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NONCAPITAL PROJECT PAPER (PROP)

Country: Technical Assistance Bureau

Project No.: 931-11-180-787 *mp*

Submission Date: December 17, 1970

Original: June 18, 1967

Project Title: Increased Fish Production Through Improved Fish Cultures
in Less Developed Countries.

U.S. Obligation Span: FY 1967 through FY _____

Physical Implementation Span: FY 1968 through FY _____

I. SUMMARY DESCRIPTION

Inadequate diets, resulting in reduced life expectancy, low energy and chronic ill-health are a standard way of life in most developing nations. Despite increased agricultural production through research and improved technology, the expanding world population is placing ever increasing demands upon existing food-producing capabilities. The farming of fish and other aquatic crops (AQUACULTURE) is becoming increasingly important as a means of providing a significant amount of high quality protein needed for more adequate diets-- and as an important contribution to the economic growth of developing countries in Asia, Africa and Central and South America.

Many developing countries have large inland, coastal and estuarine waters that can be used to produce crops of fish and other edible aquatic crops, utilizing the wastes from agriculture for fertilizer and feeds. Aquaculture, unfortunately, plays a minor role relative to its potential for providing high quality protein as well as income in developing countries. In far too many instances, a few individuals working with inadequate experimental ponds and related facilities have the responsibility of developing aquacultural techniques. The Agency for International

Development, recognizing this deficiency, is intensifying its efforts to promote more rapid development of aquaculture as part of its program of technical assistance to developing countries.

The general goal of the program is to apprise Mission officials responsible for agriculture and rural development in developing countries of the potential of aquaculture as a form of resource management. Appropriate officials of the host governments will be made aware of the role that aquacultural research, development and extension can play in their countries.

Specific objectives to be achieved under the aquaculture project are

1. to conduct surveys in LDC's as requested by A.I.D. to determine the need and assess potential for increased fish production.
2. to develop cooperative aquacultural programs if there is adequate interest and support by the host country and the A.I.D. Mission.
3. to provide trained and experienced personnel from Auburn University on a rotation basis in conducting testing programs and develop experimental procedures for various phases of aquaculture.
4. to furnish experts for short-term visits to developing countries to help solve problems in specific areas of aquaculture as they arise.
5. to conduct short courses in developing countries to inform fisheries research and extension personnel of newest advances in aquacultures and to help develop their competence in areas of particular need.
6. to train selected fisheries personnel in academic subjects and research methods, at B.S., M.S. and Ph.D. levels at Auburn University.
7. to provide assistance to personnel in the cooperating fisheries departments of host countries in preparation of research results for

publication and in producing more effective extension leaflets

on improved methods of aquaculture.

9. insert

Many developing countries are characterized by climate which is tropical in nature, with abundant rainfall for at least a portion of each year. The human population, already in excess of that which can be adequately supported, is increasing at rates that will double it within 20 to 30 years. Thus, ever increasing demands undoubtedly will be placed on total agricultural production capabilities of developing countries. Given a long growing season, with adequate water and availability of waste agricultural products as a source of fertilizer and feed, productive aquacultural crops, including fish, shrimp and other aquatic animals can be developed. To develop efficient management methods rapidly, however, experimental stations of adequate size are needed. Some developing nations where surveys have shown that aquacultural research stations and cooperative fisheries projects could make a meaningful impact on food production or to the general economy are the Philippines, India, Pakistan, Costa Rica, San Salvador, Thailand, Brazil, Panama, Colombia, Ecuador, Paraguay and Ghana, Uruguay, Kenya, Ethiopia, Afghanistan and a

Research required to develop improved methods for increased production of fish and other aquacultural products in developing countries would include: 1) determination of most efficient species and most efficient combinations of species for culture in host country; 2) development of methods of feeding fish, shrimps and other aquatic animals with agricultural and other organic wastes available locally; 3) development of methods of pond management to obtain highest production; 4) determination of most important diseases and parasites affecting production of fish and other aquacultural products in host countries and develop methods for their control; 5) development of methods of processing for market and preventing waste and spoilage of fish, shrimps and other aquacultural products produced.

9. To provide back-up support for bilateral AID Mission programs and for cooperative regional programs involving AID and other international agencies.

