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Initial Report of the Findings of the Central American Seminar Workshop on Artisanal Fisheries Development

The International Center for
Marine Resource Development

University of Rhode Island
Kingston, Rhode Island USA

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James J. Griffin, Editor
International Center for Marine Resource Development

Contents

Introduction

Purpose. The purpose of this report is three-fold. First, it is being issued to present for interested parties a timely but brief preliminary summary of the recent Central American Seminar-Workshop on Artisanal Fisheries Development. It includes its objectives, organization, participants and output for general use prior to publication by the University of Rhode Island of the bilingual (Spanish-English) Proceedings. The Proceedings will include the detailed papers presented at the conference by Central American national fisheries leaders and international specialists. Second, it seeks to present to the participants a timely consensus of the group recommendations of necessary actions for effective regional and national support of artisan marine resources development. And finally it does provide an opportunity for correction, adjustment, and/or supplement to the output (through each individual committee chairman) prior to publication of the Proceedings.

Rationale. The seminar's general focus was clearly described in remarks by Nelson Marshall, director of the University of Rhode Island's International Center for Marine Resoruce Development; J. J. Sconce, Director, AID-Costa Rica; and Hernan Garron, Minister of Agriculture and Livestock, Costa Rica.

"In this seminar, focusing on a limited region," said Dr. Marshall, "it is easy to identify the artisan group. The small-scale fishermen operate along both coasts in dugouts and small planked skiffs--some with, many without, motors. Their gear is simple; that is, lines, long lines, simple gill nets and seines, harpoons and sometimes just their bare hands. Their methods are simple; their investments are minimal. Some may operate out of large ports, but this is not basic to the fishery, and many are scattered along the shores, sometimes launching right off the beach. Their catch is handled in the crudest manner, usually without icing, and if processed at all, only in the most rudimentary fashion. Distribution and marketing are sometimes happenstance, sometimes over-organized, but almost never the asset they could be to the industry.

"Knowing these fishermen very well--and many of you represent them--you have little difficulty distinguishing them from those in the sector known as the industrial fishery which is more sophisticated in every sense: larger craft, more complicated gear, greater capital investment and less labor per unit of fishing effort. Sometimes, but not always, this industrial fishery is a decided step ahead when it comes to processing, distribution and marketing.

"Why are we interested in the artisans? After all, they are small-scale operators, perhaps lagging badly, while those in other sectors of the fishery pass them by. But the artisans greatly outnumber their brothers in the industrial sector; they harvest stocks of considerable potential often overlooked by the industrial fisheries; and their catches already exceed a third of the world harvest of food fish. Almost everywhere the artisans' relatively simple methods are in need of improvement, which can be made with modest means. Almost everywhere the infrastructure, i.e., the financing, marketing, distribution, processing, and entire complex of the artisan fishery, needs a critical look, proper attention.

"It is not that the artisans fail to sense their needs and lack insight into solutions. There is no expert quite like the man doing the job. But he does not know the whole story any more than we do. Moreover, by the very nature of this fishery, the participants are often too scattered geographically and organizationally to move ahead without assistance. In a certain sense these fishermen are not artisans because the word refers to persons who do work with high skills. These men exhibit great skill considering the task at hand. But they need better tools to become true, first-rate artisans, and that is why we are here.

"It seems likely that the artisan fishery is destined to command the spotlight increasingly for several years to come. Concurrently there will be a related growing interest in aquaculture. Just which of these two subsectors will command the greater attention seems to depend in part on who you are talking with and what area you are talking about. At the meeting of the FAO Committee on Fisheries in Rome in October 1974 there was unanimity in country endorsements of FAO plans to concentrate on artisan problems. Even though little was said about aquaculture, its promise is being proclaimed highly in other circles.

"We feel the course to set is one which gives attention to both the artisan fishery and aquaculture. The emphasis can shift as the particular situation dictates, but, far more important, the two subsectors can be developed in a complementary manner. This is a point that should be emphasized strongly. The same peoples are often involved as well as much of the same technology and infrastructure. In both subsectors great strides can be realized with modest personal investments and relatively simple methods. Both promise, especially when growing together where appropriate, to increase the food supply, increase employment opportunities and, as a result, substantially improve overall nutrition and the economy.

