

INTER-AMERICAN TROPICAL TUNA COMMISSION

SUMMARY MINUTES OF THE FIRST PART OF THE
THIRTY SECOND MEETING

October 13, 14, and 17, 1975
Paris, France

Chairman: Mr. Robert Letaconnoux, France

Secretary: Mr. Gilberto Bergman P., Nicaragua

A G E N D A

1. Opening of the Meeting
2. Consideration and Adoption of Agenda
3. Review of Current Research
4. The 1975 Fishing Year (Background Paper No. 1)
5. Assessment Studies of Yellowfin Tuna in the Eastern Pacific Ocean
(Background Paper No. 2)
6. A Discussion of the Present System of Closing the Fishery
7. The Porpoise-Tuna Relationship and Associated Problems
8. Recommended Research Program and Budget for FY 1977/1978
(Background Paper No. 3)
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11. Other Business
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AGENDA ITEM 1 - OPENING OF THE MEETING

The 32nd meeting of the Inter-American Tropical Tuna Commission was convened in plenary session at the Maison de Chimie, Paris, France, on October 13, 1975. The meeting was called to order at 10:30 a.m. by the Chairman, Mr. Robert Letaconnoux of France. He welcomed the Commissioners, advisors and observers to Paris, and said that he hoped everyone would have an enjoyable stay in that city and hoped particularly for a successful meeting. He then introduced Mons. Jean Chapon Le Secretaire General of Marine Merchant, keynote speaker of the meeting. The complete text of this address is attached as Appendix I.

After thanking the Secretaire General for his most stimulating remarks, the Chairman then called for introduction of the delegations. The heads of the delegations of Canada, Costa Rica, France, Japan, Mexico, Nicaragua, Panama and the U.S.A. introduced themselves, their fellow Commissioners and their advisors. This was followed by the introductions of the observers from Chile, Cuba, Ecuador, Korea, Spain, the International Commission for the Conservation of Atlantic Tunas (ICCAT), FAO and the Organization for Economic Cooperation and Development (OECD). The attendees are listed in Appendix II.

After the introductions, and again welcoming warmly all the attendees to Paris, the Chairman announced that the next point of business he wished to undertake was a most enjoyable one. He then told of the heroic act by Ambassador Joaquin Mercado of Mexico, in which he had volunteered to serve as a hostage on an airplane carrying terrorists from Nicaragua to Cuba, and reminded the assemblage of the proposal of Mr. Loker of the U.S.A. at the 31st meeting of the Commission in San Diego, California, to prepare and present a suitable scroll to Ambassador Mercado, recognizing this great act. The scroll was presented to Ambassador Mercado by the Chairman, and all attendees joined heartily in congratulating him.

AGENDA ITEM 2 - CONSIDERATION AND ADOPTION OF THE AGENDA

The Chairman noted that the agenda had been distributed to the Commissioners several weeks earlier, as is the normal practice, and that it followed the usual format. He called for modification to the agenda, and there being none it was adopted as presented.

AGENDA ITEM 3 - REVIEW OF CURRENT RESEARCH

The Chairman asked Dr. Joseph to review the current research of the IATTC, which he did. He stated that in this year's research review he was going to highlight a few subjects in more detail, rather than attempt to cover quickly all subjects as has normally been done in the past. He did note, however, that the most important function of the staff was the collection and analysis of statistical data of catch and effort, and that for long-term studies the data can be obtained several months after the fish are caught, but for management purposes the statistics must be collected, tabulated and analyzed on a current basis. In either case it is necessary that the staff have intimate knowledge of the fishery and an extensive and sophisticated system for collecting and processing the data

