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MEETING OF COASTAL STATES AND DISTANT WATER FISHING NATIONS  
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BRIEF DESCRIPTIONS OF THE OPERATIONS OF:

- (a) Inter-American Tropical Tuna Commission (IATTC)
- (b) International Commission for the Conservation  
of Atlantic Tuna (ICCAT)

(a) INTER-AMERICAN TROPICAL TUNA COMMISSIONResearch and Management of Tuna  
in the Eastern Pacific Ocean

by James Joseph

The fishery for tuna in the eastern Pacific Ocean developed initially as an albacore fishery off Southern California shortly after the turn of the century. The market for tuna grew rapidly, and in the early 1920's, when albacore failed to appear off the California coast, the fleet of small boats began exploiting yellowfin and skipjack off Baja California, Mexico. The market continued to grow and the fleet continued to expand. By the end of World War II, vessels were fishing southward from California to below the equator and up to 3 or 4 hundred miles offshore. Throughout this period of development the fishery was almost exclusively a U.S. operation.

Baitfishing was the primary method of harvesting the tuna. The bait was generally captured in certain coastal areas along the west coast of the Americas from Mexico to Ecuador, with one of the principle grounds being off Costa Rica in the Gulf of Nicoya. Concern over both the condition of the baitfish stocks and the expanding tuna catches was growing during these postwar years, which resulted in the establishment of the Inter-American Tropical Tuna Commission in 1949 by a treaty between Costa

Rica and the U.S.A. Membership in the Commission was open to any nation whose nationals participated in the tuna fishery within convention waters which were defined as the eastern Pacific Ocean. At present the Commission's member nations are Canada, France, Japan, Nicaragua, Panama, and the U.S.A. In past years Costa Rica, Ecuador, and Mexico have also been members.

The principal duties of the Commission are to study the biology of the tropical tunas, tuna baitfishes, and other species taken by tuna vessels in the eastern Pacific and to determine the effects of fishing and natural factors upon them. When necessary, the Commission also recommends appropriate conservation measures so that the tuna stocks can be maintained at levels that will produce maximum sustained catches. In recent years the duties of the Commission have been expanded to include research on dolphins. Dolphins frequently associate with yellowfin in the eastern Pacific, and significant catches of yellowfin are made by setting purseseines around such associated schools. This type of fishing has caused considerable dolphin mortality in the past and has raised concerns for the dolphin stocks. The Commission's dolphin research program has arisen out of this concern.

The formal leadership of the Commission is provided

by a plenary body made up of Commissioners from each member government. This plenary body has a Director of Investigations who is responsible for the ongoing research and management functions of the Commission. To accomplish this task, the Director hires an independent, internationally-recruited staff of scientists and technicians.

The Commission's research program on tuna can be thought of as being carried out structurally at three different levels. At the first research level effort is directed toward acquisition of a data base that can serve to monitor the course of development of the fishery. Basic data on the characteristics of all boats participating in the fishery are collected. The activities of individual boats in terms of days of operation, days fishing, location of fishing, and associated catch and effort data are collected for each vessel. The staff has constructed such a data bank that extends back to 1934. This data bank is maintained each year on a current basis. During the 31 years that the Commission has been in existence coverage of fishing activities has been monitored through a logbook system with coverage that has accounted for more than 90% of the catch of the entire eastern Pacific.

In addition, at this first research level unloading statistics are collected by species at all of major ports of landing in the eastern Pacific as well as in Puerto Rico where a large share of the catch from the eastern Pacific is landed. Virtually 100% of the unloadings are accounted for in the Commission's program. since 1965 the staff of the Commission has maintained an information network that allows them to monitor on an almost daily basis the catch of the international fleet, the number of vessels at sea, and a current estimate of apparent abundance. Such real-time information has been necessary for the proper functioning of the conservation program.

Along with limited biological information on the distribution of the tuna stocks being harvested, these catch and effort statistics are used in a first cut approach to the assessment of the impact of fishing on these stocks. General production or logistic type models which relate fishing mortality to changes in apparent abundance and yield have been employed by the Commission in its first level approach to stock assessments.

At the second level of research on tuna more detailed information on their biology is collected. The most basic information collected at this level are length measurements made on samples of fish from the commercial

landings. The main objective of the length measurement program is to collect a sample of the entire catch that is broad enough to allow one to estimate the relative abundance of the different size groups comprising the catch which, in turn, is hopefully representative of the underlying population of fish supporting the fishery. Such length-frequency information can then be used to estimate rates of growth and mortality.

Mark and recapture experiments constitute another very important part of the Commission's second level research program. Since the Commission began mark and recapture experiments in 1958, more than 200,000 tuna have been tagged and released. These studies have provided valuable information on growth, migration, natural mortality, and fishing mortality. Additional estimates of growth have been made by closely examining the small bones in the inner ear of tunas called otoliths. Tuna lay down a mark on their otoliths on virtually a daily basis. By counting the resulting daily rings one can theoretically estimate the age of the fish.

Another aspect of second level research involves extensive studies of stock structure and the relationships between fish in one area and those in another. Morphometric studies comparing fish from different areas

have been carried out for both yellowfin and skipjack, but the results have been inconclusive so far. Genetic studies of yellowfin tuna have also been undertaken in which the frequency of genes controlling certain enzyme systems have been examined. These studies have shown that tuna in the eastern Pacific are probably not genetically homogeneous, but may comprise several different groups which mix rather extensively. Current studies to further elucidate stock structure are based on a comparison of the microchemistry of the bones of tuna. The bones after being bombarded by a high energy proton beam emit X-rays which are associated with the specific elements in the small region being examined. Using this technique, it is believed that mixing rates of adult fish can be determined based on a comparison of their biochemical history.

