INTER-AMERICAN TROPICAL TUNA COMMISSION

SUMMARY MINUTES OF THE 46TH MEETING

May 10-12, 1989

Paris, France

Chairman: Dominique Piney

AGENDA

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AGENDA ITEM 1 - OPENING OF THE MEETING

The 46th meeting of the IATTC was called to order by the Chairman, Mr. Dominique Piney, Commissioner from France, at 10:50 a.m., May 10, 1989, at the Centre de Conférences Internationales, Paris, France. The Chairman introduced Mr. Jean-Yves Hamon, Director of Marine Fisheries and Marine Aquaculture of the Ministry of the Sea, who gave the inaugural address.

Mr. Hamon welcomed all the attendees of the meeting on behalf of Mr. Roland Dumas, Minister of Foreign Affairs, and Mr. Jacques Mellick, Minister of the Sea. He first called attention to the fact that tunas are highly migratory fish which do not recognize man-made boundaries, but instead respond to natural features of the ocean. He then called attention to Article 64 of the Third United Nations Conference on the Law of the Sea, which was drafted specifically for tunas because they are highly migratory. He noted that the article affirms the sovereignty of the coastal states, but at the same time calls for all nations to cooperate through international forums in the scientific study and management of tunas. He emphasized that no nation can properly study or manage tunas alone, and that such objectives can be achieved only through international cooperation. He further noted that tuna are a common property resource, and that international cooperation is necessary for viable trade to be maintained. Mr. Hamon noted that the interest of his government is to provide the opportunity for the tuna fleets of the world to exploit tunas wherever they occur, but at the same time to foster cooperation with all interested states in the study and management of these resources. He emphasized the fact that France has cooperated to the fullest extent possible with interested nations and international organizations in the utilization and management of tunas in the Atlantic, Pacific, and Indian Oceans and will continue to do so because, as a fishing state, it cannot neglect its responsibilities to its citizens in Europe or its overseas territories. Mr. Hamon also called attention to the fact that other factors, such as the need to protect markets for tunas and tuna products, must also be considered. For all the above reasons, and for other reasons as well, France considers its membership in the IATTC to be highly important. Mr. Hamon concluded his inaugural address by wishing the best of luck to all the participants in their deliberations during the course of the meeting.

Chairman Piney then welcomed all the attendees, and called for the heads of the delegations of the member and observer nations and of the various international and other organizations to introduce themselves and their delegations. The attendees are listed in Appendix 1 of these minutes.

AGENDA ITEM 2 - ADOPTION OF AGENDA

Chairman Piney called for comments on the provisional agenda which had been distributed previously to the attendees. Mr. Morimoto of Japan proposed that the agenda be adopted as drafted, with the understanding that Agenda Item 9 would include only an informal exchange of views, and that nothing emanating from the discussions would represent the official positions of the governments or be binding upon them. After a short explanation by the Chairman that this was the usual practice at meetings of the IATTC, all delegations approved the agenda.

AGENDA ITEM 3 - REVIEW OF CURRENT TUNA RESEARCH

Chairman Piney called upon Dr. James Joseph, Director, for a review of the research carried out by the IATTC staff.

Dr. Joseph noted that the IATTC's research program is now in its 39th year. He stated that the objectives of the program are to conduct scientific studies of the tropical tunas and billfishes of the eastern Pacific Ocean and, when necessary, to make recommendations to the High Contracting Parties for management of these species. The Convention, he said, specifies that the goal of management is to achieve the maximum sustainable yield in weight of fish. In 1976 the IATTC's duties were broadened to include problems arising from the tuna-dolphin relationship in the eastern Pacific Ocean. As its objectives, it was agreed that "the Commission should strive [1] to maintain a high level of tuna production and also [2] to maintain [dolphin] stocks at or above levels that assure their survival in perpetuity, [3] with every reasonable effort being made to avoid needless or careless killing of [dolphins]." The studies of tunas, billfishes, and dolphins require persons with a wide range of expertise. The IATTC staff now consists of more than 50 people, about half of them scientists. These employees are stationed at the IATTC headquarters in La Jolla and at its field stations in Ecuador, Mexico, Panama (Panama City and Achotines), Peru, the United States (Mayaguez, Puerto Rico, and Terminal Island, California), and Venezuela. Its investigations are carried out by collecting data on almost all aspects of the biology of the fish and dolphins. The conditions of the tuna and billfish stocks are assessed by analyses of catch and effort, length-frequency, tagging, maturity, hard part, and oceanographic data, and the dolphin stocks are evaluated by studies of sightings, mortality, behavior, and tuna catch and effort data. Practically all of these data are obtained with the permission and assistance of the governments of the nations involved in the fishery and of the fishermen and tuna processors. The staff is deeply grateful for this cooperation with its program.

Dr. Joseph began his review by discussing the catches of tunas on a world basis. He noted that during 1987 the total catches of tunas amounted to 3.4 million metric tons, of which 2.4 million tons consisted of the principal market species, skipjack, yellowfin, bigeye, albacore, and northern and southern bluefin. Of the remainder, 892 thousand tons were secondary market species and 116 thousand tons were marlins, spearfishes, and swordfish. Since 1964 the production has increased by about 6 percent per year. The catches of skipjack, the most important species in terms of weight, have been increasing at a rate of about 10 percent per year, those of yellowfin, the next-most important species, have been increasing at a rate of about 9 percent per year, and those of bigeye, the third species, have been increasing at a rate of about 3 to 4 percent per year. The catches of the other principal market species, albacore and northern and southern bluefin, have declined. The decline in albacore has most likely been due to lesser market demand, while the declines for bluefin may, in some cases at least, be due to overexploitation.

Dr. Joseph noted that, because an extensive and detailed discussion of the IATTC's research program had been given at the 45th meeting in La Jolla in 1988, he would discuss only a few highlights of the staff's research.

He described morphometric analyses of yellowfin from Australia, Ecuador, Hawaii, Mexico, and Japan. The preliminary results indicate that the fish from the western Pacific differ from those of the central and eastern Pacific and that the fish from the northern and southern parts of the eastern Pacific differ from one another. Further sampling and analyses are planned for the future.

He also discussed studies of tuna growth carried out during the last few years, especially those involving counting of increments on the otoliths of yellowfin tuna. He described the differences in the growth of males and females.

He next reviewed the studies being made at the IATTC's Achotines Laboratory, where studies of the early life history of tunas are in progress.