An extensive discussion of the fishery for skipjack in the eastern Pacific was given. Attention was called to the earlier work of the staff in attempting to predict

the highly variable catch of skipjack. It was noted that the staff predicted a large catch in 1974 and a poorer than average catch in 1975. These predictions were based on anomalies in surface temperature along the equator 1 1/2 years earlier. The catch in 1974 was only slightly better than average, and during 1975 was much better than average. In examining the possible reasons for the relative lack of success a method was developed for separating the catches into yearly cohorts of fish, and the contributions of these cohorts were compared with the Southern Oscillation index, which is the difference between the high-pressure system over Easter Island, and the low-pressure system over northern Australia and southeast Asia. When this index is low the southeast trade winds subside, reducing upwelling and mixing and resulting in higher surface temperatures. These higher surface temperatures appear to be related to higher larval survival. The correlation between cohort strength and the Southern Oscillation index 1 1/2 years earlier is extremely high, and the relationship can be used to predict cohort strength. Such predictions were presented, and the cohort entering the fishery for the first time in 1974 was shown to be an unusually strong one. Had most of the cohort been caught during its first year in the fishery, as is normally the case, the 1974 catch would have been unusually high. However, much of the cohort was caught during 1975, thereby increasing the 1975 catch. The phenomenon of larger portions of the fish being caught as 2+ year olds has been persistent for the last few years. Through the predictive model seems to be quite useful for predicting cohort strength, the next step of investigations must deal with predicting at what age the fish will be taken in the fishery.

Another important aspect of the staff's research deals with the aging of yellowfin. It was explained that the usual method of aging yellowfin has been to study the progression of modal groups relative to time. This method apparently works well for the smaller sizes, but not so well for the larger fish. Work at the Commission is now underway in which apparent daily marks on small bones which are found in the inner ear of tuna may be useful for studying growth. To date estimates of growth of yellowfin have been made for a number of fish sampled in the eastern Pacific Ocean. These estimates compare well with the growth at the smaller sizes as determined by modal progressions, but not so well at the larger sizes. Additional work in which attempts to determine whether the marks on the bones represent daily marks was discussed. It was explained that biological marks have been introduced into fish at the time of tagging. These marks identify the daily ring laid down shortly after tagging. After the recapture of the tagged fish the number of marks laid down during the time at liberty can be compared with the number of days at liberty. On the basis of the few such returns received as far it appears that the rings are laid down daily. Work in this area is continuing.

A brief summary of the tagging program was given. During 1974 there were two tagging cruises, one in the inshore area off southern Mexico and Central America and the other in offshore area A2. Tag returns from the inshore area showed movement to both the north and south, as well as offshore. One return was received from a fish caught to the west of the CYRA. The recaptures from the tagged fish released in the offshore area were made mostly inshore. It was reported that there have been two purse seine and one baitboat tagging cruise so far during 1975. The tag returns from these have not yet been analyzed.

Mention was made of the cooperative Pacific-wide study of yellowfin being made by Japanese and Commission scientists. A figure showing the distribution of catches of

yellowfin larvae in the Pacific Ocean was shown. There appear to be three major areas of occurrence of larvae, the eastern, central and western Pacific.

After the presentation the Chairman announced that questions could be directed to Dr. Joseph concerning the staff's research.

Ambassador Castro y Castro of Mexico indicated that he and his delegation had a number of questions to ask of Dr. Joseph, but before so doing wished to express on the part of himself and his delegation the high regard they had for the scientific work of the Commission's staff. Referring to the slide showing the distribution of yellowfin larvae in the Pacific, Ambassador Castro y Castro wished to know if the three concentrations of larvae represented distinct stocks. It was explained that clear inferences on stock structure could not be made, since the fish which produce the larvae are quite mobile and may mix a great deal. This led to a general questioning of Dr. Joseph by Ambassador Castro y Castro concerning the spawning, migrations and stock structure of yellowfin on a general basis. Ambassador Castro y Castro was particularly interested in how the line defining the CYRA was established, since it apparently does not correspond with the biology of the fish. Dr. Joseph replied that the area had been established in 1961 on the basis of morphometric and tagging data and, in addition, the fact that the population within the area responded to the fishery as expected from the models developed up to that time tended to support such a definition of areas. After much discussion on this point Ambassador Castro y Castro observed that more attention should be given by the Commission to the management of all tuna species on a much broader geographical basis.

