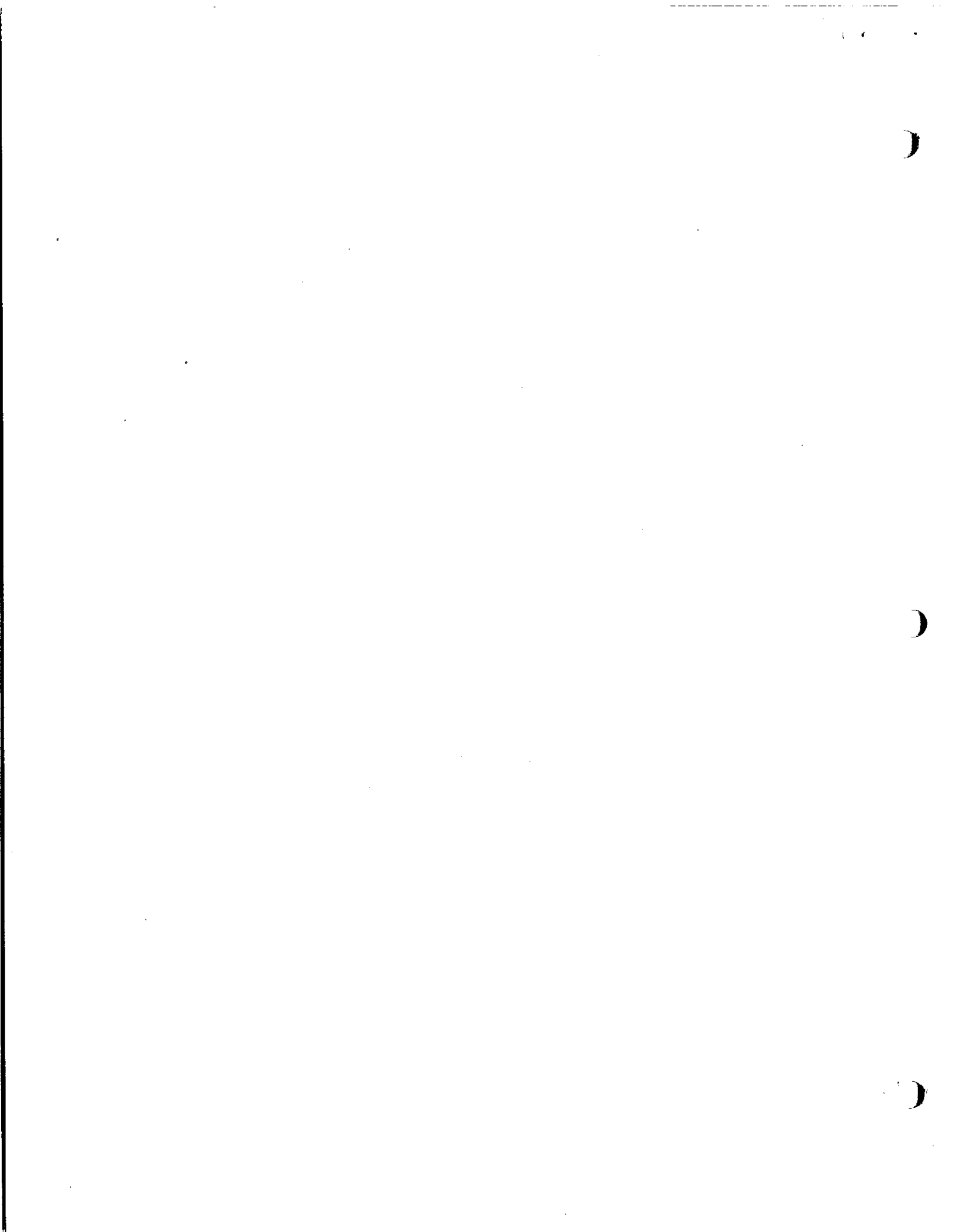


INTER-AMERICAN TROPICAL TUNA COMMISSION
SUMMARY MINUTES OF THE FORTY-THIRD MEETING

October 15-16, 1985

Tokyo, Japan

Chairman: Satoshi Moriya



AGENDA

43RD MEETING OF THE INTER-AMERICAN TROPICAL TUNA COMMISSION

October 15-16, 1985

Tokyo, Japan

1. Opening of the Meeting
 2. Consideration and Adoption of the Agenda
 3. Review of Current Tuna Research
 4. Review of the Tuna-Dolphin Program
 5. The 1985 Fishing Year
 6. Condition of the Yellowfin Stock and Recommendation for 1986
 7. Recommended Research Program and Budget for 1987-1988
 8. An Update of Activities Concerning Arrangements for Tuna Management in the Eastern Pacific
 9. Place and Date of Next Meeting
 10. Election of Officers
 11. Other Business
 12. Adjournment
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AGENDA ITEM 1 - OPENING OF THE MEETING

The 43rd meeting of the IATTC was called to order by the Chairman, Mr. Satoshi Moriya of Japan, at 10:30 a.m., October 15, 1985, at the Ministry of Foreign Affairs in Tokyo, Japan. His opening remarks are in Appendix 1. He then introduced His Excellency, Director General Hiroya Sano of the Fisheries Agency of Japan, who gave the welcoming address. This address is in Appendix 2. At 10:40 a.m. Chairman Moriya suggested that there be a brief recess.

The meeting was reconvened at 10:55 a.m., at which time Chairman Moriya called upon the leaders of the various delegations to introduce themselves and the other members of their delegations. These are listed in Appendix 5.

AGENDA ITEM 2 - CONSIDERATION AND ADOPTION OF THE AGENDA

Chairman Moriya called for opinions on the draft agenda. After a brief discussion, this was adopted without change. It was decided that the meeting times would be 10:00 a.m. to 12:00 noon and 2:00 to 5:00 p.m. Chairman Moriya invited the attendees to a reception hosted by the Commissioners of Japan, Messrs. Susumu Akiyama, Yamato Ueda, and himself, at the Imperial Hotel on October 15 at 6:00 p.m. He also announced that the attendees were invited to a reception hosted by the Japan Tuna Fisheries Cooperative Associations at the Capitol Tokyu Hotel on October 16 at 6:30 p.m.

