rica/University of the Philippines

Primary U.S. Institution: University of Washington

Project Rationale: Existing management models as applied in tropical fisheries are much less successful than the same models as applied to temperate zone fisheries. This is often said to be caused by the multispecies nature of tropical fisheries. The analyses proposed rest upon recognition that multispecies management modeling is still primitive and that, even in tropical environments, more progress may be made by judicious use of single species

models. Another common explanation for the failure of management/assessment models in tropical fisheries centers on the reported quasi-continuous spawning of fish. These difficulties can be overcome to some extent by the appropriate choice of models, but guidelines on what can be accomplished, at what cost in terms of data requirements, need to be formulated.

Project Description: We propose to examine a subset of the primary array of single species models used for management and assessment today. These fall into two groups, those where age or size is explicitly represented and those where it is implicitly present. The group of models where age, size, or growth is explicitly involved contain most of the new ideas, concepts and theories today, and thus have not yet received extensive application in any fishery. Within this group of models are both those that require large amounts of detailed data, and those which can be readily applied without costly data collection or sophisticated analysis. Over the length of the project, the trade-offs of one type of model for another will be evaluated.

The most straight forward and inexpensive models of the implicit type are those that use size rather than age. These have already been employed in the tropical context and related to recruitment and spawning behavior. These models raise possibilities for new conceptual developments with additional mathematical and/or statistical analysis, but the statistical tests may have to be devised. Other models that explicitly involve age or size can be discrete or continuous, and can deal with the quasi-continuous spawning problem, but the data requirements rise dramatically.

The traditional single species management models have something to offer because they are the substance of existing fisheries management, which is most familiar and because of the comparative value they bring.

The concepts of MSY, steady states, and yield-per-recruit emerge naturally from these models and the degree of biological data needed is the least

specific, and thus the easiest type of model to apply. However, the cost in terms of the specificity of the result is the highest.

Criteria for making value judegements about the optimal model to apply from the simplest to the biologically complex under given circumstances, and clear ways of predicting the costs of collecting the corresponding appropriate data will be developed, and made accessible for LDC applications.

Actual modeling probably cannot be initiated in the first year but literature on the species can be accumulated, programs can be written and communications set up between scientists. The activity would continue over the duration of the project and include scientists from Costa Rica and the Philippines coming to the University of Washington in the second year. In the last year, the gradual takeover of the use of the management models by scientists from Costa Rica and the Philippines will occur.

AGE-SIZE RELATIONSHIPS AND CONSEQUENCES OF ERRORS

Primary Host Country Institutions: University of Costa Rica/University of the Philippines

Primary U.S. Institution: University of Washington

Project Rationale: Age determination of tropical fish is a difficult and imprecise process because growth typically does not follow the regular seasonal patterns that characterize fish growth in temperate zones. The degree to which assessment biologists in the developing nations will be able to make use of relationships that exist between age and mortality rates depends upon their ability to reliably age fish species in their region. The inability to reliably separate mature from the less fecund ages contributes to an inability to recognize overfishing before it is in an advanced condition. The results of increased capability to age fish will relate well with the age explicit modeling section of this proposal.

Project Description: This study will focus on the following approach to aging tropical fish species: (1) Existing temperate zone age determination methods will be extrapolated to the tropics. All techniques currently used in the temperate zone will be explored carefully for their applicability to tropical species. (2) New methods of age determination will be sought. (3) The validity of the age determination methodolgy selected will be determined. (4) Indirect methods of estimating the natural mortality coefficient (M), from age composition data will be explored.

During the first three years of the investigation, research will be dependent on field studies and will focus on Costa Rica, and will extend to the Phillipines during the final two years of the project in conjunction with URI efforts there.

APPLICATION OF SHALLOW-WATER HYDROACOUSTIC TECHNIQUES FOR ASSESSMENT OF FISH STOCKS SUBJECT TO ARTISANAL FISHERIES

Primary Host Country Institutions: University of Costa Rica/University of the Philippines

Primary U.S. Institution: University of Washington

Project Rationale: The stock assessment information necessary to manage a commercial fishery can be obtained by two general approaches. One approach is to rely on analysis of catch and effort statistics from the commercial fishery itself; the other is through direct measurement by means of hydroacoustics or direct-capture gear. Hydroacoustics has the highest sampling power and the lowest cost of all direct population assessment techniques. It is usually used in conjunction with direct capture techniques (trawls, nets, traps) for species identification.