The USAID bilateral agricultural programs have been most effective in increasing production of agricultural products in developing countries. This project in aquacultures will make possible the development coordinated programs for the most effective use of both land and water resources to increase production of the foods required for balanced diets and to increase income of the agricultural communities in these countries.

Contributions to be made by LDCs will vary greatly, depending upon the training of personnel and the facilities available. In the more advanced of the developing countries, transportation within the country is often made available and technicians are sufficiently well-trained to recommendations in operation. In other ^{developing countries} LDCs, neither transportation nor trained personnel are available and the program must start with training following the initial survey.

FAO has a limited number (approximately 6) of fisheries projects on their fisheries development funds. These are in Africa and Asia and consist of usually one advisor to a country. In addition they have a larger number of fisheries projects under the United Nations Development ^{Program} Project, principally in Southeast Asia and Africa. FAO has expressed a willingness to cooperate on bilateral AID ~~AID~~ projects when requested by the host country and AID Missions and where UNDP funds are available to pay for the specialists.

all the same?

II. STRATEGY

Needs in aquacultural programs vary tremendously among various developing nations. A preliminary survey generally is required to determine the specific program most appropriate for a particular country. Methods proposed for achieving the program objectives would involve technical services of staff for 2-year tours or on a short-term basis for periodic visits to assist in planning and organizing research or conducting short courses in aquacultural techniques and testing methods. Personnel assisting in construction of new aquaculture facilities so that tested procedures for increasing fish production may be developed would likely serve in the host country on a 2-year tour basis.

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→ The Institutional Grant 211(d) program principally will function to strengthen Auburn University's International Center for Aquaculture with particular emphasis on increasing competence in its on-campus research and training programs and its ~~ability for providing trained consultants~~ ~~consultation service capabilities~~ in the field of aquaculture. Specific goals to be achieved include: 1) development of staff with increased competence in selected areas previously not fully developed including genetics and selective breeding of fishes, pathology, nutrition and processing technology and dynamics and ecological relationships in cultured populations; 2) development of an information materials center containing worldwide literature on aquaculture; 3) providing special training programs through short courses, symposia, and university courses for professional staff members of A. I. D. and other federal agencies, for students interested in careers in international development, and for foreign nationals; and, 4) conducting research in aquacultures at the International Center and abroad on problems related to A. I. D. -sponsored programs in developing nations.

It is anticipated that the Institutional Grant will significantly increase competence of the International Center for Aquaculture in providing consultative services,

The activities under the former are those that will strengthen the field of aquaculture while those under the latter are specific services to AID Missions and developing countries in planning effective fisheries programs and increasing the competence of personnel in those countries in research and extension programs involving aquacultures.

under appropriate contractual arrangements with centrally- or mission-funded projects, or by subcontractual arrangements with other A.I.D.-sponsored programs. A particularly useful feature of the Institutional Grant is the aquacultural information materials center in which information on improved aquacultural methods throughout the world is collected at Auburn University. Information on improved methods of aquaculture is reviewed periodically and that showing greatest potential for increased fish production is summarized and subsequently forwarded to interested American and foreign investigators and to A.I.D. Missions sponsoring aquacultural programs.

One of the prime purposes of the general technical services contract is to make available to A.I.D. Washington and the various A.I.D. Missions, on a continuing basis, consultative services in a wide range of specialties within the general area of aquaculture. Normally a rather long period is required for a project implementation order for technical services to be drafted, circulated to various offices and approved. Specific problems, often requiring immediate attention, frequently arise in developing countries without advance warning. Considerable savings from the standpoint of both time and money are achieved with the centrally funded project with the added advantage of greater immediate access for consultative services.

Following in tabular form are specific types of services rendered under 211(d)

INSERT
and the centrally funded project.

211(d) Institutional Grant

1. Provide staff to increase competence of the Center in various phases of Aquaculture.

A.I.D./csd-2270 Project

1. Make specific surveys requested by AID/Washington in developing countries.

211(d) Institutional Grant

2. Set up information Center for Aquacultures, including a comprehensive library of publications in this field.
3. Provide training in Aquacultures at B.S., M.S., and Ph.D. levels at Auburn University.
4. Conduct research on problems of international importance to Aquacultures.
5. Provide short-term ^{advisory services of senior staff} consultants for ~~to~~ AID/Washington.
6. Provide short-term services ~~40 days~~ ^{senior staff} or-less) of experts in Aquacultures ^{to} ~~for~~ AID Missions abroad.
7. Cooperate with FAO and other international organizations in organizing and conducting seminars and short-courses in Aquacultures.