AGENDA ITEM 3 - REVIEW OF CURRENT RESEARCH

Chairman Moriya introduced Dr. Joseph, Director of the IATTC. Dr. Joseph said that it was customary to review the IATTC's research program at the IATTC meetings, as this made it possible for the Commissioners to ask questions and make suggestions regarding the research, thus making the program responsive to current needs. He then introduced the staff's new Chief Scientist, Dr. Robert E. Kearney, who had previously done important work on tunas with the Department of Primary Industry of Papua New Guinea and with the South Pacific Commission.

Dr. Kearney began by stating that the IATTC staff's research can be divided into three primary categories, data gathering, data processing, and analyses of numerical and biological data.

Data gathering is the first step in any research, and if this is not carefully planned and executed the research will be of little value. The two most extensive data gathering tasks undertaken by the IATTC staff are the catch and effort data collection and length-frequency sampling carried out at ports where tunas caught in the eastern Pacific are landed and the scientific technician program in which persons trained by the IATTC staff accompany tuna fishing vessels and collect data on distribution and abundance of dolphins and the numbers of them accidentally killed during fishing operations. Because of recent changes in the ports where tunas are landed a new office was opened in Venezuela in 1985 and an additional employee was assigned to Mexico. At the same time the number of employees doing this type of work in California was reduced. The scientific observer program is continuing to do well, with cooperation from the governments of nearly all the member and non-member countries which have vessels participating in the fishery.

The staff's data processing capabilities increased several fold in 1985 when its PDP 11 computer was replaced by a VAX 750 machine. The conversion has taken about 6 months to complete, but there is no doubt that the net results, increased efficiency and enhanced capability, have more than justified the expense and temporary disruption of activities. The staff is grateful to the United States for extra funding which made this purchase possible.

The most visible aspect of the staff's analyses of data is stock assessment, as the results of this research often directly affect the tuna fishing industry. Such studies are carried out on yellowfin, skipjack, bluefin, bigeye, black skipjack, and dolphins, and the results are summarized in Background Papers 2, 4, 5, and 6 for this meeting. These analyses are the result of integration of results obtained from all of the research conducted by the staff. Some of these, principally those which are not covered in detail in the background papers for this meeting, will now be briefly discussed.

Studies of the age and growth of tunas are of fundamental importance for improving understanding of their general biology and productivity, defining their stock structure and mixing rates, and conducting yield-per-recruit and cohort analyses. The age and growth of tunas have been studied in the past by analysis of length-frequency, tagging, and hard part data. At present the most emphasis is being given to studies of the physical characteristics of hard parts, but analysis of the microchemistry of hard parts looks promising. The studies of the physical characteristics of hard parts include an analysis of the age and growth of yellowfin from otoliths and studies of the age and growth of bluefin from otoliths and vertebrae. So far the microchemistry studies have been conducted only with Atlantic bluefin, but the results have been encouraging, and it is hoped that funding can be obtained so that they can be applied to yellowfin.

A study on the sex ratios of yellowfin and one on the reproductive biology of black skipjack have recently been completed. It has been known for some time that males are more numerous than females among yellowfin greater than 130 cm (about 110 lb or 50 kg). All the available data have now been analyzed, and it appears that, although there are some differences among areas and time periods, the phenomenon is common to the whole of the tropical eastern Pacific. A description of the difference in growth for male and female yellowfin resulting from a study of the daily growth marks on the otoliths strongly suggests that the difference is due mainly to greater mortalities of the females, rather than to differential growth rates or sex reversal. A study of the reproductive biology of yellowfin, using techniques developed during the black skipjack study, has recently begun.

A great deal is known about the biology of tunas of catchable size, and plankton surveys have revealed some information about the larvae. Almost nothing is known about the period between metamorphosis of the larvae and recruitment into the fishery, however. To fill this gap a laboratory has been established at Achotines, Panama. This facility includes generators, indoor and outdoor tanks with running seawater, outdoor ponds, laboratories, and living facilities for the persons working there. The principal purpose of the facility is to attempt to rear yellowfin and other scombrids from larvae to weights of about 1 kg (2 lb) to study their growth, mortality, behavior,

physiology, etc. In addition, however, some attention is being given to studies, in cooperation with the Ministry of Commerce and Industry of Panama, of the biology of other fish of economic importance in the area.

Two manuscripts on the general subject of feeding, energetics, and predator-prey relationships of yellowfin have recently been accepted for publication in outside journals. The results have suggested no compelling evidence for or against availability of food as a limiting factor for yellowfin abundance in the eastern Pacific. A lesser amount of work of this nature has been done with black skipjack.

Tag return data yield information on migrations and stock structure, growth, mortality, and behavior of tunas. Tagging has been an important aspect of the staff's research during most of the years of the IATTC's existence, but the field aspects of this work have been curtailed in recent years. Analysis of data collected in past years has continued, however. Recent work includes analyses of the growth of yellowfin, skipjack, and bluefin and studies of the schooling behavior of skipjack.

The problems of stock identification and evaluation of the amount of exchange among stocks have plagued scientists for many years. A knowledge of stock structure is implicit in most management decisions, and yet there is little or no knowledge of this in many cases. Studies of the microchemistry of the hard parts, mostly supported by the U.S. National Marine Fisheries Service (NMFS), seem to have great promise for alleviating this problem. The thesis is that the chemical composition of the water is different in different parts of the ocean and that the hard parts of the fish acquire characteristics from the water they inhabit. Accordingly, the centers of the vertebrae of bluefin hatched in the western Atlantic are different in chemical composition from those of bluefin hatched in the eastern Atlantic. Furthermore, if a bluefin hatched in the western Atlantic migrates to the eastern Atlantic the parts of the vertebrae further out from the center will acquire characteristics from the eastern Atlantic. Thus the history of any fish can be determined by chemical of its vertebrae from the center to the edge. The concept is simple, but accomplishing the analyses is difficult. Essentially, this is carried out by bombarding sections of the vertebrae with protons and measuring the emissions. Getting all the equipment to working properly has taken considerable time and effort, but most of the problems have now been solved, and preliminary estimates of the mixing rates of bluefin in the Atlantic Ocean have been obtained.

Changes in environmental conditions can have major impacts on the distribution and vulnerability of tunas, as is evident from the effects of recent El Niños on various tunas fisheries. During the period of the IATTC's existence there have been seven El Niños, including three major ones in 1957-1958, 1972-1973, and 1982-1983. The impacts of El Niños are not always the same, so careful analysis is necessary. The El Niño of 1982-1983 was the strongest of the 20th century, and its effects were felt throughout the Pacific Ocean and in other parts of the world. Of particular interest to those concerned with tuna fishing is the shoaling of the thermocline in the western Pacific at the same time as the thermocline deepened in the eastern Pacific.