Second level research studies of the types described above as well as others dealing with areas such as spawning, early life history, feeding behavior, and energetics, collectively provide the estimates of growth, mortality, and other vital life history parameters that are necessary to formulate more sophisticated dynamic pool type models. Such models can be used to predict the behaviour of populations of tuna, to assess their abundance, and to measure the impact of man's exploitation on them.

At the third level of tuna research an attempt is made to measure the affect that fluctuations in natural factors have on fluctuations in both the real and apparent abundance of the animals. These fishery independent factors are the result of the dynamic forces acting in the ocean and the atmosphere that alter the behavior and survival of the animals. Therefore the study of ocean features and their changes and interrelationships has been an integral part of the Commission's research program.

Much of the Commission's third level has concentrated on attempting to predict the abundance of skipjack in the eastern Pacific in one year on the basis of oceanic and atmospheric conditions in the central Pacific a year and half earlier, the average age at which they are first recruited. Significant correlations between skipjack abundance and indices of wind-mixing, current strength, and upwelling have been found, although for predictive purposes they are only marginally useful.

Compared to its tuna research program, the Commission's dolphin research program is in its infancy having been underway only since 1979. The goals of the Commission's dolphin program are 1) to maintain a high level of tuna production, at the same time 2) maintaining dolphin stocks at levels that insure their survival in



perpetuity and 3) avoiding the needless or careless killing of dolphin. A key element has been the establishment of an international observer program to place scientific technicians on a certain proportion of the vessels fishing in the eastern Pacific. Although improvement is hoped for, cooperation in this program by many nations has been good. Scientific studies have been undertaken in such areas as: mortality estimation, population estimation, gear research and school composition.

As a result of its research on tuna, the staff concluded during the late 1950's that the stock of yellowfin, which is resident in the eastern Pacific, was capable of supporting yields of about 100,000 tons per year. Catches up to that time had not exceeded this amount for any sustained period. On the other hand, skipjack do not spawn in the eastern Pacific and appeared to be a species that was not resident to the area, coming instead from waters further to the west. It was concluded that skipjack stocks could sustain higher yields while they were in the eastern Pacific.

In 1958 and 1959 the baitboat fleet, which then comprised more than 90% of the entire fleet, converted to the much more efficient technique of purseseining for

economic reasons. This increased their efficiency by a factor of at least two, resulting in increased catches overall and consequent overfishing. By 1962 catches and catch rates of yellowfin tuna began to fall sharply. Based on the staff's recommendation that fishing effort on the yellowfin stock should be reduced, the Commission in 1966 initiated a yellowfin conservation program. The key element in the conservation program was the establishment of an overall yellowfin catch quota.

After several years of operating under this system catch rates began to increase. New vessels began to enter the fishery and these new vessels began to expand their areas of operation seaward. It was during this period that the fishermen developed methods for catching tuna which occurred in association with dolphin in these offshore areas.

By about 1972 the area of the fishery had expanded by a factor of nearly fourfold within the Commission's Yellowfin Regulatory Area. Fishing effort increased by about 3 times, and the annual catch of yellowfin went from roughly 100,000 tons to about 150,000 tons. Based on this greatly enlarged fishing area, assessments of stock productivity suggested that catches of about 175,000 tons could be sustained on an annual basis. The fishing fleet

continued to expand going from 40,000 tons of capacity in 1965 to 190,000 tons in 1978, and fishing effort naturally also increased. Under an experimental program designed to overfish the resource in a controlled manner, catches climbed to 210,000 tons in 1976 and then began to decline. They have continued to decline ever since. Since 1979 the staff has been recommending much reduced quotas in order to maintain and restore the stock to optimum levels. However, these quotas have not been implemented.

Catches of the other important species, skipjack, have fluctuated greatly. There are two major fishing grounds for skipjack, one which is centered off north-central Mexico and the other which has historically been centered off northern Peru and Ecuador. The southern fishery has, on the average, produced 2 to 3 times more skipjack than the northern one. Up to about 1975 the overall skipjack fishery produced about 70,000 tons on the average, fluctuating sharply between 30,000 and 130,000. In recent years, however, fishing effort on skipjack has increased and so have catches which have been averaging about 145,000 tons. From 1969 through 1972 the area off northern Peru and southern Ecuador experienced an unusually strong surface warming effect, a phenomenon referred to as El Niño. This El Niño was the strongest recorded in the area during the last century. Associated

Catch by Country CYRA.

Country	Yellowfin		Skipjack	
	1976	1980	1976	1980
Bermuda (British	*	*	*	*
Canada	*	*	*	*
Cayman Is. (British)	0	1,850	0	1,002
Chile	*	0	*	0
Colombia	*	*	*	*
Costa Rica	*	*	*	*
Ecuador	5,536	6,989	6,824	8,218
Japan	904	1,137	334	0
Korea	0	539	0	240
Mexico	14,644	20,665	7,795	13,778
Netherlands Antilles	*	*	*	*
New Zealand	0	*	0	*
Nicaragua	*	0	*	0
Panama	14,595	5,664	5,030	3,768
Peru	2,396	502	3,139	174
Senegal	*	*	*	*
Spain	*	*	*	*
U.S.A.	145,293	89,399	95,554	81,957
Venezuela	*	*	*	*
Total of *	27,298	20,251	21,105	15,649
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TOTAL	210,666	146,996	139,781	124,786

Catch CYRA Boundary to 150° W.

