

*GENERAL FISHERIES COUNCIL FOR THE MEDITERRANEAN (GFCM)
INTERNATIONAL COMMISSION FOR THE CONSERVATION OF
ATLANTIC TUNAS (ICCAT)*

EXPERT CONSULTATION ON EVALUATION OF STOCKS OF
LARGE PELAGIC FISHES IN THE MEDITERRANEAN AREA

Bari, Italy, 21-27 June 1990

SUMMARY REPORT

I. OPENING

1. The Dean of the Faculty of Veterinary Medicine of the Università degli Studi di Bari, Prof. Giuseppe Marcotrigiano, opened the Consultation in the Aula Magna of the University. He stressed the importance to the city of Bari and the Regione di Puglia, inter alia, of the fisheries for tunas and swordfish in the Adriatic and Ionian Seas, and the work being carried out on these fishes in the Faculty.
2. Prof. di Benedictis welcomed the participants on behalf of the Rector of the University, Prof. Attilio Alto, who was unable to attend. Prof. di Benedictis also stressed the importance of studying the living marine resources of the Mediterranean in order to improve the food supply to the growing population of the region. In welcoming the participants, he noted the wide range of countries represented.
3. Representatives of other local authorities also welcomed the participants. The representative of the Ministero della Marina Mercantile, Admiral Gravina, expressed the Minister's regret that he could not attend and his best wishes for the success of the meeting.
4. The Consigliere della Pesca of the Regione Puglia and the representative of the Comune di Bari expressed their best wishes for the success of the meeting, and their interest in its outcome.
5. The Secretary of GFCM, on behalf of the Council, expressed his gratitude to the Università degli Studi, the Regione Puglia, l'Amministrazione Provinciale, the Ministero della Marina Mercantile, the City of Bari and the several financial institutions that had contributed to the support for the meeting, notably the Cassa di Risparmio and the Banca Popolare della Murgia. He also expressed his personal thanks to Prof. Gregorio De Metrio, of the Faculty of Veterinary Medicine, and to Miss Mary Lonigro, of the New Inter Centre (conference organizers) for the excellent local arrangements.

6. The Assistant Executive Secretary of ICCAT added his thanks to the local authorities and the host institution. He noted that this was the first joint meeting held by ICCAT and GFCM. The Mediterranean is part of the ICCAT convention area but only a few Mediterranean countries have actually joined ICCAT; this explains the main reason for joint action with GFCM. Although Mediterranean bluefin tuna are almost certainly, and other tunas and swordfish could be, part of the eastern Atlantic stocks, a significant part of these stocks breed and grow in the Mediterranean, and their evaluation is essential not only to the fishery in the Mediterranean but also to that in the Atlantic Ocean.

7. The Dean of the Faculty of Veterinary Medicine then invited the participants to a cocktail.

8. The List of Participants is given in Appendix II to this Report.

II. ELECTION OF CO-CHAIRMEN

9. Two co-chairmen were proposed to deal with different parts of the Agenda. The Consultation invited Prof. Gregorio De Metro to take the chair for items 1 to 8 and 18, and Dr. Jose-Luis Cort, for items 9 to 17. Both accepted.

III. ADOPTION OF THE AGENDA

10. It was proposed that item 13.1 (Review of stock structure) of the Provisional Agenda become new item 9 (same title). Item 2 was also slightly changed (from Election of the Chairman to Election of the Co-Chairmen). The Consultation adopted the Agenda as amended; it is given in Appendix I to this Report.

IV. NOMINATION OF RAPPORTEURS

11. The Consultation decided to assign different subjects to various Rapporteurs. Mr. Ray C. Griffiths was invited to be the General Rapporteur and to coordinate the preparation of the Summary Report. Messrs. Peter Miyake, Stephen Turner, Jacek Majkowski, Michel Savini, Jaime Mejuto, and Nobuyuki Miyabe were invited to take part in drafting the report for the various agenda items. All accepted these tasks.

V. REVIEW OF WORKING PAPERS

12. The papers that experts wished to present were reviewed briefly and it was agreed that they should be discussed under the appropriate agenda items. All the papers presented, with the exception of those published elsewhere or those which the authors did not wish to be included, are given in Appendix III to this Report.

VI. REVIEW OF NATIONAL FISHERIES

13. Brief reviews were made of the Mediterranean fisheries for tunas and/or swordfish of several countries: Algeria, France, Greece, Italy, Japan, Libya, Morocco, Spain and Yugoslavia.

14. Mr. G. Kadari (Algeria) reported that tuna fishing is very limited in Algeria. Disparity of field results and the unreliable data obtained so far make it difficult to have a clear idea of this fishery. It is clear that, in spite of the fact that tuna migrate along the Algerian coast, Algeria does not take its share of this resource. However, since 1989, serious efforts are being made to improve knowledge of the dynamics of this resource: fishing gear has been acquired, experimental fishing has been undertaken and a programme of sampling and data collection has been initiated. A more detailed report is given in Appendix III to the present report.

15. Mr. B. Liorzou (France) reported that France has a Mediterranean commercial fishery for bluefin tuna and this species is mainly taken by purse seiners (26 in 1988) and occasionally by the rod-and-reel sport fishery. The total catches increased regularly up to 1985 to a level that has remained constant (about 5000 metric tons per year) in recent years. The fishing season begins in April and ends at the beginning of December. The maximum landings are in August, September and October. There have been two major changes in the purse seine fishery. The first is the use of a spotter aircraft since 1982. The second is in the fishing areas. The fishing effort in recent years has shifted from the east to the west of the western Mediterranean basin and a new fishery has been developed in the last three years around the Balears for big fish during the spawning season (June-July). Other species, such as albacore (*Thunnus alalunga*) and bonito (*Sarda sarda*), are present at a certain time of the year along the French Mediterranean coast, but the landings are not yet very important and, for albacore, the biggest problem is the low price offered to the fishermen for this species in the Mediterranean. A detailed report on the French bluefin tuna fishery is found in Liorzou (in press).

16. Mr. S. Tselas (Greece) reported that the fishery for large scombroids is a relatively new activity in Greece. There are 530 vessels involved, with a total annual catch of 2400 metric tons. Swordfish is the most important of all the large scombroids exploited in Greece, with 360 boats operating from 70 ports, in 1989. Fishing for swordfish occurs throughout most of the Aegean Sea, off the west coast of Greece in the Ionian Sea, and occasionally in the Levant Sea towards Cyprus. The height of the fishing season for swordfish is from May to September. The closed season is from 1 October to 31 January. Only drifting longlines are used. In 1989, 1700 metric tons of swordfish were landed.

17. Only 55 vessels fish for bluefin, mainly in the northern Aegean Sea. The fishing season is from the end of August to the end of November. The gears used are pole-and-line, troll-line, encircling gillnets; two vessels use purse seines and another two use Japanese longlines. In 1989, 170 metric tons of bluefin were taken.

18. One hundred and seventy vessels fish for albacore, mainly in the Khalkidiki and Sporades regions. The fishing season is from 15 August to the end of November. The gears are longline and troll-line. The albacore catch was 500 metric tons in 1989. A somewhat more detailed account is given in Appendix III to the present report.

19. Mr. A. Di Natale (Italy) reported that the bluefin tuna fishery is of some importance in Italy, although there has been a decrease in catches during the past five years. Purse seine catches decreased by 89 percent in 1984-1988; the Tyrrhenian fleet has decreased 62 percent. The remaining tuna traps catch around 300 metric tons per year regularly. In contrast, a big increase in catches is reported for the sport fishery and the line fishery, although the total quantity is still low. The harpoon fishery is of marginal importance and is carried out by a traditional fleet of about 20 boats in the Strait of Messina. Longline and line fisheries for juvenile tuna are still carried out off southern Italy.

20. The fishery for albacore catches 3400 metric tons by longlines, surface driftnets (with a medium mesh size of 12-18 cm) and lines (with a pole-and-line method with chumming). Different mean lengths reported for the Ionian Sea and the Tyrrhenian Sea may be caused by the different seasons in which fishing is carried out.

21. The Italian large-pelagic fleet catches more than 10000 metric tons of swordfish and the length-frequency of the fish covers rather a large length range. The fleet uses mostly driftnets (in spring and summer) and drifting longlines (all year round). A traditional harpoon fishery for swordfish is still carried out in the Strait of Messina, but the catches are decreasing, due to the reduction of the fleet. Two detailed reports on tuna and on swordfish fisheries in the southern Tyrrhenian Sea are given in Appendix III.

22. Mr. N. Miyabe (Japan) reported that the only Japanese fishery currently operating in the Mediterranean is the longline fishery, mainly for adult bluefin tuna, with a very minor by-catch of swordfish. The catch has decreased in recent years, to less than 300 metric tons in 1988. The fishing season starts in March in the waters around the Strait of Gibraltar. The fleet enters the Mediterranean in April and May, apparently following the fish which migrate into the Mediterranean to spawn. During this period, operations are observed as far east as 20° E. Since 1975, fishing in the Mediterranean has been prohibited between May 21 and June 30, because of Japanese domestic regulations aimed at the protection of spawning adult fish. The fleet moves to the Atlantic, due to this regulation. Since 1985, another regulation has been in effect that limits to 35 the number of boats allowed to operate in the Mediterranean. A detailed description of the Japanese Mediterranean longline fishery is given in Appendix III to the present report.

23. Mr. N. El Kebir (Libya) reported that two of the six Libyan traps constructed along the Libyan coast are used for catching large pelagic fishes. The fishing season for that fishery is February to June or July. The bluefin tunas caught by trap are in the length range of about 60 to nearly 300 cm.

24. The only other tuna fishing operation off Libya this year has been from a Korean joint venture longline vessel. This vessel also targeted bluefin tuna, with a catch of about 50 individuals, including swordfish, this year. The hooks are set at 100 to 300 m. The total bluefin catch reported by FAO were considered unreliable by the Consultation, due to inaccuracies in the species composition of the Libyan catches.

25. Mr. A. Srouf (Morocco) reported that tunas migrate from the Atlantic into the Mediterranean mainly in April-June and emigrate in September-November. Although the Moroccan catches represent only a small percentage of the total national catches, the peak fishing seasons correspond to these two migrations. The principal tuna species are bluefin tuna, swordfish, bonito and frigate tuna. Four fishing methods are used: purse seines, longlines, traps and artisanal methods (pole and line, gillnets, etc.). However, the use of longlines to catch tunas has virtually disappeared in the last two years. The principal fishing area is in the vicinity of the Strait of Gibraltar and between El Hoceima and Saidia. The catches of tunas and related species from the Mediterranean were 1133 and 1605 metric tons for 1988 and 1989, respectively. A detailed report on the Moroccan tuna fishery in the Mediterranean is given in Appendix III of the present report.

26. Mr. J. Mejuto (Spain) reported that some 145 longliners fish for swordfish. The average annual catch for the last ten years is 1100 metric tons (average fish weight was nearly 26 kg). The Spanish swordfish fishery covers the whole of the western Mediterranean to 42°N, 8°E. Fishing is carried out all year round, with peak effort in summer and autumn. A few metric tons are taken by drifting gillnets near the Strait of Gibraltar between May and August. Bluefin tuna are taken by various gears. The catches in 1984, 1986 and 1989 were 2711, 559 and 1321 metric tons, respectively. The average annual catch for the Mediterranean in the last six years has been 1300 metric tons. Three traps operating in the vicinity of the Strait of Gibraltar capture about 200 metric tons a year (mean fish size: 150 kg). The fishing season for these traps is from July to October. Surface longlines catch about 100 metric tons of bluefin per year. Although longlines are used all year round, the bluefin catches are greatest in May and June. Age classes II-XV predominate in the catch. An average annual catch of 250 metric tons of bluefin is taken by the pole-and-line fishery in two quite different periods: April-June, and August. Fishing starts at Cape Gata and extends along the coast to Catalonia. Most of the individual fish are of year class V or older. Two purse seiners fish for bluefin off Catalonia, taking fish 20-100 kg in individual weight. When fishing for clupeids, young bluefin (age-class 0) may be taken in appreciable quantities in September-November. Occasional, or seasonal catches are also made by surface gears (driftnets, trolls, seines, etc.). The catches have varied between 219 and 717 metric tons over the last five years. A detailed report on Spanish Mediterranean tuna fisheries is given in Appendix III to the present report.

27. Ms. V. Alegría Hernández (Yugoslavia) reported that Yugoslavian tuna fishing by traps and fixed nets dates back to the sixteenth century. The first purse seiner was introduced in 1929. From 1947 to 1964 traditional gears were used. From 1965 on, only purse seiners were used to catch tunas as well as small pelagic fishes. Thirty-two boats operated in 1958, but the number of vessels dropped to about 14 as tuna catch rates in the Adriatic region were low. Most of the purse-seining is done at night (by detection of phosphorescence produced by tuna movements). Between 1947 and 1964, the total bluefin catch dropped from 897 (1947) to 271 metric tons (1964); thereafter and until 1974, catches were variable and low, at about 220 metric tons. From 1978 to 1988, the catch increased to a maximum of 1523 metric tons (1988), with a mean of 822 metric tons. However, the catch in 1989 was only 560 metric tons. The data on catches of small tuna species are less reliable, but show a decreasing trend. Catches of bonito have been low in recent years, but a sudden increase was recorded in 1989. Small amounts

of frigate tuna, little tunny and skipjack may be taken. Tuna fishing is seasonal, being much less in winter. Individual bluefin weights range from 6 to 200 kg, though smaller specimens may be taken. However, bluefin weighing 6 to 14 kg predominate (52 percent). The main fishing areas are: northeast Adriatic, Kvarner and Kvarneric, Blitvonica and around the islands of Jabuka, Vis, Palagruza, Losinj and Dugijski Otok. A full report is given in Appendix III to the present report.

28. The Consultation welcomed these national reports as a basis for the discussion under specific agenda items.

VII. REVIEW OF THE DATA BASE

29. Before discussing the individual agenda sub-items, Mr. Peter Miyake briefly summarized the methodology of virtual population analysis (VPA) which has been applied to the stock assessment of bluefin tuna and swordfish by ICCAT scientists. From this standpoint, he explained the type of data required to create a data base for the stock assessment.

30. The Creation of a data base starts by collecting the most basic data; i.e., the total nominal catch by country and gear. These total catches must be broken down into size categories (i.e. catch at size). Therefore, in principle, all the catches should be sampled and size frequencies must be obtained. However, many fisheries are not sampled. Hence, size frequencies obtained from other fisheries have to be substituted.

31. Once the catches are sized (either applying the actual samples from that catch or from the substituted size data) the catch at length will be transformed into the catch at age and tuned to series of catch-per-unit-of-effort data, which can be considered as an index to the relative abundance of the stock. If we assume that catchability and natural mortality do not change over time, then the fishing mortalities applied for each age group in each year and the population number by age can be back-calculated for previous years.

32. Therefore, total catch, size of fish in the catch and stock abundance indices (CPUE) are the essential basic statistics needed for a VPA type of analysis. With this information in mind, the Consultation considered the data availability and quality for the Mediterranean large pelagic fishes.

A. Total national annual catches by gear

33. The ICCAT Secretariat provided a listing of basic nominal catch data reported by country, gear and year for all tunas and tuna-like species in the Mediterranean Sea, for the period 1950-1988. The Consultation reviewed the table and updated the base as far as possible.

34. Greek bluefin catches reported prior to 1985 were questioned, since the Greek bluefin tuna fishery started in 1985. It was clarified that these catches are a mixture of several tuna species and that frigate tuna appears to be the dominant species.

35. It was pointed out that the Italian purse seine catches of bluefin tuna from the Adriatic Sea have been reported for only 1985 and 1986, even though the fishery has been known to exist in this area in most years since the early 1970's. In the ICCAT data base, catch estimates were recorded for most years, but not for 1980-1984. The Consultation estimated that roughly 1000 metric tons had been caught in each of these years.

36. For the first time, Italian rod and reel catches of bluefin tuna from the Adriatic Sea were reported. The estimates for 1984 and 1985 were 10 and 50 metric tons, respectively. The Consultation agreed that 50 metric tons would be used for subsequent catches until better estimates become available. Italy also reported a catch of 10 metric tons by hand line in the Adriatic Sea for both 1984 and 1985. This fishery also started recently and is still developing. The Consultation agreed to carry 10 metric tons over to all the following years.

37. Tunisia has been traditionally a trap fishing country as far as bluefin tuna is concerned. However, the purse seine fishery has been developing since 1986 in its coastal waters, but the catch has not been reported. The total catch for 1988 was estimated as 100 metric tons by FAO.

38. It was reported that 95 metric tons (gilled and gutted) of bluefin tuna caught by purse seine were imported to Japan from Tunisia in 1988, corresponding to 120 metric tons round weight (Miyabe and Warashina, Appendix III). The Consultation recommended that the 120 metric tons of purse seine catch be added to 1988 and that the Tunisian trap catch should be estimated at 83 metric tons (the previous year's catch).

39. The Consultation recognized that the statistics for Italian swordfish have improved since 1985, when the new national research program on large pelagic fish started, although a majority of the catches are still reported in the mixed gear categories (a part of the longline and all of the driftnet, harpoon, handline catches, etc.). The catches for the period before 1985 were much under-estimated. The Consultation discussed in depth the possibility of separating the recent catches by gear, as the catch by different gears represent different sizes of fish.

40. The Consultation recommended that, in the future, the Italian swordfish catches by mixed gears be reported by gear, and that size samples be taken from each catch of the different gears.

41. The only new information on albacore catches concerned Greek landings. Although in the catch data base some albacore catches had been reported for past years, the Consultation concluded that there were no albacore fisheries for 1982-1985. The 1986 catch was estimated from surveys and reported as 486 metric tons and the catches in 1987-1988 were estimated to be on the order of 500 metric tons. The catches previously reported as albacore for those years were assumed to have been Auxis.

42. The basic catch data were updated and are attached as Appendix Table A to this report.

B. Catch and effort

43. The experts examined available catch and effort data, keeping in mind the possibility of using these data for indexing the stock abundance. The ICCAT data base contains the following catch and effort data by area and time strata:

Bluefin tuna

- Tunisian trap catch per trap-day for 1976-79
- Yugoslavian catch per boat for 1950-77
- Spanish Mediterranean trap catch per trap-day for 1987-1988
- Spanish handline catch per day of fishing for 1985-1988
- Spanish driftnet catch per day of fishing for 1984-1986
- French purse seine catch per day with catch for 1981-1988
- Italian Tyrrhenian purse seine catch per day for 1972-1987
- Japanese longline catch per hook for 1972-1987
- Spanish Atlantic trap catch per trap since 1950 (which is assumed to be an index of the abundance of large bluefin tuna entering the Mediterranean Sea for spawning)

Swordfish

Spanish longline catch per hook for 1975-1988

Albacore

Spanish baitboat catch per day of fishing for 1982-1985 (fishing discontinued since then).

44. Besides the data mentioned above, several catch-per-unit-effort data were reported at this Consultation. Arena (1988) calculated time series of catch per unit effort for bluefin tuna caught in the Tyrrhenian Sea by purse seine. The other data are only for a short period and are listed in Table 1. These values represent nominal catches per nominal effort and were available only as averages for the area and time period listed in the Table. Therefore, it would be difficult to standardize the indices.

45. The Consultation recommended that detailed original data be sent to the ICCAT Secretariat and entered into its data base, so that standardization could be made in the future, when the data are accumulated for a longer time period.

C. Distribution of catch and effort

46. Most of the catch-and-effort data in the ICCAT data base are by area (1° x 1° area) and time (month). The new data listed in Table 1 are mostly yearly averages for relatively small areas. However, raw data would be most useful for developing indices of abundance.

47. Geographical and temporal changes in CPUE distribution are often indicative of fish migration and/or stock structure. Data reported by small area and time strata can be used to investigate these biological characteristics and to develop indices of abundance which account for fish movement.

D. Size data

Bluefin tuna

48. In Miyake (Appendix III) size data contained in the ICCAT base are listed and the availability of size data for the reported catches are examined. It was explained that at past bluefin stock assessment sessions, ICCAT matched all the catches with existing size data. For the bluefin catches without matching size data, size samples from other fisheries or from the same fishery but from different years were used for the substitutions. After matching the catches with size data (or substituted size data), a catch-at-size file was created for the east Atlantic and Mediterranean Sea, for the period 1970 through 1988. (Miyake, Appendix III.)

49. The Consultation considered whether any additional size data had become available at this session. New data are as follows:

- Greek size frequencies from landings at Kavala Port for 1986 and 1987 (FAO Fisheries Report 412)
- Italian size frequencies from Tyrrhenian Sea catches by purse seine for 1982, 1984-1988 (Arena (a), Appendix III)
- Italian size frequencies from catches of mixed gears (excluding purse seine) in the south Tyrrhenian Sea for 1985 through 1989. (Di Natale (a), Appendix III)
- Italian weight frequencies of rod-and-reel catches from the Adriatic Sea for 1985 (C. Piccinetti, Italian Administ. Merc. Marine. 1988)
- Italian weight frequencies from purse seine catches from the Adriatic Sea for 1984 and 1985 (C. Piccinetti, Italian Administ. Merc. Marine. 1988).
- Yugoslavian weight records for small fish sold in fresh-fish markets, 1978, 1979, and 1981 through 1988.
- Tunisian weight frequencies of bluefin caught by purse seine and exported to Japan, 1988. (Miyabe and Warashina, Appendix III)

50. Then the Consultation examined all the past size-data substitutions made by the ICCAT scientists.

Italian North Adriatic Catches

51. Weight frequencies from purse seine catches for 1984 and 1985 were made available as listed above. The Consultation decided that the catches for these years should be sized with these new frequencies. For the other years, the use of French Mediterranean purse seine size frequencies was recommended but disregarding the fish over 100 cm. The Consultation believed that it would not be possible to perform all the necessary operations to resize the 1984-1985 catches before the end of the meeting, and decided (a) to use the file already prepared using French data substitutions and (b) to have the changes as suggested by the Consultation made before the next ICCAT meeting.

52. For the Adriatic Sea, Italy reported, for the first time, 10 and 50 metric tons of catches by rod-and-reel, for 1984 and 1985, respectively. These are in addition to the catches reported for the Tyrrhenian and Ligurian Seas. This fishery started only in recent years and is still developing. It was agreed that the 50 metric tons reported for 1985 be maintained as estimates for the following years until better statistics become available. For 1985, a weight frequency is available. For other years, however, no size data were available and it was agreed that the Spanish hand-line sizes be used for substitution. Once again, because of time constraints, it was decided that even the 1985 catch would be sized with Spanish hand-line size data for this Consultation only.

53. No size data were available for the Italian Adriatic handline fishery and it was agreed that the Spanish hand-line size would be used for the substitutions.

Yugoslavian Adriatic Catches

54. In the past, all the Yugoslavian Adriatic bluefin catches (by purse seine) have been sized by French Mediterranean purse seine sizes, but disregarding fish over 100 cm. In general, this procedure was approved. However, after a very careful review of the data presented by a Yugoslavian expert, it was concluded that all the bluefin of less than 10 kg caught by purse seine were sold at the fresh-fish market and weight frequencies of all the fish of that category were recorded for 1978 through 1988 (except for 1980). Therefore, these weight frequencies should be used for fish less than 10 kg in future studies. During this session, however, the data base already matched with the French purse seine size data was accepted.

55. From these weight frequencies, the total catch of fish less than 10 kg could be estimated. The difference between total reported catch and the estimate of fish less than 10 kg corresponds to fish over 10 kg which should be sized with the French purse seine fish over 10 kg.