Project Description: Comparisons of population abundance estimates will be made between hydroacoustic techniques and (1) assessment techniques traditionally used by scientists in the collaborating countries, (2) other direct-

capture techniques with which we have experience and are appropriate for particular environments, and (3) the actual artisanal catch. The first step is to work with the scientists of the collaborating country to demonstrate the hydroacoustic techniques and compare results with extant assessment methods. We will then experiment with additional techniques that have been successful in shallow-water environments. Finally, since a considerable portion of the overall AID program will deal with catch data of the artisanal fisheries themselves, we will work closely with other projects in the stock assessment CRSP program to compare the hydroacoustic observations with the corresponding fishery data.

Efforts in the first and second year will be include exploratory field studies and comparisons with additional gear and fishery statistics in Costa Rica. These studies will be continued in Costa Rica in the third year and begun in the Philipines. During the fourth year the effort in Costa Rica will be concluded and efforts in the Philipines will be expanded. All research will be concluded in the fifth year, along with remaining data analysis and final reporting.

ECONOMIC AND PROBABILISTIC EXTENSIONS OF STANDARD FISHING MODELS

Primary Host Country Institution: University of Costa Rica

Primary U.S. Institutions: University of Washington/University of Maryland

Project Rationale: Standard fishery models are often criticized because they do not take into account important management questions that relate to the future state of exploited stocks. These questions often involve aspects of the multiple-species nature of fisheries, the stochastic properties of fisheries, and the relationship of economic value to the magnitude or species composition.

Project Description: The objective of this study is to extend standard fisheries models to increase their utility to managers of tropical small-scale

fisheries. Emphasis will be placed on developing feasible techniques that have minimal information requirements. The multiple-species nature of fisheries will be addressed by examining variability in recruitment and species interaction in terms of parameter definition and estimation. The stochastic properties of fisheries will be approached through the study of empirical probabilities of recruitment and production functions. In developing economic extensions of models, the utility of current models for small-scale fishery stock assessment will be assessed. Where these models fail to be beneficial, new methodologies for providing useful bioeconomic information will be developed using a decision theoretic model.

During the first year of the project existing data and contextual information will be collected to support the initial modeling phase. Beginning in the second year, formal modeling efforts will be initiated. As a model is developed and tested, data collection methodes will be modified as new data needs are discovered and areas in which less data, or less accurate data, are exposed. These activities will continue through the life of the CRSP, and will be worked on in a collaborative fashion by Costa Rican and United States researchers. Work will be conducted at the University of Costa Rica, the University of Maryland and the University of Delaware.

EMPIRICAL ANALYSES AND MODELING

Primary Host Country Institution: University of the Philippines

Primary U.S. Institution: University of Rhode Island

Project Rationale: A very important and as yet poorly understood problem in tropical fishery stock assessment involves a determination of the quantitative relationships among yields, effort and species composition for multispecies fisheries.

Project Description: The objective of the empirical analyses study is to contribute to the development of relatively simple stock assessment models which address yield, effort and species composition relationships and which can be effectively tested and evaluated. These models will be based on existing and ongoing demersal fisheries surveys in the Philippines, Thailand, Malaysia and Indonesia.

The methodology for this project consists of a strategy for analyzing distribution patterns (in time and space) of demersal fish assemblages in the Sunda Shelf region of Southeast Asia. The results of the distribution analysis will be correlated with environmental and fisheries data in an effort to develop alternate multispecies assessment techniques and to provide an understanding of the basic causal mechanisms for changes in relative species composition. A simple predictive model for this mixed species fishery will be developed as will a complimentary package of user-friendly fisheries programs to aid in the analysis of tropical multispecies fisheries.

Year one will be spent gathering and entering existing survey data on microcomputer diskettes and formulating a data management system. Year two will be devoted to running classification and ordination analyses. In year three, the environmental data base will be developed and tested for associations with species groups. During years four and five practical operating empirical models will be developed, field testing of the models will be conducted, user-friendly microcomputer programs to facilitate the use of the models will be developed and the transfer of technology will take place. Work on this project will be conducted at the University of Rhode Island and the University of the Philippines.

