14th meeting

INTER-AMERICAN TROPICAL TUNA COMMISSION

SUMMARY MINUTES OF SPECIAL MEETING HELD AT LONG BEACH, CALIFORNIA
14 SEPTEMBER 1961

A Special Meeting of the Inter-American Tropical Tuna Commission, for the purpose of considering the need for regulation of the fishery for yellowfin tuna and, if necessary, to make specific recommendations to the Member Governments, was held at the Lafayette Hotel, Long Beach, California, on 14 September 1961. Representatives of the Member Governments attending the meeting were:

Costa Rica:

Fernando Flores and Victor Nigro, Commissioners

Ecuador:

Cesar Raza, Sub-Director of Fisheries, having credentials to represent Ecuador at this meeting.

Panama:

Juan L. Obarrio, Chairman of the Commission

United States of America: Eugene D. Bennett, Robert L. Jones, and J. Laurence McHugh, Commissioners

Official observers from non-member Governments were:

Colombia: Jesús Echeverri, Consul General at Los Angeles
Mexico: Pedro Mercado, Director Escuela Superior de Ciencias Marinas, Ensenada, B.C.
Peru: Antonio Mesones, Consul General at Los Angeles

The following members of the Advisory Committee to the U.S. Section of the Commission in attendance were:

Lester Balinger
John Calise
W. M. Chapman
Charles Carry
August Felando
Max Gorby
Donald Loker
Janous Marks
John McGowan
William Moore
Anthony Nizetich
Gerald F. Roberts
John J. Royal

The following members of the Commission's staff were present:

M.B. Schaefer, Director of Investigations
Gordon C. Broadhead
Clifford L. Peterson
Franklin G. Alverson
Edwin B. Davidoff
Craig C. Orange

Other persons attending the meeting were:

W. C. Herrington, U.S. Department of State
José Alvarez Manzanos, Pesca y Marina, Los Angeles
Raúl de Lara, Pesca y Marina, Los Angeles
Edwin R. Kovalcheck, Westgate California Packing Co.
Leslie E.Gehres, National Marine Terminal, San Diego
Joseph Monti, Independent Fishermen's Union
Raúl Rodriguez, Pacific Fisherman
Vince Budrovich, Fishermen's Coop., San Pedro
D. R. Johnson, U.S. Bureau of Commercial Fisheries
M. C. Mardesich, Franco-Italian Packing Corp.
Charles Buchan, Van Camp Sea Foods, Inc.
Peter Buchan, Van Camp Sea Foods, Inc.
William Horner, Van Camp Sea Foods, Inc.

The meeting was called to order at 1000 by Juan L. Obarrio, Chairman. He gave a short address of welcome, outlining the history of the Commission, its objectives, and its terms of reference, and the purpose of this Special Meeting. He introduced all persons present.

Mr. Cesar Raza responded, expressing the pleasure of Ecuador at attending the meeting, and transmitting greetings from the Minister of Fomento and the Minister of Foreign Affairs of his country.

In honor of Mr. Lee F. Payne, Commissioner of the United States of America, there was presented a Resolution in his memory, which was read by the Chairman, as attached hereto. This was moved by Costa Rica, seconded by the United States, and unanimously adopted.

A suggested agenda for the meeting, and notes thereon had been circulated in advance. This contained three items:

I. The need for regulation of the fishery for yellowfin tuna.

II. Consideration of possible types of regulation, and selection of the most appropriate.

III. Specific recommendations to be made to the Member Governments.

The adoption of the agenda was moved by Costa Rica, seconded by the United States, and unanimously approved.

The Chairman announced that the procedure for the meeting would be as follows: The Director of Investigations would discuss Item I, and thereafter would be questioned by the Commissioners, following which any member of the audience might ask further questions. The same procedure would be followed with respect to Item II. After the discussions and questioning, and whatever statements anyone cared to make, had been completed, the Commission would convene in Executive Session with the scientific staff to consider Item III.

The Chairman then called on the Director of Investigations to present and discuss Item I of the agenda.