56. It was understood that the fish between 10 and 40 kg are unloaded either at fresh-fish markets or at fish processing plants, while all the fish larger than 40 kg are unloaded at the plants. Fish between 10 and 40 kg unloaded at the market are sampled but no records have been extracted for the fish landed at these plants.

57. The Consultation recommended that the landing records (weight of fish) for those fish be examined and compiled to make a complete estimate of fish size in the catch.

Tunisian Catch for 1988

58. The Consultation recommended to size the 120 metric tons of the Tunisian purse seine catch in 1988 with the French purse seine size samples and to size the 1988 Tunisian trap catch with Spanish Atlantic trap samples.

Swordfish

59. The ICCAT Secretariat presented a catalogue of size data available and explained that the catch-at-size base was created only for the North Atlantic and not for the Mediterranean Sea, not because the Mediterranean stock was considered to be separate but because of the lack of size data for the majority of the Mediterranean fisheries.

60. For this Consultation, the ICCAT Secretariat created a catch-at-length file for swordfish of the Mediterranean Sea, adopting many data substitutions. The procedure used is reported in the paper by Miyake (Appendix III). The Greek swordfish catch at size for 1986 and 1987, as estimated by Megalofonou, De Metrio and Lenti (Appendix III), was included in this file.

61. Firstly, it was recognized that the Italian catch data have been significantly underestimated for the period prior to 1985. The Consultation felt that it would be impossible to carry out a stock assessment on the present data set for this earlier period. It was agreed that catch at size be created only for the period since 1985. It was also recommended that every effort be made to make better estimates of the level of catches for the pre-1985 period. This is particularly essential, should the Mediterranean catches be considered as part of the North Atlantic stocks.

62. Recognizing that many new swordfish size data have been submitted to this Consultation, each fishery was reviewed by the experts for availability of size data (particularly since 1985). In the absence of size data, possible substitutions were discussed.

Italian Fisheries

63. New size frequencies were presented for mixed-gear catches from the south Tyrrhenian Sea, 1985 through 1989 (see paper by Di Natale (b) in Appendix III). It was clarified that the Italian catches by unclassified gears, discussed in paragraph 36, were made by longline, driftnet, harpoon and hand lines. A major part of the mixed-gear catches came from the south Tyrrhenian Sea and was sampled. However, the rest of the catch was from other parts of the Tyrrhenian or Ligurian Seas and was not sampled.

64. It was pointed out that the size of the fish in the catch is dependent on the gears used and is often different for different gears. It was agreed that catches be reported separately for sampled and unsampled portions and that the southern Tyrrhenian unclassified gear size should be matched only to the corresponding catch data (i.e., from the south Tyrrhenian Sea). Since other catches could have different size compositions, the Consultation recommended that they also be sampled in the future. However, until better size data become available, the size data taken from the south Tyrrhenian catches can substitute for these unclassified gear catches from other areas.

65. Ionian and south Adriatic fisheries have been well sampled for 1985 through 1988 and monthly data became available. The Consultation decided to use these data for that segment of the catches.

66. Italian longline catches are mostly from the Ionian Sea. Therefore, those identified positively as longline catches are best sized with the Ionian Sea samples.

Greek Fisheries

67. Although there were Greek size data for 1988, they were not used for the catch at length. It was recommended that the scientists concerned create the catch-at-length file with the size data and send it to the ICCAT Secretariat in time for the coming swordfish stock assessment session or that the scientists provide the basic catch and size data by small time-area strata to the ICCAT Secretariat very soon.

Other Changes

68. Algerian and Tunisian catches have no corresponding size data. Fishing occurs relatively close to the shore. The Spanish longline fishery is widespread in the western Mediterranean and has operated for an extended period. Spanish longliners also fish in the waters near Algeria and Tunisia. For these reasons, it was agreed to use size data from the Spanish longline fishery for these catches.

69. Cypriot catches were reviewed and it was considered that Greek longline fishing in offshore waters may go as far afield as the fishing grounds of Cyprus. For this reason, it was recommended that Cypriot catches be sized with the Greek Aegean Sea samples.

70. It was agreed that the Maltese swordfish catches be sized with Italian Ionian longline size samples, since the fishery is only conducted in the summer time and Italian longliners are fishing near this area.

71. Turkish catches for 1985 should be sized with Greek size data for 1986 rather than with Spanish longline data for 1985.

72. With these changes, the Consultation approved the substitutions proposed by the ICCAT Secretariat (Table 2 of Miyake's paper in Appendix III).

Albacore

73. Spanish size data are available in the ICCAT data base. Greek catches for 1986, 1987 and 1989 have been sampled. Italian Ionian and Adriatic Seas catches were also sampled for 1986, 1987 and 1988. Those two series of samples showed very similar size frequencies. On the other hand, the 1985-1989 albacore size (Di Natale (a), Appendix III) from the south Tyrrhenian Sea showed very different size frequencies.

74. The Consultation noted that the size of albacore caught by the Spanish fishery is very similar to that from Greek and Italian Ionian fisheries. It was agreed that all the catches in the western Mediterranean should be substituted by Spanish longline size

samples and those from the eastern Mediterranean should be substituted by the Italian Ionian and Adriatic size data.

General comments

75. The Consultation noted and appreciated the great progress made by the Italian scientists in the collection of data and research on large pelagic fishes since 1985. It was recommended that research results from the north Adriatic Sea also be made available as soon as possible.

76. The Consultation also noted that the 1986-1987 joint research program on large pelagic fishes in the eastern Mediterranean Sea, funded by the European Community, has resulted in a great improvement in the data base and research activities.

77. The Consultation concluded that re-creating the swordfish catch-at-size base or creating a new albacore catch-at-size file would be very time-consuming, since many additional data were presented at this time. Therefore, the Consultation requested that the individual national scientists (including non-ICCAT countries) either send the basic data to the ICCAT Secretariat, who will put them all together as agreed, or that the scientists create national catch-at-size files and send them the ICCAT Secretariat. The results will be sent to the pertinent GFCM and ICCAT member countries for review and study.

78. On the other hand, the Consultation recognized that the modifications proposed for the current bluefin catch at length are relatively few and most of these corrections might be done during this session.

E. Tag release and recapture data

79. The tagging files in the ICCAT data base contain release and recovery information only for fish recovered in the Atlantic and Mediterranean Sea. Recoveries in the Mediterranean of tags released in the Atlantic have been very limited and are almost exclusively of bluefin tuna. A summary of the recoveries of bluefin tags in the north Atlantic and the Mediterranean Sea is given in Table 2. On-going tagging programs were reviewed and are listed in Table 3.

80. ICCAT has prepared posters in its three official languages (English, French and Spanish). These posters are available to any interested country or laboratory upon request. ICCAT annually requests information on releases made in the previous year and tag serial numbers used and/or in stock. The ICCAT Secretariat has some extra tags which could be provided for small-scale pilot tagging programs and it also can help countries in ordering the tags, should they decide to conduct large-scale tagging.

81. It was pointed out that many tags recovered by fishermen are not returned to the releasing agencies but are kept by them. The Consultation emphasized the importance of publicity to facilitate the recovery of recaptured tags. Since tagging is very costly to carry out, economizing on the recovery end is unjustified.

82. In this respect, discussion centered on the current amount paid as an incentive to return tags. The standard reward paid by ICCAT is \$4.00 per tag and many of the experts believed this is too little to be an effective incentive. The Spanish Institute of Oceanography has recently been offering \$50.00 and a tee-shirt as rewards for any recoveries of its tags. It seems that such a high reward draws more attention from the fishermen and that the recovery rate has thereby improved.

83. The \$4.00 rewards were adopted by the FAO Tagging Group as the international standard, and it was recommended that the standard prize be maintained so as to avoid any conflict as a result of paying different amounts, depending on the releasing agency, particularly where more than one type of tag recoveries might be reported.

84. Some attractive souvenirs (e.g., tee-shirts) might be more effective than a small amount of money. A suggestion was also made to give something practical for housewives as a reward. At any rate, the Consultation recognized the complications and difficulties in determining effective rewards.

85. Other important aspects include training clerks, fishery office personnel, and laboratory technicians working in ports who have the opportunity to receive tags from fishermen. Also, the importance of paying the reward on the spot upon receipt of the tag, and of having a feedback of information to the fishermen, were emphasized.

86. The Consultation recommended that every effort be made to recover recaptured tags from fishermen.

VIII. REVIEW OF BIOLOGICAL PARAMETERS

A. Length-weight relationships

Bluefin

87. No new information on bluefin length-weight relationships was presented. It was noted that the ICCAT SCRS uses separate equations for east Atlantic catches and Mediterranean catches (Table 4). The length-weight relationship of bluefin shows substantial seasonal variation and, for the west Atlantic, different equations are used for different periods in the year. Further investigations into the seasonal, geographic and size-related effects on the length-weight relationship were recommended for the east Atlantic and Mediterranean.

Swordfish

88. The Consultation examined seven length-weight equations reported for the Mediterranean and retained five for further analysis (see Table 4). The weight units were reviewed as well as the size, size range of the samples and the period of the year in which they were taken. The Consultation considered equation 2 as being the most suitable for developing catch-at-size data. Equations 3 and 4 were suspected of bias due to the possible use of individuals eviscerated according to different criteria. No differences by sex were found.

Albacore

89. The Consultation examined the length-weight relations provided for various sub-regions of the Mediterranean (Megalofonou; Arena *et al.*; and Arena (b); Appendix III, and Table 4). No differences by sex were found. The Consultation compared them with those from the Atlantic. These comparisons indicated that, for a given size class, the Atlantic specimens are heavier. The Consultation recommended that these differences be subjected to statistical analysis. Since there is a need for a length-weight equation for the Mediterranean, the Consultation recommended the provisional use of equation 7 in Table 4, since it is derived from a larger number of sampled fish even though it represents an area (Aegean Sea) where smaller catches are made. The Consultation recommended that comparisons be made of length-weight equations from all areas and months.

B. Growth

90. The Consultation noted that validated information is essential for reliably describing the growth of fish and observed that the strongest evidence on the change in size over time for large pelagic fish has come from tag recapture studies. It was encouraging for the participants to learn that there were indications that marks observed in hard parts might be validated for swordfish. The participants noted that Tsimenides and Tserpes (1989) presented information on the proportion of fish forming bands for different periods of the year which suggested that the bands might be formed only once a year. The Consultation noted that the Mediterranean Sea is one of the few areas in which swordfish are caught throughout most of the year and encouraged an international study to obtain samples for marginal-increment analyses.

91. The participants noted that Megalofonou and De Metrio (1989) had observed that the back-calculated length at age one and two from swordfish spines indicated a size which coincided with modes in length frequencies thought to be from a year class a year after being spawned. Megalofonou, Dean and De Metrio (Appendix III) reported that daily growth of small fish estimated using otolith indicated growth rates similar to those calculated from modal analysis of similar sized fish.

Bluefin

92. No new information on bluefin tuna growth was presented. The ICCAT SCRS uses the equation of Farrugio (1980) with an L_{∞} of 351.1 cm to assign age to fish at a given length. The size estimates from that equation are shown in Table 5.

Swordfish

93. Several growth curves were examined from papers presented at this meeting (paper by Cavallaro *et al.* in Appendix III of the present report) and previously published reports (ICCAT 1989; Berkeley and Houde 1983; Megalofonou and De Metrio 1989; Tsimenides and Tserpes 1989). The various parameter estimates are shown in Table 6 and several of the curves are plotted in Figure 1.

94. All the hard-part growth curves had large negative values of t_0 (Table 6) and, as a result, unrealistically high estimates of size at age 0. It was suggested that a growth equation with a different form from the von Bertalanffy might be more appropriate for swordfish. All the hard-part growth equations indicated that, at the larger numbers of bands, males were estimated to be smaller than females. It was noted that, at those larger number of bands, there were generally small numbers of fish sampled for one or both sexes.

Albacore

95. Papers by Megalofonou and by Arena *et al.* (Appendix III) were examined with information on the growth of albacore in the Mediterranean Sea. Both were based on the analysis of scales and are presented in Table 7. The results by Megalofonou (Appendix III) were reported to be preliminary, and it was stated that alternative tissues for aging were being examined. It was noted that the ICCAT SCRS (ICCAT 1990) studied several growth equations and selected for the North Atlantic a growth equation calculated by Bard and Compean-Jimenez (1980), which assumed that two rings were formed each year. This decision was based on that the estimates from the Bard equation were quite similar to estimates from a growth equation based on tagging data.

C. Natural mortality

96. No new information was presented to the Consultation. Although it was agreed that estimation of M is difficult, further investigations, such as the use of the possible relationship between k and M , are encouraged. Examination of the sensitivity of VPA results to uncertainty about M is recommended. The values of M used by the ICCAT SCRS follow.

Bluefin tuna

97. Natural mortality rates currently used by the ICCAT SCRS for the west Atlantic and the east Atlantic/Mediterranean stocks are 0.10 and 0.18, respectively. ICCAT scientists doubt that such different natural mortality rates exist for these stocks which are known to intermix, and they have recommended further research on the subject. The difference in opinion on the most appropriate natural mortality rate is, in part, due to differences in the assumed growth rates for fishes of the two regions.

Swordfish

98. For the North Atlantic swordfish a natural mortality of 0.2 is used by the ICCAT SCRS.

Albacore

99. The 1989 ICCAT Albacore Workshop recommended that a range of M of 0.25-0.35 be used initially for Atlantic albacore stock assessments.

D. Comparison of various measurements

100. The study of the relationship between fork length and pectoral-fork length was reported for large bluefin caught in the Greek fishery where fish are unloaded in dressed (headed) condition. The results of that study should be useful, when it is completed.

101. Fish are processed in a wide variety of ways and the associated terminology used to describe fish measurements varies. The Consultation considered this to be important, so descriptions of the condition of various large pelagic species on landing and the terms used to describe them are listed in Table 7. Considering these diversities in measurement currently applied, it is suggested that uniform methods of measuring fish and describing fish measurements be established by country and/or by fishery.

E. Sexual dimorphism

102. All three species exhibited differences in the proportions of male and females at length in the catches. For bluefin it was reported that males were more common in the catches of fish over 225 cm FL. Female *swordfish* were reported to be more common than males above 150 cm in the Atlantic and in the Mediterranean it was reported that, for fish over 150 cm FL, females predominated in the catches (De Metrio, 1987). For *albacore* in Aegean Sea catches, fish above 68 cm were dominated by males (Megalofonou, in Appendix III).

103. Differences in length-weight relationships of bluefin, swordfish or albacore have not been demonstrated over the sizes of fish sampled for either the Atlantic or the Mediterranean.

104. No differences in growth have been proven for bluefin in the Atlantic or Mediterranean. Studies of swordfish hard parts have consistently shown that females are larger than males with the same number of growth bands (see section 8.B and Figure 1). Sex-specific growth rates of albacore in the Mediterranean were not examined in the papers presented.

IX. REVIEW OF STOCK STRUCTURE

Bluefin

105. ICCAT has been working for many years under a hypothesis that there are two-stocks, one in the eastern Atlantic/Mediterranean and another in the western Atlantic, with limited intermixing. Mixing between eastern and western bluefin generally has been estimated from tag recoveries and hard-part micro-analysis to be less than 10 percent. However, for management purposes, SCRS considers Atlantic bluefin to be composed of an eastern (including Mediterranean) and a western stock.

106. The Mediterranean fish are considered as a part of the eastern stock. The Mediterranean Sea is the only known spawning ground for bluefin on the eastern side of the Atlantic; very clear migrations of ripe adult fish before spawning from the Atlantic to the Mediterranean can be seen in the trap and longline catches near Gibraltar; mass emigration of adult fish from the Mediterranean is also seen in the trap and longline catches after spawning; significant emigration of juveniles in the fall is detected by Spanish Mediterranean traps near Gibraltar; and there is a general lack of fish of 5 to 10 years old in the Mediterranean catch. Besides, there has been a considerable number of tags released in the North Atlantic and recovered in the Mediterranean Sea (Table 2).

107. The Consultation reaffirmed the observations and conclusions reached by the ICCAT scientists in past assessment sessions.

Swordfish

108. In the ICCAT stock assessment sessions, swordfish stocks in the North Atlantic have been considered as a single management unit, although the possibility of two stocks (eastern and western) with an unknown amount of mixing could not be rejected. In the 1989 stock-assessment session, because of conflicting information on the integrity of Atlantic swordfish stock structure, it was decided that analyses should also be conducted on eastern and western components as a second priority to an assessment of the overall North Atlantic stock.

109. ICCAT has not seriously discussed the relation between the swordfish in the Mediterranean and North Atlantic, because of the absence of biological information on interchange and because it has not been possible to create a data base for the Mediterranean due to the lack of good catch and size data.

110. The Consultation reviewed all the possible evidence concerning the stock structure of swordfish between these two areas. The growth curves estimated for both areas seem to show somewhat different patterns and the age of first maturity of the fish in the Mediterranean seems to be lower (105 cm for males and 135 cm for females) than those in the North Atlantic.

111. On the other hand, there is some evidence from the gillnet and trap fisheries near Gibraltar that potential spawners move into the Mediterranean in the springtime whereas spent adults move out of the area in summer. Also, fish with bite marks of *Isistius brasiliensis* (a species of shark found only in the tropical and sub-tropical waters of the Atlantic) are observed in the Mediterranean Sea.

112. Compared with the situation of bluefin tuna, there are some fundamental differences: i.e., swordfish are known to spawn in the tropical area of the Atlantic Ocean as well as in the Mediterranean Sea; the movement of adult fish through the Strait of Gibraltar does not appear to be as massive as is seen with the bluefin; there is no mass emigration of juveniles from the Mediterranean, and fish of all sizes are found in the Mediterranean.

113. From this knowledge, the Consultation considered that the swordfish in the Mediterranean Sea could be considered as a separate unit from the Atlantic stock(s), for the present stock assessment and management purposes, even though there is clear evidence of some inter-mixing of unknown amounts of fish between these two stocks.

114. However, the Consultation recommended that further investigation be made to understand genetic stock structure, and to estimate the rate of mixing between these two stocks.

Albacore

115. ICCAT scientists have been working under a two-stock hypothesis for the Atlantic; i.e., one in the North and another stock in the South. However, they have not yet given any serious consideration to the relationship between North Atlantic and Mediterranean fish.

116. The Consultation considered firstly whether the Mediterranean stock is independent of the Atlantic, and secondly whether there are any substocks in the Mediterranean Sea.

117. There are differences in morphological characteristics between Atlantic and Mediterranean fish, although they have not yet been tested statistically. It was reported that the Mediterranean fish definitely have a relatively larger head length to the fork length ratio than the Atlantic fish, and in the Mediterranean the pectoral fin is considerably shorter, not reaching as far back as the second dorsal fin.

118. The fish reach first maturity at 62 cm in the Mediterranean, whereas in the Atlantic the corresponding length is much higher. The estimated growth seems different and the water temperature at which fish of a certain size are taken also differs between the two areas. However, it was also hypothesized that some large fish found in the Tyrrhenian Sea might have come from the Atlantic, since such large fish are not normally found in the eastern Mediterranean Sea.

119. There has been one recovery in the Mediterranean Sea of a tag released in the Atlantic (Aloncle and Delaporte, 1976). There has been no albacore fishery near the southern coast of Spain in the Atlantic. Moreover, in the Strait of Gibraltar, albacore is seldom caught by either trap or gillnet.

120. The Consultation concluded that Mediterranean albacore can be treated as a separate stock from the Atlantic for stock-assessment and management purposes. The biological evidence available at present suggests an independent stock in the Mediterranean, but this needs to be confirmed by further research.

121. It was pointed out that the tagging projects presently being undertaken in the Mediterranean and the Atlantic would produce more information on the stock structure in the near future.

122. As for the stock structure within the Mediterranean, some studies have been made of morphometric characters, but it was suggested that all such information be gathered together and compared. In particular, the comparison of growth curves and

other biometric characteristics should not be made independently for areas but by comparing all the data from the different areas together in one analysis. Therefore, the Consultation recommended that the basic data be exchanged among the scientists working in the different areas and that they collaborate in the analysis of these data.

X. REVIEW OF CATCH-AT-SIZE DATA BASE

125. The bluefin catch data for the Mediterranean Sea were sized as agreed by the Consultation and re-created. As noted earlier, there was not sufficient time to make all of the recommended changes in matching catches with size samples, but these changes would be made in time for the next ICCAT meeting. The results were examined by country and gear and verified for correct substitution.

126. Due to time constraints, the catch-at-size data base was not created for other species at this time.

XI. AGING OF CATCH AT LENGTH

127. Mr. S. Turner explained the program to convert the catch-at-length into the catch-at-age table. The Farrugio (1980) equation, which the Consultation agreed to use for Mediterranean bluefin tuna, was applied and the birth date was assumed to be July 1. The equation was applied to the mid-point of the period covered by each frequency, and a corresponding age was assigned to that length class of fish.

128. The Consultation, having agreed with the ICCAT view that the east Atlantic and Mediterranean bluefin be treated as a single stock, used the entire catch at length from those areas to create the catch at age (Table 9). It was noted that the catch at age was not much different from that estimated by ICCAT in 1989. The catch at age for several nations and fisheries in the Mediterranean were tabulated (Appendix Table B) so that scientists could examine the information in detail, especially with respect to the accuracy of their decisions and prior decisions of other scientists concerning size composition substitutions.

129. The Mediterranean catch-at-age table was briefly reviewed by the experts and the following observations were made.

Spain

130. Data are missing for 1987 and 1988, whereas it is known that a few seiners have operated off the Catalonian coast together with French and Italian seiners. The Consultation recommended that an investigation be made to estimate the catches and that the catches be matched with French purse seine size data.

Turkey

131. The 1986-1988 catches were sized by 1989 Turkish sampling at this time. However, this put most of the fish into the young age category, whereas the size of fish imported into Japan (Miyabe and Warashina, Appendix III) suggested that, for 1986-1987, the fish were larger. The Consultation recommended that substitution for 1986 and 1987 be changed to French purse seine size.

Greece

132. Use of the Kavala size frequencies, agreed upon earlier by the Consultation, was questioned, since the sample seems to include only large fish. Some smaller fish have been caught by fishermen from other areas and the Consultation was informed that a sample is available for small fish. It recommended that the catch be resized by Greek scientists using finer time-area strata and appropriate size samples and that the results be sent to ICCAT.

General

133. It was requested that all national scientists carefully review the catch-at-age table, and if some improvements have to be made, these modifications should be sent to the ICCAT Secretariat not later than 31 September 1990 for the coming stock assessment session. Such modifications must be done in terms of the number of fish by size.

XII. REVIEW OF ABUNDANCE INDICES SERIES

General

134. The Consultation defined abundance indices as time-series of values proportional to the abundance of the stock. Usually they refer to specific age-classes, though in principle, we can have indices reflecting the abundance of the entire stock. In the cases where they are indicative of the dynamics of the biomass of the entire stock or its specific age-classes, it is more appropriate to refer to them as biomass indices.

135. Such indices by themselves are of great interest to fishery scientists, managers, and fishermen, because they are indicative of the past dynamics of stocks and their responses to exploitation. However, it is difficult, if not impossible, to extrapolate the indices for age-classes and periods, including future periods (predictions) for which they are not available, although such an extrapolation is frequently required. Also, values of entire stock abundance and/or biomass are usually needed.

136. In order to obtain an estimate of the population size, a procedure called Virtual Population Analysis (VPA) is frequently used. Some versions of this procedure, which may be applicable to large pelagic fishes in the Mediterranean, require abundance indices as an input (see section XIV A). Consequently, abundance indices have an important twofold role, as valuable information in themselves on the state of stocks and as an input to relatively sophisticated stock-assessment analyses.