"To the best of my knowledge, this is the first regional workshop on the artisan fisheries. More limited seminars have been held, including one session on the University of Rhode Island campus in November 1971. More recently, in Indonesia the Directorate General of Fisheries held an artisan fisheries development workshop focusing on programs for that country. Thinking big, and usually this is appropriate when a topic is as important as this one is, FAO at first contemplated a worldwide conference as the first step in covering the small-scale fisheries. Reflecting further and realizing that this sector of the fishery differs from one region to the next and that its needs require focus rather than generalities, FAO now suggests that it is better to start with smaller, regional efforts. From this perspective, we are all pioneering in a very timely undertaking.

"Why did we elect to start in Central America? Some of my colleagues have a first-hand familiarity with the Central American scene. A little checking with FAO/IDB encouraged us, especially as we learned how actively artisan investment loan plans are pursued in these countries. When we discussed the idea with AID and OAS, we got added encouragement. And everything we have learned since has indicated that we have chosen wisely.

"Now, what are we going to do in this seminar and workshop? This remains to be seen. Intentionally we are a small group. We represent either the key to action or the expertise needed for action, and in a number of cases both. Hopefully everyone has come prepared to step forward as a resource person in his area of expertise. For the better part of two days we will review pertinent background topics. In doing so there will be more questions raised than answered.

"Then we will move into the workshop stage of this gathering, probably working in smaller teams. This is the harder part, the stage in which we are to come up with the answers, or the means for providing the answers. It is at this point that we must talk about action and expectations--what are the needs? What will the fishermen do for themselves? Are the loan and investment programs on track? Are there further roles for international assistance, organizations, bilateral assistance?

"The horizons are unlimited."

In the group charge J. J. Sconce noted, "You have come here to explore a vital opportunity: that of mobilizing existing knowledge and technology yet to be developed for increasing the world's food supply through more productive artisan fisheries, while also expanding employment and improving the well being of persons who work in artisan fishing.

"It is painfully obvious that the simultaneous onset of the world food and energy crises demands urgent efforts to breathe new life into the ancient and noble enterprise of fishing. These crises require that we seek sources of additional food which do not utilize increasing amounts of petroleum-derived inputs, which do not further deplete soils and forests, and which do not rely on inefficient conversion to animal protein of foods which human beings could directly consume.

"These crises require that we stimulate fish production through technologies that are more labor-intensive and carry less risk of over-fishing than the sometimes predatory commercial operations.

"We know that artisan fishing meets these criteria more fully than most means of food production and is an industry where man, the producer, must live in a symbiotic relationship with nature, not an adversary one. For these reasons, the theme of your conference is not only important in economic terms; it is also, if I may say so, a theme that has great significance in humanistic terms."

The possible outgrowths of the conference were clearly delineated by Hernan Garron: "I believe," he said, "that it would be convenient to take advantage of this meeting by calling for future interchanges in similar fields which to me are extremely important--the development of aquaculture, the change in people's thinking so that they will conceptualize fish farming, rather than fishing, an idea which needs grasping by the world in view of the constant threat of extinction of species, which we ourselves bring about due to our lack of foresight. Some countries are already working in this direction. Others, like ours, are just starting.

"I believe that the interchange of persons as highly qualified as you are, of persons as well acquainted with fishing problems as you are, should be taken advantage of by establishing dates for future meetings and discussions related to such other fields."

Country-by-Country Presentations. At the conclusion of introductory remarks, the remainder of the first day of the conference was devoted to the keynote address by Arthur L. Domike, Coordinator, FAO/IDB Cooperative Program, Inter-American Development Bank, and to presentations led by senior representatives of each Central American country present: Eduardo Bravo P. of Costa Rica, Carlos Fuentes of El Salvador, Luis Fernando Martinez of Guatemala, Antonio Flores of Nicaragua, Humberto Caballero of Honduras, and Carlos Arellano-Lennox of Panama. Each described the development of his country's artisanal fisheries and future plans for them. As the talks progressed, both unique national differences in experience and many common development conditions were described. The general outline of the country-by-country presentations, shown below, indicates the scope of activities described in the individual papers.