The Director of Investigations referred to the following note which had been attached to the suggested agenda, which had been adopted:

"1. The need for regulation of the fishery for yellowfin tuna

"It will be remembered that at the time of the annual meeting, held in Panama, on 23-24 February 1961, it was indicated that during 1960 the fishing effort applied to the yellowfin tuna stocks of the Eastern Tropical Pacific had reached approximately the level believed to correspond to maximum average sustainable yield. It was also indicated that further substantial increase in fishing effort might occur during 1961, resulting in the attainment of a rate of exploitation of the yellowfin tuna greater than that corresponding to maximum average sustainable yield. It appeared possible, however, that diversion of vessels to other fisheries, and other factors, could result in the fishing becoming stabilized near the maximum yield level.

"Review of the statistics of the fishery, and ancillary data, for the first six months of 1961 leads to the conclusion that the fishery will almost certainly, during this year, reach a rate of exploitation of the yellowfin tuna above that corresponding to sustainable maximum average harvest, and that, in consequence, the abundance of the stocks will have been reduced to an undesirably low level. Thus, joint action by the High Contracting Parties will be required to restrict the fishery for yellowfin tuna so as to restore the stocks to the level of abundance which will permit maximum average sustainable catch, and to maintain them in that condition in the future.

"I shall plan to review at the meeting the material presented at the annual meeting in February, the data respecting the experience of the first six months of 1961, and our forecast of effort and catch for the full year 1961. It is anticipated that this will lead to the conclusion that there is need at this time for the Commission to recommend regulatory action by the High Contracting Parties."

He then presented the staff's analyses of data for earlier years and for the current year, to show the condition of the yellowfin stocks with relation to the condition corresponding to maximum sustainable yield, the salient points being as follows:

According to the current tabulations of catches, it was estimated that some 90,000 tons of yellowfin tuna had been landed so far this year, and the staff's forecast for the full year is 120,000 tons. At the same time, in both the northern and southern areas (north and south of 15°N latitude) of the fishery, there has been a substantial drop in the catch-per-unit-of-effort by seiners. It is believed that the amount of fishing effort exerted during 1960, 34,000 standard (baitboat equivalent) days, corresponds verynearly to the value at which maximum average sustainable yield is to be obtained; the catch of 117,000 tons during that year reduced the stock to about the level where it could continue to yield the maximum harvest. In order to take the estimated 120,000 tons during 1961, there will be exerted some 45,000 units of effort, and the stock will be reduced to a level below that at which it can continue to yield maximum harvests.

It was shown that analysis of data from 1934 through 1960 indicate that, with the present size at first susceptibility to capture of yellowfin tuna, the maximum average sustainable yield is estimated to lie between 80,000 tons and 110,000 tons, with 97,000 tons as the most probable value, and that this can be taken with a sustained effort of about 36,000 standard (baitboat) units. It was noted that with the conversion of much of the fleet to seining, it had become necessary to convert seiner units of catch per effort and of effort to baitboat units to obtain reliable figures, using information from both types of gear, and the method of doing this was explained.

It was pointed out, as it had been at the Panama meeting, that the relationship among fishing effort, catch-per-unit-of-effort, and total catch has been extrapolated somewhat beyond the range of data through 1960, and that, therefore, we cannot be certain that the mathematical model employed would continue to fit the data at higher levels of fishing effort. Consequently, the staff has also examined the dynamics of the fishery using a different approach, based on estimates of growth rate, natural mortality rate, and fishing mortality rates at various levels of fishing effort. Assuming constant recruitment at all levels of stock (and fishing effort), that is, assuming that decrease in stock will not decrease recruits, which is the most favorable reasonable assumption, the maximum harvest is still found to occur near 36,000 units of fishing effort. However, at higher levels of fishing effort, the sustainable catch, according to this model (where recruitment is density-independent) falls off slower than according to the alternative model applied to catch-statistical data alone (which implicitly assumes that recruitment is density-dependent). At the level of yellowfin abundance expected to be reached after the removal of 120,000 tons during 1961 the sustainable yield will be 87,000 tons according to the density-dependent model or 95,000 tons according to the density-independent model. In either case, it would be necessary to curtail fishing effort if the stock is to be restored to where it can sustain the average maximum yield of 97,000 tons.