137. Time-series of the catch-per-unit-of-fishing-effort (CPUE) identified for northern bluefin tuna, swordfish and albacore (see section VII) were the only data available for the derivation of abundance indices. It was pointed out by some participants that, to satisfy the definition of abundance indices, the catches used need to be "aged". The aging of catches was considered under Agenda Item 11 and the procedure therefore was regarded as the only practical one for deriving abundance indices at this stage. To eliminate the potential problems with nominal fishing effort as a measure of effective fishing effort, the Consultation recommended that a general linear model (GLM) be used to standardize CPUE.

138. GLM is a commonly used procedure for many tuna stocks to obtain indices of abundance from CPUE. The purpose of GLM application is to eliminate differences in CPUE due to differences in seasons (usually months or quarters) geographical areas, fishing gear, environmental factors such as temperature, etc. This work needs to be done before VPA can be applied with confidence. Because of the limited time available, the standardization could not be performed, and the Consultation recommended that the required work be done during the period before the next meeting on stock assessment of Mediterranean large pelagic fisheries. As many Mediterranean fisheries directed at large pelagic species are multi-species, special attention should be paid to target and non-target species in standardizing indices.

139. Some participants pointed out that catch rate information from one area may be more indicative of the status of the stock than the catch rate from another area. The Consultation noted that it would be very difficult to determine beforehand whether one area was providing more useful information than another area. They further noted that GLM can be used to integrate catch rates from several areas and to compare the relative variability of catch rates from different areas. The Consultation once again recommended that basic catch and effort data from similar fisheries be exchanged among the scientists working in different areas and that they collaborate in the analysis of these data.

140. The Consultation recommended that attempts be made to derive indices of abundance from all the fisheries directed at the stocks of Mediterranean bluefin tuna, swordfish and albacore. This recommendation was made to cover the range of the age-classes, grounds, and seasons involved in the fisheries. That way, the Consultation hoped to get a better overall reflection of the dynamics of stocks. In view of the consideration of methods to be used for stock assessment (see section XIV A), the Consultation regarded such an overall reflection as very important.

Bluefin tuna

141. Table 10 gives ten abundance indices presented at the 1989 ICCAT SCRS meeting (ICCAT, 1990). From them, four were rejected at that meeting as providing little or no input information to the VPA that was used for the Mediterranean and eastern Atlantic stock. The rejected indices were from the French purse seine fishery in the Mediterranean for age class 1 for all years; age classes 2 and 3 for years prior to 1982, and from the Spanish baitboat fishery in the Bay of Biscay (eastern Atlantic) for age class 1. From the remaining indices, the participants pointed out that only the indices from the Japanese fisheries were standardized. There are definite plans to standardize soon the indices from the French fishery. Preliminary analyses suggest that standardization may have little effect on the Bay of Biscay index.

142. Mr. B. Liorzou reported on a series of CPUE for the French purse seine fishery in the Mediterranean off the south coast of France (including the Gulf of Lions). Before the World Meeting on Bluefin Tunas, which was held in La Jolla, California, in May 1990, these indices for age classes 2 and 3 did not account for days during which catches were not taken but fish were searched. The new indices were regarded as potentially valid for years for which spotter aircraft support (one plane) was at approximately the same level, i.e., since 1982 with the exception of a few years like 1984 when the plane did not operate. The two series of indices were not standardized, but they were very closely correlated and therefore, the use of the new series of CPUE may not have significant impact on the VPA results.

143. Mr. P. Arena briefly presented a paper (Arena (a), Appendix III). The CPUE provided by him (Table II of his paper) was neither "aged" nor standardized. It referred to a very wide range of age classes and showed a declining trend.

144. In response to questions from the participants, Mr. Arena provided supplementary information on the CPUE series from his document. In his calculations, fishing effort was expressed as the number of fishing days including the days during which fish were sought but not caught.

145. During the period for which the CPUE time-series was given, Mr. Arena showed that there was a change in the size of the vessels (from large to small) for economic reasons. He explained that the fishing power^r is independent of vessel size. He also mentioned that the support of spotter aircraft to the fishery stabilized in 1980.

146. Mr. Arena also indicated that it would be reasonable to develop indices of abundance for age groups from these data using the annual number of days fished and the numbers of fish caught at age for this fishery.

Swordfish and albacore tuna

146. Some participants pointed out that the available CPUE time-series, which are not "aged" and standardized, were short (5 years). Unless the abundance of the above-mentioned stocks changed very significantly during that period, the variability in the CPUE time-series, even after "aging" and standardization, is very likely to mask any trends.

XIII. DEPLOYMENT OF LARGE-SCALE PELAGIC DRIFTNETS

147. The GFCM Secretariat recalled that, in October, 1989, the Working Party on Marine Mammals, of the International Commission for the Scientific Exploration of the Mediterranean Sea (ICSEM), expressed concern about the impact of driftnetting on cetacean stocks and urged governments to increase research on this question. In November, 1989, at the annual meeting of ICCAT, a few countries commented on the use of driftnets in tuna fishing and it was recommended that the SCRS consider the effect of driftnet fisheries. In the same month, at its 25th Session, the FAO Conference recommended that FAO undertake scientific work to improve the information available.

148. Of particular importance was the resolution adopted by consensus by the General Assembly of the United Nations in December, 1989, on Large Scale Pelagic Driftnet Fishing and Its Impact on the Living Resources of the World's Oceans and Seas. This resolution recommended, inter alia, that all members of the international community, bearing in mind the special role of regional organizations in the conservation and management of living marine resources, agree to:

(i) moratoria on all large-scale pelagic driftnet fishing on the high seas by 30 June 1992 with the understanding that such a measure will not be imposed in a region, or if implemented can be lifted, should effective conservation and management measures be taken based upon statistically sound analysis, to be jointly made by concerned parties of the international community with an interest in the fishery resources of the region, to prevent unacceptable impacts of such fishing practices in that region and to ensure the conservation of the living resources of that region.

(ii) an immediate cessation to further expansion of large-scale pelagic driftnet fishing on the high seas, with the understanding that this measure will be reviewed subject to the conditions in para (i) above.

149. This resolution was brought to the attention of the GFCM Executive Committee at its 48th Session (February 1990) which agreed that the problem should be discussed by the present Expert Consultation. The Executive Committee recommended that the subject also be considered by the GFCM Committee on Fisheries Management, at its first session in 1991. This Committee should consider, inter alia, whether or not the moratoria recommended by the General Assembly should apply to the GFCM area and make appropriate recommendations to GFCM. The Executive Committee also instructed the Secretariat to seek extra-budgetary funds to conduct a detailed analysis of the problem to be submitted to the Committee on Fisheries Management. Informal contacts have already been made by the GFCM Secretariat with the EEC Commission, with a view to ascertaining its interests in a research programme for the Mediterranean.

150. The Consultation was also informed that the EEC Commission was studying the possibility of submitting to the Council of Ministers a proposal prohibiting the use of driftnets. It was noted, however, that the fisheries resources policy of the EEC does not apply to the Mediterranean.

151. The Consultation had before it the Report of the Expert Consultation on Large Scale Pelagic Driftnet Fishing, held in Rome (2-6 April 1990) and three papers dealing more specifically with the situation in the Mediterranean (Ferretti; di Natale; Troncione et al.; Appendix III).

152. It was first recalled that driftnets have been used in the Mediterranean at least since 177 B.C.

153. It was noted that, in the western Mediterranean, this type of gear was not very widely used. In Algeria a 3-km-long driftnet is now being used experimentally for fishing off the western coasts of the country. So far no interaction with marine mammals has been reported.

154. In Morocco, a fleet of 30-40 artisanal vessels is fishing seasonally for small tuna with driftnets of 3 to 4 km length. A scientific programme to follow up the activities of this fleet has just been established.

155. In Spain, about 50 small vessels use driftnets between 1.5 and 3.5 km length to take swordfish in the Gibraltar area. The observers placed on board these vessels by the "Instituto Español de Oceanografía" have not yet reported any incidental taking of marine mammals; so far, three turtles have been taken and released. In the Gulf of Lions, two French vessels are operating with driftnets of about 3 km in length.

156. Most of the large-scale driftnet fishing is taking place in the central Mediterranean and is conducted by Italian fishermen. The length of the nets used so far has varied, depending on the size of the vessels, from 2 to 40 km with an average of 12 km. The nets are made of multifilament polyamide fibre. Those targeting swordfish have a mesh opening of 400-450 mm and those fishing for albacore, a smaller mesh of 120-180 mm. The fleet consists of more than 700 vessels, the majority of them being below 15 m in length. Thirty-five vessels are about 25 m in length. The annual average catch is about 5000 metric tons of swordfish and 1000 metric tons of albacore. By-catch includes medium and large pelagic fishes, turtles, large cetaceans (e.g. sperm and beaked whales) and small cetaceans (striped and bottlenose dolphins). According to recent official statistics, about 100 marine mammals were taken in 1988. A systematic study is now being made with observers on board to obtain a more realistic assessment which would take into account the cases not officially reported by fishermen. This fishery provides direct employment to 5000 persons and indirect employment for another 20000 especially in the southern part of the country.

157. In 1989 and 1990, the Italian government has taken a series of measures aimed at freezing the number of licenses and at regulating the gear (minimum mesh size of 320 mm for swordfish, maximum depth of 35 m and maximum length of 2.8 km for coastal fishing and 9.3 km for offshore fishing, compulsory marking of nets) and the fishing season.

158. A few artisanal driftnetters (less than 10) are also reported to operate from Corsica.

159. Little information is available from the eastern Mediterranean. The Greek government is planning to prohibit the gear until the results of research currently undertaken are known. It appears that one vessel using a 10-km driftnet recently started to operate on the high seas in the Aegean Sea, and that 13 small units using nets of 3-km length are also operating in this sub-region.

160. Finally, it also appears that no driftnet fishing in the Mediterranean is being conducted by countries from outside the region.

161. On the basis of the available information and pending the outcome of the ongoing research programmes, the Consultation agreed that it was necessary to regulate strictly the use of driftnets in the Mediterranean, in particular through a limitation of the size of the net and through licensing schemes controlling the fishing effort, in the spirit of the Resolution of the UN General Assembly. It was also stressed that the consequences of global and indiscriminate moratoria on the use of driftnets in the Mediterranean should

be carefully studied. Besides painful socio-economic repercussions, the prohibition of large-scale driftnets might result in an increase in fishing effort for swordfish with longline. This would undoubtedly save a number of cetaceans but would also provoke the capture of several thousands of marine turtles (although many of these would survive if released by the fishermen) and of an increased number of juvenile swordfish (with unknown consequences on the swordfish stock).

XIV. STATE OF STOCKS

A. Stock-assessment models to be used

162. It was pointed out that models are necessary for extrapolation of fishing statistics. Such an extrapolation is possible only by the utilization of available biological information and the introduction of assumptions. Especially in the cases where such biological information is limited and the assumptions cannot be fully supported, the utilization of direct indicators from the fisheries for stock assessment is recommended. Such indicators may include gross catches, their size/age composition, CPUE and the indices of abundance.

163. The Consultation did not recommend, at this time, any specific models that could be used at present for the stock assessment for swordfish and albacore, in view of the relatively short time-series (five years) of catch and fishing effort statistics, limited tag-release/recapture data, no abundance indices independent of fisheries, and limited biological information. Although it was recognized that this meeting set a milestone in improving the Mediterranean statistics for large pelagic fishes, the Consultation emphasized the need to continue detailed data collection activities and to make every effort to obtain historical data.

164. At the meetings of the ICCAT SCRS, VPA has been used for the Mediterranean and the east Atlantic stocks. These applications were described in various ICCAT publications, including the SCRS Reports. The Consultation recommended further examination of the applicability and the application of VPA to these stocks. It was planned that this work should be carried out, in collaboration with GFCM scientists, in time for the stock assessment at the October/November 1990 SCRS meeting.

165. Participants in the Consultation recognized that there are uncertainties in many of the inputs to the VPA for northern bluefin tuna (see previous sections). In light of these uncertainties, sensitivity tests and simulation studies of VPA should be made.

166. In view of the early stage of stock assessment of several large pelagic fishes in the Mediterranean and the nature of information available on them, some participants felt that to limit stock assessment to VPA may not be the most efficient approach for building up the knowledge of the state of the stocks. Regardless of the likely suitability of the VPA, at least for east Atlantic/Mediterranean bluefin tuna stocks, the Consultation recognized that various approaches to stock assessment should be encouraged.

167. Megalofonou, De Metrio and Lenti (Appendix III) presented estimates of total mortality (Z) for Aegean Sea swordfish using the catch-curve methods of Beverton and

Holt (1957). Their estimates were 0.464 and 0.300 per year for 1986 and 1987 and 0.443 and 0.305 per year for the same years, respectively.

B. Application of models to the existing data

C. Review of results

168. These two items were discussed together. The Consultation was quite satisfied with the significant improvement made on the Mediterranean tuna and swordfish data base, since the lack of data for that region had prevented ICCAT from assessing these stocks or degrading the precision of the assessments. It also agreed upon the data substitutions for the catches for which size samples have not been made available. Therefore, it was recognized that the catch at length could now be created for swordfish and albacore, as well as greatly improving that now in existence for bluefin.

169. The Consultation, at the same time, discussed in depth all the parameters to be used in various models of stock assessments, and agreements were reached on the selection of many of these parameters.

170. The Consultation also reviewed the available catch and effort data and recommended use of GLM to develop standardized indices. Despite the fact that this was the first meeting of its kind for the Mediterranean Sea, and that three major species were studied, more than expected was achieved.

171. However, the time for the Consultation was limited and it was impossible to proceed further in applying stock-assessment models to the data base thus agreed upon, since the preparation of the data base, including all the changes, would take several weeks for three species. It is hoped that the coming ICCAT Swordfish Stock Assessment Session (September, 1990), Albacore Workshop (October, 1990) and the meeting of the bluefin species group (October-November, 1990) will follow up this work.

XV. RECOMMENDATIONS

172. The Consultation expressed its general satisfaction with the progress achieved. Nevertheless, considerable effort is needed for some of these species to improve further the data quality and estimates of biological parameters used in developing the assessments. It strongly recommended to GFCM and ICCAT that they consider carefully the convening of another Consultation on the same subject as the present one, in due course, as a valuable means of bringing together GFCM and ICCAT scientists to continue building a high-quality data base on the large pelagic fishes of interest.

173. The Consultation also recommended that the member countries of GFCM and ICCAT, and the concerned national institutions, be officially invited by each of these two bodies to promote actively the attendance of their experts at GFCM and ICCAT meetings at which the assessment of stocks of large pelagic fishes in the Atlantic Ocean and the Mediterranean Sea are planned, with the objective also of enhancing cooperation between the member countries of GFCM that are not members of ICCAT and member countries of ICCAT; that is, basically between Mediterranean and Atlantic scientists concerned with the fisheries for large pelagic fishes.

A. Statistics

174. Section VII of this report includes many recommendations made by the Consultation concerning statistics and sampling. During this session, an important quantity of new basic data became available and the Mediterranean data base has been improved to a great extent. The major reason for such an improvement was that many scientists working on large pelagic fishes met together for the first time. This allowed better communication among them.

175. All the recommendations made under Section VII should be well noted but, in addition, the Consultation recommended that:

a) close collaboration among the scientists working towards the same objectives be encouraged, such as exchange of basic data concerning biometric measurements, age, growth, etc.

b) the basic data on catch, detailed catch-and-effort and size be sent to the ICCAT Secretariat, which should serve as the data centre for the large pelagic fishes of the Mediterranean.

c) the ICCAT Secretariat provide the concerned scientists with a catalogue of the data base available at the Secretariat and provide them with a computer file upon request, insofar as the file is not confidential.

d) national scientists try to find historical data or make best estimates of missing past catches (e.g., Italian catches in the northern Adriatic Sea, Italian swordfish catches prior to 1985).

e) all the existing significant catches be registered separately by gear and sampled properly at least for fish size.

f) all the catches of small fish (age 0) reported in catch statistics be sized; this is particularly important for stock assessment of bluefin.

g) GFCM and ICCAT assist nations in developing adequate catch-at-size tables for the fisheries. GFCM and ICCAT give serious consideration to assisting Yugoslavia financially to extract size information for large bluefin recorded and accumulated at processing plants.

B. Research and technology

176. Regarding the development of research in support of the impact evaluation of each type of gear (e.g., environmental impact, interaction with other gears, catch composition, socio-economic factors, interaction with other human activities, etc.), the Consultation recommended that all Mediterranean countries promote, much more actively than hitherto, the necessary fishery and marine scientific research, with a view to developing reliable basic instruments for the management of the different stocks of large pelagic fishes.

C. Management

177. The Consultation learned that ICCAT has recommended some management measures for the east Atlantic and Mediterranean bluefin fishery:

That the Contracting Parties take the necessary measures to prohibit any taking and landing of bluefin tuna (*Thunnus thynnus*) weighing less than 6.4 kg.

Notwithstanding the above regulation, the Contracting Parties may grant tolerances to boats which have incidentally captured bluefin weighing less than 6.4 kg, on the condition that this incidental catch should not exceed 15 percent of the number of fish per landing of the total bluefin catch of said boats or its equivalent in percentage by weight.

That, as a preliminary step, the Contracting Parties that are actively fishing for bluefin tuna (*Thunnus thynnus*) or those that incidentally catch it in significant quantities shall take necessary measures to limit the fishing mortality of bluefin tuna to recent levels (ICCAT 1975).

178. It was noted that more severe size and catch regulations are in effect for the west Atlantic bluefin stocks.

179. The minimum-size regulation is based on yield-per-recruit studies and intended to increase overall yield by increasing the age at first capture. The implementation of this regulation would protect the majority of 1-year-old fish. However, this minimum-size regulation has not been effectively carried out even by ICCAT member countries in the Mediterranean areas. Table 11, which was prepared by the ICCAT SCRS, shows clearly that a very significant part of the catches, in number, in this area are of under-sized bluefin tuna. It was added that the age-0 fish catch is considerably underestimated in this Table, due to unreported catches of such fish.

180. Considering the seriousness of the problem, the Consultation recommended that at the next GFCM Session, the Council should decide whether or not the bluefin minimum-size regulation already recommended by ICCAT should also be the subject of a formal GFCM recommendation under Article 5 of the GFCM Agreement.

XVI. FUTURE RESEARCH AND WORK PLAN

181. The Consultation noted that a number of future studies had already been recommended under various Agenda items. The subjects covered are:

- a) improved estimates of Italian catches of swordfish prior to 1985;
- b) further investigations into genetic stock structure and estimation of the rate of mixing between Atlantic and Mediterranean stocks;
- c) completion of abundance indices, particularly by standardizing the catch and effort (by application of GLM on disaggregated data);
- d) statistical comparison of various biological parameters from different areas; and

- e) application of VPA for revised or newly created catch-at-age tables as well as some sensitivity studies of VPA for different parameters such as natural mortality.

182. However, the Consultation specifically proposed to GFCM and ICCAT that two important projects be carried out in the immediate future:

i) *Validation of age reading using hard parts*

It seems that the Mediterranean fishery offers a unique opportunity to validate age reading on hard parts, since size frequency and hard parts can be collected from the same sample, and since the fishery catches a wide range of fish sizes for extended fishing periods. The Consultation recommended that national scientists initiate or continue investigations on this subject, possibly in international collaboration.

ii) *International tagging with tetracycline injections*

Noting that there are three albacore-tagging cruises planned in the Mediterranean, and another in the eastern Atlantic, the Consultation called for international cooperation in the implementation of these tagging cruises. The essential component of such tagging would be the use of tetracycline injections, to verify aging. Injection into small swordfish is sometimes difficult but otherwise this method is easy to use and of little cost.

183. Different colored tags (generally red) are to be used to distinguish the fish injected with tetracycline so that fisherman can return the fish together with the tags. The ICCAT Secretariat offered to provide participants with some red tags on request. Special publicity for recovering tag and fish will also be required. Mr. S. Turner offered documentation on some special equipment used for easy injection of tetracycline.

XVII. ADOPTION OF THE REPORT

184. The Consultation reviewed the draft report and, after revision, adopted it. It was agreed that the ICCAT Secretariat would be responsible for making the final corrections as adopted, and circulate the report among the Rapporteurs for a final checking for accuracy. It will be published with an Appendix including all the scientific papers presented at the meeting, with the exception of those published elsewhere.

XVIII CLOSURE

185. At the closure of the meeting, the Consultation thanked the meeting host, Università degli Studi, the Regione Puglia and Mr. G. De Metrio for the excellent meeting facilities. The Consultation also appreciated the efficient meeting services provided by the New-Inter Centre, the support provided by the GFCM and ICCAT Secretariat staff, and the assistance provided by the interpreters between English and Italian.

186. The Chairman closed the Consultation at 19:10 on June 27, 1990.

REFERENCES

- Aloncle, H. 1973. Marquage de thons rouges dans le Golfe de Gascogne. ICCAT Collective Volume of Scientific Papers, I: 445-458.
- Aloncle, H. and F. Delaporte. 1976. Marquages de germons par l'ISTPM, 1967-1974. ICCAT Collective Volume of Scientific Papers, V(2): 216-220.
- Arena, P. 1988. Risultati delle rilevazioni sulle affluenze del tonno nel Tirreno e sull'andamento della pesca da parte delle "tonnare volanti" nel triennio 1984-1986. In: ATTI Seminari delle unita operative responsabili dei progetti di ricerca promossi nell'ambito dello schema preliminare di piano per la pesca e l'acquacoltura, I. Ministero della Marina Mercantile, Consiglio Nazionale delle ricerche, Roma, 1988: 273-298.
- Arena, P., A. Cefali and F. Munao. 1980. Analisi sulle'eta, peso, lunghezza ed accrescimento di Thunnus thynnus (L.) caturati nei mari della Sicilia. Mem. Biol. Mar. Ocean., X, 5: 119-134.
- Arena, P. and F. Li Greci. 1970. Marquage de thonidés en Mer Tyrréhennienne. Journées ichtyol. : 115-119. Rome, CIESM.
- Arena, P., A. Potoschi and A. Cefali. 1980. Risultati Preliminari di Studi Sull'Eta, l'Accrescimento e la Prima Maturita Sessuale dell'Alalunga Thunnus alalunga (Bonn. 1788) del Tirreno/Preliminary Results of Studies on Age, Growth and First Sexual Maturity of Albacore, Thunnus alalunga (Bonn. 1788) in Tyrrhenian Sea. Mem. Biol. Mar. Ocean., X(3): 71-81.
- Bard, F.X. and G. Compean-Jimenez. 1980. Conséquences pour l'évaluation du taux d'exploitation du germon (Thunnus alalunga) nord atlantique d'une courbe de croissance déduite de la lecture des sections de rayons épineux. ICCAT Collective Volume of Scientific Papers, IX(2): 365-375.
- Berkeley, S.A. and E.D. Houde. 1983. Age determination of broadbill swordfish, Xiphias gladius, from the Straits of Florida, using anal fin spine sections. U.S. Dep. Comm., NOAA, Tech. Rep. NMFS, 8: 137-143.
- Beverton, R.J.H. and S.J. Holt, 1957. On the dynamics of exploited fish populations. Ministry of Agriculture, Fisheries and Food, London. 533 pp.