A.I.D. /csd-2270 Project

2. Advise AID Missions in developing fisheries and aquacultural projects in host countries and to provide advisory services to fisheries departments in planning research and extension activities.
3. Conduct short-courses in developing countries to upgrade competence of research and extension personnel.
4. Provide short-term services of expert in various fields related to Aquaculture to solve specific problems arising in AID sponsored projects abroad.
5. Provide trained personnel for 2-year ^{orientation for technical} tours in developing countries under AID projects.
6. Provide short-term (1 week to 3 months) specialized training at the International Center for Aquacultures for personnel sent by AID/Washington or the AID

P10/P (Country funding) of 210

A. I. D. /csd-2270 Project

*Next
under
countries*

7. Supervise research training at Auburn University and abroad for participants of developing countries training at M.S. or Ph.D. level. This service abroad is available only where Auburn staff members are stationed for 2-year tours. It reduces the time abroad necessary to complete research for the degrees and allows the participant to conduct research on problems in the developing country.
8. Abstract and make available to fisheries workers in developing countries the newest techniques and advances in aquacultures.
9. Preparation of special leaflets used in training trips to countries under AID projects.
10. Cooperation with fisheries personnel in Brazil, Thailand, Philippines, and East Pakistan* to develop effective feeds for fish and methods of testing locally available materials.

*On an informal basis. We have no project in East Pakistan. *at possible countries on page 3*

11. Coordinate with FAO and other interested organizations in organizing and conducting

III. ACCOMPLISHMENTS ACHIEVED SINCE JUNE 18, 1967

Mission-supported programs under Auburn University Contract A. I. D. /csd-2270

Mission-sponsored projects contracted to Auburn University presently are in operation in Brazil and Thailand and a third in the Philippines is expected to be in operation within the near future.

In Brazil, the principal objective of the cooperative fisheries project is to increase the supply of protein available through an improved aquacultural program. An aquaculture research station, consisting of 28, one-fourth-acre ponds and 4, one-acre ponds, has been constructed at Pentecoste and a laboratory facility is now being built. A testing program to develop effective methods of aquaculture using local fish species has been initiated.

Also, a pelleted feed, developed from locally available products, is now being evaluated in cage and pond cultures. Recently the project was expanded to include work on reservoir management with emphasis on fish population dynamics and improved fishing methods.

Two Auburn University staff members are servicing the project, each of whom is on a 2-year tour.

The A. I. D. Mission-sponsored project in Thailand has been in operation since 1968. Emphasis has been on upgrading technical personnel of the Thai Department of Fisheries through short-course training programs. Another phase of this cooperative program has been the periodic review of completed research projects in aquaculture, with assistance in planning future research to utilize effectively services of the Thai research personnel and limited experimental facilities located within the country. Under this program, two training visits, each with 3 professors conducting one-month programs, and two research review trips, each with 2 professors spending approximately one-month in the country have been completed.

A fisheries development project presently is in the advanced stages of finalization by A. I. D. Philippines. This program involves establishment of brackishwater and freshwater aquacultural Experimental Stations. The brackish-water station, consisting of approximately 80 acres of experimental ponds plus a laboratory and related facilities, will be constructed near Iloilo, Panay Island, while the smaller freshwater research center will be developed at Central Luzon University. Target date for implementation of the cooperative aquacultural program is early 1971. It is anticipated that 3 to 4 Auburn University staff will be assigned to the project to supervise pond construction, initiate testing programs and train host country personnel in research methods.

The various consulting trips conducted and final reports submitted since implementation of this centrally funded contract are summarized below.

Since 1967 when the world-wide contract in fishculture development was initiated, the Department of Fisheries and Allied Aquacultures of Auburn University has provided technical services as requested by A. I. D.