Dr. Joseph next introduced Mr. Michel Goujon, a student at the École Nationale Supérieure Agronomique de Rennes, Rennes, France, who had recently spent 8 months performing tuna research at the IATTC headquarters in La Jolla. Mr. Goujon described his work on the fishery for tunas in the vicinity of Clipperton Island. The trends in catches per unit of effort of yellowfin at Clipperton Island have corresponded closely to those in the rest of the eastern Pacific Ocean. The incidence of yellowfin less than 60 cm in length was greater during 1976-1982 than during 1983-1987. During the latter period a greater proportion of the catch was taken in association with dolphins. The results of IATTC tagging experiments were used to study the movement of yellowfin occurring near Clipperton Island. It was noted that the fish tended to stay near that island for periods in excess of 1 year in some cases, and hypotheses for such behavior were analyzed. In addition, studies of the growth and schooling behavior of yellowfin were conducted.

In concluding the discussion of the IATTC's research program, Dr. Joseph called attention again to the fact that its success is largely due to the cooperation of the nations, both member and non-member, involved in the fishery for tunas in the eastern Pacific Ocean in supporting its work. He took the opportunity to thank them again for the cooperation and support.

AGENDA ITEMS 4 AND 5 - THE 1988 FISHING YEAR AND STATUS OF TUNA STOCKS

Chairman Piney asked Dr. Joseph to review these two agenda items.

Dr. Joseph explained that the 1988 fishing year was reviewed in Background Paper 1 and that the conditions of the tuna stocks he was preparing to discuss, yellowfin, skipjack, bluefin, and bigeye, were covered in Background Papers 2, 4, and 5. He said that the catch of tunas of all species combined in the eastern Pacific Ocean in 1988 was excellent, and that the catch of yellowfin, 317 short tons, exceeded that of the previous record year, 1987, by over 15 thousand tons. These record catches were due to better-than-average recruitment, an increase in population size due to lesser fishing effort during the preceding years, and the fact that the fish were harvested at near their optimum size. The fishing effort during 1988 was almost the same as in 1987, but somewhat greater than during 1986. The skipjack catches, which were not particularly good in 1986 and 1987, were significantly greater in 1988, when 94 thousand tons were taken. The greatest catches of tunas during 1988, and so far during 1989, have been taken by vessels of Mexico, followed by vessels of the United States, Venezuela, and Ecuador.

The status of yellowfin in the eastern Pacific Ocean is discussed in Background Paper 2. The fishery was under management from 1966 through 1979. After 1979 the catches began to decline, and this was exacerbated by the El Niño of 1982-1983. As a result, many vessels became inactive or transferred their operations to other ocean areas. The lesser fishing effort during 1982-1985 allowed the population to increase rapidly, as shown by trends in the catch per day's fishing.

Two analytical approaches, cohort analyses and yield-per-recruit analyses, have been used by the staff to assess the status of yellowfin in the eastern Pacific Ocean. In addition, production modeling has been used to estimate the average maximum sustainable yield (AMSY) of the stock. The long-term (1968-1988) series of data gives an estimate of about 175 thousand tons for the AMSY. Until recently the model predicted events in the fishery fairly well, but for the last three years it has not. If only the data for 1984-1988 are used the estimate of the AMSY is about 60 percent greater, and the events in the fishery correspond fairly well to those predicted by the model. Based on the latter model, the population should be able to sustain a catch during 1989 of about 280 thousand tons.

The increased productivity of the stock is due to the effects of changes in the size composition of the catch and to changes in recruitment. The average size of the fish caught was substantially greater during 1985-1988 than during previous years, and this increased the yield per recruit by about 25 percent. The recruitment has been significantly greater during the 1984-1988 period than during earlier years, and this accounts for an increase in the production of nearly 40 percent.

Using these analyses and an estimate of the size of the stock at the beginning of 1989, and assuming that the 1988 and 1989 recruitments are above average and that the size composition of the catch will be the same in 1989 as in 1985-1987, the 1989 catch in the Commission's Yellowfin Regulatory Area (CYRA) should be about 265 thousand tons, as compared to the 1988 catch of 295 thousand tons. If, however, the size composition of the catch reverts to that of 1977-1981, when smaller fish were caught, the catch could decrease to about 190 thousand tons in 1989.

Because the size composition of the catch during 1989 is uncertain, and no estimate of the 1989 recruitment is available, a conservative quota of 220 thousand tons is recommended for the CYRA in 1989. If is further recommended that two increments of 30 thousand tons each be added at the discretion of the Director if data available later in the season indicate that such is warranted.

Dr. Joseph concluded his discussion of yellowfin by describing the fishery in the area between the CYRA and 150°W. He noted that tagging and other data suggest that the fish in the outside area do not mix rapidly with those in the CYRA and that the fish in the outside area are larger than those of the CYRA, making them near the optimum size for maximum yield per recruit. In the outside area there is a strong relationship between catch and effort, but little or no relationship between catch per day's fishing and effort, indicating that the fishery has not had much effect on the fish in this area. Such being the case, no regulations are recommended for this area.

Dr. Joseph began his treatment of skipjack by referring the attendees to Background Paper 4, which discusses this species. There is little spawning of skipjack in the eastern Pacific; fish believed to have resulted from spawning in the central and/or western Pacific enter the eastern Pacific as juveniles, remain there a few months, and then return to the central and/or western Pacific to spawn. Analyses conducted by the staff indicate that there is no need to restrict the catches of skipjack nor to attempt to alter the size composition of the catch by minimum size limits or area closures.

He then referred the audience to Background Paper 5, which discusses bluefin and bigeye. Northern bluefin spawn in the Pacific Ocean only in the vicinity of Japan. A few of the young migrate to the South Pacific, but the great majority either remain in the northwestern Pacific or migrate to the northeastern Pacific. Those which migrate to the eastern Pacific eventually return to the western Pacific unless, of course, they are caught or die in the eastern Pacific. The catches in the eastern Pacific have decreased in recent years, and this is apparently not due to decreased fishing effort. Bluefin were tagged in the western Pacific by the Far Seas Fisheries Research Laboratory of Japan and the IATTC during the 1980-1988 period. The return data for these tagged fish suggest that the proportion of the population which migrates to the eastern Pacific is highly variable, and that the low catches in the eastern Pacific in recent years are due to lesser proportions of the population migrating to the eastern Pacific. Further information based upon cohort analyses is needed to understand better the dynamics of bluefin tuna. Such work is currently being conducted jointly by the two organizations.