- Bréthes, J. C. 1978. Campagne de marquage de jeunes thons rouges au large des côtes du Maroc. ICCAT Collective Volume of Scientific Papers, VIII(2): 367-369.
- Bréthes, J. C. 1979. Sur les premières récupérations des thons rouges marqués en juillet 1977 au large du Maroc. ICCAT Collective Volume of Scientific Papers, VIII(2): 367-369.
- Bréthes, J. C. and J. M. Mason, Jr. 1979. Bluefin tuna tagging off the Atlantic coast of Morocco in 1978. ICCAT Collective Volume of Scientific Papers, VIII(2): 329-332.
- De Metrio, G. 1987. La pesca dei grandi scombroidei nei mari di Grecia. Report for E.E.C.
- Farrugio, H. 1980. Age et croissance du thon rouge (*Thunnus thynnus*) dans la pêche française de surface en Méditerranée. ICCAT Collective Volume of Scientific Papers, IX(2): 536-546.
- FAO 1989. Report of the Second Technical Consultation of the General Fisheries Council for the Mediterranean on Stock Assessment in the Eastern Mediterranean. FAO Fisheries Report No. 412. FAO, 1989, Rome. 206pp.
- Hamre, J. 1963. Tuna tagging experiment in Norwegian waters. FAO. Fish. Rep., (6), 3:1125-1132.
- Hamre, J. 1964. Observations on the depth range of tagged bluefin tuna based on pressure marks on the Lea tags. ICES, Scombriform Fish Committee, (151), 5 pp.
- Heldt, H. 1927. Le thon rouge (*Thunnus thynnus*, L.). Mise à jour de nos connaissances sur le sujet. Bull. Stat. Oceanogr. Salammbô, 7, 24 pp.
- ICCAT, 1975. Report for the Biennial Period, 1974-1975. Part I (1974). 200 pp. ICCAT, Madrid.
- ICCAT, 1989. Second ICCAT Swordfish Workshop. ICCAT Collective Volume of Scientific Papers, XXIX: 71-162.
- ICCAT, 1990. Report of the 1989 ICCAT Albacore Workshop. ICCAT Collective Volume of Scientific Papers, XXXI: 73-243.

- Lamboeuf, M. 1975. Contribution à la connaissance des migrations des jeunes thons rouges à partir du Maroc. ICCAT Collective Volume of Scientific Papers, IV: 141-144.
- Liorzou, B and L.L. Bigot (in press). L'exploitation du thon rouge au large des cotes francaises de Méditerranée/The bluefin tuna exploitation off the Mediterranean French coast, Laboratoire Ressources Halieutiques. Annales de Societe zoologique de France.
- Mather III, F. J. and J. M. Mason Jr. 1973. Recent information on tagging and tag return for tunas and billfishes in the Atlantic Ocean. ICCAT Collective Volume of Scientific Papers, I: 501-531.
- Megalofonou, P. and G. De Metrio. 1989. Stima dell'età e dell'accrescimento di Xiphias gladius, L. del Mar Egeo mediante lo studio dei raggi spiniformi della pinna anale. XXI. Congresso della Società Italiana di Biologia Marina.
- Mejuto, J., S. Iglesias, J.C. Rey, E. Alot and B. Garcia. 1987. Relaciones talla-peso del pez espada (Xiphias gladius, L.) en las areas BIL-94 y BIL-95, por estratos espacio-temporales. ICCAT Collective Volume of Scientific Papers, XXVII: 214-221.
- Piccinetti, C. 1988. Risultati preliminari sulla pesca e sugli stocks di tonno in alto e medio Adriatico ed in Sardegna. In: ATTI Seminari delle unita operative responsabili dei progetti di ricerca promossi nell'amito dello schema preliminare di piano per la pesca e l'acquacoltura, I. Ministero della Marina Mercantile, Consiglio Nazionale delle ricerche, Roma, 1988: 177-188.
- Rey, J.C. and J.L. Cort. 1978. Resultado de la campaña de marcado de atún rojo, Thunnus thynnus (L.), juvenil en la costa mediterránea española. ICCAT Collective Volume of Scientific Papers, VII(2): 318-321.
- Rey, J.C. and J.L. Cort. 1986. The tagging of the bluefin tuna (Thunnus thynnus) in the Mediterranean: History and analysis. CIESM, 2 pp.
- Rodríguez-Roda, J. 1969. Resultados de nuestras marcaciones de atunes en el Golfo de Cádiz durante los años 1960 a 1967. Publ. Tec. Junt. Est. Pesca, 8: 153-158.
- Rodríguez-Roda, J. 1980. Nuevas rutas en las migraciones transatlánticas del atún. IBERICA, Actualidad científic. 207: 8-10.

Tsimenides, N. and G. Tserpes. 1989. Age determination and growth of swordfish, Xiphias gladius L., 1785 in the Aegean Sea. *Fish. Res.*, 8 (1989): 159-168.

Vilela, H. 1960. Estudos sobre a biologia dos atuns do algarve. *Bol. de Pesca*: 11-34.

Table 1. Nominal annual average CPUE values made available, for the first time, during the session*

SPECIES	COUNTRY	GEAR	YEAR	AREA	PERIOD	E x 1000	CPUE kg	CPUE N.
HOOKS								
SWORDFISH	ITALY	LL	1984	IONIAN	JUNE-SEPT	849.6	92.2	2.0
SWORDFISH	ITALY	LL	1984	ADRIATIC	JUNE-SEPT	2085.0	40.2	1.3
SWORDFISH	ITALY	LL	1985	IONIAN	JUNE-SEPT	1554.9	52.1	2.0
SWORDFISH	ITALY	LL	1985	ADRIATIC	JUNE-SEPT	2070.0	58.0	2.6
SWORDFISH	ITALY	LL	1985	TYRRHENIAN	OCTO-NOVE		104.2	
SWORDFISH	ITALY	LL	1986	IONIAN	JUNE-SEPT	1019.0	58.9	2.2
SWORDFISH	ITALY	LL	1986	ADRIATIC	JUNE-SEPT	1570.5	50.2	1.5
SWORDFISH	ITALY	LL	1986	TYRRHENIAN	AUGU-DECE		56.5	
SWORDFISH	GREECE	LL	1986	AEGEAN south	JUNE-SEPT	122.5	142.5	6.2
SWORDFISH	GREECE	LL	1986	AEGEAN eastern	JUNE-SEPT	870.8	162.7	5.0
SWORDFISH	ITALY	LL	1987	IONIAN	JUNE-SEPT	743.6	71.9	2.8
SWORDFISH	ITALY	LL	1987	ADRIATIC	JUNE-SEPT	572.8	134.8	8.4
SWORDFISH	GREECE	LL	1987	AEGEAN south	JUNE-SEPT	156.9	114.5	6.4
SWORDFISH	GREECE	LL	1987	AEGEAN eastern	JUNE-SEPT	2300.1	94.6	2.7
SWORDFISH	ITALY	LL	1988	IONIAN	JUNE-SEPT	316.9	66.6	3.9
SWORDFISH	GREECE	LL	1988	AEGEAN south	JUNE-SEPT		90.5	4.9
100 m net								
SWORDFISH	ITALY	GILL	1985	TYRRHENIAN	APR-SEPT	1.04		
SWORDFISH	ITALY	GILL	1986	TYRRHENIAN	APR-AUG	0.90		
CPUE kg x fishing day								
SWORDFISH	ITALY	HARP	1985	TYRRHENIAN	APR-AUG	34,86		
SWORDFISH	ITALY	HARP	1986	TYRRHENIAN	APR-AUG	21,09		
HOOKS								
ALBACORE	ITALY	LL	1984	IONIAN	SEPT-NOV	1227	77.3	15.1
ALBACORE	ITALY	LL	1984	ADRIATIC	SEPT-NOV	1633	78.9	15.7
ALBACORE	ITALY	LL	1985	IONIAN	SEPT-NOV	819.8	71.1	13.5
ALBACORE	ITALY	LL	1985	ADRIATIC	SEPT-NOV	2895	101.9	19.1
ALBACORE	ITALY	LL	1985	TYRRHENIAN	OCTO-DEC		136.5	
ALBACORE	ITALY	LL	1986	IONIAN	SEPT-NOV	335.7	63.1	12.8
ALBACORE	ITALY	LL	1986	ADRIATIC	SEPT-NOV	2336.2	109,6	22,6
ALBACORE	ITALY	LL	1986	TYRRHENIAN	OCTO-NOV		52.5	
ALBACORE	GREECE	LL	1986	AEGEAN	SEPT-NOV	160.9	100	17.4
ALBACORE	ITALY	LL	1987	IONIAN	SEPT-NOV	218.5	74.4	13.9
ALBACORE	ITALY	LL	1987	ADRIATIC	SEPT-NOV	1025	247.3	49.5
ALBACORE	ITALY	LL	1988	IONIAN	SEPT-NOV	387.5	88.3	15.5
ALBACORE	GREECE	TROL	1986	AEGEAN	SEPT-NOV	471 days	61.2/day	11.8/day
kg x fishing day								
ALBACORE	ITALY	HAND	1985	TYRRHENIAN	OCTO-DEC	255,5		
ALBACORE	ITALY	HAND	1986	TYRRHENIAN	SEPT-DEC	36,1		
kg/100 m net x day								
ALBACORE	ITALY	GILL	1985	TYRRHENIAN	APR-AUGU	0,04		
ALBACORE	ITALY	GILL	1986	TYRRHENIAN	APR-AUGU	0,12		

LL = longline; GILL = gillnet; HARP = Harpoon; TROL = Trolling; HAND = Handline.

* No new CPUE data were presented for bluefin tuna.

Table 2. Historic bluefin tagging programs carried out in the east Atlantic and Mediterranean Sea

Releasing Country and Years	No. of tunas released	Recoveries				Sources
		Total No of recoveries	Atl. to Mediter.	Med to Atl.	Trans- Atl.	
Italy (1911-1912)	30	-	-	-	-	(1)
Portugal (1931-1935)	107	-	-	-	-	(2)
Norway (1957-1962)	237	25(10.5%)	-	-	-	(3)
Spain (Atl.) (1969-1967)	312	25(6.7%)	-	-	-	(4)
Portugal (1960)	50	-	-	-	-	(5)
Italy (1963-1968)	296	6(2.0%)	-	-	-	(6)
France-Portugal (1967-1972)	34	5(14.7%)	-	-	2	(7)
CIESM (1972)	8	-	-	-	-	(8)
Morocco (Atl.) (1972-1978)	195	21(10.8%)	-	-	-	(9)
Spain (Atl.) (1976-1989)	4674	293(6.3%)	6	-	13	See text
Spain (Med.) (1977-1984)	384	41(10.7%)	-	3	-	(10)
Total	6327	412(6.5%)	12	3	15	

(1) Held, 1927; (2) Rodríguez-Roda, 1980; (3) Hamre, 1963; 1964; (4) Rodríguez-Roda, 1969; 1980; (5) Vilela, 1960; (6) Arena and Li Greci, 1970; (7) Aloncle, 1973; Mather and Mason, 1973; (8) CIESM = International Council for Scientific Exploration of the Mediterranean Sea, personal communication; (9) Lamboeuf, 1975; Brêthes, 1978; 1979; Brêthes and Mason, 1979; (10) Rey and Cort, 1978; 1986; Rey, personal communication.

Table 3. Summary of on-going tagging programs on tunas and tuna-like fishes

COUNTRY	ON-GOING TAGGING PROGRAM IN:		SPECIES EXPECTED TO BE RECOVERED	
	ATLANTIC	MEDITERRANEAN	ATLANTIC	MEDITERRANEAN
SPAIN	ALB, BFT, SWO *	BFT	ALB, BFT, SWO, SHAKS	BFT
FRANCE	-	ALB (1500 tags) (87-88-89)	-	-
YUGOSLAVIA	-	-	-	-
MOROCCO	-	-	-	-
ALGERIA	-	-	-	-
ALBANIA	-	-	-	-
GREECE	-	SWO 100 (1987)	-	-
JAPAN	SKJ *	-	SKJ	SKJ
LIBYA	-	-	-	-
ITALY	-	SWO 134 ALB 18	-	-

* Opportunistic tagging by fishermen

Tabla 4. Length-weight relationship for bluefin, swordfish and albacore in the Mediterranean Sea

No.	Range	Area	Sex	Equation	Period	Document
<i>Bluefin tuna</i>						
	FL					
1		Tyrr.S.	M + F	$RW = 1.96 E-05 * FL^{3.0092}$	May-Aug	Arena (Personal comm)
<i>Swordfish</i>						
	LJFL cm					
1	48 71-177	W. Med.	M + F	$RW = 9.62 E-07 * LJFL^{3.533}$	March-Jun	Mejuto <u>et al.</u> , 1987
2	462 64-205	Ionian S.	M + F	$GW = 5.70 E-06 * LJFL^{3.16}$	Jun-Sept	De Metrio, 1987
3	960 90-206	Aegean S.	M + F	$GW = 4.75 E-06 * LJFL^{3.17}$	Feb-Sept	Megalofonou (App. III)
4	974 55-250	Aegean S.	M + F	$GW = 7.5 E-06 * LJFL^{3.06}$	Feb-Sept	Tsimenides & Tserpes, 1989
4A	5 juveniles	Ion.+ Tyrr.	M + F	$GW = 4.14 E-07 * LJFL^{3.636}$	-	Cavallaro et al
<i>Albacore</i>						
	FL cm					
1	122 32-88	Tyrr. Sea	M + F	$RW = 1.47 E-05 * FL^{3.009}$	-	Arena et al 1978
2	867 55.2-81.8	Aegean Sea	M + F	$RW = 3.561 E-05 * FL^{2.84}$	1986	Megalofonou (App. III)
3	379 58.2-81.7	Aegean Sea	M + F	$RW = 3.317 E-05 * FL^{2.86}$	1987	Megalofonou (App. III)
4	496 58.7-89.0	Aegean Sea	M + F	$RW = 5.618 E-05 * FL^{2.74}$	1989	Megalofonou (App. III)
5	164 58.7-87.0	Aegean Sea	M	$RW = 4.344 E-05 * FL^{2.80}$	86-89	Megalofonou (App. III)
6	87 61.5-77.0	Aegean Sea	F	$RW = 4.178 E-05 * FL^{2.81}$	86-89	Megalofonou (App. III)
7	1742 55.5-89.0	Aegean Sea	M + F	$RW = 3.119 E-05 * FL^{2.88}$	86-89	Megalofonou (App. III)

Table 5. Size (FL) at age for bluefin tuna used by the ICCAT SCRS for the east Atlantic and Mediterranean Sea catches employing Farugio's (1980) equation with an L_{∞} of 351.1 cm.

AGE	FL (cm)	wt (kg)
1	54.0	3.6
2	76.8	9.9
3	97.9	19.8
4	117.4	34.5
5	135.4	50.5
6	152.0	70.5
7	167.3	93.0
8	181.4	117.5
9	194.5	143.6
10	206.5	170.7
11	217.6	198.6
12	227.9	226.9
13	237.4	255.2
14	246.1	283.3
15	254.2	310.9
16	261.6	338.0
17	268.5	364.2
18	274.9	389.7
19	280.7	414.1
20	286.1	437.6

Table 6. Growth equations for swordfish in the Atlantic and Mediterranean Sea

No.	Size range	Basic Data	Area	Sex	Equation	Author
1	85 3-360 Lbs.*	Tags	Atlantic	F + M	Dwt = 305.6 e ^{-4.652e^{-0.3058t}}	ICCAT 1989
2	455	54-215 cm	Spines Aegean	F	FL = 193.9 (1-e ^{-.342 (t + 1.21)})	Tsimenides <u>et al.</u> 1989
3	427		Spines Aegean	M	FL = 220.1 (1-e ^{-.251 (t + 1.52)})	Tsimenides <u>et al.</u> , 1989
4		Spines Aegean	F	FL = 236.5 (1-e ^{-.17 (t + 2.1)})	Megalofonou <u>et al.</u> , 1989	
5		Spines Aegean	M	FL = 203.2 (1-e ^{-.21 (t + 2.0)})	Megalofonou <u>et al.</u> , 1989	
6		Spines Aegean	F + M	FL = 243.8 (1-e ^{-.14 (t + 2.6)})	Megalofonou <u>et al.</u> , 1989	
7	164	Spines Florida	F	FL = 340.0 (1-e ^{-.095 (t + 2.59)})	Berkeley <u>et al.</u> , 1983	
8	275	Spines Florida	M	FL = 217.4 (1-e ^{-.195 (t + 2.04)})	Berkeley <u>et al.</u> , 1983	
9		Spines + Vert. Medit.	F	FL = 415.5 (1-e ^{-.056 (t + 3.84)})	Cavallaro <u>et al.</u> (see App. III)	
10		Spines + Vert. Medit.	M	FL = 297.1 (1-e ^{-.105 (t + 4.17)})	Cavallaro <u>et al.</u> (App. III)	

46

* Dressed weight (Dwt) at release

Table 7. Growth equations for albacore. Equation 1 is used by the ICCAT SCRS for the North Atlantic stock

No.	Size range	Basic Data	Area	Sex	Equation	Author
1	353 46-115 cm	Spines	Atlantic	F + M	FL = 124.7 (1-e ^{-.228(t+.989)})	Bard & Compean, 1980
2	122 32-88 cm	Scales	Tyrrhenian	F + M	FL = 98.6 (1-e ^{-.406(t+.63)})	Arena et al, 1980

Table 8. Types of weight and length measurements of fish taken by each fishery

COUNTRY	SPECIES	GEAR *	TYPE OF MEASUREMENT	
			WEIGHT	LENGTH
France	ALB		Round	
	BFT	PS	Round	
Greece	ALB	LL	Round	FL
		TROLL	Round	FL
	BFT	BB	Dressed	FL
		TROLL	Dressed	FL
	SWO	LL	GG, fins & bill off	LJFL
Italy	ALB	ALL	Round	FL
	BFT	HAND + HARP	Round	FL
		LL + GILL	Round (JUVENILE)	FL
			Gutted (ADULT)	FL
	SWO	HARP	Round	LJFL
		LL + GILL	Round (JUVENILE)	LJFL
		Gen. Tyrr.** Ionian**	Gutted, bill off Gilled and gutted	LJFL LJFL
Japan	ALB	LL	Round	FL
	BFT	LL	Gilled and gutted	FL
	SWO	LL	not available	EFL
Lybia	BFT	TRAP	Round	not available
Morocco	-	-	-	-
Spain	ALB		Round	FL
	BFT	HAND	Gilled and gutted	FL
		LL	Gilled and gutted	FL
		SURF	Round	FL
		TRAP	Gilled and gutted	FL
	SWO	LL	GG and bill off, Dressed or Round	LJFL
Yugoslavia	BFT	ALL	Round	not available

* See Appendix Table A for Gear Codes.

** Some fisheries.

GG: Gilled and gutted.

FL: Fork length.

LJFL: Lower jaw-fork length.

EFL: Eye-fork length.

Table 9. Estimated bluefin catch (in number of fish) at age for the total east Atlantic and Mediterranean (as of 14:00, June 26, 1990)

AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	130694	10423	115725	138102	181757	685791	93610	214061	147853	74075	110511	148702
2	76341	88641	148570	66881	130102	289266	188083	287032	195233	40217	159974	327128
3	26357	52434	73295	83399	56414	34088	279697	43050	149979	101630	118127	112433
4	16746	15130	15235	6434	63235	19638	40803	66156	28978	48658	33197	17684
5	9570	12223	7466	3184	7470	6727	20323	2254	4905	6944	8636	12187
6	8927	4146	8017	3600	5119	4732	5376	5396	1774	2647	5437	7011
7	4619	4563	4308	6822	3042	3323	3371	4214	2652	2592	3222	4032
8	3715	12279	2455	10255	5379	3442	1999	2476	1768	3764	2248	4655
9	6403	3174	3249	6560	10663	5758	3965	2705	1320	3954	2556	3572
10	8583	1905	1162	1598	4600	5743	3059	3580	3485	3501	3885	3436
11	5082	1432	1305	1828	4700	7257	4079	3827	2018	2321	3997	4247
12	3594	1553	1928	1862	6115	10354	5326	4500	3012	2129	3984	3485
13	2558	3065	2959	2677	7133	10250	7951	5131	3598	3637	3911	2019
14	2417	4304	3573	3230	6859	8198	6740	6240	5935	3246	3347	1381
15	1285	3358	2676	2549	4242	5120	4870	4992	3563	2206	2699	989
16	457	1525	1103	1477	2522	3522	3154	3299	1577	2406	1537	644
17	99	652	445	670	1311	1911	1757	1949	836	1454	566	401
18	21	256	150	196	588	742	1163	1242	823	837	192	306
19	2	18	12	41	75	206	274	409	502	164	48	108
20	0	0	6	11	57	253	423	572	625	130	8	77
TOTAL	307470	221081	393639	341376	501383	1106321	676023	663085	560436	306512	468082	654497
AGE	1982	1983	1984	1985	1986	1987	1988					
1	686474	689209	258756	489810	664220	274157	922108					
2	202685	164037	548279	291127	274272	442490	169792					
3	206692	132656	44086	273132	150810	102888	216437					
4	28442	33875	32413	30616	75636	26974	22690					
5	5141	10257	22570	12843	7714	9461	7751					
6	3404	3550	9928	7840	5350	7823	8268					
7	6045	9194	6070	4098	2697	8059	9471					
8	8431	5587	6983	3722	2248	4096	4850					
9	5273	5388	11277	4088	2955	3531	6213					
10	5706	13886	11663	6942	3765	5250	5562					
11	7071	5764	9495	7385	5312	4312	5737					
12	7908	6299	9724	6828	6355	4369	5835					
13	10176	6186	5295	5126	5034	3275	5284					
14	3009	4283	3354	3010	2588	1949	3335					
15	1379	1050	1745	1663	1082	1317	1855					
16	1061	438	1052	769	588	372	618					
17	844	236	689	404	243	111	234					
18	424	115	262	241	111	29	81					
19	160	74	140	78	44	123	126					
20	97	6	112	86	118	237	350					
TOTAL	1190422	1092090	983893	1149808	1211142	900823	1396597					

Table 10. Abundance indices used in the ICCAT calibration of east Atlantic and Mediterranean Sea bluefin tuna stock size estimation (Age 1 indices were not used)

GEAR	LL	LL	TRAP	PSM					BB	
COUNTRY	JAPAN	JAPAN	SPAIN	FRANCE					SPAIN	
AREA	EAST	MEDITER-	GIBRALTAR	MEDITERRANEAN					BAY OF BISCAY	
	ATLANTIC	RANEAN	ATLANTIC	1	2	2	3	3	1	2
AGE RANGE	5+	7+	7+							
1970	--	--	--	0.7	--	--	--	--	--	18.0
1971	--	--	11.0	8.1	--	--	--	--	--	13.7
1972	--	--	3.5	1.1	--	--	--	--	--	13.3
1973	--	--	18.2	14.9	--	--	--	--	--	25.6
1974	7.94	--	--	54.0	--	--	--	--	0.8	29.2
1975	8.22	--	15.5	48.9	--	--	--	--	12.3	42.2
1976	12.79	--	13.7	33.7	--	--	--	--	2.9	37.6
1977	19.14	810.3	10.1	16.6	--	--	--	--	18.3	43.9
1978	10.18	62.5	16.2	121.2	63.3	--	86.1	--	63.4	24.8
1979	18.42	177.4	16.8	15.9	86.1	--	137.3	--	7.6	7.8
1980	7.15	174.3	33.7	353.1	20.0	--	49.2	--	110.5	17.0
1981	8.19	90.8	33.0	32.1	135.8	--	14.1	--	104.4	25.5
1982	13.99	795.3	71.3	392.4	--	122.7	--	96.2	6.6	23.6
1983	10.46	375.0	41.3	255.5	--	87.7	--	54.7	227.4	33.2
1984	9.24	206.6	43.4	33.8	--	256.6	--	16.0	5.8	105.0
1985	4.90	261.3	37.8	27.5	--	150.9	--	173.5	8.1	51.1
1986	6.99	158.5	11.5	182.6	--	96.7	--	075.0	190.3	36.5
1987	11.18	218.8	14.2	163.1	--	228.5	--	080.4	67.2	82.0
1988	--	--	41.1	362.7	--	75.0	--	139.4	203.7	35.3

49

Stock
measure: numbers numbers numbers numbers numbers numbers numbers numbers numbers numbers

Time of year
for stock
size: middle start start middle middle middle middle middle middle middle

**Table 11. Minimum estimates of percent composition
(in number) of small fish less than 6.4 kg
for the East Atlantic and Mediterranean
bluefin stock**

Year	East Atlantic	Mediterranean	East Atlantic & Mediterranean
1975	75.1	46.2	64.9
1976	45.9	17.7	24.0
1977	51.3	51.6	51.5
1978	50.6	38.9	42.9
1979	48.7	25.6	35.0
1980	57.0	20.7	33.2
1981	63.1	11.8	26.1
1982	67.3	28.9	37.1
1983	75.3	59.0	65.0
1984	16.7	22.8	21.0
1985	20.8	58.7	53.3
1986	74.6	58.9	63.5
1987	28.4	26.8	27.2
1988	73.4	58.3	63.6

Source: ICCAT (1990).