Dr. Kearney concluded his presentation at 12:20 p.m. Chairman Moriya announced that the meeting would be adjourned until 2:20 p.m.

The meeting was reconvened at 2:30 p.m., Chairman Moriya calling for questions regarding the material Dr. Kearney had presented in the morning. Chairman Moriya asked for details regarding the El Niño event of 1982-1983. Dr. Kearney stated that it was characterized by major changes in the horizontal and especially the vertical distributions of tunas in the Pacific Ocean. In the eastern Pacific the thermocline became deeper, making yellowfin less vulnerable to the fishery, whereas in the western Pacific the opposite was apparently the case. This resulted in reduced fishing effort in the eastern Pacific and increased fishing effort in the western Pacific. The vulnerability of skipjack in the eastern Pacific was probably also reduced, but this is difficult to measure because reduced prices for this species induced the vessels to concentrate their efforts in areas where yellowfin were most abundant.

Dr. Joseph next introduced the cooperative research carried out by the Far Seas Fisheries Research Laboratory (FSFRL), formerly the Nankai Regional Fisheries Research Laboratory, and the IATTC. This collaboration has resulted in a series of reports analyzing the longline fishery in the eastern Pacific Ocean during the 1956-1970 period. Recently Dr. Ikuo Ikeda, Director of the FSFRL, has permitted Mr. Naozumi Miyabe to spend one year at La Jolla, working with IATTC staff members on the data for 1971-1980. Dr. Joseph then introduced Mr. Miyabe, who would describe that work.

Mr. Miyabe began by thanking Dr. Ikeda for permitting him to use the data and Dr. Joseph for inviting him to work in La Jolla. The previous reports of the series dealt only with the fishery to the east of 130°W, but in the most recent work the coverage was extended to 150°W. It seems appropriate to extend the coverage to 150°W, as this coincides with the western limit of the eastern Pacific surface fishery. In addition, the enlarged area facilitates the study of bigeye, which is the most important species taken by the longline fishery in the eastern Pacific. Several changes occurred in the longline fishery in the eastern Pacific during the 1971-1980 period. During 1963-1975 the fishing effort remained virtually level, at 70 to 100 million hooks, but during 1976-1978 it increased to about 140 million hooks and remained at that level during 1979-1980. The total catch also increased during the 1971-1980 period, but not as much as the effort. The percentage of bigeye in the catches increased, while those of the other species remained about the same or declined. This was at least partly due to greater concentration of effort in the equatorial region and use of "deep longlines," which take more bigeye and less of some of the other species. He showed a series of slides with details on the spatial and temporal distributions of the fishing effort, catch, apparent abundance, and size of the fish. In addition, he described the deep longlining method and compared the hook rates for various species for this gear and conventional longline gear.

Chairman Moriya asked if there were any questions on Mr. Miyabe's presentation. Commissioner Beasley of the United States asked if the longline fishery was affected by the El Niño phenomenon. Mr. Miyabe referred the question to Mr. Kume of the FSFRL, who answered that there are so many variables to be considered that no one is certain of the effects of the El Niño phenomenon on the longline fishery. Dr. Joseph had two comments. First,

he said that it seemed to him that a deepening of the thermocline would increase the vulnerability of yellowfin and decrease that of bigeye, and asked if anyone would like to comment on this, especially with regard to the strong El Niño of 1982-1983. There was no response. Second, he mentioned the poor catches by longline gear along the equator and between 10° and 15°N, and wondered if strong currents had anything to do with this. Mr. Shimura of the Japan Tuna Federation stated that these latitudinal bands are generally considered to be deserts of the ocean. Also he remarked that when large amounts of natural food are available for the fish, fishing success is poor because the fish seldom bite on the baited hooks.

Dr. Joseph then introduced Dr. William H. Bayliff, a longtime member of the IATTC staff, who would talk about bluefin research. Dr. Bayliff briefly discussed the catch trends in the western and eastern Pacific since 1951. There have been wide year-to-year variations in the catches on both sides of the ocean. The catches have been especially poor in the eastern Pacific during the 1980's, but that of 1985 was better than those of 1980-1984. He then discussed a model which describes the life history of bluefin, based upon knowledge obtained from biological studies and upon supposition for aspects of the life history for which no knowledge is available. He stated that it is especially important that it be determined whether migration of fish hatched in the western Pacific to the eastern Pacific is induced by genetic or environmental factors and that cohort analyses be performed with this species. He said that after the IATTC meeting there would be a workshop in Shimizu to discuss past and present bluefin research conducted by the FSFRL, the IATTC, and other organizations and to coordinate future research. Chairman Moriya asked if there were any questions or comments regarding bluefin. Mr. Kume briefly described Japan's bluefin ranching program. At 3:40 p.m. there was a brief recess.

The meeting was reconvened at 4:00 p.m., at which time Chairman Moriya called upon Dr. Kearney to continue his presentation.

Dr. Kearney began by talking about the status of skipjack, which is covered in Background Paper 4 for the meeting. Skipjack has been the dominant species in the world catches of tunas for many years. The portion of the catch of the principal market species which was skipjack increased from 36 percent in 1970 to 43 percent in 1983. The Pacific Ocean accounts for more skipjack than the Atlantic and Indian Oceans combined. In the eastern Pacific skipjack occur in two areas, off northern Mexico and off Central America and northern South America. They are not generally found in the area of very warm water off southern Mexico, but in some years, such as 1956, they have been distributed continuously from northern Mexico to northern South America. After the early 1970's the center of abundance for the southern group seemed to have shifted from the waters off northern South America to the waters off Central America, but during the 1980's there seems to have been a shift back toward northern South America. The catches of skipjack in the eastern Pacific in 1985 were somewhat reduced, but this was probably due to lower prices for this species, rather than scarcity of the resource. The average weight of the fish in 1985 was among the highest ever recorded. There is little spawning of skipjack in the eastern Pacific, the fish in that area apparently being migrants from the central Pacific which return there to spawn. Production modelling has been carried out for skipjack in the eastern Pacific. One of the assumptions for this type of model is that the population be closed, and

it is known that this assumption is violated because of the interchange of fish between the eastern and central Pacific. Nevertheless it is thought that the results can be useful, provided it is not forgotten that failure to satisfy an important assumption makes the interpretation of the results open to question. There appears to be no relationship between catch per unit of effort and effort, suggesting that skipjack are underfished in the eastern Pacific. In spite of this conclusion, it is important to continue to study skipjack. First, it would be useful for the fishing industry if the abundance of skipjack and the areas and times of its greatest concentrations could be predicted. Second, skipjack is an important component of the total ecosystem, and thus must be studied if a better understanding of the workings of the total ecosystem is to be achieved.