It was noted that the yellowfin tuna are, in fact, separable into at least two components, which are to some degree independent, with an approximate geographical demarcation near 15°N latitude, although some fish of the northern component migrate into the northern part of the southern area, and some fish of the southern component migrate into the southern part of the northern area, as shown by tagged tuna migrations and other information. The data for the separate areas on fishing effort, apparent abundance, and total catch for years 1947 through 1960 (such data not being available by area for former years) have therefore also been examined, and were illustrated by charts shown at the meeting. It is estimated that the northern component's maximum sustainable yield is about 43,000 tons, whereas that of the southern component is about 53,000 tons. However, the data indicate that these two component stocks respond somewhat differently to fishing, the southern stock decreasing more rapidly for the same increase in fishing effort than the northern stock. It also appears that the maximum sustainable catch from the southern component occurs at a higher level of catch-per-unit-of-effort than at which the maximum sustainable catch from the northern component is to be obtained. Since this also corresponds to the economic fact that, for the same catch, a vessel sailing from California requires a higher catch-per-day in the southern area to make it worthwhile to go there, there appears to be a good possibility that a single limitation on total catch would, through the effect of this economic factor, be properly pro-rated between the component stocks.

The Chairman then asked for any questions.

Commissioner McHugh asked several questions, and received answers as follows:

1) Since, as is well known, seiners catch more big fish than baitboats, is there not a possibility that this gear is now fishing on a new population of yellowfin not previously exploited?

The Director, referring to publications by the staff, indicated that both baitboats and seiners catch the same size-range of yellowfin tuna, but that seiners catch from this size-range relatively more of the larger fish and fewer of the smaller fish than do baitboats, fishing in the same areas at the same seasons. It seems that the difference in size-composition of the catches of the two types of gear is the result of a slight differential in availability to the different gears at different sizes, not to the vessels fishing different stocks of fish.

The staff has also tagged a great many fish from baitboats, which have been returned both by baitboats and by seiners, even after they reach large sizes. Fewer fish have been tagged from seiners, but recoveries were made by both types of gear.

If the large fish taken by seiners were from a different stock than that fished by baitboats, it would have to be assumed that these fish at small sizes occurred somewhere else than in the Eastern Tropical Pacific and migrated here at larger sizes. Since there are known extensive spawning areas within the region under investigation, since the migrations of yellowfin tuna are limited (as shown by tagging results and also by morphological comparisons of specimens from other parts of the Pacific with those from the fishery off the Americas), such an assumption appears quite unrealistic.

The fact that the seiners do, indeed, take somewhat larger fish than the baitboats might result in some small increase in sustainable yield since, as had been shown at Panama (and was shown again at this point), leaving small fish in the sea for a few extra months increases the yield-per-recruit, because at very small sizes the fish are gaining more in weight than is being lost by natural mortality.

2) Could not the fishery be expected to return by itself to a lower amount of fishing effort due to diversion of vessels to fishing of bluefin, sardines, and other species?

The Director said that there is little reason to believe this will happen. The seiners always do fish bluefin during the season when they are abundant near California, but he saw no reason to believe that this would substantially increase. So far as diversion to sardine fishing is concerned, only the smaller seiners do this and, considering the present very low abundance of the sardine resource, we would expect perhaps less fishing of that species rather than more than during the past years.

3) Since it cannot be determined whether recruitment to the yellowfin population is or is not density-dependent, should not a catch limit be established on the basis of the density-independent model rather than the density-dependent model?

In reply, it was reiterated that we cannot tell whether the density-dependent or the density-independent recruitment model is most nearly correct. In either case, however, if 120,000 tons are taken during 1961, it will be necessary to return to the stock, over whatever period of years is deemed most desirable, about 23,000 tons which will have been removed above the maximum sustainable yield of 97,000 tons. If the density-dependent model is correct, the stock in 1962 will be able to support a catch of only 87,000 tons without further decline, while under the density-independent model this figure would be 95,000 tons. In order to be assured that the stock will be restored, it will, thus, be necessary to restrict the catch, by one means or another, to less than 87,000 tons. If, for example, the catch were limited to 80,000 tons, the stock would be restored in about three years in the case of density-dependent recruitment and in less than two years in the case of density-independent recruitment.

4) If the fishing effort, and total catch, need to be reduced, what would be the biological effect of doing this more gradually?

Dr. Schaefer replied that the "biological" effects would be the same in any case, it is only a question of how rapidly the stock is to be restored to its optimum level. If, for example, the catch were to be restricted to 83,000 tons it would take almost six years to return to the optimum level in the case of density-dependent recruitment. The longer time needed to restore the stocks could mean a substantial

loss of income which might otherwise have been obtained. This was illustrated arithmetically on the blackboard, with the aid of additional questions from the audience.