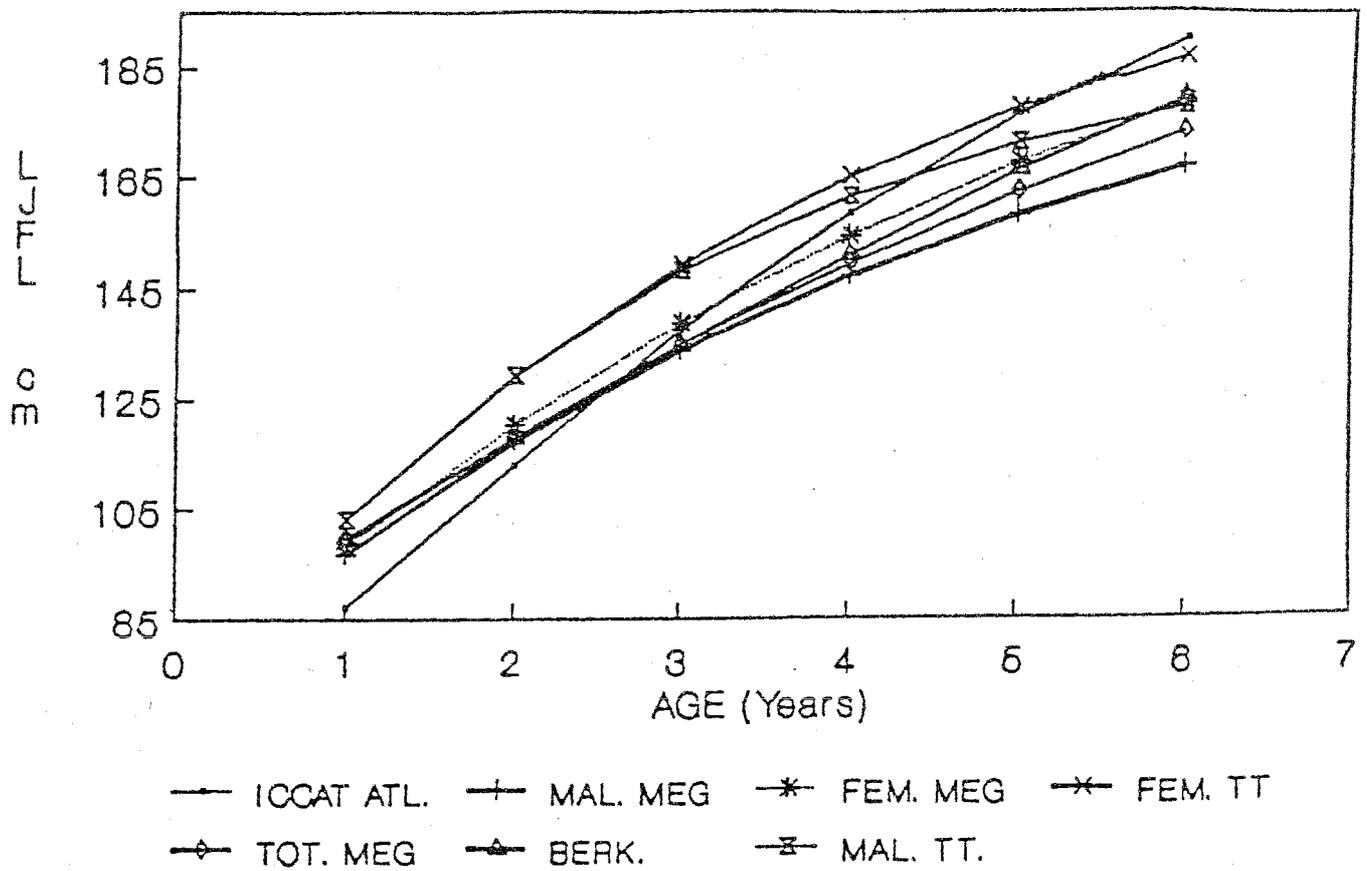


Figure 1. Estimates of length at age from various growths.

Appendix Table A.

**Nominal catches (in metric tons) of tunas and tuna-like fish in
Mediterranean waters, 1950 - 1988, (reported by ICCAT)**

NOEENCLATURE/NOEENCLATURE/NOEENCLATURA

Code Code Código	Scientific names Noms scientifiques Nombres científicos	English	Français	Español
BFT	Thunnus thynnus thynnus	Bluefin tuna	Thon rouge	Atún
ALB	Thunnus alalunga	Albacore	Germon	Atún blanco
BET	Thunnus obesus	Bigeye tuna	Thon obèse	Patudo
LTA	Euthynnus alletteratus	Atlantic black skipjack	Thonine	Bacoreta
SKJ	Katsuwonus pelamis	Oceanic skipjack	Listão	Listado
BON	Sarda sarda	Atlantic bonito	Bonite à dos rayé	Bonito
FRI	Auxis thazard	Frigate tuna	Auxide	Melva
BOP	Orcynopsis unicolor	Plain bonito	Palomette	Tasarte
SHD	Xiphius gladius	Broadbill swordfish	Espadon	Pez espada

- OTH
- includes figures reported as 'mixed species of tunas' or 'unknown species'.
 - comprend des chiffres déclarés comme 'espèces mêlées de thonidés' ou 'espèces inconnues'.
 - incluye cifras consideradas como 'varias especies de atunes' o 'especies no conocidas'.

TYPES OF FISHERIES (GEAR)
 TYPES DE PECHERIE (ENGIN)
 TIPOS DE PESQUERIA (ARTE DE PESCA)

Code
 Code
Código

BB	Baitboat/live bait, Canneur/appât vivant, Barco de cebo/cebo vivo
BEI	Baitboat ice-well, Canneur-glacier, Barco de cebo depósito de hielo
BEF	Baitboat-freezer, Canneur-congélateur, Barco de cebo congelador
BLL	Bottom longline, Palangre de fond, Palangre de fondo
GILL	Gill-net, Filet maillant, Red de enmalle
HAND	Hand-line, Ligne à main, Liña
HARP	Harpoon, Harpon, Arpón
HS	Haul seine, Senne de plage, Red de playa
LL	Longliner, Palangrier, Palangrero
LLD	Longline discards, Rejets palangre, Descartes de palangrero
LLFB	Individual foreign-based longliner, Palangrier individuel basé à l'étranger, Palangrero con base en país extranjero
LLHB	Individual home-based longliner, Palangrier individuel basé dans son propre pays, Palangrero individuel con base en su propio país
LLMB	Deckloaded-type motherboat longliner, Bateau mère transporteur de palangriers, Buque nodriza transporte de palangreros
MWT	Mid-water trawl, Chalut pélagique, Arrastre meso-epipelágico
MWTD	Double boat mid-water trawl, Chalut pélagique travaillant en paire, Arrastre meso-epipelágico dos embarcaciones
PS	Purse seiner, Senneur, Barco de cerco
PSG	Large size purse seiner, Grand senneur, Cerquero grande
PSM	Medium size purse seiner, Senneur moyen, Cerquero mediano
PSS	Small purse seiner, Petit senneur, Cerquero pequeño
PSD	Double-boat purse seiners, Senneurs travaillant en paire, Redes de cerco con dos embarcaciones
PSLB	Purse seiner with live bait, Senneur avec appât vivant, Cerquero con cebo vivo
R R	Rod-and-reel, Canne et moulinet, Caña y carrete
SPHL	Sport handline, Ligne à main sportive, Liña deportiva
SPOR	Sport fisheries unclassified, Pêche sportive non spécifiée, Pesca deportiva sin especificar
SURF	Surface fisheries unclassified, Pêcheries de surface non spécifiées, Pesquerías de superficie sin especificar
TN	Trammel net, Tramail, Trasmallo
TRAP	Trap, Madrague, Almadraba
TRAW	Trawl, Chalut, Arrastre
TROL	Troller, Ligneur, Curricán (Cacea)
UNCL	Unspecified methods, Méthodes non spécifiées, Métodos sin especificar

Symbols used throughout the tables:

- 0 - Nil catch, or no catch reported (see note on **). Appropriate alpha symbol for the source is given for verified nil catch information.
- ++ - Magnitude of catch more than zero but less than 0.5 metric tons. No amount is added to subtotals or totals.
- ** - No catch reported, but it is likely that a catch of an unspecified amount was made. Nearly always bears alpha symbol as to source. No amount is added to subtotals or totals.

Individual entries show symbols which indicate data sources:

- None - Final nominal catch reported by national office, either by formal publication or in formal correspondence.
- A - Officially reported catches (or landings) which have been further subdivided or redistributed by fishery (gear) and/or area by the SCRS, a Working Group or the Secretariat.
- E - Estimate by SCRS or SCRS Working Group. Includes estimates by national scientists, or by the Secretariat, which have been reviewed and approved by SCRS.
- F - From appropriate FAO Yearbook of Fishery Statistics.
- G - Estimate by the Secretariat on the basis of best available information.
- K - Preliminary nominal landing formally reported by national office which may not coincide with amount, time, and/or place of catch.
- L - Final nominal landing formally reported by national office which may not coincide with amount, time, and/or place of catch.
- N - Estimate by national scientist which does not agree with formal statistics, or where formal statistics are not available.
- P - Preliminary nominal catch reported by national office, either by formal publication or in formal correspondence.

BLUEFIN TUNA

AREA	COUNTRY	GEAR	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
MEDI	ALGERIE	TRAP	100G	100G	100G	98N	62N	98N	56N	52N	78N	++F
MEDI	FRANCE	UNCL	507E	816E	966E	899E	798N	783E	329E	615E	294E	384E
MEDI	GREECE	UNCL	400G	400G	400F	800F	600F	1200F	900F	500F	700F	700F
MEDI	ITALY	PSFB	0	0	722	423	263	296	153	129	158	60
MEDI	ITALY	PSFS	0	0	0	53	329	259	213	110	59	104
TYRR	ITALY	TRAP	2200F	1978	1044	2007	1752	1589	1560	2571	2736	1823
MEDI	LIBYA	TRAP	1000F	1100F	900F	1700F	1200G	1200G	1200G	1200G	1200F	1100G
MEDI	MALTA	UNCL	100F	100F	100F	100F	100F	100F	100F	100F	100F	100F
MEDI	ESPANA	TRAP	168N	273N	553N	54N	597N	60N	136N	345N	282N	374N
MEDI	TUNISIE	TRAP	465G	410G	290G	320G	355	301	0G	34	0G	85
MEDI	TURKEY	UNCL	**G	**G	**G	**G	**G	**G	**G	800F	400F	500F
MEDI	YUGOSLAV	PS	657	531	279	588	654	346N	253	382	388	224N
TOTAL			5597	5708	5354	7042	6710	6232	4900	6838	6395	5454

AREA	COUNTRY	GEAR	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
MEDI	ALGERIE	TRAP	++F	++F	**F	++F	++F	++F	150N	150N	150N	150N
MEDI	FRANCE	GILL	400E	599E	214E	668E	953E	390E	0	0	0	0
MEDI	FRANCE	PSM	0	0	0	0	0	0	1000E	1500N	2500N	1500N
MEDI	GREECE	UNCL	900G	1100F	1000F	1200F	600F	700F	500F	600F	500F	500F
MEDI	ITALY	PSFB	69	244	171	989	896	155	410	792	366	729
MEDI	ITALY	PSFS	47	105	161	267	94	146	220	296	325	1099
TYRR	ITALY	TRAP	1229	1423	1280	1227	1652	1264	945	1949	1739	1324
MEDI	LIBYA	TRAP	1100G	1000F	800F	100F	400F	600F	700F	800F	1000F	2000F
MEDI	MALTA	UNCL	100F	100F	100F	100F	100F	100F	100F	100F	100F	++F
MEDI	MAROC	TRAP	0	0	0	0	0	172	11	27	5	0
MEDI	ESPANA	LLHB	0	0	0	800N	300N	400	500	300N	600	400
MEDI	ESPANA	TRAP	561N	620N	377N	472N	653N	1235N	151N	104N	4N	217N
MEDI	TUNISIE	TRAP	0G	0G	404E	260E	376E	601E	293E	307E	184E	77E
MEDI	TURKEY	UNCL	300F	300F	200F	100F	0F	100F	100F	1488	310	393
MEDI	YUGOSLAV	PS	109N	123N	87N	277N	271N	134N	246N	331N	150N	301N
TOTAL			4815	5614	4794	6460	6295	5997	5326	8744	7933	8690

AREA	COUNTRY	GEAR	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
MEDI	ALGERIE	UNCL	100E	100F	1F	++F	33F	66F	49F	40F	20F	150F
MEDI	FRANCE	PSM	1100N	2200N	1100N	1400N	1800N	1600N	3800N	3182	1566	1527
MEDI	FRANCE	UNCL	0	0	0	0	0	0	0	0	31	51
ADRI	ITALY	PSFS	0	496	95A	117A	0	0	597A	47A	125A	400A
LIGU	ITALY	PSFS	0	0	1668A	1358A	2880N	2100N	4890A	1205A	2438A	450A
TYRR	ITALY	HAND	100N	88E	120N							
TYRR	ITALY	HARP	0	0	0	0	0	0	12	34	22	0
TYRR	ITALY	PSFB	1203	840	1020N	1225N	3120N	4170N	4120N	4179N	2100N	2855N
TYRR	ITALY	TRAP	961	1044	835	367	739	713	650	698	210	195
MEDI	JAPAN	LLHB	0	0	112	246	2195	1260	968	520	61	99
MEDI	LIBYA	UNCL	500F	600F	300F	400F	500F	634F	799F	336F	677F	424F
MEDI	MALTA	UNCL	++F	++F	++F	++F	21F	37F	25F	47F	26F	23F
MEDI	MAROC	PS	0	42E	1E	0	2E	40E	1E	7E	0	2
MEDI	MAROC	TRAP	0	37	36	1	7	0	0	0	0	0
MEDI	PANAMA	LLFB	0	0	0	0	0	0	0	4G	0	0
MEDI	ESPANA	LLHB	69E	129E	124N	274N	192N	103N	250N	68L	92N	100N
MEDI	ESPANA	SPOR	0	0	0	0	0	14N	0	88N	72N	15N
MEDI	ESPANA	TRAP	280N	53N	88N	146N	11N	3N	3N	2N	1N	0
MEDI	TUNISIE	TRAP	248E	238E	64E	52E	123E	101E	65E	120E	120G	131N
MEDI	TURKEY	UNCL	138	22	68	66	34	17	181	177	127	27
MEDI	YUGOSLAV	PS	90N	326N	200N	224N	317N	155N	562N	932N	1049	756
TOTAL			4789	6227	5812	5976	12074	11113	17072	11786	8825	7325

BFT CONT.

AREA	COUNTRY	GEAR	1980	1981	1982	1983	1984	1985	1986	1987	1988
MEDI	ALGERIE	UNCL	190F	220F	250F	252F	254F	260F	566	420	677
MEDI	FRANCE	PSM	1701	2300	4818	3600	3570	3400	3460	4300	5750
MEDI	FRANCE	SPOR	0	20	30	30	30	30	30	30	30
MEDI	FRANCE	UNCL	0	30	30	30	0	0	0	0	0
MEDI	GREECE	UNCL	0	0	0	0	0	131G	131N	131E	131E
ADRI	ITALY	HAND	0	0	0	0	10E	10E	10E	10E	10E
ADRI	ITALY	PSFS	1000E	1000E	1000E	1000E	1913	740	1500G	1500G	1500N
ADRI	ITALY	R R	0	0	0	0	10E	50E	50E	50E	50E
LIGU	ITALY	PSFS	1759N	2992N	3260N	1992N	993	2329	2207N	522G	395N
LIGU	ITALY	SPOR	0	0	0	0	10	50	50G	53G	51G
TYRR	ITALY	GILL	0	0	0	0	100	100	45	0	0
TYRR	ITALY	HAND	0	0	0	0	10	10	0	0	0
TYRR	ITALY	HARP	0	56N	24N	0	0	0	0	0	0
TYRR	ITALY	LLHB	0	0	0	29N	41	62	1	65G	63G
TYRR	ITALY	PSFB	3361N	1712N	2182N	2560N	2476	1453	1082N	557G	334N
TYRR	ITALY	TRAP	152N	209N	155N	284N	327	295	293	310G	301G
TYRR	ITALY	UNCL	0	48N	37N	0	1250	2100	2338	1495G	1452G
MEDI	JAPAN	LLHB	119	100	961	677	1036	873	421E	280	236P
MEDI	LIBYA	TRAP	339	255	130	0	0	0	0	0	0
MEDI	LIBYA	UNCL	59G	16G	180G	300F	300F	300F	300F	300F	300F
MEDI	MALTA	UNCL	24F	32F	40F	31F	21F	21F	41F	36F	25
MEDI	MAROC	PS	++	2	++	0	0	0	0	0	0
MEDI	MAROC	SURF	0	0	0	1N	4N	12	18	0	44
MEDI	MAROC	TRAP	0	0	0	0	0	0	0	337A	96A
MEDI	ESPANA	BB	0	100N	53N	0	1699N	278N	0	0	0
MEDI	ESPANA	GILL	0	0	0	0	3N	2N	0	0	0
MEDI	ESPANA	HAND	0	0	0	151N	145N	267N	29N	177N	553N
MEDI	ESPANA	LLHB	100N	200N	538N	233N	69N	129N	117N	116N	135N
MEDI	ESPANA	PS	0	50N	277N	0	79N	56N	22N	0	0
MEDI	ESPANA	SPOR	33N	1N	55N	0	0	0	0	0	0
MEDI	ESPANA	SURF	0	0	0	391N	26N	415N	220N	404N	225N
MEDI	ESPANA	TRAP	0	3N	66N	37N	621N	302N	168N	219N	228N
MEDI	ESPANA	UNCL	0	0	0	0	101N	22N	0	0	0
MEDI	TUNISIE	PS	0	0	0	0	0	0	0	0	120E
MEDI	TUNISIE	TRAP	120G	98G	100G	80G	80G	80G	84F	83F	83G
MEDI	TURKEY	PS	0	0	0	0	0	2230	1524	910	910F
MEDI	TURKEY	UNCL	391	565	825F	557F	869	0	0	0	0
MEDI	YUGOSLAV	PS	573	376N	486	1222N	755N	1084N	796N	648N	1523N
TOTAL			9921	10385	15497	13457	16802	19091	15503	12953	15222

SUORDFISH

AREA	COUNTRY	GEAR	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
MEDI	ITALY	UNCL	**G	**G	**G	**G	**G	**G	**G	**G	**G	**G
MEDI	MALTA	UNCL	**G	**G	**G	**G	**G	**G	**G	**G	**G	**G
MEDI	ESPANA	LLHB	586N	580N	337N	0	452N	340N	393N	0	414N	0
MEDI	TURKEY	UNCL	**G	**G	**G	**G	**G	**G	**G	**G	500F	200F
TOTAL			586	580	337	**	452	340	393	**	914	200
AREA	COUNTRY	GEAR	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
MEDI	ITALY	UNCL	**G	**G	**G	**G	**G	**G	**G	1900F	1400F	2000F
MEDI	LIBYA	UNCL	0	0	0	0	0	200F	200F	300F	500F	++F
MEDI	MALTA	UNCL	**G	**G	**G	**G	**F	++F	++F	++F	++F	++F
MEDI	MAROC	LL	0	94A	188A	94A	282A	223A	192A	169A	196A	250A
MEDI	MAROC	TRAP	0	0	0	0	0	1	0	1	1	0
MEDI	ESPANA	LLHB	0	0	0	0	0	1200N	1000N	700N	1000N	1100E
MEDI	TURKEY	UNCL	100F	100F	100F	200F	100F	100F	300F	99	103	119
TOTAL			100	194	288	294	382	1724	1692	3169	3200	3469

SWORDFISH CONT.