Dr. Kearney then proceeded to the assessment of bigeye, which is covered in Background Paper 5 for the meeting. Unlike yellowfin and skipjack, bigeye are caught mostly by longlining, predominantly by Japanese vessels. The longline fishery in the eastern Pacific began during the 1950's, and the catches rapidly increased to nearly 90 thousand tons by 1963. From 1964 to 1976 the catches ranged from 35 to 64 thousand tons, but during the 1977-1980 period, after deep longlining had been introduced, the catches ranged from 79 to 82 thousand tons. Bigeye have always been caught by the surface fishery, mainly off northern South America, but no annual catches greater than 1 thousand tons were recorded until 1967. Bigeye are similar in appearance to yellowfin, and the prices for the two species are the same. Bigeye were probably often reported as yellowfin prior to the mid-1960's, but when regulations began it became to the advantage of all concerned that bigeye be reported correctly. Because of this, and probably also because the fishermen became more skillful at catching bigeye, the catch statistics show greater catches of this species after the mid-1960's, reaching a peak of 17 thousand tons in 1980. Most fish caught by the longline fishery are between 100 and 170 cm in length. The length distributions were fairly stable during the 1971-1974 period, but after that the portions of fish less than 120 cm in length increased. The fish caught by the surface fishery tend to be smaller than those caught by the longline fishery, but the size distributions of the fish caught by the two types of gear overlap considerably. The IATTC staff has tried to evaluate the status of the bigeye resource in the eastern Pacific with production and age-structured models, but so much information is lacking that few conclusions can be drawn. Considerable thought is currently being given as to how this situation can be remedied, however.

Dr. Kearney then proceeded to the status of black skipjack, also covered in Background Paper 5 of the meeting. Black skipjack are caught mostly off Central America and northern South America. The landings by the fleet from which logbook data are obtained have never exceeded 5 thousand tons, but the landings by small vessels from which the IATTC staff does not get data are believed to be substantial. Larval surveys have shown that this species is abundant, so it is likely that it will become more important commercially in the not-too-distant future. The IATTC staff members who take length-frequency samples of tunas have routinely measured black skipjack, as well as yellowfin, skipjack, bluefin, and bigeye. The fish off Ecuador tend to be smaller than those caught further north. Black skipjack have been tagged incidentally to yellowfin and skipjack on several cruises, and the returns have shown that many of them move considerable distances. Studies of the physiology and reproduction of black skipjack have recently been completed. In the Gulf of

Panama the fish spawn during the upwelling season, from November to March. Studies of the early life history of this species will almost certainly be conducted at the IATTC's new laboratory at Achotines, Panama. The IATTC staff considers black skipjack to be an important species because it is of particular significance to the inshore artisanal fisheries and because it is apparently underexploited and represents a major resource for possible future development.

Chairman Moriya asked if there were any questions for Dr. Kearney. Dr. Barrett of the United States asked if the high average weights of the skipjack in 1985 were due to greater average lengths or higher condition factors of the fish. Dr. Kearney replied that he had received the weight data only a day or two prior to coming to Japan, and had not yet seen the length data, but he believed that greater average lengths must have been at least partially responsible for the greater average weights. Mr. Kume asked if bigeye caught by surface gear are caught in pure or mixed schools. He also commented that longline data should produce a good index of abundance of bigeye, provided adjustments can be made to compensate for the shift from conventional to deep longline gear during the 1970's. Dr. Kearney replied that 72 percent of surface-caught bigeye are taken in schools not associated with dolphins or flotsam and more than 70 percent are taken in schools containing no other species of tunas. He said that he agreed that the longline data might provide a good index of abundance for bigeye, but remarked that this would not be the case if the deep longline fishery was exploiting a different population than that exploited by the conventional longline fishery. Mr. Marcille of FAO remarked that the IATTC has data only for black skipjack caught by the relatively large vessels from which logbook data are obtained, and asked what other gears are employed to catch black skipjack and if the staff had any estimates of the total catch. Dr. Kearney asked Dr. Joseph to comment. Dr. Joseph said that black skipjack are caught by hook and line gear and gill nets, and that the actual catches are believed to be considerably greater than the logged catches. Dr. Sibert of the SPC asked about problems in distinguishing yellowfin and bigeye in the catches. Dr. Kearney said that the IATTC has staff members in all the important ports where fish from the eastern Pacific are landed, and these persons determine the portions of bigeye in the catches when the two species are not separated in the statistics furnished to the IATTC.

At 4:55 p.m. Chairman Moriya announced that the meeting would be adjourned until the following day.

AGENDA ITEM 4 - REVIEW OF THE TUNA-DOLPHIN PROGRAM

The meeting was reconvened on October 16, 1985, at 10:05 a.m. by Chairman Moriya, who called upon Dr. Joseph to review the IATTC's tuna-dolphin program. Dr. Joseph said that this research is summarized in Background Paper 6 of the meeting. He reviewed the history of the fishery for tunas associated with dolphins and the reasons for the IATTC's involvement in this research. He then explained that observers trained by the NMFS and scientific technicians trained by the IATTC accompany tuna vessels on many of their trips to collect data on abundance and distribution of dolphins and their mortality due to fishing for tunas. Good coverage has been secured for vessels of all nations fishing in the eastern Pacific except Mexico, and there are signs that Mexico may be willing to participate in the scientific technician program in the near

future. Previously the IATTC staff had estimated the mortalities of dolphins using a scheme which stratified the data by vessel flag (U.S. and non-U.S.), but data recently analyzed indicate that better results are obtained by stratifying by area instead of by vessel flag. Recent research has shown that the mortality rates of offshore spotted and whitebelly spinner dolphins are less in heavily-exploited areas than in lightly-exploited areas, which appears to indicate that the dolphins learn to escape from the nets. He then showed a series of slides comparing the dolphin mortalities for day and night sets, sets made in weak and strong currents, normal sets and sets during which the gear malfunctioned, sets made in different wind speeds, sets made by vessels of various capacities, sets made during different months, and sets which caught various tonnages of fish. He described the studies involving estimation of sizes of dolphin schools by scientists and technicians aboard fishing vessels and aircraft. These estimates were reasonably good in most cases, but tended to be low for very large schools. He then gave a brief account of the program in which the IATTC staff is encouraging the vessels to use high-power lights to illuminate the backdown channel of their nets at night, which appears to reduce the mortality of dolphins caught in the nets.