MULTISPECIES FIELD STUDIES

Primary Host Country Institution: University of the Philippines

Primary U.S. Institution: University of Rhode Island

Project Rationale: Because coralline areas are highly productive and often easily accessible fishing grounds, they are especially critical to small-scale fisheries, the single-man boat operators and food-gatherers. Hence, these areas provide a protein source for a large segment of the population for which no realistic alternative sources exist. The need to understand the population dynamics of fish in both coralline and non-coralline shoreline areas is critical on large scale, because of the importance of the fisheries to developing coastal regions throughout the world.

Project Description: The two general objectives of this field project are (1) to develop and validate techniques for the estimation of fishery productivity in reef and shore-line fisheries, and (2) to apply the resultant methodology to the estimation of fishery potential within the study area. The major approaches to obtaining these objectives will include visual assessments to determine the composition and variability of fish communities, fish trapping to supplement existing information on the fish community and to assess the limitation of trap sampling and harvesting, and gill net and beach seine sampling for non-reef shore-line fishery analysis.

The proposed time frame is to arrive on site (the Marine Science Center of the University of the Philippines) and perform validation of visual, trap and shoreline sampling techniques during the first year. During the remaining four years, community monitoring of reef and non-reef areas will take place. Selected aspects of this project will also be conducted at the University of Rhode Island.

The results of these projects will be incorporated into a stock assessment

manual that will be usable by the less than expert, local fisheries manager. Ideally, a fishery manager will be able to categorize the characteristics of a fishery then select the stock assessment techniques identified by the manual as most effective for managing a fishery with those features.

The relationships of the nine research projects to one another are diagrammed in Figure 1 and described as follows. The systematic investigation of variability in fish stocks project sets the stage for the conceptual component of the program. The field studies provide information that will be used for model development and evaluation in the empirical, age/size and conceptual projects. The empirical, age/size and conceptual projects will, in turn provide the basis for developing a sampling methodology specifically designed for the dynamics and variability of exploited fish stocks.