AREA	COUNTRY	GEAR	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
MEDI	ALGERIE	UNCL	**F	++F	++F	100F	196F	500F	368F	370F	320F	521F
MEDI	CYPRUS	LL	0	0	++F	++F	++F	5	59	95	82	98
MEDI	ITALY	HARP	0	0	0	0	0	0	279A	372A	675A	424A
MEDI	ITALY	LLHB	0	0	0	0	0	0	3067A	2973A	3348A	3085A
MEDI	ITALY	UNCL	1800F	2900F	3700F	2800N	3330N	3002N	0	0	0	0
MEDI	JAPAN	LLHB	0	0	0	0	0	0	1	0	2	3
MEDI	MALTA	UNCL	100F	200F	200F	200F	171F	191F	156F	199F	121F	135F
MEDI	MAROC	LL	214A	326A	229A	183	193A	118	186A	144	172A	0
MEDI	MAROC	TRAP	0	1	1	0	3	0	0	0	0	0
MEDI	ESPANA	LLHB	900L	1100L	1300L	1105L	700L	89L	89L	667L	720N	800N
MEDI	TUNISIE	UNCL	++F	++F	++F	++F	5F	3F	5F	0	0	0
MEDI	TURKEY	UNCL	88	76	60	59	15	10	7	34	20	44
TOTAL			3102	4603	5490	4447	4613	3918	4217	4854	5460	5110

AREA	COUNTRY	GEAR	1980	1981	1982	1983	1984	1985	1986	1987	1988
MEDI	ALGERIE	UNCL	650F	760F	870F	877F	884F	890F	847	1820	2621
MEDI	CYPRUS	LL	72	78	103	28	63	71	154	84	121
MEDI	GREECE	LL	0	91N	690N	689N	965N	925N	1530N	1163N	1251F
MEDI	ITALY	GILL	0	0	0	0	1303	1375	1446A	1562G	1648G
MEDI	ITALY	HARP	447A	412A	318A	327A	0	0	0	0	0
MEDI	ITALY	LLHB	3252A	3002A	2306A	2375A	2463	2226	2341A	2528G	2669G
MEDI	ITALY	TRAP	0	0	0	0	3	0	0	0	0
MEDI	ITALY	UNCL	0	0	0	0	4588	6098	6403A	6915G	7299G
MEDI	JAPAN	LLHB	1	1	5	6	19	14	7	3	4
MEDI	MALTA	UNCL	198F	171F	158F	53F	84F	96F	87F	117F	185
MEDI	MAROC	LL	++	++	0	43N	39N	37	99	39A	62
MEDI	ESPANA	HAND	0	0	0	0	0	1N	0	0	0
MEDI	ESPANA	LLHB	750E	1120N	900N	1321N	1243N	1219N	1337N	1134N	1760N
MEDI	ESPANA	SURF	0	0	0	0	0	2N	0	0	0
MEDI	ESPANA	TRAP	0	0	0	1N	2N	3N	0	0	2N
MEDI	ESPANA	TRAW	0	0	0	0	0	1N	0	0	0
MEDI	ESPANA	UNCL	0	0	0	0	0	1N	0	0	0
MEDI	TUNISIE	UNCL	0	7F	19F	15G	15G	61F	64F	63F	80F
MEDI	TURKEY	GILL	0	0	0	0	0	190F	226	557	557F
MEDI	TURKEY	UNCL	13	70	40F	216F	95F	0	0	0	0
TOTAL			5383	5712	5409	5951	11766	13210	14541	15985	18259

ALBACORE

AREA	COUNTRY	GEAR	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
MEDI	MALTA	UNCL	++F									
TOTAL			++	++	++	++	++	++	++	++	++	++

AREA	COUNTRY	GEAR	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
MEDI	ITALY	UNCL	0	0	0	0	0	500F	500F	500F	500F	500F
MEDI	MALTA	UNCL	++F	++F	**F	**F	**F	++F	++F	++F	++F	0F
MEDI	YUGOSLAV	PS	0	0	0	0	0	0	0	0	0	200F
TOTAL			++	++	**	**	**	500	500	500	500	700

AREA	COUNTRY	GEAR	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
MEDI	ITALY	LLHB	0	0	0	0	0	0	40	130	150	0
MEDI	ITALY	UNCL	500F	500F	500F	500F	500	500	520	483	440	833
MEDI	JAPAN	LLHB	0	0	1	0	0	0	1	0	0	0
MEDI	ESPANA	UNCL	0	0	200L	0	0	0	0	0	0	0
TOTAL			500	500	701	500	500	500	561	613	590	833

ALBACORE CONT

AREA	COUNTRY	GEAR	1980	1981	1982	1983	1984	1985	1986	1987	1988
MEDI	FRANCE	PSH	0	0	0	0	141	250	10	50	16
MEDI	FRANCE	SPOR	0	0	0	0	0	0	10	10	15
MEDI	GREECE	UNCL	0	0	0	0	0	0	484N	500E	500E
MEDI	ITALY	GILL	0	0	0	0	191	385	100A	107G	110G
MEDI	ITALY	LLHB	0	0	0	0	226	375	150A	161G	165G
MEDI	ITALY	UNCL	500N	600N	700N	700G	1525	2588	2958A	3165G	3254G
MEDI	ESPANA	BB	0	900N	539N	535N	1331N	243N	0	0	0
MEDI	ESPANA	LLHB	0	0	0	0	0	0	0	0	3N
MEDI	ESPANA	PS	0	0	0	0	0	24N	0	0	0
MEDI	ESPANA	TROL	0	0	33N	0	0	264N	0	0	0
TOTAL			500	1500	1272	1235	3414	4129	3712	3993	4063

ATLANTIC BLACK SKIPJACK

AREA	COUNTRY	GEAR	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
MEDI	ESPANA	TRAP	138N	228N	3N	38N	4N	9N	81N	0	0	0
MEDI	YUGOSLAV	PS	18	23	11	6	126	47	13	22	47	11
TOTAL			156	251	14	44	130	56	94	22	47	11

AREA	COUNTRY	GEAR	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
MEDI	CYPRUS	UNCL	0	0	0	0	0	6F	9F	14F	12F	9F
MEDI	MAROC	SURF	0	0	0	0	0	0	0	0	0	1
MEDI	MAROC	TRAP	0	0	0	0	0	3	0	5	12	2
MEDI	ESPANA	SURF	0	0	23N	6N	31N	26N	12N	4N	139N	931N
MEDI	ESPANA	TRAP	1N	0	6N	4N	15N	5N	3N	8N	0	0
MEDI	YUGOSLAV	PS	12	24	2	8	2	2	3	7	5	8
TOTAL			13	24	31	18	48	42	27	38	168	951

AREA	COUNTRY	GEAR	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
MEDI	CYPRUS	UNCL	14F	17F	6F	6F	5F	7F	7F	18F	11F	17F
MEDI	ISRAEL	UNCL	100F	100F	100F	100F	242F	200F	300F	300F	200F	170F
MEDI	ITALY	UNCL	0	0	0	0	0	0	0	0	0	**N
MEDI	MAROC	SURF	0	36	0	12	0	63	0	1	0	6
MEDI	MAROC	TRAP	2	1	3	4	5	0	4	3	0	0
MEDI	ESPANA	SURF	590N	372N	566N	716N	688N	732N	1134N	1059N	1153N	993N
MEDI	ESPANA	TRAP	0	0	0	0	0	0	0	0	39N	0
MEDI	SYRIA	UNCL	0G	0F	0F	0F	0F	0F	102F	105F	109F	89F
MEDI	YUGOSLAV	PS	5	4	12	9	4	20	2	4	0	0
TOTAL			711	530	687	847	944	1022	1549	1490	1512	1275

AREA	COUNTRY	GEAR	1980	1981	1982	1983	1984	1985	1986	1987	1988
MEDI	CYPRUS	UNCL	17F	22F	33F	17F	31F	32F	13F	25F	41F
MEDI	ISRAEL	UNCL	105F	35F	110F	35F	60F	259F	284F	273F	273F
MEDI	MAROC	SURF	0	62	12	0	2N	++	++	0	12
MEDI	ESPANA	GILL	0	0	0	0	0	10N	++N	0	0
MEDI	ESPANA	PS	0	0	0	0	8N	0	0	0	0
MEDI	ESPANA	SURF	800N	0	705N	0	3N	0	0	0	0
MEDI	ESPANA	TRAP	0	6N	0	0	21N	2N	5N	++N	5N
MEDI	SYRIA	UNCL	80F	73F	90F	80F	96F	80F	41F	57F	81F
MEDI	YUGOSLAV	PS	0	0	0	1N	6N	1N	1N	2N	5N
TOTAL			1002	198	950	133	227	384	344	357	417

BONITO

AREA	COUNTRY	GEAR	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
MEDI	ALGERIE	UNCL	**G	**G	**G	**G	**G	**G	**G	**G	**G	**G
MEDI	BULGARIA	UNCL	**G	**G	**G	**G	**G	**G	**G	**G	**G	**G
MEDI	GREECE	UNCL	200G	200G	200F	500F	3400F	6600F	2400F	4800F	1300F	900F
MEDI	ITALY	UNCL	**G	**G	**G	**G	**G	**G	**G	**G	**G	**G
MEDI	ESPANA	TRAP	236N	165N	91N	274N	296N	296N	98N	0	109N	0
MEDI	TURKEY	UNCL	**G	**G	**G	6000F	14700F	49000F	55500F	39300F	27200F	10600F
MEDI	YUGOSLAV	PS	47	48	36	21	40	311	180	27	13	30

TOTAL			483	413	327	6795	18436	56207	58178	44127	28622	11530
-------	--	--	-----	-----	-----	------	-------	-------	-------	-------	-------	-------

AREA	COUNTRY	GEAR	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
MEDI	ALGERIE	UNCL	**G	**G	**G	**G	100F	200F	300F	200F	100F	100F
MEDI	BULGARIA	UNCL	**G	**G	**G	**G	**G	1683F	1475F	2281F	1784F	2079F
MEDI	GREECE	UNCL	1400G	1900F	2000F	2200F	900F	3200F	2300F	1800F	1700F	2000F
MEDI	ITALY	UNCL	600F	2000F	1100F	1000F	1000F	852F	969F	1413F	836F	969F
MEDI	MAROC	SURF	0	0	0	0	0	26	9	115	16	17
MEDI	MAROC	TRAP	0	0	0	0	0	4	6	10	7	3
MEDI	ROUMANIE	UNCL	0	0	0	0	0	0	0	0	0	++F
MEDI	ESPANA	SURF	0	0	578N	424N	214N	374N	504N	628N	287N	248N
MEDI	ESPANA	TRAP	139N	28N	6N	77N	52N	32N	111N	89N	67N	90N
MEDI	TUNISIE	UNCL	0	0	0	0	0	**F	**F	**F	**F	**F
MEDI	TURKEY	UNCL	32200F	41800F	3800F	19100F	11200F	20600F	16100F	34514	21343	50089
MEDI	USSR	UNCL	0	0	0	++	++	++	200	100	100	++
MEDI	YUGOSLAV	PS	20	82	42	34	22	30	138	56	28	17

TOTAL			34359	45810	7526	22835	13488	27001	22112	41206	26268	55612
-------	--	--	-------	-------	------	-------	-------	-------	-------	-------	-------	-------

AREA	COUNTRY	GEAR	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
MEDI	ALGERIE	UNCL	++F	31F	222F	343F	183F	140F	143F	206F	196F	515F
MEDI	BULGARIA	UNCL	++F	100F	++G	++F	++F	++G	40F	44F	11F	1F
MEDI	CYPRUS	UNCL	0	0	++F	++F	++F	++F	++F	++F	0	0
MEDI	EGYPT	UNCL	0F	0F	0F	0F	10F	3F	0F	1F	17F	10F
MEDI	GREECE	UNCL	900F	600F	600F	500F	487F	658F	511F	550F	610F	712F
MEDI	ITALY	UNCL	914F	1064F	965F	715F	760	959F	955F	1533F	1378F	1403F
MEDI	MALTA	UNCL	0	++F	++F	++F	2F	5F	1F	2F	2F	1F
MEDI	MAROC	SURF	22	37	42	295	90	135	628	450	128F	155
MEDI	MAROC	TRAP	3	17	12	13	40	0	2	6	0	0
MEDI	ROUMANIE	UNCL	++F	++F	0	0	0	0	2F	0	0	0
MEDI	ESPANA	SURF	508N	817N	198N	250N	219N	289N	364N	565N	598N	540N
MEDI	ESPANA	TRAP	150N	71N	68N	30N	71N	40N	33N	45N	113N	173N
MEDI	TUNISIE	UNCL	117F	251F	200F	203F	499F	429F	619F	768F	791F	865F
MEDI	TURKEY	UNCL	1805F	25229	13905	3901	5324	3371	3178	4503	5536	9082
MEDI	USSR	UNCL	++	0	0	0	0	0	0	0	0	0
MEDI	YUGOSLAV	PS	10	13	13	4	10	9	23	26	39	29N

TOTAL			20681	28230	16225	6254	7695	6038	6499	8699	9419	13486
-------	--	--	-------	-------	-------	------	------	------	------	------	------	-------

AREA	COUNTRY	GEAR	1980	1981	1982	1983	1984	1985	1986	1987	1988
MEDI	ALGERIE	UNCL	640F	740F	860F	867F	874F	880F	459	203	625
MEDI	BULGARIA	UNCL	13F	191F	4F	24F	1F	1F	0	13F	0
MEDI	CYPRUS	UNCL	0	0	0	0	0	0	0	0	0F
MEDI	EGYPT	UNCL	3F	2F	23F	14F	48F	62F	68F	90F	90F
MEDI	FRANCE	PSM	0	0	0	0	0	0	0	0	10
MEDI	FRANCE	UNCL	0	0	0	33F	16F	**F	0	0	0
MEDI	GREECE	UNCL	809F	1251F	1405F	1367F	1732F	1650F	1321F	1321F	1321F
MEDI	ITALY	UNCL	1180F	1096F	1102F	1806F	2777F	1437F	1437F	2148F	2242F
MEDI	MALTA	UNCL	1F	++F	++F	1F	++F	++F	++F	++F	++F
MEDI	MAROC	SURF	62	309	36	92N	74N	56	41	0	107
MEDI	ESPANA	GILL	0	0	0	0	0	223N	245N	0	0
MEDI	ESPANA	PS	0	0	0	969N	634N	617N	430N	0	0
MEDI	ESPANA	SURF	380N	560N	803N	44N	100N	50N	6N	0	893N
MEDI	ESPANA	TRAP	100N	150N	187N	212N	250N	155N	48N	51N	69N
MEDI	TUNISIE	UNCL	700F	381F	748F	600G	600G	482F	504F	500F	600F
MEDI	TURKEY	PS	0	0	0	0	0	12809F	11426	17333	17333F
MEDI	TURKEY	UNCL	14910	24300F	25978F	29485F	7818F	0	0	0	0
MEDI	YUGOSLAV	PS	72	39	61	31N	37N	34N	38N	62N	36N

TOTAL			18870	29019	31207	35545	14961	18456	16023	21721	23326
-------	--	--	-------	-------	-------	-------	-------	-------	-------	-------	-------

PLAIN BONITO

AREA	COUNTRY	GEAR	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
MEDI	MAROC	SURF	0	0	0	0	0	1	1	48	4	3
TOTAL			0	0	0	0	0	1	1	48	4	3
AREA	COUNTRY	GEAR	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
MEDI	MAROC	SURF	3	7	6	3	7	0	0	135	153F	28
TOTAL			3	7	6	3	7	0	0	135	153	28
AREA	COUNTRY	GEAR	1980	1981	1982	1983	1984	1985	1986	1987	1988	
MEDI	MAROC	SURF	++	++	0	0	0	9	1	0	8	
TOTAL			++	++	0	0	0	9	1	0	8	

FRIGATE TUNA

AREA	COUNTRY	GEAR	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
MEDI	ITALY	UNCL	**G									
MEDI	MALTA	UNCL	**G									
MEDI	ESPANA	TRAP	722N	372N	176N	772N	612N	877N	1324N	0	1614N	0
MEDI	YUGOSLAV	PS	29	52	36	22	77	195	68	32	86	72
TOTAL			751	424	212	794	689	1072	1392	32	1700	72
AREA	COUNTRY	GEAR	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
MEDI	ITALY	UNCL	600F	1000F	700F	800F	500F	700F	900F	1200F	1200F	1100F
MEDI	MALTA	UNCL	**G	**G	100G	100G	++F	++F	++F	++F	++F	++F
MEDI	MAROC	SURF	0	87A	261A	741A	653A	11	11	30	11	5
MEDI	MAROC	TRAP	0	0	0	0	0	457	352	380	640	75
MEDI	ESPANA	SURF	0	2481N	2872N	2138N	1161N	1175N	1080N	2571N	827N	1051N
MEDI	ESPANA	TRAP	880N	0	16N	536N	412N	196N	342N	322N	350N	499N
MEDI	YUGOSLAV	PS	43	35	41	75	68	52	47	58	50	56
TOTAL			1523	3603	3990	4390	2794	2591	2732	4561	3078	2786
AREA	COUNTRY	GEAR	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
MEDI	CYPRUS	UNCL	++F	0	0							
MEDI	ITALY	UNCL	1100F	1600F	1700F	1200F	1300	939F	912F	1147F	1177F	1342F
MEDI	MALTA	UNCL	++F	++F	++F	++F	7F	18F	15F	9F	33F	11F
MEDI	MAROC	SURF	8	16	65	299	62	0	130	109	69F	73
MEDI	MAROC	TRAP	99	156	130	147	346	0	227	125	0	0
MEDI	ESPANA	SURF	1845N	1869N	1074N	1463N	1873N	1269N	1417N	765N	1333N	1627N
MEDI	ESPANA	TRAP	127N	205N	270N	243N	462N	120N	218N	419N	343N	144N
MEDI	TUNISIE	UNCL	294F	202F	4F	154G	235F	123G	1209G	1099G	898G	1500G
MEDI	YUGOSLAV	PS	24	29	21	12	22	16	18	24	23	17N
TOTAL			3497	4077	3264	3518	4307	2485	4146	3697	3876	4714
AREA	COUNTRY	GEAR	1980	1981	1982	1983	1984	1985	1986	1987	1988	
MEDI	CYPRUS	UNCL	0	0	0	0	0	0	0	0	0F	
MEDI	GREECE	UNCL	0	516N	2192N	1887N	2060N	1419N	0	0	0	
MEDI	ITALY	UNCL	1376F	1193F	1299F	1494F	1610F	1344F	1344F	906F	609F	
MEDI	MALTA	UNCL	18F	4F	9F	11F	4F	1F	13F	5F	8F	
MEDI	MAROC	SURF	10	14	0	57N	37N	49	251	0	811	
MEDI	ESPANA	GILL	0	0	0	0	0	39N	2N	0	0	
MEDI	ESPANA	PS	0	0	0	1629N	1605N	1392N	1297N	0	0	
MEDI	ESPANA	SURF	2100N	1600N	1732N	0	41N	3N	0	0	1327N	
MEDI	ESPANA	TRAP	20N	100N	203N	506N	655N	613N	256N	631N	1342N	
MEDI	YUGOSLAV	PS	19	14N	14	18	16N	14	32N	14N	41N	
TOTAL			3543	3441	5449	5602	6028	4874	3195	1556	4138	

SKIPJACK

AREA	COUNTRY	GEAR	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
MEDI	MAROC	TRAP	0	0	0	0	0	0	0	0	1	0
TOTAL			0	0	0	0	0	0	0	0	1	0
AREA	COUNTRY	GEAR	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
MEDI	MAROC	BB	0	2	0	0	0	6	0	1	0	0
MEDI	MAROC	PS	0	0	0	0	0	0	0	0	0	11
TOTAL			0	2	0	0	0	6	0	1	0	11
AREA	COUNTRY	GEAR	1980	1981	1982	1983	1984	1985	1986	1987	1988	
MEDI	MAROC	SURF	0	0	0	1N	++N	13	1	0	++	
MEDI	ESPANA	BB	0	0	0	0	10N	0	0	0	0	
MEDI	ESPANA	TRAP	0	0	0	1N	0	0	0	0	0	
TOTAL			0	0	0	2	10	13	1	0	++	

BIGEYE TUNA

AREA	COUNTRY	GEAR	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
MEDI	JAPAN	LLHB	0	0	0	0	0	0	1	0	0	0
TOTAL			0	0	0	0	0	0	1	0	0	0
AREA	COUNTRY	GEAR	1980	1981	1982	1983	1984	1985	1986	1987	1988	
MEDI	JAPAN	LLHB	0	0	0	0	0	0	1	0	0	
TOTAL			0	0	0	0	0	0	1	0	0	

OTHERS OR MIXED SPECIES

AREA	COUNTRY	GEAR	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
MEDI	ISRAEL	UNCL	100G	100G	100F	200F	200F	100F	200F	300F	500F	500F
MEDI	MALTA	UNCL	**G	**G								
MEDI	ESPANA	TRAP	0	0	0	0	0	0	0	0	21N	0
TOTAL			100	100	100	200	200	100	200	300	521	500
AREA	COUNTRY	GEAR	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
MEDI	ISRAEL	UNCL	500F	700F	1000F	900F	1100F	200F	300F	0G	300F	200F
MEDI	LEBANON	UNCL	600F	500F	400F	500F	500F	300F	300F	200F	300F	800F
MEDI	MALTA	UNCL	**G	**G	**G	**G	**F	++F	++F	++F	++F	++F
MEDI	ESPANA	UNCL	0	0	0	700N	500N	600	600	300	500	200
TOTAL			1100	1200	1400	2100	2100	1300	1200	500	1100	1200
AREA	COUNTRY	GEAR	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
MEDI	LEBANON	UNCL	200F	200F	200F	200F	260F	200F	140F	130F	140F	140F
MEDI	MALTA	UNCL	++F	++F	++F	100F	14F	39F	9F	30F	2F	11F
MEDI	ESPANA	UNCL	300L	0	0	0	0	337L	0	0	0	0
MEDI	TUNISIE	UNCL	52G	262G	336G	148G	142G	204G	360G	299G	265G	112G
TOTAL			552	462	536	448	416	780	509	459	407	263
AREA	COUNTRY	GEAR	1980	1981	1982	1983	1984	1985	1986	1987	1988	
MEDI	EGYPT	UNCL	0	0	0	0	0	32F	68F	80F	80F	
MEDI	GREECE	UNCL	0	0	195F	135F	40F	128F	128F	128F	128F	
MEDI	ITALY	UNCL	18F	0	0	0	0	0	0	0	0	
MEDI	LEBANON	UNCL	140F	130F	120F	110F	100F	120F	130F	150F	150F	
MEDI	MALTA	UNCL	4F	10F	21F	11F	14F	54F	12F	11F	6F	
MEDI	TUNISIE	TRAP	40G	0	100G	0	0	0	0	0	0	
MEDI	TUNISIE	UNCL	1786F	1344G	1350G	1164G	1273G	1791F	1872F	1858F	2991F	
TOTAL			1988	1484	1786	1420	1427	2125	2210	2227	3355	

Appendix Table B.