A list of the various country visits, with dates and Auburn staff participating follows:

<u>DATE</u>	<u>AUBURN STAFF</u>	<u>COUNTRIES</u>
September 2, 1967	H. S. Swingle	East Pakistan, India, Japan, Malaysia, Philippines, Taiwan Thailand, South Vietnam, and FAO - Rome
December 19, 1967	D. D. Moss	
August 17, 1967	J. S. Dendy	Brazil
September 20, 1967	E. W. Shell E. E. Prather	
May 14, 1968	H. S. Swingle	Pakistan, Philip Thailand
June 26, 1968	R. O. Smitherman	
August 19, 1968	E. W. Shell	Brazil
September 21, 1968	E. E. Prather	

DATE**AUBURN STAFF****COUNTRIES**

October 19, 1968
December 8, 1968

H. S. Swingle
H. R. Schmittou
W. A. Rogers

Pakistan, Philippines,
Thailand, and FAO - Rome

March 30, 1969
May 28, 1969

D. D. Moss
G. B. Pardue
M. J. Danner

Cameroon, Central African
Republic, Ghana, Ivory Coast,
Nigeria, Senegal, Togo, and
FAO - Rome

April 14, 1969
May 17, 1969

H. S. Swingle
R. O. Smitherman

Thailand

May 5, 1969
May 22, 1969

E. W. Shell

Guyana

October 6, 1969
October 28, 1969

H. S. Swingle
F. A. Fagan

Colombia and Ecuador

November, 1969

N. B. Jeffrey

Brazil - to begin 2-year tour

August 11, 1969
September 20, 1969

H. S. Swingle
H. R. Schmittou
G. B. Pardue

Thailand

February 9, 1970
March 22, 1970

D. D. Moss

India

April 27, 1970
June 25, 1970

D. D. Moss
R. O. Smitherman

Panama, Paraguay and Peru

July 6, 1970
August 14, 1970

H. S. Swingle
D. D. Moss

Philippines

October, 1970

W. D. Davies

Brazil - 2-year tour

November 1, 1970
December 11, 1970

H. S. Swingle
R. Allison

Malaysia, Philippines, Israel,
Thailand, and FAO - Rome

Since implementation of the fishculture project in 1967, the following major reports of the countries surveyed, with specific recommendations for aquacultural development programs, have been completed and transmitted to A.I.D. Washington and the appropriate A.I.D. Missions:

Fishculture Survey Report for West Central Africa, by D. D. Moss, G. B. Pardue and M. J. Danner. 115 p. June 30, 1969. Revised October 15, 1969.

ASIA

Report of Fishcultural Investigations in India, by H. S. Swingle and D. D. Moss. 23 p. February 16, 1968. Revised August 15, 1969.

Report on the Development of the College of Fisheries, University of Agricultural Sciences, Bangalore, India, by D. D. Moss. 119 p. March 20, 1970. (U.S.A.I.D. - University of Tennessee Contract)

Report of Fishcultural Investigations in Japan, by H. S. Swingle and D. D. Moss. 22 p. April 15, 1968. Revised August 15, 1969.

Report of Fishcultural Investigations in the Federation of Malaysia, by H. S. Swingle and D. D. Moss. 15 p. February 26, 1968. Revised August 15, 1969

Report of Fishcultural Investigations in East Pakistan, by H. S. Swingle and D. D. Moss. 16 p. January 30, 1968. Revised August 15, 1969.

Fishculture Project Report for East Pakistan - Final Report, by H. S. Swingle, H. R. Schmittou, D. D. Moss, and W. A. Rogers. 132 p. February 1, 1969. Revised October 15, 1969.

Report of Fishcultural Investigations in the Philippines, by H. S. Swingle and D. D. Moss. 58 p. October 10, 1967. Revised August 15, 1969.

Report of Fishcultural Investigations in Taiwan, by H. S. Swingle and D. D. Moss. 24 p. June 17, 1968. Revised August 15, 1969.

Report of Fishcultural Investigations in Thailand, by H. S. Swingle and D. D. Moss. 35 p. January 15, 1968. Revised August 15, 1969.

Report on Extension and Research at the Fisheries Stations of Thailand - In Country Report, by H. S. Swingle and R. O. Smitherman. 45 p. May 15, 1969.

The Marine and Coastal Fisheries Stations of Thailand, by H. S. Swingle and R. O. Smitherman. 39 p. July 30, 1969.