1. Present state of artisan fisheries, the marketing system and development goals, including exploitation of new resources, vessels and gear; processing, marketing and distribution.

2. Methods of achieving goals, including technical assistance and education, financing, and the promotion of institutions (cooperatives, private enterprise, government ownership), and management.

3. Critical evaluation of development programs, including successes, problems, organizational inhibition, and changes.

International Specialists. On the second day international specialists treated from a broad perspective a wide spectrum of topics related to artisan fisheries and coastal aquaculture. Included was the following subject matter:

1. Currently exploited resources, their susceptibility to overfishing, information systems, stock assessment strategy, and new stock potential.

2. Worldwide aquaculture accomplishments, current practices and recent innovations, as well as fishing gear effectiveness and selectivity, vessel and port configuration, adaptability of methods, material and people to new techniques.

3. Product marketing, processing and handling, including current practices, recent changes; the role of the middleman, improvement strategies, current practices and changes.

4. Artisanal institutions including the entrepreneur, government activity, capital and investment, and integration of institutional and technical development.

5. Technical assistance, social and institutional structures, strategies for change, education and change, and inhibitors of technology transfer.

The Workshops. At the end of the second day of the conference, a special group was impaneled to consider the potential subject matter for forthcoming workshops based on material presented by the Central American participants on the first day and the international participants on the second day. It was to incorporate both on- and off-the-floor comments.

This Steering Committee, under Nelson Marshall's direction, recommended three workshop sessions and appointed three panel leaders whose function on the third day was to present a statement of workshop scope and intent to the plenary session for approval or modification. After discussion and adoption of the plans for the three basic workshops and plenary session, the meeting broke into three separate,

simultaneously interpreted, non-recorded working sessions, each under a chairman and recorder. The three workshop groups were constituted as follows:

1. Policy and Strategy for Development with Antonio Flores, chairman; Geoffrey Kesteven, panel leader; and Ivan Galeano, recorder.

2. Institutional Framework and Development with Carlos Arellano-Lennox, chairman; W. Philip Appleyard, panel leader; and Spiros M. Constantinides, recorder.

3. Changes and Technology Transfer with Manuel Murillo, chairman; and Richard B. Pollnac, panel leader and recorder.

While all participants primarily took part in one working session, some cross-attendance was encouraged. The output of those sessions was presented to the group on the fourth morning for discussion and endorsement.

Findings: Workshop 1--Policy and Strategy for Development

The importance of artisan fisheries is well recognized, not only with respect to both actual and potential production, but also to fishermen's living conditions. Thus, governments have made plans to promote the development of these fisheries with the principal objective of improving fishermen's living conditions while increasing sources of highly nutritious food through effective use of exploitable resources.

In spite of the importance of these matters, development plans have freqently failed, in many cases because a lack of initiative in establishing comprehensive programs. Among the *a priori* conditions promoting a successful development effort is that governments should play a major role in fishery policy formulation, not only during the preparatory phases but in subsequent implementation of development programs.

By policy we mean the establishment of general and specific objectives by which the government plans to achieve its goals as well as a description of principles governing its course of action. These objectives should be based on substantiated knowledge of the present situation of these fisheries and an evaluation of their potential.

In general terms, artisan fisheries can be characterized by the following:

1. Fisheries unit--stable, small, utilizing a variety of fishing gear, unspecialized by task.
2. Boat--small, technically deficient, very limited propulsion means and limited action radius.
3. Fishing gear--either industrially manufactured or made from local materials.
4. Practices--minimum utilization of machinery.
5. Investment--low, entirely by operator.
6. Catch--average to low.
7. Productivity--average to low.

8. Utilization of catches--local sale, disorganized, highly significant to the operator.

9. Economic level of the operator--lower level, little accessibility to national financing plans.

10. Social condition--often isolated.

These fisheries can be developed to play a role of considerable importance in the national food industries by (1.) enlarging and regionalizing their operations, (2.) adjusting their present technology, and (3.) applying new bio-technologies to wildlife stock management and resource exploitation.