**Catch (in number of fish) at age estimated
for major countries and fisheries**

NATION = ALGERIA GEAR = OTHR

AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	1
3	0	0	0	0	0	0	0	0	0	0	2	134
4	24	2	0	0	2	10	3	1	0	0	15	143
5	12	5	0	0	7	34	12	6	0	0	19	86
6	12	16	0	0	9	37	26	21	4	0	27	67
7	12	43	0	0	13	22	21	18	4	0	23	103
8	24	36	0	0	14	35	10	3	5	0	34	146
9	130	25	0	0	9	20	6	2	5	11	39	105
10	154	17	0	0	6	16	7	5	7	61	95	133
11	160	27	0	0	11	29	15	10	8	47	101	170
12	18	24	0	0	12	46	24	16	5	60	104	112
13	12	58	1	0	19	40	25	19	9	107	124	66
14	0	70	1	0	20	30	23	20	11	67	75	49
15	0	47	1	0	13	16	17	16	7	48	77	28
16	0	19	0	0	5	7	10	9	4	61	38	21
17	0	14	0	0	4	2	9	10	5	27	13	13
18	0	5	0	0	1	0	3	3	3	20	4	6
19	0	0	0	0	0	0	1	1	1	0	0	4
20	0	0	0	0	0	1	3	3	0	0	0	2
total	558	408	3	0	145	344	213	163	77	509	790	1390

AGE	1982	1983	1984	1985	1986	1987	1988
1	0	2	4644	41924	151	0	33
2	1	12	4374	822	561	283	325
3	186	16	611	0	1197	150	1326
4	133	52	667	0	948	268	605
5	122	65	866	0	468	161	449
6	46	117	525	0	622	313	351
7	40	145	71	0	364	226	575
8	114	120	28	0	322	243	637
9	128	108	14	0	222	200	523
10	137	285	14	0	477	220	541
11	193	114	14	0	649	323	562
12	170	126	0	0	608	285	530
13	109	128	0	0	307	205	433
14	55	93	14	0	87	67	246
15	36	32	0	0	19	56	110
16	24	0	0	0	21	20	47
17	12	5	0	0	0	0	27
18	6	0	0	0	0	0	8
19	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0
total	1512	1420	11844	42746	7026	3021	7328

NATION - FRANCE GEAR - PS

AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	0	781	886	2569	17184	29813	5891	6543	3037	84	4802	11491
2	7556	2606	33227	3399	25242	69715	47279	101658	45214	6560	52126	119084
3	5851	8385	23098	31797	4805	8569	106921	8763	41795	38978	28065	28670
4	75	200	3556	970	20748	5034	13131	38985	1557	18378	7891	645
5	1410	44	0	456	883	1026	7670	776	422	651	1771	3620
6	4972	232	0	132	36	191	516	1608	24	3	808	1944
7	2590	2465	0	1036	168	97	0	302	514	35	59	107
8	1855	11094	0	2424	888	17	39	68	171	247	127	60
9	9	1724	668	1651	2943	924	1102	196	16	107	88	106
10	31	500	0	4	0	367	288	395	594	69	66	91
11	0	40	0	88	0	17	6	5	107	2	34	81
12	18	0	0	0	0	6	3	0	19	0	1	3
13	0	0	0	0	0	0	3	0	7	38	16	1
14	0	0	0	24	0	0	0	0	0	0	1	3
15	0	0	0	24	0	0	0	0	2	0	0	0
16	0	0	0	0	0	0	0	0	0	3	1	0
17	0	0	0	66	0	0	0	0	0	3	1	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
total	24366	28071	61434	44640	72897	115774	182848	159296	93477	65157	95859	165904

AGE	1982	1983	1984	1985	1986	1987	1988
1	282666	173907	24377	25110	140667	102814	240811
2	77001	54974	161382	110992	54531	162504	46167
3	80094	38325	2814	150669	34270	41694	103440
4	5362	7301	7942	8369	36530	12977	12648
5	503	4867	3187	3003	1677	1112	2502
6	68	197	1467	857	748	1054	2209
7	191	2623	1486	6	105	880	992
8	33	375	934	0	11	91	585
9	8	195	353	0	0	84	2325
10	19	1497	535	2	0	1244	1260
11	105	98	38	2	0	12	303
12	52	0	1581	0	0	0	0
13	0	0	303	0	0	0	0
14	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0
total	446102	284357	206397	299008	268538	324465	413241

NATION = FRANCE GEAR = OTHR												
AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
total	0	0	0	0	0	0	0	0	0	0	0	0

AGE	1982	1983	1984	1985	1986	1987	1988
1	4130	2900	194	140	1220	718	1257
2	1126	916	1282	617	473	1134	242
3	1164	639	22	838	298	292	540
4	76	123	63	47	318	91	66
5	4	81	26	17	15	8	13
6	0	3	12	5	7	8	12
7	0	44	12	0	1	6	5
8	0	6	7	0	0	1	3
9	0	3	3	0	0	1	12
10	0	25	4	0	0	9	6
11	0	2	0	0	0	0	2
12	0	0	13	0	0	0	0
13	0	0	2	0	0	0	0
14	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0
total	6500	4741	1640	1663	2332	2266	2160

 NATION = GREECE GEAR = OTHR
 NUMBER CAUGHT

AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
total	0	0	0	0	0	0	0	0	0	0	0	0

AGE	1982	1983	1984	1985	1986	1987	1988
1	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0
7	0	0	0	1	1	0	0
8	0	0	0	9	9	6	6
9	0	0	0	52	52	59	59
10	0	0	0	93	93	177	177
11	0	0	0	101	101	173	173
12	0	0	0	121	121	85	85
13	0	0	0	90	90	47	47
14	0	0	0	47	47	26	26
15	0	0	0	22	22	3	3
16	0	0	0	7	7	8	8
17	0	0	0	3	3	3	3
18	0	0	0	0	0	0	0
19	0	0	0	0	0	2	2
20	0	0	0	0	0	2	2
total	0	0	0	546	546	592	592

NATION = ITALY GEAR = LL
NUMBER CAUGHT

0

AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
total	0	0	0	0	0	0	0	0	0	0	0	0

AGE	1982	1983	1984	1985	1986	1987	1988
1	0	0	0	0	0	0	3
2	0	1	0	0	0	44	31
3	0	3	83	18	1	23	124
4	0	5	132	81	1	42	56
5	0	8	90	83	0	24	43
6	0	11	20	30	0	48	34
7	0	18	11	13	0	35	55
8	0	13	7	11	1	37	59
9	0	13	13	12	0	31	50
10	0	32	23	33	0	34	51
11	0	10	33	44	1	49	53
12	0	16	32	53	1	43	49
13	0	16	30	34	0	31	40
14	0	13	19	14	0	10	23
15	0	3	11	9	0	9	11
16	0	1	5	4	0	3	5
17	0	1	5	2	0	0	3
18	0	0	2	0	0	0	1
19	0	0	1	0	0	0	0
20	0	0	1	0	0	0	0
total	0	164	517	440	5	463	689

NATION =ITALY-ADRIATIC GEAR = PSFS												
AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	0	0	155	0	0	0	503	1964	0	0	0	0
2	0	18885	2804	4142	0	0	14973	2470	1554	4972	12430	12430
3	0	13883	2843	2473	0	0	16605	515	3792	12133	30334	30334
4	0	1837	494	409	0	0	4163	287	1100	3519	8799	8799
5	0	185	0	55	0	0	45	0	3	10	26	26
6	0	0	0	58	0	0	35	0	8	26	64	64
7	0	0	0	54	0	0	33	0	8	24	60	60
8	0	0	0	47	0	0	29	0	7	21	52	52
9	0	0	0	23	0	0	14	0	3	10	26	26
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
total	0	34791	6294	7260	0	0	36400	5236	6474	20716	51791	51791

AGE	1982	1983	1984	1985	1986	1987	1988					
1	0	0	91455	119538	112256	55897	129888					
2	12425	12425	86141	2344	43517	88350	24902					
3	30330	30330	2797	0	12687	9298	26777					
4	8813	8813	0	0	0	0	0					
5	28	28	0	0	0	0	0					
6	80	80	0	0	0	0	0					
7	75	75	0	0	0	0	0					
8	65	65	0	0	0	0	0					
9	33	33	0	0	0	0	0					
10	0	0	0	0	0	0	0					
11	0	0	0	0	0	0	0					
12	0	0	0	0	0	0	0					
13	0	0	0	0	0	0	0					
14	0	0	0	0	0	0	0					
15	0	0	0	0	0	0	0					
16	0	0	0	0	0	0	0					
17	0	0	0	0	0	0	0					
18	0	0	0	0	0	0	0					
19	0	0	0	0	0	0	0					
20	0	0	0	0	0	0	0					
total	51848	51848	180394	121882	168461	153545	181566					

NATION = ITALY-TYRRHENIAN GEAR = GILL

AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
total	0	0	0	0	0	0	0	0	0	0	0	0

AGE	1982	1983	1984	1985	1986	1987	1988
1	0	0	0	0	0	0	0
2	0	0	0	1	0	0	0
3	0	0	201	28	1	0	0
4	0	0	321	131	15	0	0
5	0	0	219	134	24	0	0
6	0	0	49	48	23	0	0
7	0	0	26	20	17	0	0
8	0	0	18	18	9	0	0
9	0	0	31	20	11	0	0
10	0	0	56	54	14	0	0
11	0	0	81	70	27	0	0
12	0	0	79	86	39	0	0
13	0	0	72	56	30	0	0
14	0	0	47	22	18	0	0
15	0	0	27	14	9	0	0
16	0	0	12	6	3	0	0
17	0	0	12	3	1	0	0
18	0	0	5	0	0	0	0
19	0	0	2	1	1	0	0
20	0	0	2	0	0	0	0
total	0	0	1261	710	240	0	0

NATION = ITALY-TYRR. GEAR = TRAP

AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	2	89
4	228	11	33	15	30	74	25	10	0	0	9	138
5	114	30	128	56	113	304	113	58	0	0	15	104
6	114	116	204	90	181	384	311	318	17	0	22	60
7	114	476	377	166	333	314	322	359	49	0	14	97
8	114	300	270	119	239	288	133	93	52	0	26	111
9	1162	324	286	126	253	295	91	28	50	6	30	120
10	1686	211	185	81	164	189	89	63	73	76	73	120
11	1025	247	211	93	187	205	157	157	63	63	70	155
12	570	212	281	124	249	452	277	246	64	57	80	119
13	114	499	450	198	399	481	314	289	86	135	91	74
14	114	794	569	250	504	363	352	387	111	103	81	49
15	0	564	389	171	344	215	277	328	104	70	61	37
16	0	240	168	73	148	96	150	185	44	78	40	20
17	0	144	89	39	79	26	99	135	29	40	12	11
18	0	72	40	17	35	0	71	104	46	30	2	10
19	0	6	3	1	3	0	16	23	14	4	1	3
20	0	0	2	1	2	6	34	48	0	0	0	3
total	5355	4245	3686	1619	3262	3691	2829	2831	801	660	629	1319

AGE	1982	1983	1984	1985	1986	1987	1988
1	0	0	0	2538	2177	0	20
2	0	8	0	0	10868	0	5
3	104	23	0	0	524	48	0
4	68	44	0	0	0	538	0
5	80	78	9	23	0	538	3
6	46	102	18	110	12	265	45
7	24	179	62	32	46	135	42
8	56	132	155	60	35	116	48
9	79	131	365	107	67	144	65
10	93	316	424	279	115	149	93
11	105	99	310	245	232	176	198
12	114	154	237	219	320	180	235
13	75	163	83	186	248	128	318
14	47	127	50	76	126	78	198
15	26	31	8	45	79	55	121
16	15	7	2	20	37	7	39
17	8	5	0	9	14	2	15
18	4	0	0	6	9	0	6
19	0	0	0	0	5	0	1
20	0	0	0	3	4	0	1
total	944	1598	1723	3956	14918	2561	1453

NATION = ITALY-TYRR. GEAR = OTHR

AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	381	0	116	339	339	339	339	339	301	0	0	0
2	715	0	235	19	19	19	19	19	16	0	0	0
3	170	0	262	31	31	31	31	31	29	0	0	36
4	381	16	309	42	42	46	42	41	35	195	0	133
5	245	20	93	20	20	35	23	19	10	780	0	350
6	7	6	14	14	14	30	33	41	6	0	0	23
7	7	26	25	25	25	25	34	46	17	0	0	38
8	7	16	18	18	18	23	14	12	18	0	0	44
9	68	17	19	19	19	23	9	4	17	2	0	47
10	98	12	12	12	12	15	9	9	25	26	0	48
11	60	13	14	14	14	16	17	20	21	22	0	61
12	33	11	19	19	19	35	29	32	22	20	0	47
13	7	27	30	30	30	38	33	37	29	46	0	29
14	7	43	38	38	38	29	37	50	38	36	0	20
15	0	30	26	26	26	17	29	42	35	24	0	15
16	0	13	11	11	11	8	16	24	15	27	0	8
17	0	8	6	6	6	2	10	17	10	14	0	4
18	0	4	3	3	3	0	7	13	16	10	0	4
19	0	0	0	0	0	0	2	3	5	1	0	1
20	0	0	0	0	0	1	3	7	0	0	0	1
total	2186	261	1250	686	686	732	736	807	662	1201	0	910

AGE	1982	1983	1984	1985	1986	1987	1988
1	0	0	0	8239	7809	9433	7954
2	0	0	0	5339	1209	5322	343
3	40	0	2561	399	1140	1142	748
4	24	0	4084	376	1871	1873	1369
5	36	4	2778	351	688	2583	872
6	12	13	633	882	787	1565	1292
7	4	13	342	592	515	3623	3336
8	20	51	254	894	636	1159	376
9	29	80	429	924	1008	357	75
10	36	295	741	1326	913	505	442
11	43	220	1043	1769	1341	375	747
12	43	194	1012	1018	1566	500	1013
13	29	50	921	979	1698	100	270
14	17	46	598	783	998	23	141
15	12	2	353	405	306	114	21
16	5	4	158	131	236	0	7
17	2	0	145	78	83	0	3
18	0	0	54	103	28	0	1
19	0	4	24	13	0	114	107
20	0	0	31	0	70	228	321
total	352	976	16159	24601	22901	29216	19439

NATION = ITALY-TYRR. GEAR = PSFB

AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	36	733
4	285	10	41	49	125	431	157	61	0	0	205	1136
5	143	24	156	187	476	1781	715	345	0	0	330	852
6	143	93	249	299	762	2250	1970	1905	174	0	482	489
7	143	383	460	553	1407	1837	2038	2148	491	0	312	792
8	143	241	330	397	1010	1687	843	554	516	0	580	906
9	1455	261	349	420	1070	1725	573	169	498	81	670	980
10	2111	169	226	271	691	1106	564	379	734	1110	1616	980
11	1284	199	258	310	788	1200	995	939	634	920	1554	1267
12	713	170	344	413	1051	2643	1759	1473	634	839	1768	971
13	143	402	550	661	1683	2812	1988	1729	858	1975	2018	608
14	143	639	696	835	2128	2118	2234	2317	1113	1516	1785	400
15	0	454	475	571	1453	1256	1754	1966	1039	1029	1339	304
16	0	193	204	246	626	562	951	1108	435	1137	893	165
17	0	116	109	130	332	150	627	811	286	595	268	91
18	0	58	49	58	148	0	451	621	460	433	54	80
19	0	5	4	5	12	0	98	135	137	54	18	28
20	0	0	3	3	9	37	216	284	0	0	0	28
total	6704	3416	4501	5406	13771	21596	17931	16943	8011	9689	13928	10809

AGE	1982	1983	1984	1985	1986	1987	1988
1	0	0	0	0	0	0	0
2	12	71	0	8	0	0	0
3	1442	206	4993	406	8	87	48
4	992	398	7961	1896	346	966	416
5	1152	706	5416	1938	582	968	395
6	606	918	1224	691	556	476	184
7	363	1617	643	293	409	243	154
8	773	1187	458	264	213	208	115
9	1094	1187	784	289	272	259	97
10	1307	2852	1391	779	332	268	142
11	1491	889	1999	1017	641	315	172
12	1581	1392	1955	1243	937	323	221
13	1067	1470	1788	808	718	231	140
14	648	1145	1163	322	433	141	94
15	352	276	687	201	208	100	79
16	220	67	308	84	67	12	22
17	122	45	282	38	34	4	11
18	64	0	106	4	12	0	6
19	10	0	44	8	11	0	8
20	20	0	62	0	4	0	15
total	13316	14426	31261	10289	5783	4600	2317

NATION = ITALY-LIG. GEAR = PSFS

AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	0	0	1278	2317	25643	36647	7080	2360	4472	23	4966	13872
2	0	0	47923	3066	37668	85697	56823	36669	66585	1821	53908	143763
3	0	0	33313	28684	7171	10533	128504	3161	61549	10818	29024	34612
4	0	0	5128	875	30962	6188	15782	14062	2292	5101	8162	778
5	0	0	0	412	1318	1261	9218	280	622	181	1832	4371
6	0	0	0	119	54	235	620	580	35	1	835	2347
7	0	0	0	935	251	119	0	109	757	10	61	129
8	0	0	0	2187	1325	21	47	24	252	68	132	73
9	0	0	963	1489	4392	1136	1325	71	24	30	91	128
10	0	0	0	4	0	451	346	142	874	19	68	109
11	0	0	0	79	0	21	7	2	157	1	35	97
12	0	0	0	0	0	8	4	0	28	0	1	4
13	0	0	0	0	0	0	4	0	10	11	17	1
14	0	0	0	22	0	0	0	0	0	0	1	4
15	0	0	0	22	0	0	0	0	3	0	0	0
16	0	0	0	0	0	0	0	0	0	1	1	0
17	0	0	0	60	0	0	0	0	0	1	1	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
total	0	0	88605	40269	108782	142315	219759	57461	137660	18085	99136	200286

AGE	1982	1983	1984	1985	1986	1987	1988
1	224689	96228	6410	10830	89726	12481	16543
2	61212	30419	42434	47871	34783	19727	3172
3	63670	21207	740	64983	21859	5061	7106
4	4265	4040	2088	3610	23301	1576	870
5	400	2693	838	1295	1070	135	172
6	54	109	386	370	477	128	152
7	152	1451	391	3	67	106	68
8	28	208	246	0	7	11	40
9	6	108	93	0	0	10	159
10	17	828	141	1	0	151	87
11	85	54	10	1	0	2	21
12	42	0	416	0	0	0	0
13	0	0	80	0	0	0	0
14	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0
total	354620	157346	54271	128963	171290	39388	28390

NATION = JAPAN GEAR = LL												
AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	29	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	2	0
4	0	0	4	5	65	53	48	0	0	35	4	0
5	0	0	1	5	48	8	199	4	0	0	6	2
6	0	0	5	10	112	61	206	45	0	35	12	11
7	0	0	5	8	89	57	172	151	0	105	13	24
8	0	0	47	80	902	550	218	463	64	172	90	79
9	0	0	49	93	1012	546	183	420	7	69	234	51
10	0	0	117	229	2490	1315	521	462	0	0	75	75
11	0	0	85	138	1571	1020	790	302	0	0	70	107
12	0	0	119	209	2333	1376	535	125	136	0	64	69
13	0	0	103	214	2288	1132	452	202	7	0	40	34
14	0	0	50	126	1285	492	331	393	72	0	16	25
15	0	0	11	26	269	118	187	126	0	0	4	14
16	0	0	14	29	305	155	282	51	0	0	2	9
17	0	0	3	5	56	30	83	13	72	0	6	2
18	0	0	0	0	0	0	20	0	0	0	2	2
19	0	0	0	0	0	0	7	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	1
total	0	0	615	1178	12826	6912	4263	2758	358	416	641	503

AGE	1982	1983	1984	1985	1986	1987	1988					
1	0	3	0	6	0	0	0					
2	0	26	0	53	0	0	0					
3	36	53	39	133	11	11	10					
4	201	128	91	119	62	14	12					
5	79	193	200	152	46	14	12					
6	432	291	141	185	46	22	19					
7	430	436	148	497	44	62	52					
8	254	337	459	363	90	73	61					
9	162	322	1038	469	178	163	137					
10	258	811	1102	602	339	202	170					
11	253	284	1052	727	372	227	191					
12	114	379	719	954	363	278	234					
13	492	394	482	755	284	297	250					
14	597	296	266	350	121	247	208					
15	260	84	100	184	31	152	127					
16	387	11	200	108	15	50	43					
17	381	13	60	144	18	17	14					
18	273	0	27	52	3	0	0					
19	138	0	12	33	1	0	0					
20	61	0	8	50	2	0	0					
total	4810	4059	6141	5933	2023	1828	1539					

NATION - LYBIA GEAR - OTHR

AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	4	116
4	119	7	12	16	20	66	31	5	0	0	24	180
5	59	17	46	61	77	271	139	28	0	0	40	135
6	59	67	73	98	122	342	382	153	56	0	57	77
7	59	274	135	180	226	280	396	173	158	0	37	125
8	59	172	97	130	162	257	164	45	166	0	69	143
9	605	187	103	137	171	263	112	13	160	12	79	155
10	878	121	67	89	111	168	110	30	236	165	191	155
11	534	142	76	101	126	183	193	76	205	137	184	201
12	296	121	101	135	169	402	341	118	204	125	209	154
13	59	287	162	216	270	428	386	139	277	293	239	96
14	59	457	204	273	341	322	434	186	359	225	212	63
15	0	324	140	186	233	191	340	158	335	153	159	48
16	0	138	60	80	100	86	185	89	140	169	106	26
17	0	83	32	43	53	23	122	65	92	88	32	14
18	0	42	14	19	24	0	88	50	148	64	7	13
19	0	3	1	2	2	0	19	11	44	8	2	4
20	0	0	1	1	1	6	42	23	0	0	0	4
total	2787	2441	1324	1766	2208	3287	3482	1362	2581	1439	1650	1709

AGE	1982	1983	1984	1985	1986	1987	1988
1	0	0	0	2580	2229	0	20
2	2	8	0	0	11129	0	5
3	206	25	0	0	536	47	0
4	138	47	0	0	0	520	0
5	162	83	9	23	0	521	3
6	86	108	17	113	12	256	45
7	52	190	57	33	47	131	42
8	108	139	142	61	36	112	48
9	155	139	335	109	69	139	65
10	186	334	389	284	118	144	93
11	213	104	284	248	238	170	197
12	225	163	217	222	329	174	234
13	151	173	77	188	255	124	317
14	91	134	46	77	130	76	198
15	49	32	7	46	82	54	121
16	30	8	2	20	39	6	39
17	16	5	0	9	14	2	15
18	8	0	0	6	9	0	6
19	2	0	0	0	5	0	1
20	2	0	0	3	4	0	1
total	1882	1694	1581	4024	15278	2477	1449

NATION = MORROCCO GEAR = PS

AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
total	0	0	0	0	0	0	0	0	0	0	0	0

AGE	1982	1983	1984	1985	1986	1987	1988
1	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0
total	0	0	0	0	0	0	0

08

NATION = MORROCCO GEAR = TRAP												
AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	0	0	2	0	0	0	0	0	0	0	0	0
2	0	0	4	0	0	0	0	0	0	0	0	0
3	0	0	5	0	1	0	0	0	0	0	0	0
4	0	0	5	0	1	0	0	0	0	0	0	0
5	0	0	3	0	1	0	0	0	0	0	0	0
6	0	12	9	0	3	0	0	0	0	0	0	0
7	0	8	6	0	3	0	0	0	0	0	0	0
8	0	17	15	0	3	0	0	0	0	0	0	0
9	0	31	31	0	6	0	0	0	0	0	0	0
10	0	28	26	0	4	0	0	0	0	0	0	0
11	0	22	22	0	4	0	0	0	0	0	0	0
12	0	27	28	3	5	0	0	0	0	0	0	0
13	0	21	21	1	4	0	0	0	0	0	0	0
14	0	13	12	0	2	0	0	0	0	0	0	0
15	0	6	4	0	2	0	0	0	0	0	0	0
16	0	3	1	0	1	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
total	0	186	194	4	40	0	0	0	0	0	0	0

AGE	1982	1983	1984	1985	1986	1987	1988					
1	0	0	0	0	0	0	0					
2	0	0	0	0	0	0	0					
3	0	0	0	0	0	0	16					
4	0	0	0	0	0	0	16					
5	0	0	0	0	0	12	42					
6	0	0	0	0	0	103	122					
7	0	0	0	0	0	205	166					
8	0	0	0	0	0	250	116					
9	0	0	0	0	0	288	59					
10	0	0	0	0	0	227	44					
11	0	0	0	0	0	291	38					
12	0	0	0	0	0	265	26					
13	0	0	0	0	0	230	12					
14	0	0	0	0	0	102	3					
15	0	0	0	0	0	79	4					
16	0	0	0	0	0	28	3					
17	0	0	0	0	0	10	0					
18	0	0	0	0	0	1	0					
19	0	0	0	0	0	0	0					
20	0	0	0	0	0	0	0					
total	0	0	0	0	0	2091	668					

NATION = MORROCCO GEAR = OTHR

AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
total	0	0	0	0	0	0	0	0	0	0	0	0

AGE	1982	1983	1984	1985	1986	1987	1988
1	0	0	192	1935	225	0	9018
2	0	0	180	38	0	0	0
3	0	0	6	0	0	0	0
4	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0
total	0	0	378	1973	226	0	9018

NATION = SPAIN GEAR = LL

AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	2	0	8	11	8	4	401	0	0	0	0	0
2	4	0	17	19	13	7	100	5	0	22	8	0
3	1	0	18	31	22	11	361	6	19	18	28	67
4	2	2	21	38	27	14	1386	31	84	56	40	4
5	3	5	9	19	13	7	683	32	70	61	82	78
6	15	35	31	68	49	25	361	28	80	49	46	115
7	47	25	24	56	39	21	180	43	97	98	42	129
8	74	53	49	108	76	41	321	41	82	197	61	190
9	51	112	106	234	164	88	121	41	30	94	84	305
10	44	96	91	201	141	76	100	40	51	78	100	111
11	36	77	75	165	115	63	100	35	36	57	66	257
12	45	97	94	205	143	78	0	92	44	16	43	75
13	37	75	73	160	112	60	0	8	15	0	14	0
14	21	45	42	95	67	35	0	18	21	16	32	0
15	7	15	14	32	24	13	0	2	27	2	6	0
16	2	6	5	11	8	4	0	0	10	6	3	0
17	0	1	0	2	1	1	0	0	0	0	5	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
total	391	644	679	1454	1021	548	4115	420	667	771	658	1331