Dr. Zarur of Mexico questioned Dr. Joseph on the size structure of the catch this year, and asked if the large catches of age-1 fish in 1973 and 1974 represented the catches of all countries. He also wanted to know if the relationships found between skipjack and temperature existed for yellowfin. Dr. Joseph asked that the discussion of size composition be deferred until Agenda Item 5, which would deal with the subject, but remarked that the catch of age-1 fish represented the catches of all countries. He stated that no relationship between yellowfin and temperature has been established.

Mr. Van Campen of the U.S.A. next asked a series of questions of Dr. Joseph concerning this review. Concerning the growth studies based on otoliths, Dr. Joseph explained that the estimates from the modal progression showed a slower growth for the larger fish than did the daily rings on the otoliths. Mr. Van Campen called attention to earlier slides shown by Dr. Joseph which depicted an inshore movement of fish tagged during October-November 1974 in the area just to the east of the western boundary of the CYRA. He wished to know whether this movement pattern was a regular occurrence. Dr. Joseph replied that precise pattern of movement for yellowfin had not been established on the basis of tagging data, but that yellowfin seem to travel both inshore and offshore as well as to the north and the south. Dr. Joseph indicated that the lack of movement of fish to the west could have been the result of low fishing effort to the west during the period following release of the fish. He added that if such inshore migration was pronounced, heavy fishing offshore could reduced the inshore abundance, and vice versa. Mr. Van Campen next asked if the studies on skipjack and their relation to the Southern Oscillation Index provide a good indication of where skipjack spawning occurs in the central Pacific. Dr. Joseph replied that heavy spawning apparently takes place in the central and western Pacific,

He noted that studies on the genetics of skipjack suggested a subpopulation in the central and eastern Pacific which is distinct from that of the western Pacific. Mr. Van Campen next expressed the opinion that possibly the three areas of concentration of yellowfin larval are artifacts of sampling, as they coincide with three areas of more intense research activity.

Ambassador Castro y Castro asked Dr. Joseph to comment on the migratory patterns of yellowfin in the eastern Pacific Ocean, particularly in the context of the term "highly migratory species." In replying to Ambassador Castro y Castro's query, Dr. Joseph indicated that he would like to talk about the migratory behavior of tuna in the Pacific Ocean in general, and then to relate the migratory behavior of yellowfin to that. He noted that in the northern hemisphere albacore undergo extensive migrations. They probably spawn in the northwestern Pacific, undertaking journeys during their first few years across the Pacific to the west coast of North America, changing again to the western Pacific and repeating the cycle various times. Albacore tagged off North America have been recaptured subsequently off Japan after only a few months of liberty. Likewise, albacore tagged off Japan have been recaptured off of North America. Northern bluefin, like albacore, undergo rapid trans-Pacific migrations. Bluefin tagged off of northern Mexico and California have been recaptured in the surface fishery off Japan, and bluefin tagged off Japan have been recaptured off North America. Skipjack are not resident to the eastern Pacific. They enter the fishery in the eastern Pacific from the central Pacific at an early age, spend on the average only a short part of their lives in the eastern Pacific and then return to the central Pacific to spawn. They rarely spawn in the eastern Pacific. Skipjack tagged off Baja California and near the Revillagigedo Islands and Clipperton Island have been recaptured near the Hawaiian Islands and the Line Islands. The migratory patterns for yellowfin are not well established, even though large numbers of them have been tagged. Of more than 75,000 yellowfin tagged and released in the eastern Pacific, none has been recaptured beyond about 142° west longitude. The longest migration of yellowfin based on tagging records is about 2,800 miles; however it is tentatively concluded that, on the average, yellowfin remain within about 1,000 miles of where they are hatched. It was emphasized by Dr. Joseph that regardless of the terminology applied to the migratory behavior of tunas, it must be remembered that to ensure proper conservation management must apply to the stock as a unit. In other words, if conservation measures are applied to a stock of tuna in only a portion of its range, those measures cannot be effective if in another portion of its range it is exploited without control.