Bigeye are caught primarily by longlining, and in recent years less than 10 percent of the eastern Pacific catch has been taken by surface-fishing vessels. The data currently available suggest that bigeye are fished at a level somewhat less than that which would produce the AMSY and that the longline gear catches fish at or slightly greater than the size which would produce the maximum yield per recruit. This concluded Dr. Joseph's presentation on the status of the tuna stocks.

Before adjourning the meeting, Chairman Piney reminded the attendees that they were invited by the French tuna industry to a cocktail party that evening at the Gustave Eiffel room at the Eiffel Tower. At 5:55 p.m. he declared the meeting adjourned until the following day.

The meeting was reconvened at 9:40 a.m., May 11, 1989, by Chairman Piney, who called upon Dr. Joseph to begin his presentation for Agenda Item 6.

AGENDA ITEM 6 - REVIEW OF TUNA-DOLPHIN PROGRAM

Dr. Joseph stated that tunas apparently associate with dolphins only in the eastern Pacific Ocean, even though the same species of tunas and dolphins occur in other ocean areas. This association was known to fishermen prior to World War II, when the fishery was pursued almost entirely by pole-and-line vessels. This knowledge has been used to assist in the capture of tunas only by purse-seine fishermen, however. In the process of catching tunas with purse seines some dolphins are inadvertently killed. During the 1960s the mortalities were high, but the fishermen developed techniques for releasing the encircled dolphins, which reduced the mortality considerably. From 1960 to 1975 U.S. vessels were responsible for most of the fishing for tunas associated with dolphins. During the early 1970s the U.S. National Marine

Fisheries Service (NMFS) initiated a program of research and regulation which succeeded in further reducing the mortality. By the mid-1970s, however, non-U.S. vessels had become a significant part of the fleet, and the problem of dolphin mortality could no longer be addressed by dealing only with the U.S. fleet. Recognizing that the only practical way to control dolphin mortality was through an international program, the nations participating in the fishery asked that the IATTC become involved in dolphin studies. The program began in 1976, but it did not become fully operational until 1986. Dr. Joseph introduced Dr. Martín Hall, head of the tuna-dolphin program, to review the research program.

Dr. Hall first discussed a study on the daily changes in average herd sizes of various species or stocks of dolphins involved in the fishery and of one non-target species, bottlenose dolphin, and compared them to the changes shown in the sizes of yellowfin tuna schools estimated from catches in sets made on fish associated with dolphins. Both the target dolphin species and the tunas show an increase in school size during the morning hours, some stabilization at midday, and a possible decline in the late afternoon. These results are of more than academic interest, as they may eventually be useful for assessment purposes.

A study of the stomach contents of dolphins and tunas taken in the same sets is currently underway. A considerable number of stomachs has been collected, and these are being processed by the staff of the Cumaná field office. The preliminary data indicate that spotted dolphins feed during the night or at dawn and/or dusk.

The associations of tunas with dolphins and with floating objects are being analyzed as two related phenomena. As the association with floating objects precedes the association with dolphins, it is important to understand the reasons for these associations and the different factors that play a role in them. After reviewing some of the basic ideas presented at the 1988 IATTC meeting, Dr. Hall showed some results concerning the proportions and nature of the different types of floating objects and the main species associated with them. About half of all floating objects are tree trunks or branches, many of which show evidence of human intervention (saw marks, etc.). A classification according to several types of shapes and sizes has been developed to facilitate the analyses.

Other important types of research are estimation of incidental dolphin mortality and of their relative abundance. The estimates for incidental mortality of dolphins in 1988 were about 20 to 25 percent less than in 1987, and about 35 to 40 percent less than in 1986. It was noted that further reductions are expected. The factors contributing to the reduction, including a decrease in the proportion of sets on fish associated with dolphins and changes resulting in lower average mortalities per set and per ton, were discussed. The proportion of vessels carrying scientific technicians in 1988 was above the target level of 33 percent; with the NMFS samples of U.S. vessels and the IATTC samples of the international fleet, more than 40 percent of the trips by tuna purse seiners were sampled. This coverage reflects the excellent cooperation obtained from the governments and business enterprises involved on a voluntary basis in the program.

Dr. Hall then reviewed the staff's attempts to reduce dolphin mortality through studies of the performance of the gear and adoption of technological

improvements. Interviews with vessel captains, distribution of floodlights, and assistance with the alignment of dolphin safety panels continued in 1988. It was stressed that the good performance of a vessel is usually the result of the joint efforts by the vessel captain, crew, and manager, but there is also a chance component. The skill and motivation of captains and crews is crucial to reduce dolphin mortality, but it is also necessary that all the equipment needed for this purpose be available and well maintained. Even if every effort is made to reduce the mortality, problems arising from such natural phenomena as strong currents or shifts in wind direction, or from unavoidable breakdowns of equipment, can still result in high mortalities on some sets.

In March 1989 a small jet-powered boat was tested for possible use in dolphin rescue efforts. The preliminary tests were promising, so several are being tried at sea by vessels of the U.S. and Vanuatu fleets.

In April 1989 most of the vessel captains of the Vanuatu fleet were brought together by their manager, who invited IATTC staff members to familiarize them with several issues related to the tuna-dolphin program. The performance of each captain present was discussed with him individually, and some suggestions for future improvements were made.

Chairman Piney asked if there were any questions on the tuna-dolphin program.

Lic. Rosado of Mexico observed that no new advances in dolphin-saving technology had been discussed in the presentation. She said that over the years a number of such advances had been made, such as the the Medina panel, the use of floodlights during sundown sets, the use of rescue rafts, etc., all of which have contributed to reductions in dolphin mortality. She asked if there were any recent improvements in gear technology developed by the IATTC staff or by fishermen which had not been made public. If so, she thought that these should be described, so they could be adopted by vessels of all nations in order to reduce the mortality even further. She also mentioned the saturation effect discussed at the Tuna-Dolphin Workshop held at San José, Costa Rica, on March 14-16, 1989. She noted that there is probably a minimum mortality rate, and it would probably be impossible, or nearly so, to reduce the mortality beyond that minimum. She wanted to know if the IATTC staff could furnish an estimate of that rate.