In planning programs intended to promote these changes, it is necessary to have a very specific and clear notice from government specifying the scope, methods and schedule for achieving them. The policy may be formulated as follows.

General objectives. Indication should be made of the government' intention with respect to (1.) the use of resources, including its attitude toward protection and preservation of the resources from pollution; (2.) the use of these fisheries as a source of employment; (3.) the standard of living of fishermen; (4.) the role of these fisheries in providing for a people's nourishment; and (5.) the role of these fisheries products in export trade.

Specific objectives. The general objectives of the entire fishery and each particular element should be quantified. Priorities should be set among private fisheries and among the different changes being considered. These particular objectives should focus on short-term country-specific fisheries activities.

Principles to be observed. The purpose of this section of the policy is to define the nature of actions that can be taken to promote the contemplated changes. The government should state its position regarding: (1.) entrepreneurial organization; namely, participation of private initiative, the role of cooperatives, and direct participation of the government in the industry; (2.) credit; (3.) government support for the infrastructure, scientific and technological investigations, training, and financial assistance;

(4.) government control of operations--exploitation, quality, sanitary conditions, prices and safety--which should be based on the results of the scientific and technological investigations; (5.) property rights to be established for certain fisheries, especially in the case of management and cultivation of resources; (6.) location of responsibility for development actions; (7.) participation of fishermen in management of exploitation; and (8.) the manner in which policy will be formalized (by law, position statement, etc.), as well as the way in which it will be communicated both officially and publicly. The latter will no doubt differ from country to country.

Strategy and Program. The implementation of the proposed changes to achieve the objectives determined by each government must of course take place through specific programs, defined in accordance with the principles mentioned above. The strategy has two main directions. On the one hand, it tries to improve the general characteristics of all fisheries, while on the other, it calls for specifically changing (or creating) certain fisheries units. The strategy should generally be directed toward: (1.) the expertise of fishermen and other categories of employees. (It should include training programs and the improvement of working conditions.) (2.) the infrastructure; (3.) quality control of the different products; and (4.) the marketing system, including the pricing mechanism. The strategy is concerned specifically with the details of equipment change and practices, or their establishment, for each fishery unit.

The work group considers it important to include in this document some of the concepts expressed by Geoffrey Kesteven in his article "Management and Development of Natural Resources," published in *Fisheries Technical Journal*, No. 28, March 1971.

> To determine developmental possibilities, specific programs for the investigation of resources should be implemented. For example: The magnitude of a resource expressly determines the magnitude of the catches and, consequently, the quantity of equipment that can be used and of effort to be applied because there is always a top

limit, beyond which catches cannot be increased. Thus, a basic question is to be able to calculate this top limit for each fishery, because the calculation will indicate which should be the size of the fleet and what land facilities, processing plants, etc., are required. The fisheries program will greatly depend upon the answer to the following questions:

1. What species are found in each zone?
2. What is the magnitude of each resource?
3. What catch level can it stand?
4. Which are its patterns of spatial and temporary distribution?
5. How does the species behave?
6. What fluctuations take place in availability, accessibility and vulnerability?

Programs for the management of populations and cultivation should have similar bases. Plans should be made in accordance with the results of such investigations.

We must recognize that the methodology to calculate vital statistics on populations and the mathematical models for the management of these fisheries has been developed mainly for temperate zones, and that in the case of tropical and sub-tropical artisan fisheries, adequate information on the size of the exploitation levels and other important statistics are required and that their collection makes necessary a unique methodology which has not as yet been either developed or published.

It is recommended that the governments taking part in the development of artisan fisheries start a coordinated plan for the gathering of adequate data and take the necessary measures to publish an appropriate manual on methodology, especially designed for the management of artisan fisheries.

Findings: Workshop 2--Institutional Framework and Development

In defining a favorable institutional framework for the development of artisanal fisheries, the group reached the following conclusions. First, the governmental organization required to provide a central unit of command must be established, particularly in light of the multiplicity of ministerial and institutional organizations normally involved in artisan activity. Consideration must be given to the forms in which catching, processing, distribution and marketing of fish could be best effected by parastatal bodies, cooperatives, or the private sector--individually or in combination. In addition, the role of the universities and other institutions must be considered, as well as those of the fishing community and the artisanal family.