AGENDA ITEMS 4, 5 and 6 -- THE 1975 FISHING YEAR, CONDITION OF THE YELLOWFIN STOCK AND THE QUOTA FOR 1976, AND DISCUSSION OF THE PRESENT SYSTEM OF CLOSING THE FISHERY

As is customary, the Chairman asked Dr. Joseph to present the material on Agenda Items 4 and 5 at the same time and to introduce Agenda Item 6, since these subjects are closely related. Everyone agreed with this approach, so Dr. Joseph proceeded with his presentation. He indicated that Background Papers 1 and 2 dealt with the subject in some depth, and that he would cover the material presented in those two documents in his review. The presentation made by Dr. Joseph lasted nearly 2 hours, but only a brief summary is given here, as the data are in the background documents. He stated that the 1975 catch of yellowfin is not complete, but will probably be about 175,000 tons. The catch rate during 1975 declined once again. It has declined by about 38% since 1972 in terms of the standard Class-3 vessels, whereas in terms of the larger Class-6 vessels, it has declined by about 50% during the same time period. If the catch rate is an accurate

index of stock abundance, then the average stock size is approximately 35 to 50% as large as it was 4 years ago. Estimates of the average maximum sustainable yield (AMSY) were made using in one case (Case I) effort standardized to Class-3 vessels and in the other case (Case II) Class-6 vessels. Both schemes produced estimates of the AMSY of 153,000 short tons. Dr. Joseph explained that, dependent upon certain assumptions chosen by the staff, further estimates were made which ranged between 135,000 and 173,000 tons. However, the staff's opinion is that the estimates of 153,000 tons best represent the conditions in the fishery.

In addition to the general production modelling analysis, Dr. Joseph reported on the staff's work with age-structured computer simulation models. He discussed the impact of the large catches of young fish taken in 1973 and 1974, and reported that the conclusion was that the large catch of age-1 fish in 1973 probably came from a year class of average strength, whereas the large catch of age-1 fish in 1974 came from a year class that was probably 50% stronger than average. This information was used with additional knowledge concerning growth, mortality, size composition and year-class strength to examine different fishing strategies with reference to conservation recommendations. Using simulation models it was estimated that the yellowfin stock in the eastern Pacific would sustain catches of about 150,000 tons per year.

The analyses were used to present the four following possible management alternatives (Cases III and IV are based on age-structured analysis):

Case I - The population of yellowfin is near its optimum level, and if the effort during 1976 is maintained at about 44,000 days a catch of about 165,000-170,000 tons can be safely taken. In 1977 the catch would come into equilibrium at about 153,000 tons.

Case II - The stock is below its optimum level, and to restore it to the level at which the AMSY can be taken the catch quota in 1976 should be set at 140,000 tons. In 1977 a catch of about 153,000 tons could be taken.

Case III - By maintaining effort constant at recently observed levels, the 1976 catch would be about 160,000 tons, and thereafter it would come into equilibrium at about 150,000 tons.

Case IV - By allowing unrestricted effort the catch in 1976 would reach about 195,000 tons, but by 1978 it would come into equilibrium at slightly less than 150,000 tons.

For Cases III and IV it seems paradoxical that catch would come into equilibrium at nearly the same level. It must be remembered that in these analyses it is assumed that there exists no relationship between the number of spawners and the number of recruits emanating therefrom. In other words, the same number of recruits enter the fishery each year. Given this assumption, it is then impossible to overexploit the stock except in terms of yield per recruitment. Therefore the catch in Cases III and IV after 2 years of fishing is nearly the same. However, to make this nearly equal catch under Case IV a great deal more effort is necessary. The catch rate under Case IV is about only half what it is for Case III, and the average size of the fish is much smaller under Case IV than Case III.