Dr. Hall responded to the second question first, indicating that with continued cooperation among fishermen, gear experts, and scientists the mortality rate could probably be further reduced to less than half the present rate. This could not be achieved immediately, however. For example, it has taken the U.S. fleet about 15 years to reduce the mortality to the present level. The captains of the non-U.S. vessels have had far less time to learn dolphin-saving techniques, so it would be unreasonable to expect that the mortality rates for non-U.S. vessels would be as low as those for U.S. vessels. In the last 2 years the mortality rate for non-U.S. vessels has been reduced by about 40 percent, and it is not unreasonable to expect that the rate for these vessels can be reduced to the level of the rate for U.S. vessels, provided the non-U.S. vessels are given sufficient time to learn the dolphin-saving techniques more thoroughly. In regard to the first question, he stated that work on net design is currently in progress, but so far nothing which can put into use immediately has been developed. He emphasized that information about any new equipment or techniques which are developed would be

immediately disseminated by the IATTC staff so that all vessels could adopt them.

Professor Le Guen of France stated that there were two points that he would like to make. First, he stated that French scientists have been studying the association of fish with floating objects in the Atlantic and Indian Oceans, and would be willing to cooperate with IATTC scientists in comparing information for the three oceans. Dr. Boely of the Office de la Recherche Scientifique et Technique Outre-Mer is in charge of the French studies. Second, he stated that, since tunas and dolphins are at the same trophic level, exploiting one and protecting the other creates an ecological imbalance. He indicated that the populations of dolphins are probably at higher levels now than they were before man began to exploit tunas, as the dolphins now have less competition from tunas. He called attention to the fact that in the Atlantic Ocean, and probably the Pacific as well, dolphins prey upon tunas. He stated that man is confusing sociological and emotional matters with ecological matters. He also noted that in many parts of the world dolphins are used as food for human consumption, and stated that he would find it difficult to explain to his colleagues in Africa that no catching of dolphins should be permitted, even though harvesting of dolphins would reduce the mortality of humans due to starvation. He concluded by stating that circular reasoning is involved in arguments for the protection of dolphins. Greater effort to protect dolphins results in increased abundance of them, which leads to greater total mortalities, which leads to increased efforts to protect them, and so on.

Dr. Joseph, referring to the earlier remarks by Lic. Rosado, emphasized that there appear to be no developments on the horizon which will drastically reduce or eliminate dolphin mortality. He mentioned several of the modifications of gear and methodology which have produced reductions in mortality in recent years. He said that the best way to further reduce mortality is for all vessels to have the proper gear in working condition and for the fishermen to employ the latest techniques in a conscientious manner at all times. He said that the IATTC staff would continue to encourage use of the best equipment and methodology.

In reference to Professor Le Guen's remarks, he commented that although man knows quite a bit about dolphins, the reason that tunas and dolphins aggregate together is not well understood.

Ms. Scheele of Greenpeace commented on the remarks of Lic. Rosado concerning gear, noting that the U.S. Congress has passed legislation calling for convening of workshops to develop alternatives to purse seining for tunas associated with dolphins. She encouraged the governments of other nations and other interested parties to exchange information with U.S. fishermen and gear experts in an attempt to develop alternative methods of fishing.

Chairman Piney commented on the above remarks, indicating that a realistic solution to the problem of dolphin mortality will be found only if all concerned parties cooperate with one another; no single nation can solve the problem by unilateral action.

Dr. Joseph, referring to Ms. Scheele's remarks, stated that the IATTC staff is ready, as it has been in the past, to participate in efforts to develop new gear and techniques. He stressed, however, that substitution of

longline or pole-and-line gear for purse-seine gear would not be economically feasible, given current catch rates of those gears. He emphasized that gear development should be carried out primarily by engineers and gear experts, rather than by biologists.

Dr. Garcia of the Food and Agriculture Organization of the United Nations commented that the IATTC staff is a scientific body, and that its responsibility is to advise the members of the IATTC and other nations involved in the fishery in the eastern Pacific Ocean of the consequences of the decisions they make concerning the populations of tunas and dolphins. He noted that protection of dolphins would increase their abundance, which would tend to increase the total mortality caused by fishing. This would lead to more stringent measures to protect dolphins, which would further increase their abundance and total mortality, and so on, which is completely illogical. Since the Convention of the IATTC states that its goal is AMSY of tunas, he wondered why it is now attempting to maximize the population of dolphins. It has already been shown by the IATTC staff that the yield per recruit of yellowfin can be increased by directing fishing effort toward larger fish, and that larger fish are usually associated with dolphins. If dolphins are protected the average size of fish in the catch will be reduced, which will decrease the yield. In addition, if tunas and dolphins compete for food, protection of dolphins will reduce the abundance of tunas.

Dr. Joseph commented that the reason for the association of tunas and dolphins, the extent that they compete for food, and the benefits that each derives from association with the other are not well understood. He added that the estimates of absolute abundance of dolphins are rather poor, though reasonably good estimates of the relative abundances of the major stocks are available. These do not show declining trends. More support will be needed if these estimates are to be improved.

Mr. Broadhead of the United States remarked that, in his opinion, the scientists were being too modest in stating the extent of their knowledge about dolphin stocks. Good estimates of mortalities caused by fishing and reasonably good estimates of abundance have been published. The population of dolphins in the eastern Pacific amounts to several million, and the average total annual mortality for the last several years is substantially less than 100 thousand, so the mortality due to fishing is roughly 2 percent of the population. The California gray whale and the bowhead whale are exploited by native fishermen at about the same rate, and both species are considered to be in excellent condition. It appears that the same can be said about the various stocks of dolphins in the eastern Pacific Ocean.

Mr. Morimoto of Japan stated that his government's position on marine mammals is that they are a valuable source of protein, and that man's position in the ecosystem should be considered, along with that of the dolphins. This resource should be rationally utilized to ensure the well-being and survival of the human population. Unavoidable incidental mortalities or harvesting for human consumption should be allowed, so long as the stocks of dolphins are not endangered. The Japanese government supports continued research on dolphins, and believes that such research must be reflected in formulation of the Commission's budget.

As there was no further discussion on the tuna-dolphin program, Chairman Piney said that he would give a brief and non-technical review of the Tuna-

Dolphin Workshop held in San José, Costa Rica, on March 14-16, 1989. He noted that three of the four background documents for that meeting were attached as appendices to Background Paper 6 of the present meeting. He said that evidence presented at the San José meeting showed that the major stocks of dolphins had been stable over the last 5 to 6 years and that the total mortality of dolphins had decreased during the last 3 years by about 40 percent. He noted that one of the special points of interest at the meeting was a review of U.S. laws for the protection of dolphins presented by the U.S. delegation. He called attention to the fact that the U.S. government was requiring any nation wishing to export yellowfin tuna caught in the eastern Pacific Ocean to the United States to require that its vessels meet standards of performance comparable to those met by U.S. vessels. Nations whose vessels do not meet those standards would have embargoes placed on yellowfin tuna and its products they wished to export to the United States. In addition, intermediary nations trading tuna products with both a nation subject to embargo and the United States would be required to cease trade in tuna products with the former or be subject to embargo of its tuna products by the United States. If that did not resolve problem the Pelly Amendment, which provides for an embargo of all fish products, could be applied. He mentioned a document drafted by representatives of all the Latin American nations attending the San José meeting, and endorsed by the delegations of France, Japan, and Spain, challenging the legislation established by the United States as arbitrary, unscientific, and setting a dangerous precedent in reference to the recent Law of the Sea and General Agreement of Tariffs and Trade (GATT). He concluded his remarks by noting that the issue of data confidentiality had been raised at the San José meeting, and asked Dr. Joseph to comment on that matter.