Report of Fisheries Training in Research and Extension at the Fisheries Stations of Thailand - In Country Report, by H. S. Swingle, H. R. Schmittou and G. B. Pardue. 69 p. September 19, 1969.

The Inland Fisheries Program of Thailand, by H. S. Swingle, G. B. Pardue, R. O. Smitherman, D. D. Moss, H. R. Schmittou. and W. A. Rogers. 156 p. January 1, 1970.

Report of Fishcultural Investigations in South Vietnam, by H. S. Swingle and D. D. Moss. 17 p. February 15, 1968. Revised August 15, 1969.

CENTRAL AMERICA

Fishculture Survey Report for Panama, by R. O. Smitherman and D. D. Moss. 64 p. September 1, 1970.

SOUTH AMERICA

Second Report of Short Term Survey of Perira De Miranda Reservoir to Establish Criteria for Improved Fresh Water Fisheries and Intensive Fish Culture Management, (Brazil), by J. S. Dendy, E. W. Shell and E. E. Prather. 63 p. October, 1967. (U.S.A.I.D. - U. S. Bureau of Commercial Fisheries Contract)

Third Report of Short Term Survey of Perira De Miranda and Araros Reservoirs to Establish Criteria for Improved Fresh Water Fisheries and Intensive Fish Culture Management, (Brazil), by E. W. Shell, E. E. Prather and N. B. Jeffrey. 71 p. September, 1968. (U.S.A.I.D. - U. S. Bureau of Commercial Fisheries Contract)

Report of Fishcultural Investigations in Colombia, by H. S. Swingle and F. A. Pagan. 63 p. January 10, 1970. Revised September 1, 1970.

Report of Fishcultural Investigations in Ecuador, by H. S. Swingle and F. A. Pagan. 46 p. Dccember 20, 1969.

A Review of Guyana's Program in Brackishwater and Freshwater Fisheries, by E. W. Shell. 28 p. June, 1969. (U.S.A.I.D. - University of Florida Contract)

Fishculture Survey Report for Paraguay; by R. O. Smitherman and D. D. Moss. 64 p. September 1, 1970.

Fishculture Survey Report for Peru, by R. O. Smitherman and D. D. Moss. 40 p. September 30, 1970.

IV. FUTURE COURSE OF ACTION

Future course of action envisioned under General Technical Services Contract is establishing on campus a permanent staff of qualified aquaculturists available for conducting surveys to investigate the need and assess the potential for increased fish production in less developed countries as requested by A.I.D. Washington. A final report, with appropriate recommendations for an aquacultural development program, based on the particular needs of the specific country, is prepared and distributed for consideration and action to appropriate A.I.D. officials of the Mission and Washington. Subsequently, the A.I.D. Mission develops a project implementation order for technical services with Auburn University, perhaps with some of the required funding for initiating the Mission program from A.I.D. Washington.

Requests from A.I.D. Missions for assistance, on a short-term basis, in specialized fields of aquaculture including fish taxonomy, feeds and feeding, fish processing technology, limnology, reservoir management, fish parasites and diseases, water chemistry, fisheries biology, also will be conducted under the General Technical Services Contract.

It is anticipated that a minimum of three years will be required to conduct comprehensive surveys of the approximately 10 countries for which A. I. D. Missions have submitted requests and to subsequently develop cooperative aquacultural programs for those A. I. D. Missions desiring them. Staff requirements necessary to do this work are: director (25%); alternate director (10%); assistant director (100%); 3 aquaculturists (100% each); 4 irregular staff positions for backstopping mission projects in process of being finalized; ^{an administrative assistant (50%-75%)} and a typist. Funding requirements necessary to support the project for a three-year period are contained in a table on the following page.

Section 211(d) institutional grant will be utilized to improve on-campus programs in research and training, principally through employment of research staff in specialized areas previously not developed at the International Center for Aquaculture, and by supporting graduate study in problem areas especially concerned with development of improved methods of aquaculture. Although a very limited amount of foreign travel may be conducted under the 211(d) program, the bulk of international work will be under general technical services contract. Salaries of staff supported under the 211(d) program and other research grants and contracts will be absorbed under the general technical services contract for that period of time that such staff are on travel status. A moderate amount of staff time and travel for consultation purposes is necessary during the formative stages that A. I. D. Mission programs are being developed. However, upon finalization, Mission programs are generally self-sufficient with respect to salaries for technical services contracted from Auburn University, funds for equipment and supplies and participant training. International travel required for program review of existing Mission programs normally is conducted under the general technical services contract.