The audience preferred to postpone further questions until after the discussion of agenda Item II, so the Chairman asked Dr. Schaefer to present the material respecting it.

The Director listed on the blackboard the various types of regulations which could, in theory, be applied to management of marine fisheries, as listed in the notes on the agenda, and which are as follows:

1) Measures to limit fishing effort, directly or indirectly:
   a) Direct limitation of number of vessels allowed to engage in the fishery.
   b) Limitation of catch by quota.
   c) Closed areas and/or closed seasons.
   d) Limitation of efficiency of gear and ancillary equipment.

2) Protection of small fish to increase the yield-per-recruit:
   a) Minimum size limits.
   b) Closure of areas where small fish predominate, in seasons when they predominate.

It was pointed out that, in considering which of these kinds of regulation is most appropriate, a number of factors need to be taken into account, including:

1) Effect on other fisheries. It will be remembered that skipjack are taken, in general, in the same area as yellowfin tuna, and at the same times of year. Skipjack are being very much underfished, that is the stocks are capable of supporting, on a sustainable basis, a much larger harvest than is being obtained at present. Regulation of yellowfin fishing should, therefore, be selected so as not to handicap fishing for skipjack, and indeed to encourage it.

2) Kinds of regulation which are possible for the Member Governments. In at least some of the member countries, it is against the public policy, and perhaps not constitutional, to discriminate among citizens with respect to opportunity to engage in the fishery; this effectively rules out the measure under (1a) above.

3) Whether, in fact, the regulations are capable of being observed by the fishermen. This is most pertinent with respect to minimum size limits. It is evident that in purse-seine fishing the fishermen often cannot tell what size of fish are being caught until the net has been pursed and "dried-up", by which time most of the fish are dead or dying and cannot be liberated and survive.

The Director indicated, as noted above, that direct limitation of number of boats allowed to engage in the yellowfin fishery would present very difficult legal problems in the United States, at least. Furthermore, it would be economically inefficient to license only some vessels to catch yellowfin tuna and others to be confined to skipjack, since both species occur in the same region and should be harvested jointly, so far as possible, for the sake of economic utilization of the resources. This would seem to rule out (1a).

Limitation of efficiency of gear, although employed in some fisheries, such as the North Pacific Salmon fisheries, appears undesirable because it is economically ridiculous. Also, one cannot thus handicap the catching of yellowfin without also decreasing the effectiveness of fishing for skipjack, which should be avoided. Thus

(1d) would merit little consideration.

Likewise, closed areas and/or closed seasons, either for curtailing total catch of yellowfin or for protecting small yellowfin would have serious drawbacks, because:

(1) Closure of good yellowfin fishing seasons and areas would have similar undesirable economic effects to those incurred by limiting efficiency of fishing gear and ancillary equipment.

(2) Small yellowfin occur often in the same areas as skipjack, and closure of these areas would importantly cut off the fleet from access to the skipjack resource.

(3) It would be extremely difficult to enforce an area and season closure on yellowfin, and, at the same time, permit skipjack fishing.

Thus (1d) and (2b) would seem to be a difficult, and perhaps undesirable, type of regulation.

There are left then, only two types of conservation regulation to be considered.

The establishment of a limitation of total annual catch limit, or "quota", seems to the staff to be the most straightforward and effective means of restoring the stocks of yellowfin, and of subsequently maintaining them at a level of maximum average sustainable yield. The staff had prepared an "Estimation of recommended yellowfin tuna quota for 1962", as a note to the agenda, and which is as follows:

"ESTIMATION OF RECOMMENDED YELLOWFIN TUNA QUOTA FOR 1962"

"It is estimated that there will be captured during 1961 a total of 120,000 tons of yellowfin from the Eastern Pacific, consisting of 97,000 tons corresponding to the sustainable yield, and a removal from the stock of an additional 23,000 tons.

"At the level of abundance of stock expected to be reached by the end of 1961, there can be maintained, with about 45,000 units of fishing effort (the amount of effort applied in 1961) an average sustainable yield of 87,000 tons, if the recruitment is density-dependent, or of 95,000 tons if the recruitment is density-independent.

"Since we cannot say at this time whether recruitment is or is not density-dependent, it is necessary to take less than 87,000 tons if the stock is assuredly to be rebuilt toward its level of maximum sustainable yield. A quota of about 80,000 tons would permit the stock to be returned to its optimum level in about three years in one case, and in less than two years in the other. It is, therefore, suggested that the Commission recommend that the quota of total catch by all nations be set at 80,000 tons for 1962.