Country	Yellowfin		Skipjack	
	1976	1980	1976	1980
Total	50,738	29,340	1,076	19,361

with this surface warming was a northerly shift in the center of concentration of the southern fishery to off Central America, and this fishery has not yet shifted back to its historical center of abundance. The once highly successful small-boat fishing operation out of Ecuador was dependent on this southern concentration of skipjack. It has failed as a result of the northerly shift which puts the fish beyond the range of the small-boat fleet.

From a scientific and technical point of view the conservation program for yellowfin was successful, but from a political point of view it was not. When the program was first started in 1966 the fishery was dominated by the large U.S. fleet, and most nations only claimed jurisdiction over fisheries within a narrow zone that was generally from 3 to 12 miles in width. Since most tuna are captured beyond 12 miles, access to the fishing grounds was not a problem. Because the conservation program was based on an overall quota taken on a competitive basis, the nations with the largest fleets got the most tuna. Coastal developing states which had small or non-existent fleets felt that this form of management prevented them from developing competitive fleets.

As the world trended toward extension of jurisdiction

to 200 miles, coastal states which were adjacent to the tuna resources, took the position that their adjacency should be recognized in the form of preferential treatment in any conservation program. They maintained that they should be allocated special shares of the allowable catch and that such shares should be related in some way on their adjacency to the resources. In 1977, Mexico and Costa Rica jointly convened a meeting of plenipotentiary nations to draft a new treaty for tuna management in the eastern Pacific Ocean. They distributed a working document that contained a series of principles to be included in a new treaty. Among the most important of these principles were:

- (1) An international body of tuna management in the eastern Pacific Ocean would be established.
- (2) Allocations to coastal states would be established based on the concentration of the resource within its 200-mile zone, with such allocations being non-transferable.
- (3) Shares of allocations not utilized by the coastal states would be available to other harvesting nations on a competitive basis.
- (4) Members of the organization would receive a regional license enabling them to fish throughout the treaty area beyond 12 miles from the coast.

- (5) Participant fees would be paid by all members for each ton of tuna caught in the treaty area with the bulk of the proceeds to be distributed to the coastal states in proportion to catches made in their zones.
- (6) All assets of the IATTC would be transferred to the new organization, and the headquarters and personnel of the IATTC would carry over to the new body.

After a series of two plenipotentiary meetings and ten informal meetings no final agreement was reached on a new treaty, although much progress toward an agreement was made. During the course of these meetings, both Mexico and Costa Rica withdrew from the Commission. As a result, the long standing conservation program of the Commission was terminated because of lack of agreement among nations. There has been no effective conservation since 1978. Fishing has proceeded unchecked, and catches and catch rates have declined steadily. In 1980 the catch fell to 150,000 tons, and by the end of 1981 it may well be even less than that.

Unfortunately the situation in the eastern Pacific tuna fishery has become very confused. The nations of the region, who for more than 20 years cooperated with each

other in the conservation of yellowfin tuna, have come to loggerheads with one another. The coastal Latin American states, who include tuna within their jurisdiction, have closed their 200-mile zones to unauthorized access by foreign flag vessels. U.S. vessels that violate these 200-mile zones are being seized by the coastal states and fined heavily. The U.S.A. does not recognize the right of any nation to claim jurisdiction over tuna while they migrate within the coastal zone, and they have embargoed tuna products from countries that seize their vessels. Because the U.S. market consumes almost 90 percent of the eastern Pacific tuna catch, such embargoes are creating economic chaos in the development plans of several of the coastal states of the region. Added to all of this, the yellowfin stock, which had been the object of an effective conservation program from 1966 through 1978, is now being overexploited.

The entire situation appears irrational, but the problems will not be resolved until the issues are properly identified and addressed. This cannot be accomplished unless the nations of the region get together and once again get on with the task of negotiating a new treaty that meets the political and economic needs of the participants while taking into account the uniqueness of the animals that are the object of the negotiations.



To accomplish this will require: (1) An international approach to management for, due to the nature of the animals themselves, no single nation can effectively manage them; (2) A scientific program to assess and monitor the abundance and condition of the stocks; (3) A mechanism for allocating the allowable catch among participants in the fishery that gives due consideration to the claims for preferential treatment by coastal states and recognized historic involvement in the fishery; (4) A practical system for providing access to the tuna resources wherever and whenever they are available for harvest; (5) Some mechanism to maintain a balance between fleet carrying capacity and the available resource; (6) Effective mechanisms for insuring that conservation recommendations are enforced by all participants in the fishery.

Achievement of these goals will be a difficult but not impossible undertaking that will require a degree of compromise by all of the nations involved. The time to get on with the task is now.

FIGURES

FIGURE 1. Geographical distribution of yellowfin catch in the eastern Pacific Ocean in 1980.

FIGURE 2. Relationship between effort and catch for the yellowfin fishery inside the Commission's yellowfin regulatory area, 1968-1981. The solid black line represents the logistic general production model and the dashed line the skewed general production model.

(b) INTERNATIONAL COMMISSION FOR  
THE CONSERVATION OF ATLANTIC TUNA

ICCAT AND RATIONAL MANAGEMENT OF ATLANTIC TUNA:  
THIRTEEN YEARS OF ACTIVITY

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Background of ICCAT

The early 1960s witnessed the development of tuna fishing throughout the Atlantic Ocean and catches which had been small until 1950 - about 50,000 t - were exceeding 200,000 t by 1960. For the most part, tuna catches were made up of species caught outside any "territorial" waters, for the concept of the 200-mile Exclusive Economic Zone had not come into being at that time.