Dr. Joseph stated that at the San José meeting the U.S. government had requested that the staff of the IATTC provide data collected by its scientific technicians to the various governments so that those governments could take whatever steps were necessary to enforce their regulations for the protection of dolphins. He noted that this would be contrary to Article I, Paragraph 15, of the IATTC's Convention, and would jeopardize the Commission's data collection program which had functioned so well for nearly 40 years. It was suggested at the San José meeting that the governments could require that their fishermen furnish them with the necessary data directly, rather than using the IATTC as an intermediary. Dr. Joseph had prepared a memorandum to the Commissioners which explained how this could be done. Copies of this memorandum had been furnished to all the attendees.

Chairman Piney asked if everyone agreed with this approach, and all present indicated that they did.

Mr. Morimoto commented that the Marine Mammal Protection Act (MMPA) of 1972 of the United States, with its recent amendments, undermines the world free trade system which was created with due consideration to the views of all concerned nations. The likely result would be confusion and economic hardship. While Japan appreciates the concept of protection of marine mammals, it believes that extreme and irrational measures toward this end could be considered as unilateral coercion. Furthermore, the Pelly Amendment, which sets extraordinary trade barriers against nations not involved in the tuna fishery in the eastern Pacific Ocean, may violate the GATT. Japan therefore requests that the MMPA be changed, and that the U.S. government refrain from implementing such measures.

Mr. Van Depoele of the European Economic Community (EEC) said that he wanted to inform all the attendees that the EEC has expressed a great deal of concern over the amendments to the MMPA, and has addressed the U.S. government regarding this matter through the EEC delegate in Washington.

Chairman Piney commented that discussion concerning amendments to the MMPA should not continue too long, and that the governments of all nations would have the opportunity to discuss this matter directly with representatives of the U.S. government.

AGENDA ITEM 7 - RECOMMENDATIONS FOR 1989

Chairman Piney reminded the attendees that Dr. Joseph had recommended a yellowfin catch quota for the CYRA of 220 thousand short tons, with two increments of 30 thousand tons each to be added at the discretion of the Director. This recommendation was approved unanimously by the member delegations, so Chairman Piney asked Dr. Joseph to prepare a written resolution for formal approval by the Commissioners.

Lic. Martínez of Nicaragua asked, in light of this quota, what mortality of dolphins would be expected. Dr. Joseph replied that it was difficult to estimate this because there are so many variables involved. Since the mortality of dolphins had been reduced by 40 percent since 1986, it would not be unreasonable to expect that it would reduced by another 10 percent or so in 1989. Dr. Hall reiterated these points, and indicated that in recent years the mortality had been reduced by 20 percent per year.

Chairman Piney indicated that reduction in the future at the same rate as in the past few years would be a highly desirable objective.

Lic. Martínez remarked that if reduction in dolphin mortality could be continued at the rate of the last few years there is reason for optimism concerning the condition of the stocks. He emphasized that the IATTC staff must continue its work, as it is clear that positive results are being achieved.

Mr. Morimoto, referring to the quota recently approved, asked how the 30-thousand-ton increments would be implemented. Dr. Joseph replied that the increments are implemented on the basis of current indicators of the condition of the fishery, such as catch per unit of effort and size of the fish caught. If the indices indicated that the stock could support increased catches the nations participating in the fishery would be so advised and the increments would be implemented. Dr. Joseph noted further that since 1979 there had been no implementation of the recommended quotas. This was due primarily to differences among some of the nations as to how the quotas should be implemented. He also mentioned that it was unlikely that the quota for 1989 would be implemented.

AGENDA ITEM 8 - RECOMMENDED RESEARCH PROGRAM AND BUDGET FOR 1990-1991

Chairman Piney turned the floor over to Dr. Joseph for discussion of the proposed IATTC budget for 1990-1991. Dr. Joseph said that the proposed budget was described in detail in Background Paper 3 for the meeting. He indicated that, for the first time in many years, a substantial increase in the budget was being proposed. This increase would amount to $1,434,790, of which

$181,020 would be to cover increased costs due to inflation. The remainder was for the estimated cost, $1,253,770, of placing scientific technicians on all trips of purse seiners fishing for tunas associated with dolphins, rather than on a sample of such trips. This increase is proposed because of the strong possibility that 100-percent coverage will be required to meet the requirements of recent amendments to the MMPA of the United States. If these requirements are not met, there is a high probability that the international trade of yellowfin tuna and other fish products among the nations of the world would be adversely affected.

Mr. Morimoto expressed the opinion of the government of Japan regarding the IATTC budget. He indicated, in conclusion, that it would be most reasonable for the tuna-dolphin study to be conducted in 1991 at the current level. This opinion appears as Appendix 2 to these minutes.

Chairman Piney then adjourned the meeting until the following day. Before doing so, however, he reminded the Commissioners that a decision on the budget was to be made the following day, and that that would require unanimity.

AGENDA ITEM 7 - RECOMMENDATIONS FOR 1989

The meeting was reconvened at 9:40 a.m., May 12, 1989, by Chairman Piney. He announced that, before discussing the budget, he would like to obtain formal approval of the resolution for a yellowfin quota for 1989 prepared by Dr. Joseph, which had been distributed to the attendees. After a short discussion, the resolution was approved by the member nations of the IATTC. This resolution appears as Appendix 3 of these minutes.

AGENDA ITEM 8 - RECOMMENDED RESEARCH PROGRAM AND BUDGET FOR 1990-1991

Chairman Piney reminded the Commissioners that the proposed budget had been presented the previous day by Dr. Joseph, and that the Japanese delegation had indicated that it could not support it. He then called for further comment on the budget.