Chairman Moriya asked if there were any questions. Mr. Shima of Japan stated that he was pleased to hear that the mortality of dolphins due to fishing for tunas had been reduced from roughly 500,000 animals per year to less than one tenth that amount. He asked what are the differences between the mortality estimates of the fishermen and those of the IATTC. He said that he hoped that the IATTC staff could obtain better estimates of the population sizes of the various species of dolphins as quickly as possible, as the mortality estimates are of limited value if estimates of the population sizes are not available. He also remarked that in Japan cetaceans are considered to be edible, and he regretted that the dolphins which are accidentally killed during tuna-fishing operations are discarded at sea, rather than being retained for human consumption. Dr. Joseph replied that the tuna fisherman do not estimate the mortalities of dolphins. However the Porpoise Rescue Foundation, sponsored by the U.S. tuna fishing and processing industries, and the NMFS have made some estimates of dolphin mortality for the U.S. fleet only, and these have been quite close to those of the IATTC staff. Dr. Joseph agreed that it was important to estimate the sizes of the various populations of dolphins. The IATTC staff had been heavily involved in this type of work during the years when Dr. Robin L. Allen was in charge of the dolphin program. During the past year the amount of effort directed toward population estimation was reduced substantially, but Dr. Steven Buckland, an expert on estimating population sizes from line transect data, has recently been added to the IATTC staff, so it is anticipated that more attention can be given to this type of work. He said that he appreciated Mr. Shima's thoughts concerning the discarding of dolphins at sea, but pointed out that many nations have laws prohibiting the landing of dolphins. Mr. Shima said that he wondered about the necessity of the scientific technician program, since comparable data might be obtained from the fishermen. He emphasized that this was only his personal opinion. Mr. Kato of the International Whaling Commission said that Dr. Joseph's report was very interesting, and asked about the extent of the coverage of trips by the observer and scientific technician programs. Dr. Joseph said that the coverage was about 40 percent for vessels other than those of Mexico, and said that he was optimistic about the participation of Mexico in the scientific technician program in the near future. Mr. Kato asked if the scientific technicians were on the vessels for

the entire trips or only parts of them. He also asked what were the main techniques for population estimation and if there were plans to estimate the population sizes by tagging. Dr. Joseph replied that in most cases the scientific technician remained aboard the vessel for the entire trip. He said that population sizes and indices of population sizes are estimated by line transect methods, using data collected by scientific technicians aboard commercial and research vessels, and that tagging was not being considered due to the difficulty in obtaining return data for all the tagged dolphins which are caught. Mr. Marcille asked if estimates have been made of the numbers of schools of dolphins which are accompanied by enough tunas to make them worth setting on, if estimates are available of the time it would take a school of dolphins without tunas to accumulate enough tunas to make it worth setting on, and what is being done to estimate the mortality rates of dolphins due to fishing. Dr. Joseph said that he did not have the data at hand on the numbers of schools of dolphins with and without significant amounts of tunas, but he pointed out that the scientific technicians routinely record all schools of dolphins sighted, whether they are accompanied by tunas or not. He stated that he also did not have data on the rate of accumulation of tunas by a school of dolphins at hand; he said that he thought that such estimates exist, but that they are not considered to be reliable. He said that both the IATTC and the NMFS have been looking into the problem of estimating natural mortality, as well as fishing mortality. Commissioner Beasley asked that Dr. Barrett be permitted to make a few remarks on the dolphin program of the NMFS. Dr. Barrett said that the amended (1984) Marine Mammal Protection Act calls for a program to monitor trends in abundance of stocks of dolphins taken incidentally to fishing operations by the U.S. purse-seine fishery for tropical tunas in the eastern Pacific. This program, which will begin in 1986, has three elements. First, two NMFS vessels, one with a helicopter, will be employed for 120 days each year for at least 5 years to use line transect techniques to monitor dolphin abundance and provide indications of their population trends. Second, reanalysis of data collected by NMFS observers and IATTC scientific technicians will be carried out jointly by the NMFS and IATTC staffs to attempt to develop a reliable abundance index. Third, the reproduction and growth will be monitored to provide additional information on the condition of the various stocks of dolphins. He said that the line transect surveys will have a 90-percent probability of detecting a 41-percent cumulative decline in abundance, a biologically significant change for a population of dolphins, by the end of the program. Mr. Marcille asked what are the percentages of purse-seine sets made on the various types of schools (dolphin, flotsam, unassociated, etc.). Dr. Joseph answered that the percentages of the various types varied considerably from year to year. He said that during the late 1960's and early 1970's the portions of yellowfin taken in association with dolphins were high, in the vicinity of 60-70 percent. During the mid-1970's these portions decreased to about 45 percent, and in 1984 about 60 percent of the yellowfin catch was made on fish associated with dolphins. In 1985 the percentage will be equal or greater than that for 1984.

Chairman Moriya adjourned the meeting at 11:25 a.m. for a short recess.