The project to establish a Commission for the Conservation of Atlantic Tuna (ICCAT) was then worked out by FAO, at meetings in Rome in 1963 and 1965 of two working groups on the rational use of Atlantic tuna resources. A conference of plenipotentiaries was held in Brazil in May 1966 attended by 17 States. At this conference, the basic texts establishing ICCAT, which had been prepared at the Rome meetings, were finalised.

The first annual meeting of ICCAT was held in Rome in 1969: since then, ICCAT has held one or more meetings every year. Nine countries have joined the original 10 member countries of the Commission.<sup>2</sup> A system of contributions, based on size of tuna catches and quantities canned, has been set up to finance the functioning of the Commission and especially the ICCAT Secretariat.

What is ICCAT?

(a) The decision-making body is the "Commission", which holds an ordinary meeting once every two years. The Commission is required:

- to vote the ICCAT budget;
- to adopt measures for the conservation of resources in accordance with recommendations by the Standing Committee for Research and Statistics (SCRS). The Commission has established various working bodies, which include the Standing Committee for Finance and Administration and four sub-committees to deal with the various groups of species. In practice, the Commission's role is limited to recommending its member countries to adopt and apply such and such a national measure designed for the conservation of tuna resources.

1. CRODT, B.P. 2241, Dakar, Senegal, West Africa.
2. The 18 countries that are now (1981) members of ICCAT are: Angola, Benin, Cape Verde Islands, Ivory Coast, Gabon, Ghana, Morocco, Senegal, South Africa, Spain, France, Portugal, USSR, Canada, Cuba, USA, Korea and Japan.

- (b) The Standing Committee for Research and Statistics (SCRS) is required to supply the Commission with a scientific opinion whenever measures for rational management of tuna resources are considered. To this end, the SCRS applies itself to developing, co-ordinating and directing tuna statistics and research throughout the Atlantic. The SCRS does not have "ICCAT" research workers (whereas the Pacific Tuna Commission, IATTC, has its own research workers), but it makes syntheses of studies submitted by the various countries taking part in research (whether they are ICCAT members or not).

The Standing Committee for Research and Statistics has set up a statistics sub-committee which deals with statistical matters. Clearly, any study of the status of stocks and rational management of a fishery can be done only on the basis of complete and detailed fisheries statistics; it will be seen that the scientific progress achieved by ICCAT is the outcome of the results obtained in the area of fisheries statistics. The SCRS may also set up temporary structures; thus for the period 1977 to 1983 it set up the Skipjack Sub-Committee to carry out the programme of intensive research on skipjack.

- (c) The management arm of ICCAT is the Secretariat, whose headquarters is in Madrid. Since it was set up in 1969, the Secretariat has been under the direction of a Spanish scientist, Dr Olegario Rodriguez Martin. The Secretariat's role is to carry out all the tasks and recommendations to which it is directed by the Commission. In fact, the Secretariat's work is directly geared towards statistical and scientific activities, and it works in close co-operation with the SCRS and with national statistics and research offices.

#### Past Activities

ICCAT is a young and dynamic structure, whose work embraces a wide diversity of activities.

Its working meetings have been many and busy; each year since 1969, SCRS has met for ten days or so to draw up reports on the status of stocks and to make recommendations to the Commission. In addition, many working groups set up by ICCAT meet during the period between ICCAT sessions to examine the most critical problems: thus meetings were held at Lisbon in 1971 on the identity of stocks, at Abidjan in 1972 on yellowfin, at Madrid in 1977 on skipjack, at Abidjan and Brest (1979 and 1980) on tropical tuna juveniles, at Santander in 1979 on bluefin tuna, and at Miami in 1981 on billfish.

The conclusions of all these meetings, both ordinary and extraordinary, have of course been published by the ICCAT Secretariat. Furthermore, any papers on tuna submitted to ICCAT by national research workers are published in the ICCAT special series of scientific papers.

In addition, ICCAT has contributed actively to the training of its member countries' statisticians and research workers by organising training seminars at Nantes in 1974, La Corogne in 1976, and in the Canary Islands in 1978.

The ICCAT Secretariat also has available to it, on a temporary basis, experts who are sent from time to time on missions to landing areas to assist the technicians there who are responsible for statistics.

One of the major tasks of the ICCAT Secretariat is to manage the statistics relating to all the tuna and billfish caught in the Atlantic. These statistics are divided into three separate categories:

- "Task 1", which corresponds to overall annual statistics by species and by gear, and also to nominal fishing efforts. Every year since 1971 these fisheries statistics have been published in the "ICCAT Statistical Bulletin".
- "Task 2" statistics correspond to more detailed catch and effort statistics by one degree square (surface fisheries) or by five degree square (longline fisheries) and by month.
- "Biological data" reflect the size pattern of catches.

Findings are published regularly by ICCAT in the series "data records", of which nearly twenty volumes are now available.

Lastly, the ICCAT Secretariat has its own technicians to collect fisheries statistics in respect of certain fleets that are insufficiently covered from the statistical point of view.

The results of the above work are published in the ICCAT statistical series.

Some years ago, all the above mentioned statistical data concerning Atlantic tuna (task 1, task 2, and biological data) were assembled in a computer database in Madrid. The scientists working with it find this database completely satisfactory, for it enables them, especially during working groups, to have extremely flexible and rapid access to all existing data in respect of all tuna species.