It is the staff's opinion that there does exist a relationship between spawners and recruits, and it therefore recommends basing conservation recommendations on the general

production-type models. Accordingly the staff's recommendation, as presented by Dr. Joseph, was for a lower quota of 140,000 tons, with the possibility of five increments of 10,000 tons each, which would imply an upper limit of 190,000 tons.

Next Dr. Joseph discussed the fishery in the area to the west of the CYRA, indicating that the catches in that region have increased linearly with effort. On the basis of these data and the staff's analyses no recommendation for conservation measures in that region were made.

It was then reported that if the Commission approved the lower quota it would be impossible to regulate the fishery so as to ensure that the expected catch would not exceed the established quota if the management program which existed in 1975 was retained in 1976. Of the three categories making up the catch, the open season (A), the last open trip (B) and special allocations (C), a catch of 140,000 tons could be taken under B and C alone. This means there would be no open-season catch, and therefore no opportunity to retain flexibility and to implement options. It was the recommendation of the staff that the management system be changed so as to correct this problem.

The meeting was adjourned at 6:15 p.m. until the following day.

The meeting was reconvened at 9:20 on October 14. The chairman gave a summary of Dr. Joseph's presentation of the previous day, and noted the salient features of his recommendations. He then opened the floor for discussion of Dr. Joseph's presentation. There followed a lengthy question and answer period, the most important points of which are presented herein.

In response to a question from Mr. Van Campen as to why Background Papers 1 and 2 were not available in advance of the meetings, Dr. Joseph explained that the meeting has been falling progressively earlier every year, resulting in the data for analysis becoming progressively less complete. Since time is required to collect, compile and analyse the data and to write, translate and duplicate the reports, starting the papers at a time early enough to distribute them well in advance of the meeting would reduce the data base for analysis even further.

Mr. Van Campen then asked Dr. Joseph to discuss the criteria used in deciding which of the general production models is most likely to represent the true situation. It was explained that judgement as to the validity of the assumptions made in employing the models in an important criterion. It was also pointed out that the ability of each model to duplicate events in the fishery, in terms of minimizing the sums of squares, was an important factor in the choice. Dr. Joseph went on to explain, however, that a high degree of certainty that one model would better represent conditions in the fishery than another model was not possible, and it was for that reason that the staff was asking for flexibility in managing the fishery. With such flexibility the risk of using a model that overestimates or underestimates the production is reduced. He further noted that there would always be uncertainty in estimating the potential of all fisheries, and therefore it is urgent that flexibility be retained.

Ambassador Castro y Castro, commenting on the fact that the Commission maintains a staff for scientific advice, noted that its recommendations should not be altered by the positions of particular nations, and that the advice recommended by the staff is not

too conservative to accept. Mr. Van Campen responded that the assignment of such power of flexibility to the staff can be regarded by some as the abduction of the power of the Commission. He then asked Dr. Joseph if 3-ton-per-day safety clause was not good enough in itself to provide management of the fishery. Dr. Joseph replied that it was difficult to predict precisely the catch rate on a current basis, and that the quota provided a more efficient form of management. He noted further that implementing the increments so early in the year was difficult to do in a manner that would ensure not exceeding the catch quota.

Ambassador Castro y Castro noted that by following the recommendations of the staff for 1976, and thereby remaining more flexible, the management system could be more responsive to actual occurrences in the fishery. He called attention to the fact that in the past the recommended quota had been exceeded on several occasions, and that this was related to the fact that the staff had to close the fishery at an early date to allow for the larger catches in category B, the last open trip. A rather lengthy debate continued concerning the advantages and disadvantages of retaining category B and/or C and the effects of factors such as the abundance of skipjack and the availability of yellowfin in the exclusive coastal zones on the indices of yellowfin abundance. It was noted by Mr. Van Campen that in his opinion clear overfishing of the yellowfin resource had not been demonstrated, and he defined such as a decline in catch so pronounced that it would be difficult to ascribe it to natural change. Dr. Joseph responded that in many fisheries of the world e.g. the California sardine, Atlantic halibut, Peruvian anchoveta, etc., the catches had dropped to extremely low levels, in some cases nearly zero, even though the effort remained high. It is still being argued for these fisheries whether there was clear overfishing. He reasoned on the basis of this that it would be difficult to get agreement of all parties concerned that clear overfishing of yellowfin was evident.