Governments. In many countries the thrust of fisheries is spread through a multiplicity of ministerial institutions. The problem of unifying or coordinating those services to work for the benefit of the fishing community is of extreme importance. Antagonism and competition, often existing between and among the various services, usually obstruct progress. It is therefore strongly recommended that a central unit of command be established in each country.

At times international organizations fail to effectively play the role they should. Long waiting periods occur from the time that needs are defined until substantially funded projects begin. On the other hand, international project leaders often find it difficult to achieve their objectives satisfactorily unless there is support from a clearly defined and efficient counterpart.

The cooperative was felt to be the most suitable enterprise to provide the best form of change. A type of cooperative in which the state participates in some way, such as helping build the infrastructure, would seem especially beneficial. It was also felt that the marketing system must be set up to reflect the interests of the artisanal fisherman.

Through study, each country should determine the specific type of cooperative it needs. While technical assistance should initially be given to the cooperatives, permanent assistance should be discouraged because it may lead to dependence.

Institutions. It was agreed that while the universities in Central America have in the past offered little to improve the activities of the artisan fishermen, they should now begin to develop extension and research capabilities. Regionalization of disciplines creates strcng regional capabilities. In general the university should take a leading part in generating capability in aquatic sciences as well as help train technical professionals at the intermediate educational levels needed to help the fishery sector.

The Fishing Community. The fishing community should be developed from all points of view including housing, diet, recreation, schools, roads and sanitation. By introducing improvements in these basic needs of living to the artisanal family, the fishing community will improve and, in turn, improve society. Malnutrition, especially in children, should be prevented in these communities. While leadership in setting up an infrastructure rests with the government, it is desirable that the affected fishing community participate in the decision-making process.

The object of the development of the artisanal fisheries should not only be the creation of physical and commercial facilities but should also be to provide benefits to the artisanal fisherman, his family, and the community in terms of upgrading their standard of living and dignity.

Findings: Workshop 3--Changes and Technology Transfer

In attempts to treat the different components of an artisanal fisheries development program separately, the group became increasingly aware of the necessity of an integrated approach. In discussions of resource assessment, the group found it necessary to refer to fishing gear, the sociocultural characteristics of middlemen and fishermen, and the need to train local statisticians. In discussions of marketing, reference was made to processing and handling, resource availability, economics, and sociocultural characteristics of the consumer. If plotted out, all the links among the components of maritime artisanal fisheries development would be found to be interrelated, and failure to consider any single component could result in failure of a whole project. With such strong and multiple interrelationships, it becomes impossible to place priorities on the various components. They are all necessary.

The major recommendation, therefore, is that a viable development project must take into account the entire set of factors elaborated below in addition to the institutional and governmental policies which were the subject of the other workshops.

In the deliberations the group formulated a set of recommendations concerning information needed for the various components of artisanal fisheries development. It is essential that this information be generated as an integral part of any development project.

Recommendations.

1. There is need for a more accurate assessment of the available resources and their exploitation. Several techniques are suggested. In some cases it is first desirable to obtain a versatile, small exploratory-type vessel with a wide range of gear to determine exploitable resources under varying conditions. Second, it is essential that better artisanal fisheries statistics be collected. This effort could include better use of capture statistics from

cooperatives and middlemen. Third, it is suggested that statistical sampling procedures or methods for data collection be developed to provide detailed information concerning techniques and composition of catches of artisanal fishermen. These data, properly analyzed, can be used to develop a reasonable picture of available resources and efficiency of exploitation. It is further suggested that these investigations be concentrated in regions where resource evaluation is most urgently needed. Finally, in some areas it will be necessary to provide training on collection and analysis of fishery resource statistics.

2. Several suggestions were presented concerning the modification and assessment of boats, gear and equipment. First, it is often desirable to have a small exploratory vessel with a wide range of gear and equipment from which selections can be made through the process of trial and error. The gear and equipment should consist of types which the artisanal fisherman is capable of using. Moreover, gear, boats and equipment should be developed that take into account the wants and needs of the fisherman, and modifications of these suggested by the fisherman should be incorporated into designs if they are determined to be technically feasible.