"It is, of course, unavoidable that some yellowfin will be taken from mixed schools of skipjack and yellowfin when vessels are fishing for skipjack after the fishery for yellowfin is closed due to the quota having been filled. It will be necessary, therefore, to allow a small percentage of yellowfin for unavoidable incidental catch with skipjack after the closure of the yellowfin fishery. We suggest that a vessel may be allowed on any single trip, after the closure of the yellowfin fishery, ten per cent of yellowfin among the skipjack. We estimate that as much as 70,000 tons of skipjack might be caught after the yellowfin fishery is closed, and that application of an allowance of ten per cent yellowfin per trip would result in an average of eight per cent yellowfin on such trips, or a total of 5,600 tons of yellowfin. This would leave 74,400 tons of yellowfin to be caught during the open

season for that species.

"It is, therefore, recommended that the yellowfin fishery in the Eastern Pacific be opened on 1 January 1962 and that it be closed when the landings of yellowfin tuna, plus the amount expected to be landed by vessels at sea which had cleared for the yellowfin fishery, would be expected to reach 74,400 tons. After that date, vessels would be allowed to clear for skipjack fishing only, and would be permitted to land not more than ten per cent of yellowfin on any trip."

The Director further stated that, as indicated earlier, study of the catch-statistical data from the regions north and south of 15°N latitude had shown that the responses of the population components of these two regions to fishing are such that they tend to be exploited in similar degree, due to economic factors, at a given level of total fishing effort; in other words, a single catch-quota for the entire Eastern Tropical Pacific has a reasonably high probability of resulting in properly balanced harvests from both components. It was suggested, therefore, that, initially, regulation of the fishery be by a single catch-limit for the entire region, bearing in mind, however, that it may prove necessary at some future date to establish separate quotas for the two zones.

With respect to the possibility of establishing minimum size limits higher than the size at which the yellowfin tuna now begin to be caught, the Director indicated that this would be highly desirable if it could be put into practice. The results of a study of the yield-per-recruit which could be obtained, at various levels of fishing effort, had been presented at the Panama meeting in February 1961. They were again illustrated and discussed here. It appears that, at current levels of effort, if the fishermen could let the fish grow for another six months, that is up to a size of about 25 to 28 pounds, before commencing to catch them, the yield-per-recruit could be increased, most probably, from about 16 pounds to somewhere between 20 and 22 pounds. At a minimum, it is estimated that the increase could be from 14 pounds to 16 pounds per recruit. Thus, if the fishermen could and would refrain from catching the fish of small size, the sustainable yield during 1962 might be increased by at least 12,000 tons, worth (at current prices) over three million dollars.

However, the opinions of the fishermen, who had been extensively consulted, as well as the observations of the staff, indicated that the fishermen could not tell with sufficient accuracy the size of fish in a school until the net had been set around it and had been hauled in to a point where the fish were dead or dying. It would do no good to establish a minimum size limit which could not be put into effect by the fishermen. At this point two questions were asked from the audience:

It was asked whether spawning fish could be protected. In reply, Dr. Schaefer stated that fish in spawning condition (running ripe fish) are seldom taken; apparently at that stage they become practically unavailable, although fish in a very advanced stage of sexual maturity, near to spawning, are captured, together with some that have recently spawned. These are captured during a long period of time and over large areas. Due to the very long spawning season, and large spawning areas, it would not be practical to protect them during such a period. Furthermore, protection of spawning pelagic fish, which give no care to their young, is of little utility, because whether a fish is caught during the spawning season or some months earlier, (since the fish caught is dead and thus cannot spawn) makes no difference to the reproduction of the stock.

It was asked whether, if the fishermen refrained from catching more than 97,000 tons this year any limitation of catch would be necessary.

The reply was that if only that amount were to be taken, a quota of 97,000 tons could be permitted next year, but, since about 90,000 tons had already been landed, this seemed an unlikely possibility.