AGENDA ITEM 5 - THE 1985 FISHING YEAR

Chairman Moriya reconvened the meeting at 11:40 a.m., announcing that Dr. Joseph would discuss the 1985 fishing year, and then go on to Agenda Item

6. Condition of the Yellowfin Stock and Recommendation for 1986. Dr. Joseph began by stating that he would cover the material discussed in Background Paper 1. He said that in 1982 and 1983 many vessels had transferred their operations from the eastern to the western Pacific because the El Niño conditions had made the fish less vulnerable to the fishery in the eastern Pacific and more vulnerable to that in the western Pacific. In 1984 and 1985 some of the vessels had returned to the eastern Pacific, but the fishing effort in the eastern Pacific in 1985 was less than it was during the late 1970's. Because more U.S. than non-U.S. vessels transferred their operations to the western Pacific, non-U.S. vessels are dominant in the eastern Pacific for the first time. The leading non-U.S. fishing countries are Mexico, Venezuela, and Ecuador. The yellowfin catch of 1984 exceeded that of 1983, and that of 1985 will exceed that of 1984. For skipjack the leading year was 1984, followed by 1985 and 1983 in that order. In 1983 the catch per capacity ton (CPCT) was low, but the CPCTs increased in 1984 and 1985. The distributions of the catches of both yellowfin and skipjack differ from year to year. In 1985 yellowfin were caught mostly offshore off Central America and near the entrance of the Gulf of California. Skipjack were caught mostly offshore off Central America, and the catches off northern Mexico were especially poor.

At 12:00 noon Chairman Moriya announced that the meeting would adjourn for lunch and reconvene at 2:00 p.m.

AGENDA ITEM 6 - CONDITION OF THE YELLOWFIN STOCK AND RECOMMENDATION FOR 1986

The meeting was reconvened at 2:00 p.m. by Chairman Moriya. He stated that since Dr. Joseph had finished with his discussion of the 1985 fishing year the meeting would proceed to the next agenda item. Questions and comments of Agenda Item 5 would be held in abeyance until after Dr. Joseph's discussion of the condition of the yellowfin stock and the IATTC staff's recommendation for 1986. He then turned the floor over to Dr. Joseph.

Dr. Joseph stated that he would discuss the material covered in Background Paper 2. The IATTC staff has used various measures of the abundance of yellowfin, and all have given essentially the same results. The abundance decreased during the late 1970's due to heavy catches. At that time the management program lost its effectiveness due to disagreements over allocation of the catches, and then was discontinued. During the early 1980's a large portion of the fleet transferred its operations to the western Pacific, which permitted the abundance to increase in the eastern Pacific. He discussed four production models (symmetrical and asymmetrical, with the coefficient of catchability fixed or not fixed), three of which indicate that the abundance is greater than that necessary to produce the average maximum sustainable yield (AMSY). Accordingly, it is inferred that a harvest in excess of the AMSY can be taken in 1986. He then stated that the average weight of fish in the catch increased in 1984 and 1985. He explained the yield-per-recruit model, which integrates growth, natural mortality, and fishing effort data to obtain estimates of the optimum levels of fishing effort for various sizes at entry into the fishery and the optimum sizes at entry into the fishery for various levels of fishing effort. During the mid-1970's many small fish were caught, which reduced the yield per recruit, but during the last few years the fleet has shifted to larger fish, which has increased the yield per recruit. He said that the data indicate that if there

were some way to prevent the catching of small fish it would increase the yield per recruit, which would result in greater catches. The staff has never recommended that size limits or other measures to decrease the catch of small fish be imposed, however, as small yellowfin are so often caught with larger yellowfin and with skipjack. He said that the staff was recommending a minimum quota of 175,000 short tons for yellowfin in the CYRA, with provisions for two increments of 15,000 tons each, one or both of which could be added to the minimum quota at the discretion of the Director.

Chairman Moriya thanked Dr. Joseph for his presentation, and asked if there were any questions or comments on Agenda Items 5 and 6. Commissioner Beasley said that the United States would support Dr. Joseph's recommendation, and representatives of the other member countries agreed that they would do the same. Chairman Moriya thanked them, and said that a draft recommendation would be prepared and circulated as soon as possible. He then declared a recess at 2:55 p.m.

The meeting reconvened at 3:10 p.m., at which time Chairman Moriya asked for opinions on the draft resolution which had been circulated during the recess. The representatives of all the member countries indicated that the draft resolution was acceptable, and it was unanimously adopted. This resolution is in Appendix 4.

AGENDA ITEM 7 - RECOMMENDED RESEARCH PROGRAM AND BUDGET FOR 1987-1988

Chairman Moriya turned the floor over to Dr. Joseph for discussion of this agenda item. Dr. Joseph said that the amount of the budget for 1987-1988 is the same as that for 1986-1987, except for a 5-percent increase to make up for the effects of inflation. He said that if Mexico decided to participate in the program for sending scientific technicians on purse seiners to collect data on dolphins more money would be needed, but this could be handled with an amendment. Chairman Moriya asked for comments on the proposed budget. Commissioner Beasley indicated that the United States approved, and representatives of the other member countries indicated the same.

AGENDA ITEM 8 - AN UPDATE OF ACTIVITIES CONCERNING ARRANGEMENTS FOR TUNA MANAGEMENT IN THE EASTERN PACIFIC

Chairman Moriya asked if anyone had anything to say on this subject. Mr. Hallman of the United States stated that he was sure that a conservation program would be needed again in the not-too-distant future. He said that a licensing agreement for tuna fishing has been signed by five countries, Costa Rica, Guatemala, Honduras, Panama, and the United States, but the treaty has not yet been ratified. He emphasized that this is not a conservation agreement, but that it would be compatible with the IATTC program. Mr. Freer-Jimenez of Costa Rica presented a statement concerning recent developments with regard to licensing and coastal states' rights. This statement is reproduced as Appendix 3 of these minutes. Mr. Cosío of Mexico stated that Mexico is also concerned with the conservation of tunas, and agrees that it is important to have international agreement on their management. The Latin American countries have formed the Organización Latinoamericana de Desarrollo Pesquero (OLDEPESCA), which in 1984 issued a list of 14 points regarding conservation and the rights of coastal and non-coastal states with regard to tuna fishing. In a 1985 meeting of

OLDEPESCA it was agreed that the 14 points would be incorporated into any subsequent agreement that was made. A new draft of this agreement will be considered at the next meeting of the Ministers of Latin American fisheries departments to be convened by OLDEPESCA on November 11-15, 1985, in Mexico City.