AGE	1982	1983	1984	1985	1986	1987	1988
1	0	18	17	148	31	0	7
2	40	128	87	773	116	78	65
3	160	179	54	795	247	42	267
4	88	94	33	304	196	73	123
5	136	144	31	181	97	43	90
6	432	82	49	124	129	85	71
7	384	138	36	79	75	62	116
8	328	205	43	47	67	67	129
9	592	228	59	37	46	55	105
10	640	219	51	59	99	61	109
11	264	173	42	56	134	89	113
12	472	99	36	36	126	78	106
13	264	44	23	17	64	56	87
14	0	32	8	15	18	19	49
15	40	6	8	11	4	16	22
16	32	5	7	8	4	5	10
17	48	3	2	0	0	0	6
18	0	0	0	0	0	0	2
19	0	5	0	0	0	0	0
20	0	0	0	0	0	0	0
total	3920	1803	586	2691	1453	828	1477

NATION = SPAIN GEAR = PS

AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	0	0	0	0	0	0	0	0	0	0	0	256
2	0	0	0	0	0	0	0	0	0	0	0	2344
3	0	0	0	0	0	0	0	0	0	0	0	648
4	0	0	0	0	0	0	0	0	0	0	0	12
5	0	0	0	0	0	0	0	0	0	0	0	91
6	0	0	0	0	0	0	0	0	0	0	0	21
7	0	0	0	0	0	0	0	0	0	0	0	5
8	0	0	0	0	0	0	0	0	0	0	0	3
9	0	0	0	0	0	0	0	0	0	0	0	2
10	0	0	0	0	0	0	0	0	0	0	0	2
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
total	0	0	0	0	0	0	0	0	0	0	0	3384

AGE	1982	1983	1984	1985	1986	1987	1988
1	6696	0	510	0	276	0	0
2	8926	0	3376	0	0	0	0
3	6842	0	59	166	0	0	0
4	803	0	167	1740	0	0	0
5	28	0	67	0	0	0	0
6	0	0	31	0	0	0	0
7	0	0	31	0	0	0	0
8	0	0	20	0	0	0	0
9	0	0	8	0	0	0	0
10	0	0	11	0	0	0	0
11	0	0	1	0	0	0	0
12	0	0	33	0	0	0	0
13	0	0	6	0	0	0	0
14	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0
total	23295	0	4321	1906	276	0	0

NATION = SPAIN GEAR = GILL

AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
total	0	0	0	0	0	0	0	0	0	0	0	0

AGE	1982	1983	1984	1985	1986	1987	1988
1	0	0	645	322	0	0	0
2	0	0	0	6	0	0	0
3	0	0	0	0	0	0	0
4	0	0	3	0	0	0	0
5	0	0	1	0	0	0	0
6	0	0	2	0	0	0	0
7	0	0	1	0	0	0	0
8	0	0	1	0	0	0	0
9	0	0	1	0	0	0	0
10	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0
12	0	0	1	0	0	0	0
13	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0
total	0	0	654	329	0	0	0

NATION = SPAIN GEAR = TRAP

AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	8	0	6	151	0	0	0	0	0	0	0	0
2	16	0	12	9	0	0	0	0	0	0	0	0
3	3	0	13	14	1	0	0	0	0	0	0	0
4	8	1	16	18	1	0	0	0	0	0	0	0
5	12	3	6	9	1	0	0	0	0	0	0	0
6	61	14	21	32	3	0	0	0	0	0	0	1
7	190	10	17	26	3	0	0	0	0	0	0	4
8	302	20	33	51	4	2	2	0	0	0	0	3
9	206	43	74	109	9	3	3	2	0	0	0	3
10	177	37	64	94	6	3	3	2	0	0	0	3
11	145	30	52	77	5	2	2	2	1	0	0	2
12	183	37	66	95	6	2	2	2	1	0	0	2
13	149	29	51	75	5	2	2	2	1	0	0	0
14	83	17	30	45	3	2	2	1	0	0	0	0
15	28	6	10	15	2	0	0	0	0	0	0	0
16	8	2	3	5	1	0	0	0	0	0	0	0
17	2	1	0	1	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
total	1577	252	477	825	51	16	16	11	3	0	0	18

AGE	1982	1983	1984	1985	1986	1987	1988
1	0	0	0	0	2244	0	0
2	0	0	0	0	11199	0	0
3	0	0	0	75	540	0	37
4	4	0	63	545	0	0	39
5	16	1	63	167	0	8	99
6	40	2	42	313	2	67	290
7	105	2	126	330	8	133	395
8	105	9	168	244	3	163	276
9	90	15	378	202	2	187	140
10	86	54	483	211	18	147	103
11	50	40	441	237	41	189	91
12	57	36	462	162	48	172	62
13	11	9	105	91	26	149	30
14	12	9	168	45	12	66	7
15	4	0	63	23	11	51	8
16	6	1	63	5	7	18	7
17	4	0	105	8	7	6	0
18	0	0	42	4	1	1	0
19	0	1	42	0	0	0	0
20	0	0	0	0	0	0	0
total	590	181	2815	2662	14168	1359	1584

NATION = SPAIN GEAR = OTHR												
AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1	0	0	0	0	0	0	0	0	0	0	0	3877
2	0	0	0	0	0	0	0	0	0	0	0	3421
3	0	0	0	0	0	0	0	0	0	0	0	1523
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	1	0	0	0	0	0	0
6	0	0	0	0	0	3	0	0	0	0	0	0
7	0	0	0	0	0	4	0	0	0	0	0	0
8	0	0	0	0	0	24	0	0	0	0	0	0
9	0	0	0	0	0	33	0	0	0	0	0	0
10	0	0	0	0	0	25	0	0	0	0	0	0
11	0	0	0	0	0	2	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
total	0	0	0	0	0	91	0	0	0	0	0	8820
AGE	1982	1983	1984	1985	1986	1987	1988					
-----	-----	-----	-----	-----	-----	-----	-----					
1	1648	0	36664	62022	2758	0	0					
2	2081	0	29274	949	0	0	0					
3	936	0	4091	0	0	0	0					
4	0	0	4506	9	2	0	36					
5	0	3	5827	102	36	239	224					
6	0	10	3588	283	54	768	1158					
7	0	10	582	307	30	750	1580					
8	0	38	390	430	29	555	891					
9	0	60	367	448	24	539	846					
10	0	222	390	303	17	598	544					
11	0	166	312	100	28	517	388					
12	0	147	124	46	10	222	161					
13	0	38	74	5	1	45	39					
14	0	35	133	6	3	0	4					
15	0	2	19	0	0	0	0					
16	0	3	8	0	0	0	4					
17	0	0	5	0	0	0	0					
18	0	0	2	0	0	0	0					
19	0	3	7	0	0	0	0					
20	0	0	0	0	0	0	0					
total	4665	738	86364	65009	2994	4232	5874					

NATION = TUNISIA GEAR = PS

AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
total	0	0	0	0	0	0	0	0	0	0	0	0

AGE	1982	1983	1984	1985	1986	1987	1988
1	0	0	0	0	0	0	5026
2	0	0	0	0	0	0	963
3	0	0	0	0	0	0	2158
4	0	0	0	0	0	0	264
5	0	0	0	0	0	0	52
6	0	0	0	0	0	0	46
7	0	0	0	0	0	0	21
8	0	0	0	0	0	0	12
9	0	0	0	0	0	0	48
10	0	0	0	0	0	0	26
11	0	0	0	0	0	0	6
12	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0
total	0	0	0	0	0	0	8623

NATION = TUNISIA GEAR = TRAP

AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	49	1	1	1	2	6	1	1	0	6	4	21
5	25	4	5	3	7	26	5	5	0	91	6	33
6	25	15	8	5	11	32	14	27	5	66	8	24
7	25	61	15	8	20	27	15	30	14	104	6	14
8	25	38	11	6	14	24	7	8	15	69	10	23
9	250	42	11	6	15	25	4	3	14	47	12	26
10	363	27	7	4	10	16	4	6	21	22	29	28
11	221	31	8	5	11	17	7	14	18	39	28	28
12	123	27	11	6	15	38	13	21	18	23	32	36
13	25	64	18	10	24	41	14	25	25	19	36	28
14	25	102	22	12	31	31	16	33	32	13	32	18
15	0	72	15	8	21	18	13	28	30	4	24	12
16	0	31	7	3	9	8	7	16	12	1	16	9
17	0	19	4	2	5	2	5	12	8	0	5	5
18	0	10	2	1	2	0	3	9	13	0	1	3
19	0	1	0	0	0	0	1	2	4	0	0	2
20	0	0	0	0	0	1	2	4	0	0	0	1
total	1153	544	145	80	199	311	130	244	229	504	249	310

AGE	1982	1983	1984	1985	1986	1987	1988
1	0	0	0	688	624	0	6
2	0	2	0	0	3115	0	1
3	66	6	0	0	150	13	0
4	44	12	0	0	0	144	0
5	52	22	3	6	0	144	0
6	28	29	5	30	4	71	12
7	19	50	16	9	13	36	12
8	33	37	37	17	10	31	12
9	52	37	90	29	19	39	19
10	59	89	103	75	33	40	26
11	69	28	75	66	67	47	55
12	74	44	57	59	92	48	65
13	48	46	20	50	71	35	88
14	32	36	12	20	36	21	54
15	14	9	2	12	22	15	33
16	10	2	1	5	11	2	11
17	6	1	0	3	4	1	4
18	2	0	0	2	3	0	1
19	0	0	0	0	1	0	0
20	0	0	0	1	1	0	1
total	608	450	421	1071	4275	685	400

NATION = TURKEY GEAR = PS

AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
total	0	0	0	0	0	0	0	0	0	0	0	0

AGE	1982	1983	1984	1985	1986	1987	1988
1	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0
3	0	0	0	0	63149	37645	37645
4	0	0	0	0	6736	4015	4015
5	0	0	0	0	1684	1004	1004
6	0	0	0	0	842	502	502
7	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0
total	0	0	0	0	72411	43166	43166

NATION = TURKEY GEAR = OTHR												
AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	33	0	3	2	1	2	0	3	0	0	24	375
5	16	0	11	10	5	7	0	15	0	0	38	281
6	16	3	16	16	9	10	0	81	11	0	56	161
7	16	10	31	30	15	7	0	91	30	0	36	262
8	16	6	22	21	11	7	0	23	31	0	68	299
9	167	7	23	23	12	7	24	7	30	1	78	323
10	242	5	15	15	8	5	108	16	44	11	188	323
11	147	5	17	17	9	5	149	40	38	9	181	418
12	82	5	23	22	11	11	119	63	38	8	206	320
13	16	11	37	36	18	12	161	73	52	19	235	201
14	16	17	46	45	23	9	86	98	67	14	208	132
15	0	12	32	31	16	5	48	83	63	10	156	100
16	0	5	14	13	7	2	20	47	26	11	104	54
17	0	3	7	7	4	1	4	34	17	6	31	30
18	0	1	3	3	2	0	0	26	28	4	6	26
19	0	0	0	0	0	0	0	6	9	1	2	9
20	0	0	0	0	0	0	0	12	0	0	0	9
total	769	88	300	292	151	89	718	719	486	92	1620	3567

AGE	1982	1983	1984	1985	1986	1987	1988
1	0	0	210	2564	0	0	0
2	6	15	1085	13362	0	0	0
3	546	45	672	13764	0	0	0
4	375	87	413	5245	0	0	0
5	437	154	378	3139	0	0	0
6	230	200	609	2162	0	0	0
7	137	352	441	1378	0	0	0
8	295	258	525	822	0	0	0
9	414	258	735	650	0	0	0
10	494	620	637	1014	0	0	0
11	562	193	518	976	0	0	0
12	598	303	455	632	0	0	0
13	404	320	280	287	0	0	0
14	244	249	98	268	0	0	0
15	135	60	98	191	0	0	0
16	83	15	91	134	0	0	0
17	46	10	21	0	0	0	0
18	25	0	0	0	0	0	0
19	5	0	0	0	0	0	0
20	10	0	0	0	0	0	0
total	5046	3139	7266	46588	0	0	0

NATION = YUGOSLAVIA GEAR = PS

AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	781	0	327	0	135	65	473	38966	0	0	0	0
2	1465	12413	5904	7931	9572	4680	14094	48971	13038	9396	7122	4648
3	348	9126	5985	4733	7767	3797	15632	10199	31820	22933	17381	11345
4	753	1208	1039	784	1665	814	3918	5685	9230	6652	5042	3291
5	488	122	0	104	85	42	42	0	27	20	15	10
6	0	0	0	110	86	42	32	0	69	50	38	24
7	0	0	0	104	81	39	30	0	64	47	36	23
8	0	0	0	90	70	34	26	0	56	40	31	20
9	0	0	0	44	35	17	13	0	28	20	15	10
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
total	3836	22868	13255	13900	19496	9529	34261	103821	54333	39158	29681	19369

91

AGE	1982	1983	1984	1985	1986	1987	1988
1	0	0	39424	163154	59676	23887	130927
2	6040	15134	37133	3199	23134	37754	25100
3	14742	36942	1206	0	6744	3973	26991
4	4273	10735	0	0	0	0	0
5	12	34	0	0	0	0	0
6	32	98	0	0	0	0	0
7	30	91	0	0	0	0	0
8	26	79	0	0	0	0	0
9	13	40	0	0	0	0	0
10	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0
total	25167	63152	77762	166353	89554	65614	183018

NATION = OTHER GEAR = LL

AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	1	0	0	0	0
9	0	0	0	0	0	0	0	4	0	0	0	0
10	0	0	0	0	0	0	0	3	0	0	0	0
11	0	0	0	0	0	0	0	4	0	0	0	0
12	0	0	0	0	0	0	0	3	0	0	0	0
13	0	0	0	0	0	0	0	1	0	0	0	0
14	0	0	0	0	0	0	0	1	0	0	0	0
15	0	0	0	0	0	0	0	3	0	0	0	0
16	0	0	0	0	0	0	0	1	0	0	0	0
17	0	0	0	0	0	0	0	1	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
total	0	0	0	0	0	0	0	22	0	0	0	0

AGE	1982	1983	1984	1985	1986	1987	1988
1	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0
total	0	0	0	0	0	0	0

NATION = OTHER GEAR = TRAP

AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	356	0	82	264	604	318	271	464	464	0	0	0
2	668	0	166	15	34	19	15	25	25	0	0	0
3	159	0	185	25	56	30	26	43	43	0	0	0
4	343	38	216	31	72	38	32	55	55	243	221	180
5	223	43	60	9	20	11	9	15	15	972	884	722
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
total	1750	81	709	343	786	415	353	603	603	1215	1105	902

AGE	1982	1983	1984	1985	1986	1987	1988
1	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0
total	0	0	0	0	0	0	0

NATION = OTHER GEAR = OTHER												
AGE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	0	0	0	0	163	287	194	364	201	0	0	0
2	0	0	0	0	9	15	10	20	11	0	0	0
3	0	0	0	0	15	26	18	34	19	0	0	0
4	0	0	0	0	20	34	23	43	24	85	88	118
5	0	0	0	0	5	9	6	12	7	339	354	471
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
total	0	0	0	0	211	371	251	473	262	424	442	589

AGE	1982	1983	1984	1985	1986	1987	1988					
1	0	2	5	25	10	0	1					
2	0	17	27	126	41	24	13					
3	24	24	17	130	86	13	49					
4	18	13	10	49	69	24	22					
5	22	20	10	29	34	14	17					
6	10	11	15	20	45	27	13					
7	5	19	11	13	27	20	22					
8	13	28	13	8	23	20	24					
9	20	31	18	6	16	17	20					
10	24	30	16	10	34	19	20					
11	28	24	13	9	47	28	21					
12	28	13	11	6	44	24	20					
13	20	6	7	3	22	17	17					
14	9	5	2	3	6	6	9					
15	8	1	2	2	1	5	4					
16	5	1	2	1	2	2	1					
17	2	0	1	0	0	0	1					
18	0	0	0	0	0	0	0					
19	0	1	0	0	0	0	0					
20	0	0	0	0	0	0	0					
total	236	244	180	442	508	258	274					

APPENDIX I

AGENDA

1. Opening
2. Election of the Co-Chairman
3. Adoption of the Agenda
4. Nomination of rapporteurs
5. Review of working papers
6. Review of national fisheries
7. Review of the data base
 - A. Total national annual catches by gear
 - B. Catch and effort
 - C. Distribution of catch and effort
 - D. Size data
 - E. Tag release and recapture data
8. Review of biological parameters
 - A. Length-weight relationships
 - B. Growth
 - C. Natural mortality
 - D. Comparison of various measurements
 - E. Sexual dimorphism
9. Review of stock structure
10. Review of catch-at-size data base
11. Ageing of catch at length
12. Review of abundance indices series
13. Deployment of large-scale pelagic driftnets
14. State of stocks
 - A. Stock-assessment models to be used
 - B. Application of models to the existing data
 - C. Review of results
15. Recommendations
 - A. Statistics
 - B. Research and technology
 - C. Management
16. Future research and work plan
17. Adoption of the report
18. Closure

APPENDIX II

LIST OF PARTICIPANTS

Albania

BALILI, M.
Direzione Generale della Pesca
Tirana

Tel. 22 264/22 287
Tlx. 4206 MINLET AB

MEMIA, S.
Station de Recherche
Scientifique des Pêches
Durrès
Albania

Tel. 22 552

Algeria

KADARI, G.
Centre de Recherche Pêches
11 Bvd. Amirouche
42415 Bou Ismail

Tel. 213-2-460 535
Tlx. 63354 DZ

France

LIORZOU, B.
IFREMER
1, Rue Jean Vilar
34200 Sète

Tel. 33-67 747 767
Tlx. 490305
Tfx. 33-67 747 090

Greece

LEFKATHITOU, E.
Ministry of Agriculture
Research Directorate
Myllerou 1
10436 Athens
Tel. 30-1-5 220 848

TSELAS, S.
Ministry of Agriculture
Department of Research
Myllerou 1
10436 Athens

Tel. 30-1-5 220 848

TSERPES, G.
Institute of Marine Biology
of Crete
P.O. Box 2214
71003 Iraklion

Tel. 30-81-242 022
Tlx. 262268
Tfx. 30-81-241 882

Italy

ARENA, P.
ESPI
Via A. Borelli, 10
90139 Palermo

Tel. 39-91-6 203 200

BELLO, G.
Laboratorio Provinciale
di Biologia Marina
Molo Pizzoli
70123 Bari

Tel. 39-80-5 211 200

CARMELO, A.
ICRAP
Via Lorenzo Respighi 5
00197 Rome

Tel. 39-6-87 751
Tfx. 39-6-8 870 326

CAVALLARO, G.
Dipartimento di Biologia
Animale Ecologia Marina
Facoltà di Scienze
C. da Sperone 31
Messina

Tel. 39-90-392 721
Tfx. 39-90-393 409

DE METRIO, G.
Dipartimento di Produzione Animale
Università di Bari
Via Amendola 165/A
70100 Bari

Tel. 39-80-8 779 076/8 779 077
Tfx. 39-80-242 822

DE ZIO, V.
Laboratorio Biologia Marina
Molo Pizzoli
70123 Bari

Tel. 39-80-5 213 486

DI NATALE, A.
Acquastudio
Via Trapani 6
98121 Messina

Tel. 39-90-55 200/391 189
Tfx. 39-90-391 189

FERRETTI, M.
ICRAP
Via L. Respighi 5
00197 Rome

Tel. 39-6-872 276
Tfx. 39-6-8 870 326

GUASTAMACCHIA, R.
CIHEAM
Via Ceglie 23
Valenzano (BA)

HAJDERI, E.
Facoltà di Scienze Naturali
(Tirana, Albania)
c/o Laboratorio di
Biologia Marina
Molo Pizzoli
70123 Bari

Tel. 39-80-5 211 200/5 213 486

LABOMBARDA, C.
Università di Bari
Via Bari 51
70100 Bari

Tel. 39-80-8 941 071

MAGGIO-APRILE, G.
Ministero della Marina Mercantile
V.le Asia
00155 Rome

MARANO, G.
Laboratorio Biologia Marina
Molo Pizzoli
70123 Bari

Tel. 39-80-5 211 200

MEGALOFONOU, P.
Dipartimento Produzione Animale
Università di Bari
Via Amendola 165/A
70100 Bari

Tel. 39-80-8 779 076

PESOLA, V.
Dipartimento Produzione Animale
Università di Bari
Via Amendola 165/A
70100 Bari

Tel. 39-80-8 779 076

ROSITANI, L.
Laboratorio Biologia Marina
Molo Pizzoli
70123 Bari

Tel. 39-80-5 211 200

RUSSO, A.R.
Scuola A. Fini
Via di Palma 129
Taranto

Tel. 39-99-27 931

TRIMIGLIOZZI, F.
Univesità di Bari
Via Nicolai 302
70100 Bari

Tel. 39-80-591 079

VACCARELLA, R.
Laboratorio Biologia Marina
Molo Pizzoli
70123 Bari

Tel. 39-80-5 211 200

Japan

MIYABE, N.
National Research Institute of
Far Seas Fisheries
5-7-1 Orido, Shimizu 424
Shizuoka Pref.

Tel. 81-543-340 715
Tfx. 81-543-359 642

Libya

EL KEBIR, N.K.
Marine Biology Research Centre
P.O. Box 30830
Tajura

Tel. 690 001-3
Tlx. 20523 MBRCLY

Morocco

SROUR, A.
Institut scientifique des pêches
maritimes
2, Rue Tiznit
Casablanca

Tel. 212-268 192/276 088

Spain

CORT, J. L.
Instituto Español de Oceanografía
Apdo. 240
39080 Santander

Tel. 34-942-274 043/275 033
Tlx. 35998 IEOS-E
Tfx. 34-942-275 072

MEJUTO GARCIA, J.
Instituto Español de Oceanografía
Muelle de Animas s/n
Apdo. 130
15080 La Coruña

Tel. 34-81-205 362/205 366
Tlx. 86070
Tfx. 34-81-229 077

SERNA ERNST, J.M.
Instituto Español de Oceanografía
Muelle Pesquero s/n
Apdo. 285
29640 Fuengirola

Tel. 34-952-472 261/471 907/476 955
Tlx. IEOA-E-79280
Tfx. 34-952-463 808

U. S. A.

TURNER, S.
U.S. National Marine Fisheries Service
75 Virginia Beach Drive
Miami, FL 33149

Tel. 1-305-3 614 482/3 614 200
Tfx. 1-305-3 614 515

Yugoslavia

ALEGRIA HERNANDEZ, V.
Institute of Oceanography
and Fisheries
Mose Pijade 63
58000 Split

Tel. 38-58-46 688
Tfx. 38-58-46 593

**FOOD AND AGRICULTURE
ORGANIZATION (FAO)
Fisheries Department**

Via delle Terme di Caracalla
00100 Rome, Italy

Tlx. 610181 FAO I
Tfx. 39-6-5 146 172

GRIFFITHS, R. C.
Secretary of GFCM
Tel. 39-6-57 976 435

MAJKOWSKI, J.
Fishery Resources Officer
Marine Fishery Resource Service
Tel. 39-6-57 976 463

SAVINI, M.
Senior Liaison Officer
(International Fisheries)
Fishery International Institutions
and Liaison Service
Tel. 39-6-57 976 411

**INTERNATIONAL COMMISSION
FOR THE CONSERVATION OF
ATLANTIC TUNAS (ICCAT)**

Calle Principe de Vergara, 17
28001 Madrid, Spain

Tel. 34-1-431 0329
Tlx. 46330 ICCAT E
Tfx. 34-1-576 1968

DA RODDA, D.
Programmer

KEBE, P.
Systems Analyst

MIYAKE, P. M.
Assistant Executive Secretary

**EUROPEAN ECONOMIC
COMMUNITY**

200 Rue de la Loi
1049 Brussels
Belgium

Tel. 32-2-2 354 741
Tfx. 32-2-2 352 569

REY SALGADO, J. C.

APPENDIX III

**SCIENTIFIC AND TECHNICAL PAPERS
PRESENTED AT THE CONSULTATION**