Dr. Schaefer, then, returning to the matter of the catch quota, pointed out that the staff's suggestion of an allowance of ten per cent of yellowfin among the catch of skipjack by any vessel, after the closure of the season for yellowfin, had been based on data as to catch composition recorded in vessel logbooks, but in discussing the matter with several members of the fishing fleet, it appeared that this allowance might be too small. From the standpoint of the conservation of the yellowfin stocks, it would make no difference if this allowance were set at some other percentage, so long as the corresponding tonnage of yellowfin is removed from the total quota, so that the total annual catch remains the same. He presented the following schedule of quantities of yellowfin to be taken during the open and closed seasons, with different percentage allowances for yellowfin to be taken with skipjack during the closed season:

Allowance	Total catch	Quota during open season	Estimated catch during closed season
10%	80,000	74,400	5,600
15%	80,000	71,600	8,400
20%	80,000	68,800	11,200
30%	80,000	63,200	16,800
40%	80,000	57,600	22,400
* 15%	83,000	74,600	8,400

* see text below

At this point, it then being 1230, the meeting was recessed for lunch, at which the Advisory Committee to the U.S. Section of the Commission were hosts to all persons in attendance.

The meeting reconvened at 1410.

Mr. Loker said that a higher allowance than 80,000 tons, perhaps 83,000 tons, would be less of a shock to the industry, even if it meant restoring the stocks more gradually. Also he believed it would be highly desirable to educate the fishermen on the desirability of increasing the minimum size limit, and to develop methods of more accurately determining the size of fish before setting the net around them. Several others concurred in this last opinion.

* Dr. Schaefer added to the foregoing schedule the figures corresponding to total annual catch of 83,000 tons with a 15% allowance for yellowfin after the closure of the yellowfin season, which is shown on the last line of the schedule above.

Mr. Nizetich again raised the question of voluntary curtailment of fishing by the industry, and also asked what would be the effect on the recommendations of a 1961 catch of less than 120,000 tons.

Commissioner Bennett pointed out that voluntary cooperative action by the industry to curtail the catch might lead to a charge of violation of the laws of the United States respecting restraint of trade; that while one could not forecast this, it would be, at best, a calculated risk.

Dr. Schaefer, in reply to the second part of the question, said that the quota for 1962 could be increased by the amount that the actual 1961 catch fell below

120,000 tons (but also should be decreased by the amount it exceeds 120,000 tons), and that the Commission could revise its recommendations after the end of the year if either of these contingencies should eventuate.

Dr. Chapman, Mr. Herrington and several others urged the Commission to include in whatever recommendations might be made a statement that the Commission would do this.

Mr. Monti asked whether more emphasis should not be placed on increasing the minimum size, rather than on a tonnage catch limit, since, if small fish could be avoided, this would be the best regulation.

Mr. Budrovich said that fishermen can tell large fish from very small fish (fish below the present California limit of 7.5 pounds) fairly well, but doubted that they might be able accurately to distinguish at larger sizes. He said that fishermen would probably catch a lot of small fish which would be dumped overboard.

Mr. Gorby asked whether something could be done by research on the matter of identifying size of fish before catching them.

Dr. Schaefer said this appeared to be an important line of research, but would be quite costly; that the Commission's budget recommendations had already been cut by the United States, and present finances were inadequate to carry on the work now underway, so that, without further funds, the Commission's staff could not do much along this line. However, the U.S. Bureau of Commercial Fisheries might be able to commence such research, and the Commission's staff would assist in any way possible within the limits of financial ability.

Mr. Gorby and several others said this should be vigorously pursued.

Mr. Felando asked how the sustainable yield is estimated, and what new information could lead to a conclusion that the present estimate is wrong.

The Director showed a figure (which had been shown earlier) on which is plotted the catch-per-unit-of-effort against fishing effort for past years, and the forecast for 1961. The data fall within a band, about a line which best fits the observations, there being a certain degree of statistical uncertainty as to this line of averages due to the quasi-random scatter of the data about it. If during 1961, or subsequently, a data point were to fall well outside this band encompassing the statistical variability of past observations, it would indicate that the mathematical model employed is not applicable, and construction of a new model would be necessary.

Mr. Felando and Mr. Calise asked questions about various aspects of enforcement of regulations, which were answered by Schaefer and by Herrington, with assistance from other members of the audience.

There was further discussion, with several participants, regarding the percentages of yellowfin in mixed schools. Reference was made by Dr. Schaefer to Bulletins of the Commission containing data on this matter, and Mr. Broadhead and Mr. Orange added some commentary.