Ambassador Roman of Costa Rica pointed to the fact that science is not exact, and that what is a scientific truth today is changed by further knowledge tomorrow. He therefore urged that the scientific advice of the staff be taken, even though there is some degree of doubt and even though new data might suggest an alternate interpretation in the future. He stated that if conservation is to be effective scientific advice must be heeded, even if the scientific basis for the advice may change with the acquisition of new data. He further noted that the most realistic way to accommodate the changing nature of scientific results is to remain flexible in terms of establishing quotas, and strongly urged that the flexibility recommended by the staff be approved by the Commission. He noted that to retain this flexibility the management scheme must be supported by doing away with the concept of a last open trip. Both the Mexican and Panamanian delegations supported doing away with the last open trip, Mr. Obarrio of Panama noting that in some years as much as 43 percent of the annual catch has been taken under category B. Mr. Van Campen pointed out that the elimination of the last open trip would place a heavier burden on the fisheries of the United States than on those of the other countries. The delegation of Mexico, in responding to the statement of the United States, indicated that in the period of 1971-1974 the catch of the U.S. fleet went from 87 to 129 thousand tons, whereas during the same time period the Mexican catch went from 6 to only 16 thousand tons.

The Chairman reviewed the points of business to be resolved under these agenda items. He restated the recommendations of the staff, and advised the delegation that if the recommendations were followed it would be necessary to modify the management scheme. The meeting recessed at 12:45 p.m.

After the Intergovernmental Meeting the IATTC meeting was reconvened at 6:15 p.m. on October 17, 1975

After opening the meeting on Agenda Items 5 and 6, the Chairman called on Ambassador Christian Girard, Chairman of the 18th Intergovernmental Meeting, to report on any recommendations or agreement that that group might wish to present to the Commission. Ambassador Girard stated that the Intergovernmental Meeting did not reach any general agreement concerning recommendations for the management of tuna during 1976. The representative did, however, agree that in view of the reorganization of the tuna industry in Panama, during 1976 Panamanian vessels of up to 600 tons of carrying capacity should be able to fish under the 6,000-ton small-boat allowance. Ambassador Girard reported also that a resolution incorporating certain recommendations for the enforcement of conservation measures had been passed by the Intergovernmental Meeting, and he requested that the provisions of that resolution be incorporated into the resolution of the Commission.

The Chairman thanked Ambassador Girard, and then resumed discussion on the conservation recommendations for 1976. After some time it was clear that agreement could not be reached at this time, so the Chairman suggested holding Agenda Items 5 and 6 open and going on to Agenda Items 7 and 8, recess the meeting until a later date at another location and resume the discussion of Agenda Items 5, 6, 9, 10, 11 and 12. All the delegations agreed to this proposal. The United States offered to serve as host for the remainder of the 32nd IATTC meeting in Washington, D. C., sometime in December. This was tentatively agreed to.

AGENDA ITEM 7 - THE PORPOISE-TUNA RELATIONSHIP AND ASSOCIATED PROBLEMS

Mr. Van Campen, commenting on the 1,000 tons of yellowfin granted for porpoise research by the United States in 1975, reported that two research cruises had been made aboard U.S. vessels. These cruises were to test fishing gear designed to reduce porpoise mortality. The preliminary results are encouraging, and as soon as the analyses are completed the results will be distributed to all the governments.

AGENDA ITEM 8 - RECOMMENDED RESEARCH PROGRAM AND BUDGET FOR FY 1977/1978

At the Chairman's request Dr. Joseph reviewed the proposed IATTC budget for FY 1977/1978. Ambassador Castro y Castro of Mexico stated that his government was most pleased with the research of the Commission, and the budget presented by the staff represented an excellent use of fiscal resources. He therefore proposed that the budget be approved as presented. Mr. Van Campen of the U.S.A., in agreeing to the budget, commented that he would recommend to his government approval of the full amount, but stressed that the final approval of the U.S. contribution rests with the U.S. Congress. After this discussion the Chairman recessed the meeting at 6:50 p.m.