Mr. Garo of France commented that his government supported, in principle, the study of dolphins taken in association with tunas, and made references to French involvement in marine mammal research in various parts of the world, but noted that an increase in funding of 40 percent is not compatible with budgetary guidelines set by the French government. Accordingly, France would not support such a substantial increase in the budget of the IATTC.

Mr. Fullerton of United States indicated that his government supports the increased budget. He noted that if more data on dolphins are collected better estimates of their status will be obtained.

Lic. Arosemena of Panama stated that the staff of the IATTC had shown that 33-percent coverage of fishing trips is adequate for estimating the incidental mortality of dolphins with a high degree of confidence. It would therefore be unnecessary to sample beyond that level, and to do so would constitute indirect acceptance of regulations set by the U.S. government. Panama, therefore, voted against the budget increase.

Lic. Martínez of Nicaragua said that Lic. Arosemena had expressed her country's position regarding 100-percent coverage in a most logical way. Since Nicaragua's position is the same as Panama's, his government could not support the proposed increase.

Chairman Piney indicated that the budget, as presented, did not have sufficient support for approval. Commenting on the fact that the art of governing is the art of predicting, he asked Dr. Joseph if he had prepared an alternate budget, to be submitted for approval in case the original budget was rejected. Dr. Joseph replied affirmatively, and stated that the alternate budget was identical to that of 1989-1990, except for an increase of $181,020 to cover increased costs due to inflation (Appendix 4).

Chairman Piney called for comments on the new proposed budget. The delegations of France, Panama, and Nicaragua all approved it. Mr. Fullerton of the United States stated that his country had no objection to accepting it. He asked, however, if the need for increased knowledge of dolphins became evident, and funds became available from extra-budgetary sources, would the Director accept such funds. Chairman Piney asked Dr. Joseph to comment on that. Dr. Joseph replied that the Commission had often received funds from extra-budgetary sources in the past, and it was his intention to do so in the future if such funds were to become available.

Mr. Morimoto indicated that Japan approved the new budget, but emphasized that the funds in Item H were to be used to maintain coverage by scientific technicians on tuna vessels during 1991 at the current level.

Chairman Piney indicated that the budget had been approved, and would be used to carry out the research during the 1990-1991 fiscal year as indicated.

AGENDA ITEM 9 - AN UPDATE OF ACTIVITIES CONCERNING ARRANGEMENTS FOR TUNA MANAGEMENT IN THE EASTERN PACIFIC

Chairman Piney asked Dr. Joseph to discuss this subject.

Dr. Joseph recalled that during the past few years there had been a number of attempts to develop new systems for management of tunas in the eastern Pacific Ocean. Some of these would complement the work of the IATTC and others would attempt to replace it.

A number of nations held a series of meetings during the 1977-1979 period to attempt to formulate a new treaty for tuna management in the eastern Pacific. The new treaty would deal with a number of problems, such as allocation and access, and would expand the IATTC to include responsibility for these. Final agreement was not reached on this proposal.

Three of the nations involved in the 1977-1979 initiative drafted a new treaty, the Eastern Pacific Ocean Tuna Fishing Agreement, to resolve the access problem only. This treaty would provide for access to the resource through an international licensing scheme. The license fees would be disbursed to the respective coastal states which ratify the treaty, by a formula which takes into account the amounts of fish caught in their Exclusive Economic Zones by purchasers of licenses. So far, five nations have signed this treaty, but only three have ratified it. Five ratifications are needed for the treaty to come into effect.

Another attempt to formulate a new treaty has been initiated by the Organización Latinamericana del Desarrollo Pesquero. This treaty has been under negotiation for more than 5 years. One plenipotentiary meeting and numerous informal meetings have been held, but so far the nations have been unsuccessful in agreeing on a draft treaty.

Chairman Piney called for comments on Dr. Joseph's review. Mr. Hallman of the United States noted that, although the United States has not been involved in all of the negotiations mentioned above, it does not appear that all of them are following the same path, nor that all of them will be successful. The United States believes that a new and broader effort is needed. He indicated that his government has had informal discussions with various governments on this issue, and he is hopeful that a serious dialogue can develop. While the United States explores such options, it continues to support the IATTC as the only regional body in the eastern Pacific competent to deal with tuna research and management. As the IATTC has done an outstanding job for nearly 40 years, the United States would not support any negotiating approach which would undermine its work.

Chairman Piney next stated that a memorandum written by Dr. Joseph that dealt with the issue of procedures for admitting new members to the IATTC had been distributed to the attendees. He called upon Dr. Joseph to discuss this matter. Dr. Joseph reviewed the present procedure for adherence of prospective members to the IATTC. Such nations must first seek permission from all the current members and, after receiving such permission, must address a communication to the depository government, the United States, stipulating that it has received approval from all the current members of the IATTC. This is a lengthy and cumbersome procedure, and in the past attempts of nations to become members of the IATTC have been thwarted. Some other international organizations have membership requirements which are less cumbersome that those of the IATTC. In some cases, only a letter of adherence is required. Dr. Joseph suggested that the member governments might wish to initiate discussions regarding simplifying adherence to the IATTC. He mentioned two possibilities. The first would require that a nation wishing to join the IATTC would write a letter to each of the members stating that it wished to join the IATTC and would deposit its instrument of adherence with the depository government. Approval of the current members would not be required. The second would require that a nation wishing to join would write a letter to each of the members stating that it wished to join the IATTC. If no negative reply was received within a stipulated period its instrument of adherence would be deposited with the depository government. Dr. Joseph emphasized that he was suggesting only that the member governments might wish to initiate discussions regarding this matter, rather than expecting that they make a decision at the present meeting.

Chairman Piney asked for comments.

Mr. Morimoto said that he had only recently seen the memorandum prepared by Dr. Joseph, and thus had not had time to discuss it with the legal experts of his country. He stated that he hoped that this matter could be discussed at the next meeting of the IATTC.

Chairman Piney emphasized that at this time the intention was only to make everyone aware of the problem, so that a decision could perhaps be made at the IATTC meeting to be held in the spring of 1990. He mentioned, however,

that perhaps there should be a special meeting to discuss this matter before that meeting. He also mentioned that perhaps the Director should prepare a background paper on this subject and distribute it to all the member nations, after which they could decide whether to have a special meeting prior to the meeting in the spring of 1990. The background paper would include descriptions of the procedures for adhering to other international organizations, such as the International Commission for the Conservation of Atlantic Tunas, the International Commission for the Southeast Atlantic Fisheries, and the Northwest Atlantic Fisheries Organization. This background paper, with an accompanying letter, would go to the Commissioners and/or the foreign offices of the member nations.