Mr. Felando stated that his association would, among the choices so far presented, favor regulation by annual quota, with the total catch at 83,000 tons and an allowance of 20% of yellowfin after closure of the yellowfin season.

Mr. Calise stated that he is in favor of a smaller percentage allowance.

Commissioner McHugh noted that yellowfin would, in general, probably be less abundant during the closed season, so the problem of the percentage allowance would be lessened.

Dr. Chapman observed that the occurrence of mixed schools is variable both by season and area, and that perhaps there are not yet enough data at hand for the "new" seiners to provide a very precise estimate.

Admiral Gehres was in favor of the 20% allowance.

Mr. Marks asked about protection of spawning fish by closure of spawning areas.

Dr. Schaefer explained that, due to the long spawning season over large areas, this would be impractical and that, furthermore, protection of spawning fish is not a very useful conservation measure, since pelagic fish give no care to their young, in consequence of which it makes little or no difference to reproduction when they are caught.

Mr. Nizetich was in favor of only a ten per cent allowance for yellowfin among skipjack during the closed season.

There being no further questions or statements from the audience, the open session was adjourned at 1505.

The EXECUTIVE SESSION convened at 1520, being attended by the Commissioners and the Representative of Ecuador, and at the Chairman's invitation, the members of the scientific staff and Mr. Herrington.

Under Item III of the agenda, there was discussed a draft resolution containing recommendations to the Member Governments, which was revised in the light of the discussions, questions, and statements put forward during the Open Session. The resolution, as amended, recommending joint action by the Member Governments, and as appended hereto was moved for adoption by the United States of America and seconded by Ecuador. On a roll call vote the resolution was unanimously adopted.

Mr. Herrington raised the matter of collection of statistics of catch, including both landings and catches of vessels at sea with clearance for yellowfin fishing which had not yet returned to port, which would be needed by the Member Governments in order to anticipate the filling of the yellowfin quota during the open season, and in order to enable the closure of the season to be announced in a timely manner. He believed that the staff of the Commission would be in the best position to undertake this additional task, and hoped the Commission would be able to have the staff do so.

Dr. Schaefer agreed that the staff could do this, if the Commission and the Member Governments wished them to do so, but that it would require additional funds to employ additional statistical agents, for travel, and for radio and cable communications. He had already advised Mr. Herrington about this and had estimated that the annual cost would be about $45,000, to cover all fleets and ports of landing except those of Japan. Additional funds would be needed if it was desired that the staff collect directly data on Japanese vessels fishing in the Eastern Pacific; it was to be hoped that other means might be found for this phase of the task.

After some further discussion, the Commission agreed that the staff should undertake this added task of collection of statistics necessary to assist the Governments in setting closing dates for yellowfin fishing, provided that financial support is forthcoming for this purpose. The Director of Investigations was instructed to advise Mr. Herrington and the Commissioners as to the amount of funds required.

The Southern California Fish Canners Association had urged the Commission to send Dr. Schaefer as an observer to the meeting of the Intergovernmental Oceanographic Commission, which is to be held in Paris from 19 to 27 October 1961. Realizing that this might not be of sufficient interest to the IATTC, in view of current shortage of funds, to warrant spending its money for that purpose, the Association had offered to reimburse the IATTC for expenses incurred by Dr. Schaefer in attending this meeting.

Dr. Schaefer wished to be assured that, should he attend, he would be representing only the IATTC, and exercising his best judgement in that context respecting proposals which might be put forward in Paris, realizing that this might not necessarily agree with the positions of individual Member Governments of the IATTC represented on the IOC.

After some further discussion the Commission voted unanimously to authorize Dr. Schaefer to attend the forthcoming meeting of the Intergovernmental Oceanographic Commission as an observer for the Tuna Commission, and to use his best judgement, as the Commission's representative, regarding proposals at the meeting; and to accept the offer of the Southern California Fish Canners Association to reimburse the Commission for his expenses in attending the meeting.

Mr. Raza, Representative of Ecuador, again expressed the pleasure of his Government at being a member of the Commission since 7 April of this year, and expressed the hope that the Commission would hold its next annual meeting (in May 1962) in Quito, Ecuador.

There being no further business to come before this Special Meeting of the Commission, the meeting was adjourned at 1615.