APPENDIX I

SPEECH BY SECRETARY GENERAL JEAN CHAPON

on the occasion of the opening session of the 32nd meeting of the
Inter-American Tropical Tuna Commission

The President, Gentlemen,

It is for me a great honor to open, here in Paris, the 32nd meeting of the Inter-American Tropical Tuna Commission.

First, I would like to be allowed to express a warm welcome to Paris to all the delegates, experts, advisors and observers who will participate in and follow these discussions on a high scientific level for this entire week. I would also like to express my sincere hopes for the achievement of their objectives, as well as for a pleasant sojourn in Paris.

The holding of the Commission meeting in France, in my view, does not only symbolize the conforming to a tradition followed in international fisheries organizations, a tradition which requires that the Commission be the guest of the acting President. This emphasizes, especially for us, the importance with which the French government attaches to the existence, to the proper functioning and to the development of international fisheries commissions.

Indeed, we consider that their role is irreplaceable in the protection of the species by the optimum management of known stocks; and by the investigations which have been evolved in various aspects of the stocks exploited or capable of being so, such as abundance, biology, biometrics and ecology. This is the reason that France has cooperated actively for a long time.

Our meeting here today testifies that this view has been widely held for many years.

In fact, it has been 25 years since the United States and Costa Rica decided to sign a Convention for the establishment of an Inter-American Tropical Tuna Commission. This Commission was one of the very first organizations of this kind. It has been the first to conduct research on the populations of the various species of tuna.

Since this time many states have adhered to this Convention, which began as a bilateral venture, and their participation today in their official status as adherents to the Convention, as well as the presence of observers from States or international organizations, attests to the wide interest in the questions discussed. This participation indicates the fundamental role that the Commission has played in the course of the last 25 years; a role that I would now like to emphasize. This is also a sign of the confidence that we have in the future based on its research work.

The most fundamental work undertaken by the staff of the La Jolla Laboratory first consisted in gathering existing data and analyzing the catch statistics. These statistics have been gathered each year since 1951 from the logbooks of the fishing vessels, so that it has been possible to record accurately and compute the landings in the ports of the regulatory zone. This shows the importance of gathering the statistics of the fishery and of their analyses. Everyone, at this stage, has understood the advantage of a viable statistical organization and the necessity of honest cooperation with it.

Extensive studies on different aspects of biology have been undertaken simultaneously. Investigations on migrations have been very much advanced by the tagging program. Research on the morphometrics and the biochemistry of the species is being conducted; improved methods of sampling are being used. Your Commission is also concerned with the influence and the quality of the environment on the abundance of stocks.

The diversity of these investigations, the expert choice of objective criteria for measures of abundance and the interpretation of the results have resulted in the achievement of a precise estimate of the stock abundance, and it is with a serene scientific assurance that the Director of Investigations delivers the annual value of the catch quota which may be taken without damage to the stocks.

Indeed, the trend for the reduction in the numbers of some species require us more than ever to bring into effect the principles of rational management. This type of management cannot be based on spontaneous decisions, but must be based on thoroughly considered and deliberated analyses of the situation.

It presupposes an agreement on the measures to be taken and the possibility of rapid implementation, since isolated or late implementations in the realm of conservation are almost completely devoid of effect. The preliminary investigations required by the actions of rational management so varied in kind and so geographically dispersed, have no real significance unless undertaken on a large regional scale. It must also be recognized that the sometimes large economic costs that are involved require that they be coordinated, controlled and interpreted by an international scientific body.