AGENDA ITEM 9 - PLACE AND DATE OF NEXT MEETING

Chairman Moriya asked for ideas regarding a place and dates for the next meeting. Dr. Joseph said that it was customary for the meeting to be rotated among the member countries, and Panama would be next (provided approval was obtained from the government of Panama, of course). He also stated that during the early years of the IATTC its meetings had been held in the northern spring, but it was necessary to change the time to the fall when regulations which took effect early in the year began to be formulated. He said that now that the fishery is no longer being regulated he thought that it would be wise to change the time back to the spring, because this would permit the IATTC staff to prepare statistics for the year just ended which would be much more nearly complete and because there are fewer meetings of other organizations in the spring than in the fall. Chairman Moriya asked the opinions of the representatives of the other countries, and none had any objections, so it was agreed that the next meeting would take place in the spring of 1987. Chairman Moriya asked Commissioner Martinez of Panama if it would be possible to hold the meeting in Panama. Commissioner Martinez answered affirmatively, and said that it would be a great honor for Panama to serve as the host country. After a brief discussion it was agreed that the dates of the meeting would be May 5-7, 1987.

AGENDA ITEM 10 - ELECTION OF OFFICERS

Chairman Moriya said that a chairman and a secretary for the next meeting must be selected. He reminded the attendees that it is customary for the chairman to come from the host country. The Commissioner from Japan nominated Commissioner Martinez. Commissioner Beasley seconded the nomination, and Commissioner Martinez was elected by acclamation. Commissioner Martinez expressed his thanks and said that he was confident that cooperation such as displayed at the present meeting would result in a successful meeting in Panama in 1987. Chairman Moriya then called for nominations for secretary. Commissioner Martinez nominated Commissioner Aróstegui Valladares of Nicaragua. The Commissioner from Japan seconded the nomination, and Commissioner Aróstegui was elected by acclamation. Commissioner Aróstegui thanked the other commissioners for their confidence in his abilities.

AGENDA ITEM 11 - OTHER BUSINESS

Chairman Moriya asked if anyone had any other business to discuss. Commissioner Beasley expressed his thanks to Chairman Moriya for his able leadership during the meeting, to the Japanese hosts for their gracious hospitality, and to Dr. Joseph and his staff for their carefully-prepared presentations.

AGENDA ITEM 12 - ADJOURNMENT

Chairman Moriya expressed his thanks to all the attendees, and declared the meeting adjourned at 4:00 p.m.

APPENDIX 1

INTRODUCTORY REMARKS BY MR. SATOSHI MORIYA, CHAIRMAN OF THE 43RD MEETING
OF THE IATTC

Dear Commissioners, Attendees and Guests:

It is my utmost honor to declare the opening of the 43rd meeting of the Inter-American Tropical Tuna Commission, and to serve as the chairman. The Commission plays a key role for maintaining the maximum sustainable yield of the yellowfin stock of the eastern Pacific. Accordingly I fully realize the tremendous responsibility I have to bear as the chairman.

Under the new marine order, the coastal nations are asserting their rights to manage and develop marine resources within the 200-mile fishing zones. However, this Commission has been greatly contributing to the joint research and studies on the tuna stocks in the eastern Pacific ever since the treaty came into effect in 1950. Such contributions are highly valued, not only among the member countries but also among the non-member countries operating in the eastern Pacific.

Highly-migratory species such as tunas, billfishes, and sharks are freely migrating in and out of the 200-mile fishing zone. I believe, therefore, that an international organization formed by interested nations is the most effective system for maintenance and management of these stocks.

During this year's meeting, I would like to invite active exchange of significant ideas and opinions so that all the attendees can attain their common goal, i.e., effective utilization and management of tuna stocks in the eastern Pacific.

APPENDIX 2

ADDRESS BY HIS EXCELLENCY DIRECTOR GENERAL HIROYA SAN0
AT THE OPENING SESSION OF THE 43RD MEETING OF
THE INTER-AMERICAN TROPICAL TUNA COMMISSION
IN TOKYO, JAPAN, OCTOBER 15, 1985

Mr. Chairman, Honourable Commissioners, Ladies and Gentleman:

It is a great pleasure for me to have this opportunity to say a few words of welcome on behalf the Japanese Government on this occasion of the opening of the 43rd meeting of the Inter-American Tropical Tuna Commission.

First of all, I would like to extend my sincere welcome to the Honourable Commissioners and their advisers, as well as observers, who have travelled a long way to attend this meeting.

As you are well aware, this Commission has greatly contributed, during 35 years since the Convention for the Establishment of Inter-American Tropical Tuna Commission entered into force in 1950, to the scientific management of tuna resources and particularly the Commission has succeeded in maintaining yellowfin tuna resources at levels which permit the maximum sustainable catch.

These achievements cannot be made without the studious efforts of Commissioners, scientists and administrators of each member country, as well as research staff of the secretariat who have obtained excellent results from their investigations of tuna resources in the convention area. I would like to express my deep admiration and appreciation for those efforts.

As one of very valuable animal protein sources for mankind, tuna has been utilized all over the world and has played an important role in the economy of fisheries. In Japan, too, tuna is one of the most popular fishery resources and is consumed in a great quantity.

Needless to say, this valuable fishery resource is found in every ocean of the world. Many countries have shown interests in tuna fisheries and been participating in the fishing. It should be noted that tunas migrate freely and widely around the ocean both within and outside the 200 mile fishery zones of coastal states and hence tuna fishing vessels are operating in both of these areas. I would like to emphasize, therefore, that it is the most rational way of the management of tuna resources to carry out the unified systematic control in the whole area of migration through an international organization such as the Inter-American Tropical Tuna Commission.

I earnestly hope that your efforts at this meeting would produce fruitful results in the field of conservation and rational utilization of tuna resources which are most valuable for mankind.

In closing, I wish all of you will enjoy your stay in Tokyo since October is the best season of the year in our country.

Thank you very much.

APPENDIX 3

STATEMENT PRESENTED BY AMBASSADOR MANUEL FREER-JIMENEZ AT THE 43RD MEETING
OF THE IATTC

Mr. President:

Permit me to thank you in the name of the delegation of our country for the opportunity to express here our points of view concerning Item 8 of the Agenda, relative to what has been done concerning arrangements for management of tunas in the eastern Pacific.

We have been concerned about this subject for many years, and accordingly we have taken the opportunity to express it in previous meetings of the Commission, and also it was the motive for our withdrawal from this organization in 1978. Nevertheless, after long negotiations, we have been able to sign with the United States and Panama the text of a new convention with respect to the fishery for tuna in the eastern Pacific. That convention is of an interim nature, and provides for the issuance of international fishing licenses through a council with members from all the participating states. The license is calculated to be a minimum of \$60 per registered ton and would be increased to a maximum of \$100 per ton in accordance with increases in the numbers of countries which sign the new convention or the substantial contributions of the resource of the coastal states. The convention will take effect with the ratification by at least five coastal states of the eastern Pacific.