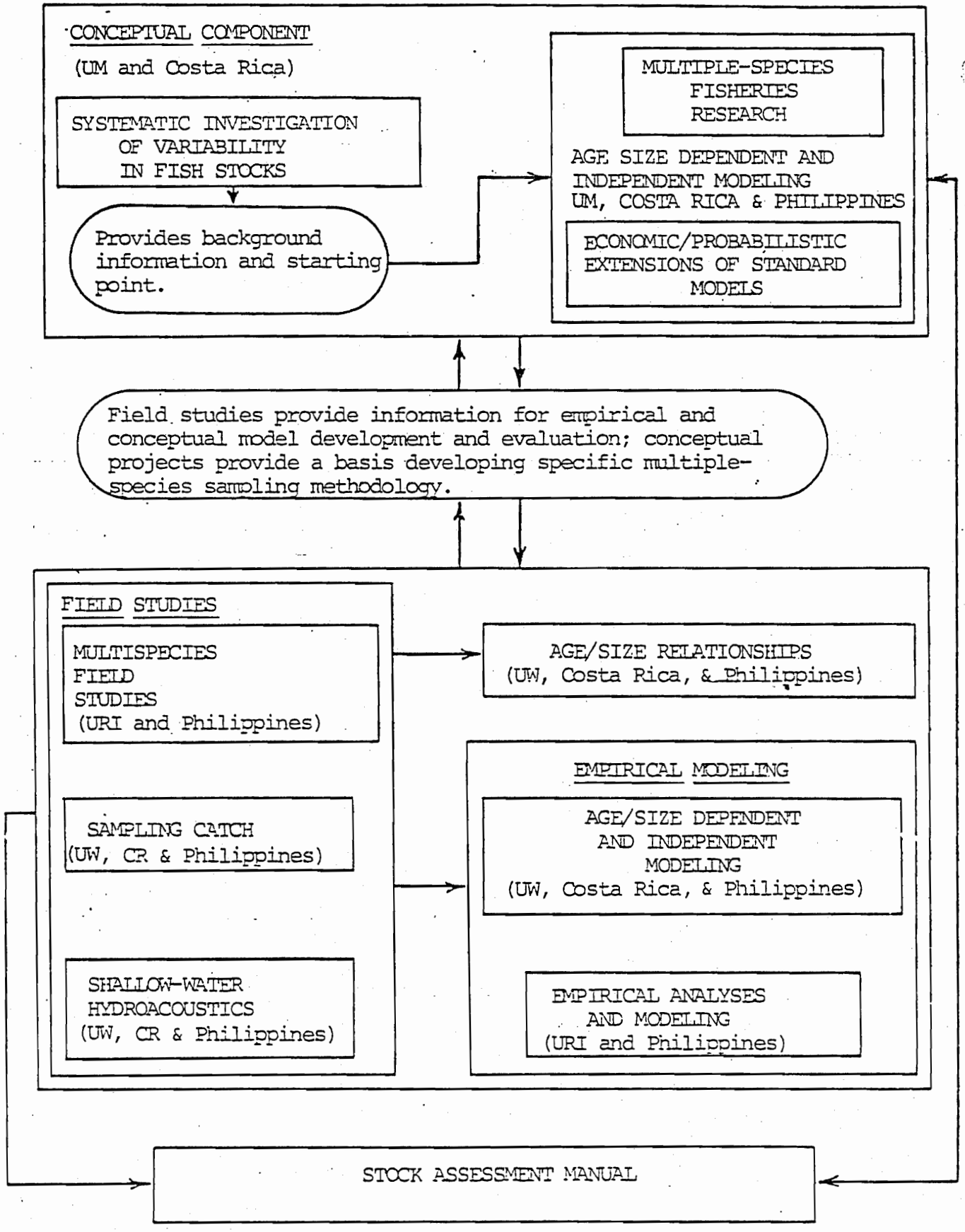

Figure 1. Schematic representation of the components of the CRSP program showing the relationships among projects, United States institutions and host country institutions.

BOARD FOR INTERNATIONAL FOOD AND AGRICULTURAL DEVELOPMENT
INTERNATIONAL DEVELOPMENT COOPERATION AGENCY

Agency for International Development
Washington, D.C. 20523

DEC 20 1984

Mr. M. Peter McPherson
Administrator
Agency for International Development
Washington, D.C. 20523

Dear Peter:

On behalf of the Board for International Food and Agricultural Development (BIFAD), I am pleased to report the decision of BIFAD on the revised (November 27, 1984) proposal for a Stock Assessment Collaborative Research Support Program (CRSP). The Board at its meeting on December 5, 1984 approved and recommends to the Agency for implementation the proposal by the three universities for the CRSP, subject to the resolution of an administrative concern described herein.

Our concern pertains to the proposal by the University of Maryland for a principal research investigator of the CRSP to also serve part-time as Program Director of the Management Entity. The University of Maryland was proposed by the other two universities, Rhode Island and Washington to be the Management Entity. BIFAD concurs with this recommendation, subject to resolution of the concern. The advisory group on stock assessment, the CRSP Panel for the Joint Committee on Agricultural Research and Development (JCARD), and JCARD all found that such an arrangement would not be in the best interest of the program, and recommended that the position be filled with a senior scientist full time, or half-time, if not engaged in the CRSP research, assisted by a junior scientist. Details are contained in the enclosed report of the CRSP Panel, dated December 6, 1984, enclosure 1, and the report of the advisory group, enclosure 3.

The current version of the revised proposed Stock Assessment CRSP represents the end product of a long and complex planning and review process, strongly influenced by the work of an external advisory group of eminent scientists and a subcommittee of the JCARD CRSP Panel. As a result of the review and negotiations, scientific objectives have been focused and clearly defined. The number of U.S. universities and country sites have been reduced and areas of responsibility have been clearly defined.

While this process of planning has been long and difficult, it has resulted in a sound program proposal. This experience offers a model in a planning process for future development of similar such research programs, and warrants consideration for use.

BIFAD and its participating subordinate bodies feel that the current proposal now represents a significant opportunity to marshall the efforts of a group of internationally recognized scientists on a priority problem in fisheries facing many developong nations. Although details remain to be addressed during negotiations by the Agency, the proposal essentially conforms with all the recommendations of the JCARD Panel with the exception of the one conern mentioned.

In submitting this proposal, BIFAD wishes to compliment the three universities for their excellent cooperation, understanding, and high quality of work.

Sincerely yours,

E. T. York
Chairman

Enclosures:
1. JCARD Panel Report
2. Overview of Proposal
3. Letter, dated November 3, 1984 from Chairman Foil, JCARD CRSP Panel, to Dr. Tenore, enclosing advisory group report.
4. The Proposal