#### The results of 12 years' activity

A distinction should be drawn between scientific findings and results obtained in the area of tuna resource development. The former are particularly impressive. At the beginning of the 1970 to 1980 decade, there were strictly speaking no coherent statistics for any tuna species found in the Atlantic.

The first statistical bulletins published by ICCAT contained mostly question marks, even in respect of total catch per species, and all the more so in respect of the more refined statistics one-degree square and by month. But over a period of ten years, a remarkable quantity of statistical information has been collected, mostly by fishing fleets, and published by ICCAT and made available to scientists, thanks to the ICCAT database. Conclusive scientific findings have also been established from such data.

Twelve years ago, it was not possible to estimate the status of the stock in respect of any species. Certain major species, including

skipjack, and bigeye tuna were referred to in the SCRS reports by a short phrase such as "in the absence of any scientific study and any statistical data, it is impossible to assess the status of the stock or its potential".

Ten years later, all the species coming within the purview of ICCAT had become the object of varied research, making it possible to study the status of most stocks according to different kinds of scientific approach.

Naturally, the results obtained differ from one species to another: Yellowfin tuna (Thunnus albacares) is probably the best known species found in the Atlantic. Since 1973, with a view to improving yield, a restriction has been imposed on catching specimens under 3.2 kg following a recommendation to this end by SCRS.

Fewer studies have been made on the patudo or bigeye tuna (Parathunnus obesus) although the biology and the dynamics of this species seem to be particularly complex because it is partially tropical, especially when young, and partially temperate. Because of the very strong growth potential of the bigeye tuna and because bigeye juveniles associate with yellowfin, ICCAT has, since 1979, adopted a size restriction of 3.2 kg for the bigeye tuna, identical to the yellowfin restriction.

Skipjack (Katsuwonus pelamis) had virtually not been studied at all from the scientific point of view until 1976, although catches of this species seemed to show very interesting potential. This was what led to the International Year of the Skipjack, organised by ICCAT in 1981. Varied and intensive research work was carried out during that year by many member countries of ICCAT; it is now clear that this programme is going very well and that the scientists will be able to give answers in 1982 and 1983 to most of the questions which were at the origin of the programme.

Here too, ICCAT's role is a determining one, for it is undeniable that this project would never have been designed or implemented had the Commission not existed. Furthermore, the co-operation, on an international scale, that developed among all member countries for the purposes of this project has been remarkable at all stages of the programme.

ICCAT has also carried out studies on temperate species such as albacore (Germo alalunga) and bluefin tuna (Thunnus thynnus). The status of albacore stocks has been analysed regularly for five years without showing cause for any series concern; and in fact no special regulations have been issued in respect of this species.

Bluefin tuna, a species which has been fished since ancient times, has been the object of special attention by ICCAT, despite the fact that the tonnages caught are small, for various factors make this species particularly interesting: it makes frequent trans-oceanic migrations, it is very long-lived (25 years) and it has large growth potential (giant bluefin tuna can weigh over 500 kg), and the species has been fished for a very long time, but above all there has been an evident sharp drop in abundance which is causing concern to the scientific community. Since 1976, this species has been the object of conservation measures designed to protect stocks: there is a size restriction of 6.4 kg and regulation of fishing effort.

Lastly, ICCAT also carries on detailed studies on billfishes (sailfish, blue marlin, white marlin, swordfish). However, understanding of these species is still very incomplete, as was confirmed by the Ad hoc working group which recently met at Miami (June 1981). Difficulties in obtaining more knowledge stem from the lack of certainty regarding identity of stocks and from the poor statistics available on catches and catch per unit of effort.

In respect of fisheries development and conservation of resources, ICCAT has, as stated above, issued various regulations regarding yellowfin, bluefin tuna and bigeye tuna: these regulations have been adopted by most member countries and incorporated in their national legislation.

An international system of supervision in the ports has been adopted by ICCAT and is now being put into effect in different countries. Thus ICCAT member countries have adopted a variety of rules and regulations within the area covered by ICCAT. However, it has to be admitted that application of these regulations is often far from good. For example, there have been constant infringements of the yellowfin regulation for seven years now (some fleets' catch comprises more than 80 per cent undersize yellowfin) and yet, it appears no action has ever been taken against any of the offenders.

Likewise, the regulations concerning bluefin tuna have been applied only intermittently. It would appear, in fact, that the regulations adopted under the aegis of ICCAT have had a marginal effect, only stopping the increase of catches of small yellowfin, bluefin tuna and bigeye tuna, and partially controlling the bluefin tuna catch effort. But although they are not conclusive, these results are not negative.

#### The weaknesses and strengths of ICCAT and its prospects for the future

It would appear that ICCAT can face the future with optimism whereas IATTC in the Pacific has, for several years, been on the verge of political failure.

Yet ICCAT too, in its very nature, has a number of weaknesses: first of all, it was conceived and its fundamental texts drafted, before the new Law of the Sea and the Exclusive Economic Zones came into being. While it remains an undeniable fact that most tunas are migratory species which are capable both of crossing many economic zones in the course of their existence and also of living far out at sea, the countries that have a large tuna biomass in "their waters" have in effect acquired a special right to exploit this resource and to conserve it. ICCAT has not taken into account this special right.