Scientific work of this quality is precisely that which is being conducted the the IATTC. It is the business of Dr. James Joseph, Director of Investigations, and of his staff, recognized for their outstanding qualities by each of you. The research is based on techniques which have been reported to me to be numerous and used with the greatest effect. In many ways the system of management and control of the yellowfin fishery in the Pacific Ocean used by the IATTC sets the example for the functioning of other international organizations.

This is the reason, I maintain, on the occasion of the 25th anniversary of the Commission, to emphasize the importance of the example established by this organization.

At this time, when the greatest uncertainties rule over the future status of the seas, and when the fishing industry is apprehensive about impending upheavals and problems which will have to be faced, it is fortunate that an organization like the IATTC has demonstrated that investigations can continue to work with confidence in a spirit of cooperation, with concern for the common interest and to arrive at decisions whose scientific basis guarantees objectivity. I am certain that organizations of this type will always have a place in the new world created by modern international law.

But, I do not wish to digress from today's purpose. Having spoken of international cooperation, it is in a spirit of straightforward collaboration that I hope you will deliberate. I well know the difficulties you are about to face. You will have to find a balanced solutions, keeping in mind on the one hand the biological imperatives, and on the other the social and economic interests of each country. The task is great, gentlemen, and I would not want to delay your work. I am certain that with a positive spirit of cooperation, animated by the will to succeed, you will arrive this year again at a general agreement.

APPENDIX II

LIST OF ATTENDEES AT THE 32nd MEETING OF THE IATTC

CANADA

S. N. Tibbo - Commissioner
G. E. Waring - Commissioner
E. B. Young - Commissioner

J. Beckett
B. M. Chatwin
Georges Leger

COSTA RICA

Milton H. Lopez G. - Commissioner

Diogenes Amador Meza
Raul H. Canessa Murillo
Giovanna Bianchini
Manuel Freer
Ruben Murillo Adams
Victor Roman

FRANCE

Serge Garache - Commissioner
Robert Letaconnoux - Commissioner

Jean-Claude Dao
Michel Dion
Christian Girard
Bertrand Labrousse
J. C. Le Guen
Jacques Marcille
Alain Parres
Madame Rossignol
Patric Soisson
A. Thibaudeau

JAPAN

Koji Imamura - Commissioner

Mikio Inamori
Y. Shirokane

MEXICO

Fernando Castro y Castro - Commissioner
Joaquin Mercado - Commissioner
Amin Zarur M. - Commissioner

Manuel Mondragon
Jesus Nieto
Jorge Torija Bouchan

NICARAGUA

Gilberto Bergman Padilla - Commissioner
Antonio Flores A. - Commissioner

Octavio Gutierrez
Rodolfo Romero Meza

PANAMA

Juan L. de Obarrio - Commissioner

Jose Maria Cabrera
Jose Luis Sosa

U.S.A.

Donald P. Loker - Commissioner
Robert C. Macdonald - Commissioner
Wilvan G. Van Campen - Commissioner
Jack Gorby - Commissioner (alternate)

Jack Bowland
Gordon C. Broadhead
Peter Buchan
Charles R. Carry
Manuel R. Cintas
Cosimo L. Cutri
James S. deSilva Jr.
August Felando
William W. Fox, Jr.
Doyle E. Gates
Brian S. Hallman
Gerald V. Howard
Daniel D. Huppert
Barbara A. Keith
O. E. Kerns, Jr.
Harold Medina
Anthony Nizetich
Bernard H. Oxman
Robert J. Pasarow
Claire Pasarow
Anthony Pisano
George Rees
B. J. Rothschild
John Royal
Manuel A. Silva
Jack Tarantino
Eduardo R. Van Os
David H. Wallace
Robert B. Young
Julius H. Zolezzi

CHILE

Eduardo Jara

CUBA

Elvira Carrillo Cardenas
Guillermo Llovet Solis

ECUADOR

Hernan Guarderas

GUATEMALA

Hernan Hurtado Prem
Salvador Ortega

KOREA

Kim Sung Chae

SPAIN

V. Bermejo
Francisco Cadiz
J. A. Pereiro Munoz

FAO

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