The specific problem for our country has been that there is implicit in the treaty what is considered to be a transfer of jurisdiction of the nation with respect to a resource existing in the 200-mile exclusive economic zone to an international organization, which necessitates the approval of the same by a two-thirds majority of all the deputies of our legislative assembly. One group of public opinion has opposed the text of the convention, defending a purely national management of our marine resources. We have had to engage in a long and difficult task of explanation to make them understand that an exclusively national management of highly migratory species is not the most convenient either for the country or for the conservation of the resource. In effect, the tunas move freely throughout the Pacific Ocean without recognizing political boundaries; accordingly, if the nature of the tunas is international their management should also be international. If they are over-exploited it will be bad for all. If they are exploited rationally it will be for the benefit of all. The above does not mean that we do not defend the thesis that the coastal states have the right to the exclusive benefit of their marine resources, including the highly-migratory species. Permit me to illustrate that thesis with an example familiar to many of us; some species of wild ducks are highly migratory, and migrate every year from northern Canada to the southern hemisphere. Thus, when they cross the skies of our countries, nobody can deny that the right to sell and regulate licenses for the hunting of ducks belongs to the state in whose skies they are flying. Naturally it would be desirable that the different states could reach accord over regulation of this matter, in case excessive hunting were to threaten the existence of the species. Thus the idea of exclusively national handling of the respective

200-MILE ECONOMIC ZONES for highly-migratory species which some defend is not a siren song or mirage, since OPTIMUM UTILIZATION OF THE TUNAS of necessity requires the cooperation of all nations, the coastal nations as well as those which own large fleets that traditionally have fished the resource. Any other vision lacks realism. We would not be frank either if we gave the impression that we wanted to convert the small coastal states into permanent sellers of licenses. For this reason the interim convention provides for the negotiation of a new integral convention founded on the concept of GUARANTEED FISHING QUOTAS based on the criterion of normal concentration of the resource in the different ECONOMIC ZONES of the coastal states. This concentration would be determined from confidential statistical data, according to the HISTORICAL CATCHES OF ALL OF THE INTERNATIONAL FLEET in "x" number of years (say 10).

Our country is nearing approval of the new interim convention (Treaty of San José), which we hope will be achieved in the latter months of this year. What we want to emphasize on this occasion is the necessity to initiate immediately the negotiations for the signing of the GENERAL OR INTEGRAL CONVENTION which permits all the coastal states of the south Pacific to be part of that treaty. We can even begin the interchange of opinions with respect to that new INTEGRAL TREATY; in fact we consider that it would be good to begin the interchange of viewpoints of the different interested states as soon as possible.

I believe that that will permit us to save time which we consider precious and thus avoid the conflict of rival or contradictory schemes, which would not be realistic and which would lead to a conflict of interest and position which would definitely be detrimental to all. Let us remember that the SEA IS INDIVISIBLE and that the tunas are not interested in our conflicting points of view over their exploitation. Perhaps if we could speak on their behalf, they are only trying to live and reproduce on an optimum scale, without a no-holds-barred battle between the different countries, which would lead to their extinction, a tragedy for them and for us. Perhaps they only want to feed mankind, as planned by the Creator.

Finally we want to announce that our country, as soon as the legislative assembly approves the Convention of San José, will initiate the necessary procedures to rejoin the Inter-American Tropical Tuna Commission, which we founded together with the United States of America in 1949.

We wish success to the meeting of this Commission.

Thank you, Mr. President.

APPENDIX 4

RESOLUTION PASSED AT THE 43RD MEETING OF THE IATTC

Recognizing that there is a need for a conservation program to prevent the yellowfin resource of the eastern Pacific Ocean from being reduced below a level which would ensure high productivity in the future,

The Inter-American Tropical Tuna Commission therefore recommends to the high contracting parties that when a yellowfin conservation program is adopted for 1986, there should be established an annual quota on the total catch of yellowfin tuna for the 1986 calendar year of 175,000 short tons from the CYRA as defined in the resolution adopted by the Commission on May 17, 1962, and

Further recommends that the Director of Investigations should be authorized to increase this limit by no more than two successive increments if he concludes from examination of available data that such increases will offer no substantial danger to the stock, the increments will be 15,000 tons each, and

Finally recommends that all member states and other interested states work diligently to achieve the implementation of such a yellowfin conservation program for 1986.

APPENDIX 5

LIST OF ATTENDEES

MEMBER GOVERNMENTS

FRANCE

Jean-Jacques Brot

JAPAN

Satoshi Moriya, Commissioner
Susumu Akiyama, Commissioner
Yamato Ueda, Commissioner
Yuichiro Harada
Tsutomu Horii
Yoshio Ishizuka
Shuichiro Kawaguchi
Susumu Kume
Kenji Matsumoto
Naozumi Miyabe
Yasuo Morita
Masamichi Motoyama
Akira Nakamae
Takanori Ohashi
Yoshiyuki Shige
Kazuo Shima
Shojiro Shimura
Ziro Suzuki
Shuichi Takehama
Akira Toyama
Tsutomu Watanabe
Jun Yamashita

NICARAGUA

Abelino Aróstegui Valladares, Commissioner

PANAMA

Armando R. Martinez V., Commissioner

U.S.A.

Henry R. Beasley, Commissioner
Robert C. Macdonald, Commissioner
Izadore Barrett
Bernard D. Fink
Charles Fullerton
Brian Hallman
Paul Krampe
Y. Munechika

OBSERVER GOVERNMENTS

CHILE

Konrad Paulsen

COSTA RICA

Manuel Freer-Jimenez
Ana Lucía Nassar

ECUADOR

Patricio Salas

KOREA

Ki Hick Barng
Sang Hwa Chung

MEXICO

Sergio González Gálvez, Ambassador
Manuel Cosío

NEW ZEALAND

David Blackstock

PERU

Alberto Tamayo-Barrios

INTERNATIONAL ORGANIZATIONS

FOOD AND AGRICULTURE ORGANIZATION

Jacques Marcille

INTERNATIONAL WHALING COMMISSION

Hidehiro Kato

SOUTH PACIFIC COMMISSION

John Sibert

IATTC

James Joseph
Robert E. Kearney
William H. Bayliff
Regina Newman