ICCAT has 18 member countries at the present time: some of them are developing countries, often coastal states bordering on the resources, while others are industrialised countries which, generally speaking, possess the instruments of production but are often not coastal countries bordering on the resources. There is thus a fundamental difference of outlook among ICCAT members on the questions of resource management and conservation: while it is in the interest of the coastal states that do not yet possess their own tuna fleets to do everything possible to conserve the resource at a high level of abundance pending development of their own fisheries, the non-coastal, industrialised countries will in general

consider that it is in their interest to obtain a return as quickly as possible on their very heavy investments, even if this involves "accidental" overfishing of stocks. This divergence of interests in the Atlantic has remained latent in ICCAT so far, but it may well become accentuated in the future.

Directly connected with these problems is the fact that ICCAT's scope of action is limited by its basic texts to "biological" conservation of resources by means of optimising the maximum sustainable yield (MSY). This concept, which has the advantage of being very sound from the biological point of view, is however very inadequate when it comes to developing fisheries. For, in practice, the "rational" management of fisheries nowadays depends on a combination of biological aims (sustainability of the resource for example) and socio-economic aims (volume of catch, producer's profitability, full employment, etc.), either in the short or in the medium term. This modern outlook, apart from the fact that it would probably bring to the member countries' divergence, is barred to ICCAT under its articles.

Furthermore it transpires that the application of tuna fishing regulations can pose legal problems of enforcement and technical problems of actual supervision, that are extremely complex.

ICCAT is, for example, considering seasonal prohibition of all fishing in a vast area of the Gulf of Guinea, in order to reduce juvenile mortality. The biological advantage of such a measure is evident. But the legal problems that it poses are immense: the best area for the prohibition of fishing, that is to say the area where the juveniles are found, includes part of the economic zone of several countries, some of which are members of ICCAT, while others are not, and it also includes an area of the open sea beyond all national economic zones. The extreme legal complexity of the situation will immediately be perceived. Such a measure would also be very difficult both to apply and to supervise: who indeed would supervise application of such regulations? ICCAT has no powers in this area. And from the technical point of view how would it be feasible to exercise surveillance over such a zone? Unless it were possible to obtain the position, by satellite, of all tuna boats, and also carry out aerial surveillance, the application of such a regulation would be futile. And aerial surveillance of the ocean along several hundred miles of coastline would of course require considerable financial means that no country, least of all the developing coastal countries, could be expected to provide. And then, sanctions in respect of offenders would be equally difficult to put into effect. Although according to the Law of the Sea, in every exclusive economic zone, penalties and their application lie within the jurisdiction of the coastal state concerned (this principle is however sometimes questioned in respect of tuna), an offence committed on the high seas still comes under the jurisdiction of the flag countries concerned (which could lead to complete laxism through the use of "well chosen" flags of convenience).

On the other hand ICCAT does have some valuable assets for the future: its research structure, which has enabled fisheries statistics and research to develop in most member countries, is a very positive factor. While it may be less efficient in the short term than a permanent team of professional research workers, such as that of IATTC, the ICCAT structure has quickly demonstrated how effective it is, by the progress that has been



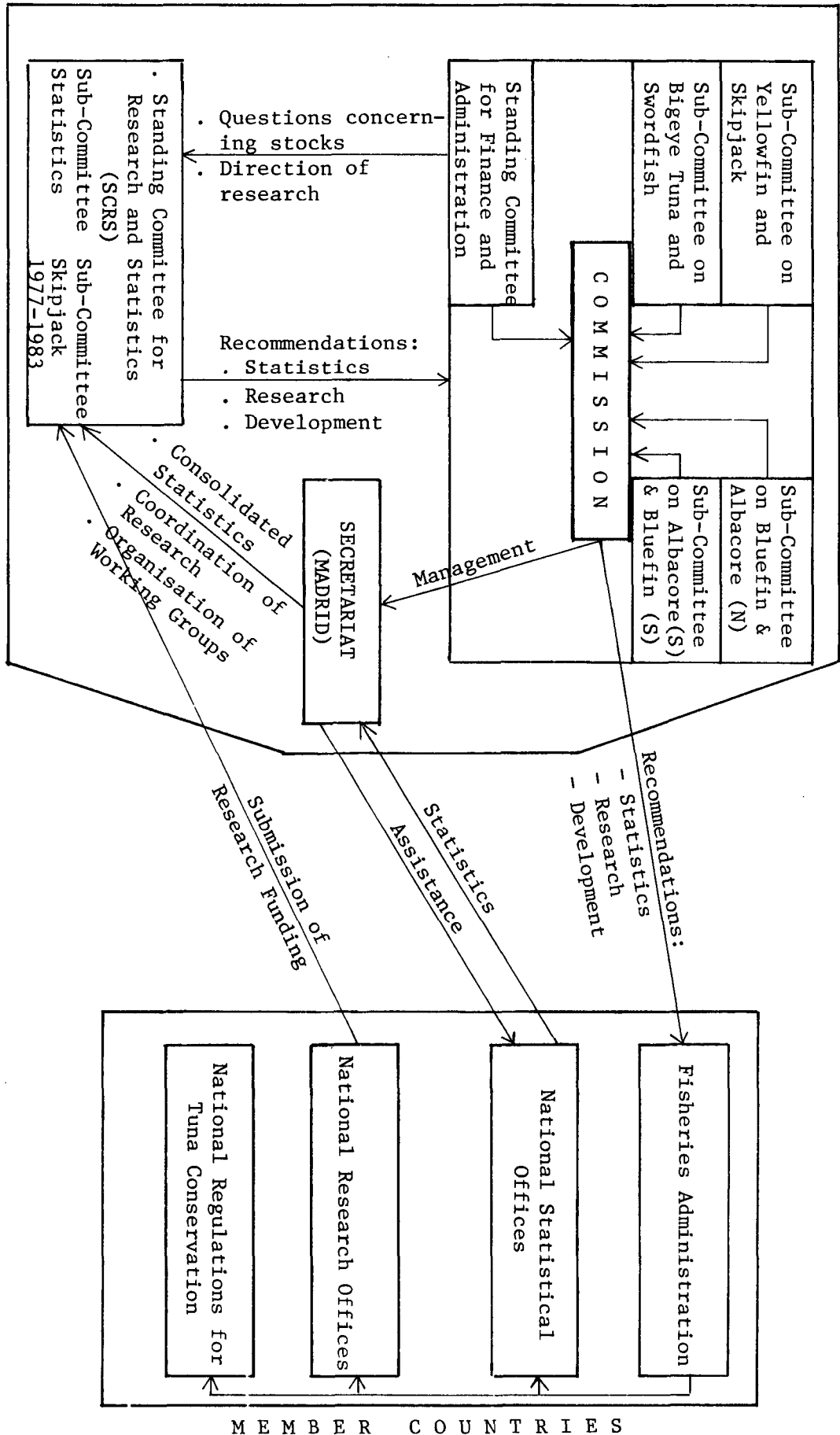
achieved in the research initiated by it in member countries. Putting into practice the idea of the Chinese proverb, 'it is better to teach a fisherman how to fish than to catch fish for him', ICCAT has quickly initiated national research structures of all-round effectiveness. The co-ordination and centralisation of statistical and research work is indispensable: and the ICCAT secretariat performs this task perfectly at a cost that is moderate, when one bears in mind the amount of work it involves.