3. With regard to mariculture it is extremely important to assess environmental potential. One important environmental factor is current and potential outwash of pollutants including pesticides. For freshwater aquaculture, environmental factors must still be examined, but more control is possible over many variables. Both types of aquaculture require assessments of potential markets, economic feasibility, and training of biologists and fish farmers. Further, projects should be planned so that maximum production occurs at the time of maximum demand. Finally, it is crucial that training of extension agents be such that they will be able to effectively communicate the complex techniques of aquaculture to target populations.

4. With regard to processing and handling, it is necessary to assess consumption patterns (e.g., fresh, dried, smoked, etc.) to determine locally acceptable techniques. Primary concern must be paid to sanitation and prevention of spoilage both on and off board before final processing or consumption. Assessment of processing and handling needs must be conducted to insure adequate provision of appropriate materials and facilities. Often it is necessary to establish pilot demonstrations of techniques to stimulate local interest. Finally, where necessary, training of food technologists should be instituted.

5. With regard to marketing, it is suggested that one must survey the type of processing consumers desire. Second, it is vital to develop pilot projects with varying types of marketing techniques (e.g., mobile markets, kiosks, etc.) to assess their comparative effectiveness. Third, it is essential to experiment with various techniques of processing and packaging to determine the most effective of these. Finally, it is important to experiment with various types of mass media to stimulate demand.

6. With regard to the final component, the transfer of technology, it is essential to develop techniques to assess the structure of the governmental and private organizations within which the artisanal fisherman operates in order to identify organizational barriers to change. Second, it is necessary to establish locally relevant techniques to determine social, cultural, and psychological barriers to change. It is also important to establish techniques to identify individuals and groups most receptive to change. Third, it is vital to develop effective means of communication between the artisanal fishermen and the change agents. Fourth, it is essential to assess the local level of technological sophistication to determine if the artisanal fishermen will be prepared to operate and maintain the proposed technologies. Fifth, it is necessary to involve the fisherman in the early stages of planned change to insure that the changes will fulfill his needs. Finally, it is important to

stress that in order to establish a locally viable environment for technical change, it is essential to train local fisheries biologists, extension workers, and all other individuals involved with artisanal fisheries. It is vital that these personnel be trained in environments similar to their home environment to insure environmental compatability of proposed innovations.

In sum, an assessment of these components, and the institutional framework and governmental policies which were subjects of the other two workshops, is essential to the planning and implementation of an artisanal fisheries development project. All elements are equally important because they form part of an integrated structure.

Participants

Appleyard, Philip W., Chief, Fishery Industries Development Service, Department of Fisheries, Food and Agriculture Organization of the United Nations, Rome, Italy. Tel: Rome 5797, Ext. 639.

Arellano-Lennox, Carlos, Director General de Recursos Marinos, Ministerio de Comercio e Industrias, Aptdo. 3318, Panama 4, Panama. Tel: 64-58-57.

Arias Parrales, Osmin, Estadistico, Departamento de Pesca, Instituto de Fomento Nacional (INFONAC), Aptdo. 629, Managua, Nicaragua.

Beca Infante, Ingeniero Alvaro, Especialista Sectorial de Contabilidad y Finanzas, Banco Interamericano de Desarrollo, Aptdo. 4647, San Jose, Costa Rica, Tel: 21-77-11.

Bleidner, James O., R.D.O. AID Honduras, c/o American Embassy, Tegucigalpa, Honduras.

Bravo Perez, Ingeniero Eduardo, Director, Direccion General de Recursos Pesqueros y Vida Silvestre, Ministerio de Agricultura y Ganaderia, San Jose, Costa Rica. Tel: 22-29-65, 23-07-77.

Buston, James C., Asesor Tecnico de Pesca, Peace Corps, c/o American Embassy, Tegucigalpa, Honduras.

Caballero Lozano, Licenciado Humberto, Director General de Recursos Renovables, Ministerio de Recursos Naturales, Tegucigalpa, Honduras, Tel: 22-63-39.

Cabrera, Jorge, Biologo, Universidad de Mexico, Aptdo. 20-239, Mexico 20, D.F. Tel: 598-10-74.