INTER-AMERICAN TROPICAL TUNA COMMISSION

Considering sorrowfully, the death on 10 April 1961, at the age of 60, of the Honorable Lee F. Payne, member of the U.S. Section of the Commission;

Noting, that Mr. Payne had served as a member of this Commission since its foundation in 1950;

Noting, also, his long years of devoted service on the California Fish and Commission, on the Los Angeles County Fish and Game Commission, and on the California Marine Research Committee, and his great devotion to the cause of conservation;

Remembering the admiration and respect in which he was held by all of his colleagues, and the magnificent contributions he made to the cause of international cooperation in fisheries affairs;

Expresses the grief of its members on the passing of our beloved colleague, the Honorable Lee F. Payne;

Extends to his widow and many friends who survive him our sincere condolences; and

Requests the Chairman to transmit to Mrs. Payne a copy of this resolution.

RESOLUTION 14 September 1961

Inter-American Tropical Tuna Commission

Observing, that the studies of its scientific staff have indicated that during the year 1960 the intensity of fishing for yellowfin tuna in the Eastern Pacific Ocean had reached the level corresponding to maximum average sustainable catch;

Observing, that continuing studies of catch statistics and other data indicate that, during 1961, there has been a further increase in the amount of fishing for yellowfin tuna, that the total catch during this year will exceed the sustainable yield, and that, consequently, the populations of this species will most probably be reduced to a level which cannot provide sustained maximum yield.

Concluding, therefore, that there is a need for joint action by the High Contracting Parties to restore the yellowfin populations to those levels of abundance which will make possible the maximum sustainable yield, and to maintain them in that condition.

Noting, however, that the stocks of skipjack tuna, which are fished in the same fishing region, at the same time, can support increased harvests, which should be encouraged.

Noting that in fishing for skipjack some incidental catch of yellowfin is unavoidable.

Having considered various possibles types of regulation of the yellowfin tuna fishery with respect to their biological and economic effects, feasibility and enforcement, and

Having considered that limitation of total catch, by annual quota, is the most effective and practicable type of regulation.

Noting that, although there are, in the Eastern Tropical Pacific, at least two semi-independent component yellowfin tuna populations, the allocation of fishing effort to them due to economic forces is such that, with a single annual catch quota for the entire region, there is a high probability that there will result properly

balanced harvests from the population components, and, consequently,

Having concluded that, initially at least, regulation of the yellowfin tuna fishery should be effected by a single annual total catch quota for the entire region

Having considered the estimates of the scientific staff that

1) There will be removed by the end of 1961, from the yellowfin tuna stocks, some 23,000 tons, above the maximum sustainable yield, which require to be restored

2) At the level of abundance which will be reached by the end of 1961 the yellowfin stocks will most probably be capable of sustaining a yield of only 87,000 tons (if recruitment is density-dependent) or of 95,000 tons (if recruitment is density-independent), it being not possible at this time to state which condition applies

3) A catch quota of less than the sustainable yield at the level of abundance expected to be reached by the end of 1961 is required to restore the stocks to the condition corresponding to maximum average sustainable yield

Recommends to the High Contracting Parties, that they take joint action, as follows:

1) Establishment of a quota of total catch of yellowfin tuna by fishermen of all nations of 83,000 tons during the calendar year 1962.

2) Reservation of 8,400 tons of this yellowfin tuna quota for allowance for incidental catches when fishing for skipjack after closure of the fishery for yellowfin tuna.

3) Opening of the fishery for yellowfin tuna on 1 January 1962; during the open season vessels to be allowed to clear port for fishing for this species and for skipjack.

4) Closure of the fishery for yellowfin tuna during 1962 at such date as the quantity landed plus the expected landings of vessels which are at sea with clearance for yellowfin tuna fishing reaches 74,600 tons.

5) After the closure of the yellowfin tuna fishery, issuing of clearances to vessels for skipjack fishing only. Any vessel operating under such clearance should be allowed to land not more than 15 per cent by weight of yellowfin among its catch on any trip.

6) Such action as may be necessary to induce Governments whose vessels operate in this fishery, but which are not parties to the Convention for the Establishment of an Inter-American Tropical Tuna Commission, to cooperate in effecting these conservation measures.

Resolves that the statistics of catch and effort respecting yellowfin tuna will be reviewed as soon after the end of calendar year 1961 as practicable and, if there is any substantial departure from the forecast values, the foregoing recommendations will, if indicated, be revised and the High Contracting Parties will be advised accordingly by this Commission.