ICCAT's scientific achievements, past and future, are probably in fact the best factor for its consolidation. From the point of view of conservation of resources, there are certain measures, easy to implement, that would be within the capability of ICCAT: for instance, seasonal restriction of the fishing effort that uses certain types of gear considered too "devastating" is an efficient development measure that ICCAT could legally and technically implement, if the member countries of the Commission were to decide to do so.

Even if the political and economic outlook is not without latent problems for ICCAT, its dynamism, the quality and the reliability of its structures and the work it does, presage a very promising future for the Commission.

The permanent east-west and north-south dialogue which has always been pursued in this Commission suggests that ICCAT will be able to adapt to the new Law of the Sea and the new requirements for rational development of Atlantic tuna resources.

# International Commission for the Conservation of Atlantic Tuna



ORGANIZATION CHART OF I.C.C.A.T.

PLEASE INSERT AT APPROPRIATE PLACE IN WP.5

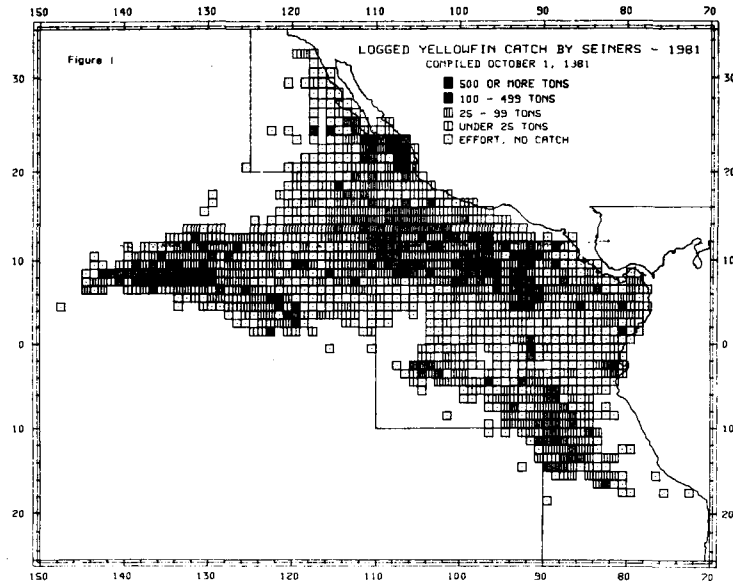


FIGURE 1. Geographical distribution of yellowfin catch in the eastern Pacific Ocean in 1980.

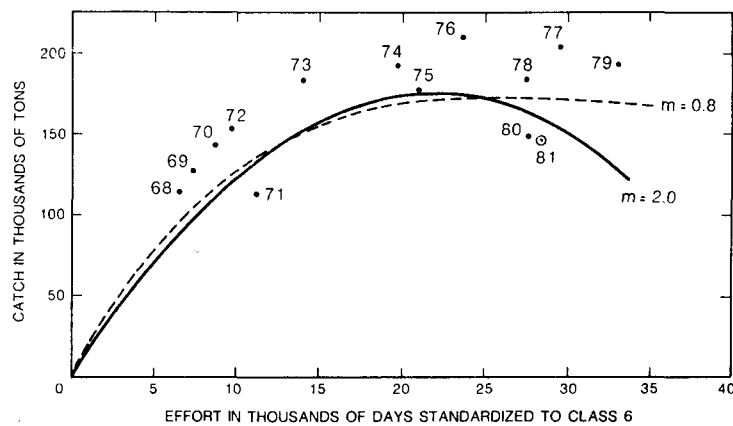


FIGURE 2. Relationship between effort and catch for the yellowfin fishery inside the Commission's yellowfin regulatory area, 1968-1981. The solid black line represents the logistic general production model and the dashed line the skewed general production model.