YEAR 1 1971 (12 mos)	YEAR 2 1972 (12 mos)	YEAR 3 1973 (12 mos)	TOTAL
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Salaries & Wages

Permanent Staff

Director 25%, H. S. Swingle	\$ 6,500	\$ 7,200	7,800	\$ 21,500
Alternate Director 10%, E. W. Shell	2,000	3,000	4,000	9,000
Assistant Director 100%, D. D. Moss	19,000	20,000	21,000	60,000
3 Aquaculturists 100%	48,600	50,400	52,200	151,200
Typist 100%	4,800	5,020	5,240	15,060
Administrative Assistant (50 to 70%)	5,000	6,000	7,000	18,000

Irregular Staff

Salary Support for staff training for foreign service and/or for visiting specialists for teaching or consultation	24,000	24,000	24,000	72,000
Student labor (wages)	5,000	5,000	5,000	15,000
Total Salaries and wages	114,900	120,620	126,240	361,760
<u>Overhead 37.8% salaries and wages</u>	43,432	45,594	47,718	136,744
<u>Personnel Services 14% of Salaries</u>	15,386	16,186	16,973	48,545
<u>Travel and Transportation</u>	25,000	25,000	25,000	75,000
<u>Printing Reports and Leaflets</u>	8,000	8,000	8,000	24,000
<u>Supplies and Small Equipment</u>	4,000	4,000	4,000	12,000
<u>Telephone, Telegraph, Postage</u>	2,000	2,000	2,000	6,000
Total	\$212,718	\$221,400	\$229,931	\$664,049

PROJECT AUTHORIZATION

1. Project Number 931-11-180-787	3. Country Worldwide	4. Authorization Number 0006
2. Project Title Fresh and Brackish Water Fish Culture in LDCs		5. Authorization Date
7. Life of Project		6. PROP Dated

a. Number of Years of Funding 5 : b. Estimated Duration of Physical Work After Last Year of Funding:
Starting FY 19 67 : Terminal FY 19 72 :

8. Funding by Fiscal Year (in U.S. \$ or \$ equivalent)	Dollars		P.L. 4801/	Local Currency			
	Grant	Loan		U.S. Owned		Host Country	
			CCC + Freight	Grant	Loan	Jointly 2/ Programmed	Other
Prior through Actual FY	661						
Operational FY	300						
Budget FY	295						
B+1 FY	295						
B+2 FY	295						
B+3 FY	295						
All Subsequent FYs	295						
Total	2241						

9. Describe Special Funding Conditions or Recommendations for Implementation,

10. Conditions of Approval of Project.

(Use continuation sheet if necessary)

11. Approved in substance for the life of the project as described in PROP, subject to the conditions cited in Block 10 above, and the availability of funds. Detailed planning with cooperating country and drafting of implementation documents is authorized.

This authorization is also contingent upon timely completion of the self-help and other conditions listed in the PROP or attached thereto.

This authorization will be reviewed at such time as the objectives, scope and nature of the project and/or the magnitudes and scheduling of any inputs or outputs deviate so significantly from the project as originally authorized as to warrant submission of a new or revised PROP.

A.I.D. Approval:

Clearances:

Date

Signature

AA/

Title

Date

1/ Use Block 9 to record kinds and quantities of P. 180

- 16 -

GENERAL TECHNICAL SERVICES

Project Title Fresh and Brackish Water Fish Culture in the IDCs

Project Number 931-11-180-787

Starting Date FY 67

Termination Date FY 71

Cumulative Obligations (in thousand \$)	June 30, 1968	329
	FY 1969 Actual	334
	FY 1970 Estimate	275
	FY 1971 Proposed	230

Name of Contractor(s) Auburn University

Contract Number(s) csd-1581

Cooperating Sponsor(s) USAID/Brazil, USAID/Thailand

Project Summary RAC

Date of EXOR 1/13/69 Date Approved (EX) 7/67 Evaluation Date (RMI) 1/69

Purpose Rice producing countries particularly are using fish as a ready and inexpensive source of protein. Under proper management and control conditions fresh and brackish water fish culture can be increased rapidly and inexpensively many fold. The need for a cheap source of protein is great in all four regions of the world, but particularly in Asia, the Near East, and Tropical Africa.