Chairman Piney next commented on the matter of membership of the EEC in international organizations. He noted that the EEC represents its members in some international organizations, but that it would probably not do so in the IATTC because Article V, Paragraph 3, of the IATTC Convention refers to memberships of governments only.

Mr. van Depoele of the EEC made an informal statement describing the purposes and objectives of his organization. He noted that the 12 member nations of the EEC have transferred their competence in international negotiations regarding fishery matters to the EEC. This does not apply to the overseas territories of the member nations, however. He mentioned that, since a discussion of possible changes to the procedures for adherence to the IATTC is underway, the Commissioners may wish to consider the possibility of providing the opportunity for membership of international organizations for regional economic integration. He repeated that his remarks were informal.

Lic. Martínez of Nicaragua commented that he had no objection to international organizations belonging to the IATTC, but he doubted that they should have the opportunity to vote.

Chairman Piney commented that Dr. Joseph's background paper should mention the issue of memberships of international organizations for regional economic integration.

Mr. Hallman of the United States reiterated the remarks of the Chairman that consideration should be given to the possibility of holding a special meeting to discuss these matters before the meeting in the spring of 1990.

Lic. Arosemena of Panama mentioned that Dr. Joseph's background paper should be distributed before a decision was made regarding a special meeting.

Chairman Piney commented that perhaps the special meeting could be in conjunction with the next regular meeting of the IATTC. In any case, the background paper by Dr. Joseph should be completed as soon as possible.

Mr. Hallman expressed concern that a meeting held in conjunction with the regular IATTC meeting might not provide sufficient time to address the issue, and therefore a separate meeting might be more appropriate.

Chairman Piney noted that if a discussion of this issue is not held until the spring of 1990, it would probably be at least 2 years before the matter could be resolved. In any event, Dr. Joseph should prepare and distribute his

background paper on the subject within the next few months so that the members could begin their review process.

Mr. Riepen of Vanuatu stated that the government of his country had taken action on May 3, 1989, to adhere to the IATTC Convention. He noted that Vanuatu's reasons for wishing to adhere were (1) longtime participation by Vanuatu in the fishery for tunas in the eastern Pacific, (2) confidence and support of the government of Vanuatu in the program of the IATTC, and (3) the Vanuatu government's view that the fishery for tunas associated with dolphins is an international issue to be dealt with by international treaties, rather than by national legislation of a single country.

Chairman Piney noted that the government of Costa Rica had expressed interest in rejoining the IATTC and, having received positive responses from all members, would be resuming membership very soon.

AGENDA ITEM 10 - PLACE AND DATE OF NEXT MEETING

Chairman Piney called for comments regarding the place and date of the next meeting. Mr. Fullerton of the United States graciously extended an invitation from his country to hold the meeting in Washington, on a date to be decided later. There was unanimous agreement to this.

AGENDA ITEM 11 - ELECTION OF OFFICERS

Mr. Piney of France nominated a Commissioner from the United States for the office of Chairman, and the nomination was approved unanimously. Mr. Fullerton of the United States, after thanking the other Commissioners for their confidence, accepted the nomination and indicated that a person for this office would be designated later.

Lic. Martínez of Nicaragua nominated Lic. Dalva Arosemena of Panama as Secretary for the next meeting. The delegations of the other countries all supported the nomination, and Lic. Arosemena was elected. She thanked the other Commissioners for this honor.

AGENDA ITEM 12 - OTHER BUSINESS

Mr. Vylegzhanin of the USSR thanked the member countries of the IATTC for inviting his country to send a representative to its 46th meeting. He noted that the IATTC was recognized for the skillful way in which it had dealt with complicated issues of tunas and dolphins in the eastern Pacific Ocean. His government agrees with the concept of international bodies such as the IATTC, and supports their work. He complimented the staff for its ability to integrate complex biological and oceanographic factors to carry out its work. In closing, he expressed his thanks to the government of France for its hospitality.

AGENDA ITEM 13 - ADJOURNMENT

As there was no more other business, the meeting was adjourned at 12:55 p.m.

APPENDIX 1--ANEXO 1

LIST OF ATTENDEES--LISTA DE PARTICIPANTES

MEMBER GOVERNMENTS--GOBIERNOS MIEMBROS

FRANCE--FRANCIA

Dominique Piney, Commissioner--Delegado
Philippe Garo, Acting Commissioner--Delegado Interino
Loïc Antoine
Patrick Bachellerie
Thierry Boely
Michel Dion
Michel Goujon
Bernard Labrousse
Jean-Claude Le Guen
Gustave Levi
Bernard Liorzou
Norbert C. Niwes
Alain J. Parres

JAPAN--JAPON

Minoru Morimoto, Acting Commissioner--Delegado Interino
Yutaka Aoki
Masaaki Okajima
Eiki Ozaki
Toyama Toshikuzu

NICARAGUA

Sergio Martínez Casco, Commissioner--Delegado

PANAMA

Dalva Helena Arosemena Machado, Commissioner--Delegado

UNITED STATES OF AMERICA--ESTADOS UNIDOS DE AMERICA

Robert C. Macdonald, Commissioner--Delegado
Charles E. Fullerton, Acting Commissioner--Delegado Interino
Gordon C. Broadhead
August Felando
Wm. J. Gillis, Jr.
Avelino Gonsalves
Brian Hallman
S. B. Irvine
Paul Krampe
Michael McGowan
Joe Medina, Jr.
Gary T. Sakagawa
Manuel A. Silva
Gary Smith
Ed Stockwell

Manuel Vargas
Robert Virissimo

OBSERVER GOVERNMENTS--GOBIERNOS OBSERVADORES

COSTA RICA

Lina Barrantes
Oscar Castillo Herrera

ECUADOR

Luis Torres Navarrete

EL SALVADOR

Gonzalo Beltrán Castro
Juan Pablo Meza

MEXICO

Margarita Rosa Rosado Matos
Damaso Luna Corona
Francisco Rangel Castelazo
Hugo H. Villanueva

PERU

Augusto Thornberry

SEYCHELLES

Joel Nageon de Lestang

SPAIN--ESPAÑA

Rafael Cavestany
Ignacio Lachaga
Cesar Seoanez Calva

TAIWAN

Ming Chu
Shin-Fuu Fuh
Po-Wei Yuan

UNION OF SOVIET SOCIALIST REPUBLICS--UNION DE REPUBLICAS SOCIALISTAS SOVIETICAS

Victor Tsoukalov
Alexandr N. Vylegzhanin

VANUATU

Michael Riepen

VENEZUELA

Jorge Daher
Carmelina Gentile de Natoli
Carlos Gimenez

INTERNATIONAL ORGANIZATIONS--ORGANIZACIONES INTERNATIONALES

EUROPEAN ECONOMIC COMMUNITY--COMUNIDAD ECONOMICA EUROPEA

Laurent Van Depoele
Constantin Vamvakas

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS--ORGANIZACION DE LAS NACIONES UNIDAS PARA LA AGRICULTURA Y LA ALIMENTACION