SPC/Coastal-DWFNS/WP.5/Add.1  
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ORIGINAL:ENGLISH

SOUTH PACIFIC COMMISSION

MEETING OF COASTAL STATES AND DISTANT-WATER FISHING NATIONS

(Noumea, New Caledonia, 18 - 22 June 1984)

BRIEF DESCRIPTION OF THE OPERATIONS OF THE SOUTH PACIFIC  
FORUM FISHERIES AGENCY

## THE SOUTH PACIFIC FORUM FISHERIES AGENCY

### Structure

1. The Agency is established by the South Pacific Forum Fisheries Agency Convention, which entered into force on 9 August 1979. It comprises the Forum Fisheries Committee (FFC) and a Secretariat. Current membership includes the 14 South Pacific Forum member and observer states (Australia, Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Nauru, New Zealand, Niue, Papua New Guinea, Solomon Islands, Tonga, Tuvalu, Vanuatu and Western Samoa). Marshall Islands and Palau participate in the work of the Agency as observers. Copies of the Convention are available from the Agency representatives. A diagram illustrating how the Agency fits in with other regional fisheries programmes is attached.

2. Under the Convention, membership of the Agency is open to:

- (a) members of the South Pacific Forum; and
- (b) other states or territories in the region on the recommendation of FFC and with the approval of the Forum.

3. An additional requirement for participation in the work of the Agency is that countries or territories recognise that coastal states have sovereign rights for the purpose of exploring and exploiting, conserving and managing the living marine resources, including highly migratory species, within their 200 mile zones.

4. The Convention also recognises the need for effective co-operation between coastal states and those states involved in the fisheries within the region for the purposes of conservation and optimum utilisation.

5. FFC meets annually to adopt the Agency's work programme and budget and, as appropriate, to consider co-ordinated action with respect to common fisheries policy. Mechanisms have been developed to allow for policy direction from the Committee in the intersessional periods.

6. The Secretariat, consisting of the Director, Deputy Director, 9 professional officers and a similar number of support staff is based in Honiara, Solomon Islands. The Secretariat provides, technical and advisory services, and in particular legal, fisheries development, economic, information and computer services for member governments.

## The link with Forum

7. The Agency has access to Forum through being required to report to Forum meetings, so has the imprimatur of the Heads of Government of the South Pacific independent states. FFC has had occasion in the past to refer matters directly to Forum for decisions at the highest level. The Regional Register and other regional policies such as the minimum terms and conditions of access to the EEZ of its member countries have had Forum endorsement. The region is cohesive and co-operation under the umbrella of Forum occurs in a wide range of political, social and economic fields. It has had a long history in co-operation which is the only way to overcome the enormous disadvantages it faces.

## Funding

8. The budget is funded through contributions of member governments. External funding meets a considerable part of the Work Programme. Occasionally, direct assistance to participating governments in support of FFA activities is provided by member governments and interested international organisations.

## Activities

9. The Agency's work programme is developed annually by the Secretariat through inputs from participating governments, for adoption by FFC. The current work programme is divided into 11 sub-programmes as follows:

1. Establishment
2. Harmonisation of fisheries regimes and access agreements
3. Surveillance and enforcement
4. Current information services
5. Tuna fishing development
6. Economic analysis
7. Fishing patterns
8. Fisheries and administrative training
9. Regional register
10. Delineation of fishing and related zones
11. Programme management

10. A key activity under sub-programme 4 is the collection of information relevant to the living marine resources of the region and the markets for the products of these fisheries. This information is developed through contributions from members, public documents of extra-regional organisations and governments, and information from informed sources in outside of the region. The computer section has been developed to ensure the efficient collation of this information which is then analysed by the Secretariat and distributed to members.

11. A major feature of Agency activity has been the convening of workshops of representatives of participating governments and appropriate experts to review specific areas of interest, identify additional information requirements and suggest strategies for co-operative action. Policy is determined at FFC meetings or where necessary at the South Pacific Forum. The Regional Research and Development Workshop convened in 1981 led to the establishment of the Regional Research and Development Programme to focus the efforts of regional and extra-regional organisations on the priority fisheries requirements of the region. The Workshop for the Harmonisation and Co-ordination of Fisheries Regimes and Access Agreements in 1982 led to the establishment of the regional register and minimum terms and conditions of access for foreign fishing within the region. The Workshop on Access Negotiations in 1982 led to the co-ordination of national approaches to the negotiation of access agreements. The most recent Workshop has been on National Tuna Fisheries Development, and should result in enhanced co-operation between members in national fisheries developments and in the utilisation of resources.

12. Fisheries programmes are undertaken in the region by the University of the South Pacific Institute of Marine Resources (IMR), the United Nations Development Programme and the South Pacific Commission (SPC). FFC is assuming a major role in the co-ordination of these programmes to meet members' needs. The Committee provides a forum for the Tripartite Review of the UNDP/FAO Regional Fisheries Adviser Project, and advises USP on the fisheries activities of the IMR. All Agency governments are also members of the SPC and bear responsibility for the SPC fisheries programmes.

#### Management of Tuna Resource

13. A large proportion of the area where tuna resources may be effectively exploited in this region falls within the 200 mile zones of Agency member States. This is reflected in the Convention, which, having been developed in the era after the recognition by international law of sovereign control over marine resources within 200 miles, has membership limited to the regional coastal States. The Agency approach based upon co-ordinated national access policies leaves open a wide range of possible mechanisms for dialogue and co-operation with extra regional states participating in the fishery. It is expected that, when the need arises, co-ordinated action by FFA Governments will provide an effective means of regulating fishing effort on tuna resources throughout the South Pacific region.

14. A high level meeting of Agency member States on fisheries management and development is being planned for 1985. This meeting is expected to lead to the development of an agreed regional approach to management issues.