Castro Butter, Licenciado Enrique, Jefe Servicio Recursos Pesqueros Direccion General de Resursos Naturales Renovables, Ministerio de Agricultura y Ganaderia, San Salvador, El Salvador. Tel: 27-06-22.

Cayetano Reyes, Profesor Esteban, Extensionista DIFOCOOP, c/o Centro Comunal, Tela, Honduras.

Cisneros Severine, Jaime, Biologo, Division de Extraccion, Instituto del Mar, Esquina de Gamarra y General Valle, Chucuito, Callao, Peru.

Constantinides, Spiros M., Professor, University of Rhode Island, Kingston, R. I. 02881, U.S.A. Tel: (401) 792-2271.

Diez Solorzano, Carlos, Traductor Oficial, Aptdo. 2876, San Jose, Costa Rica. Tel: 21-86-30. Cable: CARDISO.

Domike, Arthur L., Coordinator, FAO/IDB Cooperative Program, Inter-American Development Bank, 801 17th St., N.W., Washington, D.C. 20577. Tel: (202) 382-3783. Cable: FOODAGRI.

Erasmo Martinez, Horacio, Encargado del Departamento de Pesca, Direccion de Recursos Naturales Renovables, Edificio Jimenez Talavera, 8a. Ave. 11 y 12 Calles, Comayaguela D.C., Honduras. Tel: 22-68-39.

Flores Arana, Antonio, Jefe Division de Pesca, Instituto de Fomento Nacional, Aptdo. 629, Managua, Nicaragua. Tel: 31-10, 31-11, 31-12.

Fuentes, Carlos Alberto, Jefe de Pesca y Caza Maritima, Ministerio de Economia, San Salvador, El Salvador. Tel: 22-18-84, 22-18-85, 22-18-93.

Galeano Espinoza, Ivan, Economista, Departamento de Pesca, Instituto de Fomento Nacional (INFONAC), Aptdo. 629, Managua, Nicaragua.

Garcia P., Luis, Industrial Pesquera El Delfin S.A., Beneficio La Raya, Desamparados, San Jose, Costa Rica.

Garron, Hernan, Ministro de Agricultura y Ganaderia, San Jose, Costa Rica.

Gines, Hermano, Presidente Fundacion La Salle, Av. Boyaca-Edificio Fundacion La Salle P.H., Mariperez, Aptdo. 8150, Caracas, Venezuela. Tel: 72-96-11-14.

Griffin, James J., Executive Assistant, International Center for Marine Resource Development, University of Rhode Island, Kingston, R. I. 02881, U.S.A. Tel: (401) 792-6185. Cable: RIMARDEC.

Gonzalez Pinto, Ramiro, Gerente de Produccion y Mercadeo, Proyecto de Pesca de Farallon, Ministerio de Comercio e Industrias, Aptdo. 3318, Panama 4, Panama.

Granados Monge, Licenciado Joaquin, Jefe Departamento Asistencia Tecnica, Instituto Nacional de Fomento Cooperativo (INFOCOOP), Aptdo. 5146, San Jose, Costa Rica. Tel: 23-28-34, 23-40-97.

Hernandez Escobar, Rene, Supervisor de Cooperativas Pesqueras, Banco de Fomento Agropecuario, 15 Ave. Sur y 6a. Calle Poniente, San Salvador, El Salvador.

Hernandez Rivas, Licenciado Ricardo, Jefe de la Unidad de Recursos Marinos del Servicio de Resursos Pesqueros M.A.G., Direccion General de Recursos Naturales Renovables, San Salvador, El Salvador. Tel: 27-06-22 (Ext. 43).

Huang, Ting Lang, Director, Tainan Fish Culture Station, Taiwan Fisheries Research Institute, 81 Shang Kuen Shen, Tainan, Taiwan, Republic of China. Tel: 23361.

Hughes, David G., Fish Culturist, USAID, U.S. Embassy, San Salvador, El Salvador.

Ingram, W. Ludwig, Jr., Jefe Division Servicios Tecnicos Industriales, Instituto Centroamericano de Investigacion y Tecnologia Industrial (ICAITI), Aptdo. 1552, Guatemala, Guatemala.