Serge M. Garcia
Michael A. Robinson

ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT--ORGANIZACION PARA COOPERACION Y DESARROLLO ECONOMICO

Masara Okuno

OTHER ORGANIZATIONS--OTRAS ORGANIZACIONES

GREENPEACE

Lisa Beale-Howard
Mulvaney Kieran
Lesley Scheele

IATTC STAFF--PERSONAL DE CIAT

James Joseph
Martín A. Hall
Berta N. Juarez

APPENDIX 2

STATEMENT SUBMITTED BY JAPAN REGARDING THE IATTC BUDGET

Thank you, Mr. Chairman.

1. I would like to express the opinion of the Japanese government regarding the proposed program which would place scientific technicians aboard 100 percent of the trips of purse seiners equipped to fish for tunas associated with dolphins and in which the number of trips carrying scientific technicians would increase from 190 trips in 1989 to 425 trips in 1991.

2. As you know, there are no Japanese purse seiners fishing for tunas associated with dolphins in the eastern Pacific Ocean. Japan considers that the incidental take of dolphins by tuna purse seiners is basically a problem of the nations which have vessels participating in this fishery. Japan has no objections to the IATTC staff conducting research on the effects of purse-seining operations on dolphins or studying methods to reduce the incidental mortality of dolphins during fishing operations, as secondary objectives to the main function of the IATTC, which is to keep the tuna populations at levels which will support the maximum sustainable yields.

3. However, it seems to us that placement of technicians aboard 100 percent of the trips of purse seiners operating on the high seas can be attributed to enforcement, rather than to research. Given that fact, in this case Japan considers it inappropriate that the IATTC ensure, from its budget, that technicians accompany the vessels on 100 percent of their fishing trips, because primary responsibility for enforcement should be taken by the governments of the nations where those vessels are registered. Therefore, the nations which have tuna purse seiners should take the necessary measures, including placement of observers or enforcement officers aboard the vessels, to ensure compliance with their national regulations with respect to avoidance of incidental take of dolphins by purse seiners. Furthermore, we think that, in principle, participation of the member nations in the scientific technician program of the IATTC should be voluntary.

4. Surely, we understand that it is necessary to know the level of incidental mortality of dolphins to assess the effects of fishing operations on dolphin populations. According to Background Paper 6 for this meeting, simulation studies indicate that a sampling coverage of 25 percent is most suitable from the cost-benefit standpoint. Taking into account data losses, a sampling coverage of 33 percent is most suitable, and increasing the coverage beyond 33 percent would cost a great deal, and would not increase the reliability of the data very much. In conclusion, we do not recognize the necessity for increasing the sampling coverage by scientific technicians to 100 percent.

5. It is considered that the proposed measures for placement of technicians aboard 100 percent of the trips of purse seiners by the IATTC is closely related to the U.S. domestic regulations, which require that each U.S. purse seiner carry an official observer, certified by the Secretary of Commerce, on every trip during the 1989-1991 period. Japan does not consider it appropriate that an international organization such as the IATTC should undertake measures for the purpose of realizing the domestic policy of a single country, and such action could lead to collapse of the IATTC.

6. Finally, my delegation thinks that it would be most reasonable for the tuna-dolphin study for 1991 to be conducted at the current scale.

APPENDIX 3

RESOLUTION

The Inter-American Tropical Tuna Commission, having the responsibility for management of tunas and tuna-like fishes of the eastern Pacific Ocean, and having maintained since 1950 a continuing scientific program directed towards the study of such resources,

Notes that the yellowfin tuna resource of the eastern Pacific supports one of the most important surface fisheries for tunas in the world, and

Recognizes, based on past experience in the fishery, that potential production from the resource can be reduced by excessive fishing effort;

Recalls that from 1966 through 1979 the implementation of a successful conservation program maintained the yellowfin stocks at high levels of abundance, and

Notes that from 1980 through 1986, and in 1988, although no conservation program was implemented, conservation measures were nevertheless recommended by the scientific staff to the Commissioners, and in turn such measures were recommended by the Commissioners to their respective governments, and

Observes that, at current levels of abundance and at current fleet capacity, the stocks of yellowfin can be over-exploited, and

Concludes that a limitation on the catch of yellowfin tuna should be implemented during the 1989 fishing year.

The Inter-American Tropical Tuna Commission therefore recommends to the High Contracting Parties that when a yellowfin conservation program is adopted for 1989, an annual quota of 220,000 short tons should be established on the total catch of yellowfin tuna for the 1989 calendar year from the CYRA as defined in the resolution adopted by the Commission on May 17, 1962, and

Further recommends that the Director should be authorized to increase this limit by no more than two successive increments of 30,000 short tons each if he concludes from examination of available data that such increases will offer no substantial danger to the stock, and

Finally recommends that all member states and other interested states work diligently to achieve the implementation of such a yellowfin conservation program for 1989.

APPENDIX 4--ANEXO 4

BUDGET FOR 1990-1991 AND CHANGES RELATIVE TO BUDGET FOR 1989-1990--
PRESUPUESTO PARA 1990-1991 Y CAMBIOS RELATIVOS AL PRESUPUESTO DE 1989-1990

Project Proyecto	Recommended expenditures, 1990-1991 Gastos recomendados, 1990-1991	Changes relative to 1989-1990 Cambios relativos a 1989-1990
Administrative and other costs jointly chargeable to all projects--Gastos administrativos y otros gastos asignados en conjunto a todos los proyectos	$349,780	+$16,777
Collection and analysis of catch and effort statistics--Recolección y análisis de estadisticas de captura y esfuerzo	545,378	+17,603
Investigations of the biology of tunas and billfishes--Investigación sobre la biología de los atunes y peces espadas	1,244,792	+65,327
Tuna ecology and oceanography--Ecología de los atunes y oceanografía	54,700	+4,822
Tuna tagging--Marcado de atunes	206,610	+12,665
Tuna-dolphin studies--Invetigaciónes de atún-delfín	1,304,760	+63,826
Total	3,706,020	+181,020