Description of Activity Auburn University is the recognized world center on fish culture and is able to provide required expertise to develop regional fish culture centers on training, research and demonstrations. The Basic Agreement and Task Order 1 provides the means by which Auburn can respond to Mission or country requests and to consider proper implementation of essential activities. By using the technical and scientific competence existing at Auburn, fresh and brackish water fish culture production in IDCs can be significantly increased thereby making animal protein more readily available.

Accomplishments Auburn University has completed nine separate survey reports with recommendations on individual countries and regions and is in the process of developing fish culture programs in Brazil and Thailand. The countries for which surveys have been completed are as follows: Philippines, Thailand, Pakistan, India, Vietnam, Taiwan, Japan, Malaysia, West Africa. The Government of Pakistan has accepted recommendation for changing techniques for pond site selection which will result in considerable financial savings. A Regional Training and Research Center has been developed for Southeast Asia, headquartered in the Philippines, pending required funding.

New feeding and disease control methods are being developed at Auburn, and new methods of fish rearing are presently underway.

Future Targets Several additional countries have indicated interest in enlisting assistance in developing fisheries projects. These requests will be carried out under Task Orders prepared by the Missions. Training programs at regional level and at Auburn are being developed. The level of output under this project has far exceeded expectations. ARDS anticipates the development of Auburn as the World Fish Culture Center. The level of the program will be determined by the extent of requests for services from Missions in countries.

GENERAL TECHNICAL SERVICES (On-going)

GTS-14

PROJECT SUMMARY

Major Types of Activity: Field Support - Fisheries

Project Title: Increased Fish Production through Improved Fish Culture
in the IDCs

Contractor: Auburn University

Contract Number: AID/csd-1581 (2270)

Contract Liaison Officer: Dr. Homer S. Swingle
Title: Director, International Aquaculture Center

Project Number: 931-11-180-787

Present: 73-3192009

Project Duration: Started 6/30/67 Termination Date 6/30/72Comment: The International Aquaculture Center at Auburn was
established in June 1970 by a 211(d) grant

		(000's dollars)	Obl.	Expend.	Unliq.
Budget:	a)	Funds obligated through FY 69	: 661	277	384
	b)	Funded for FY 70	: 0	360	24
	c)	Funds requested for FY 71	: 100	110	14
	d)	Estimated fund requirement FY 72:	150	154	10

TA/AGF Project Monitor: Mr. G. K. Parman

Purpose: These funds will permit Auburn to strengthen its capability to respond to the increasing number of requests from developing countries for assistance to utilize aquaculture as a source of food and a means of employment and income. These funds also provide a necessary link to assure that the competence being developed at Auburn is utilized by AID in a timely, logical and systematic manner.

Description: The overall objective of Agency assistance to Auburn is to attempt to assure that the aquaculture area of fisheries is more effectively and efficiently utilized. This project provides funds to: execute surveys to assess the potential for aquacultural projects and follow-up with the necessary assistance for priority project development; supply technical consultation and backstopping for specific tasks in key problem areas of aquacultural development; plan and run seminars and workshops; and serve as a center for the development, analysis, collection and dissemination of relevant data, reports, and general information.

Accomplishments: Surveys have been completed in approximately 20 countries. Projects developed in Brazil and Thailand are still active. A project in the Philippines is nearing implementation. Projects are being considered or planned in East Pakistan, Colombia, Paraguay and Panama. Chile also has indicated an interest in aquaculture. Additional surveys are scheduled in three African countries during FY 1971.

Future Plans: To involve the International Center for Aquaculture increasingly in program development and to encourage greater reliance on aquaculture in developing countries where these projects seem appropriate. An expected follow-up will be to induce the U.S. private sector to invest in commercial aquacultural enterprises abroad.

TA/AGF:JBCcordaro:7/15/70; revised 8/18/70