Jimenez Castro, Virginia, Directora Nacional de Seguridad Social, Ministerio de Trabajo y Seguridad Social, San Jose, Costa Rica.

Johnson, Dr. Jan Peter, Biologo Marino, Asesor Tecnico, Departamento de Pesca, Comayaguela, Honduras. Tel: 22-63-39.

Kesteven, Geoffrey, UNDP/FAO/Peru, Australia.

King, Travis A., USAID, American Embassy, San Jose, Costa Rica.

Lampe, Harlan C., Professor, University of Rhode Island, Kingston, R. I. 02881, U.S.A. Tel: (401) 792-2095.

Laney, Frederick J., Foreign Training Officer, U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of International Affairs, Washington, D. C. 20852.

Lopez G., Milton H., Jefe Departamento de Pesca y Caza Maritima, Ministerio de Agricultura y Ganaderia, San Jose, Costa Rica

Marshall, Nelson, Director, International Center for Marine Resource Development, University of Rhode Island, Kingston, R. I. 02881, U.S.A. Tel: (401) 792-6185. Cable: RIMARDEC.

Martinez Avalos, Luis Fernando, Asesor Tecnico, Departamento de Pesca Artesanal, Direc. Gral. de Recursos Renovables, Parque La Aurora, Zona 13, Guatemala

McAlister, Joe, FAO/United Nations, P.O. Box 6314, Panama 5, Panama

Min, Lim Nan, Specialist of Fishculture, Republic of China

Moss, Donovan D., Professor, Department of Fisheries & Allied Aquaculture, Assistant Director, International Center for Aquaculture, Auburn University, Auburn, Alabama 36830, U.S.A. Tel: (205) 826-4786.

Murillo, Manual M., Ecologo Marino, Universidad de Costa Rica, Escuela de Biologia, San Jose, Costa Rica. Tel: 25-55-55 (Ext. 447).

Nanne Echandi, Herbert, Biologo, Vida Silvestre, Jefe Departamento Acuacultura, Pesca Continental y Vida Silvestre, Ministerio de Agricultura y Ganaderia, San Jose, Costa Rica. Tel: 22-29-65.

Negron, Ebenezer, Especialista Planificacion AID.

Oreamuno, Jose Francisco, Asistente Biologo, Ministerio de Agricultura y Ganaderia, San Jose, Costa Rica. Tel: 23-07-77.

Pollnac, Richard B., Professor, University of Rhode Island, Kingston, R. I. 02881, U.S.A. Tel: (401) 792-2587.

Pastor, Gabriel, Profesor, Vice Presidente, Campus de Margarita, Fundacion La Salle, Aptdo. 144, Porlamar, Estado Nueva Esparta, Venezuela.

Ramirez, Jorge, Biologo, Universidad de Costa Rica, Escuela de Biologia, San Jose, Costa Rica.

Rodriguez Castro, Fernando, Promotor Cooperativas Pesqueras, Ministerio de Economia, San Salvador, El Salvador.

Rodriguez Fernandez, Guillermo, Capitan de la Marina Mercante, Programador de Formacion, Profesional Nautico-Pesquera, Instituto Nacional de Aprendizaje, Aptdo. 5200, San Jose, Costa Rica.

Ruiz Stout, Roberto, Biologo, Jefe de Pesca Artesanal, Ministerio de Comercio e Industrias, Direccion General de Recursos Marinos, Aptdo. 3318, Panama 4, Panama. Tel: 64-58-57.

Saila, Saul B., Professor, University of Rhode Island, Kingston, R. I. 02881, U.S.A. Tel: (401) 792-6239.

Sconce, Joe J., Director, AID-Costa Rica, c/o American Embassy, San Jose, Costa Rica.

Tapias Rueda, Constantino, Oficial Regional de Pesca para America Latina, Providencia 871, Casilla 10095, Santiago, Chile. Tel: 46-20-61.

Trabanino, Francisco, Encargado Departamento Pesca Maritima, Direccion Recursos Naturales Renovables, Guatemala City, Guatemala.

Wang, Tse Hsuem, Fish Culturist, Republic of China.