

**REPORT OF THE 2007 MEETING OF THE
AD HOC WORKING GROUP ON TAGGING COORDINATION**
(Madrid, Spain - March 15-16, 2007)

1. Opening, adoption of Agenda and meeting arrangements

Mr. Driss Meski, ICCAT Executive Secretary, opened the meeting and welcomed participants.

The meeting was chaired by Dr. Enrique Rodríguez-Marín (EC-Spain). Dr. Rodríguez-Marín welcomed the Working Group participants, reviewed the objectives of the meeting and reminded that the *ad hoc* working group was created to define a general framework for ICCAT tagging activities.

The Agenda (**Appendix 1**) was reviewed and adopted with minor changes. The List of Participants is attached as **Appendix 2**. The List of Documents presented at the meeting is attached as **Appendix 3**.

The following participants served as Rapporteurs for various sections of the report:

Section	Rapporteurs
1, 7	P. Pallarés
2	A. Delgado de Molina, F. Garibaldi, M. Ortiz, E. Prince
3	V. Restrepo, P. Kebe, P. Pallarés
4	J. Ortiz de Urbina, D. Die, E. Rodríguez-Marín
5, 6	G. Scott

2. Review of ongoing tagging programs in Contracting Parties

Several documents were presented to the Working Group of ongoing tagging programs and results from different Contracting Parties (see **Appendix 3**).

Document SCRS/2007/037 presents swordfish electronic tagging in the Mediterranean Sea. A total of 19 swordfish, ranging in weight from 15 to 45 kg were tagged using pop-up satellite tags between June 2003 and November 2006. Twelve swordfish were tagged during the month of June in the Messina Strait/Aeolian Islands area by means of the traditional local harpoon fishery. Seven specimens were tagged in the Ligurian Sea by surface long-lines during summer and autumn. The tags were programmed to detach from the fish after different time intervals, between 12 and 365 days. Twelve of the 19 deployed tags established a connection after being released, even though several premature releases (50%) were recorded. The aim of the study was to obtain information concerning distribution, movements, physiology and diving behavior of swordfish in the Mediterranean Sea. Data analysis shows that swordfish follow a daily behavioral pattern, spending the night near the surface (within the first 10 m) and diving during the day to depths of up to 650 m. The analysis of horizontal movements revealed how swordfishes are able to travel long distances in short periods of time. The animals tagged in the Messina Strait during summer at the peak of the breeding season, traveled away from this area. Tags were released at hundreds of kilometers from the tagging point. The fish tagged in the Ligurian Sea showed minor horizontal movement; remaining within the northwestern Mediterranean area until autumn traveling both eastward (to Corsica) and westward (to the Gulf of Lion). During the discussion of the document the problems of satellite transmitting were recognized and considered common in this area, possibly due to electronic ‘noise’ in this area of the Mediterranean.

Document SCRS/2007/038 describes bluefin tuna conventional tagging carried out by the Spanish Institute of Oceanography in the Mediterranean and in the Bay of Biscay in 2005 and 2006. A total of 1694 and 349 bluefin tuna were tagged in 2005 and 2006, respectively, representing 15% of the total tagged bluefin since 1977 in both areas. In the Mediterranean the bluefin tuna tagged were individuals aged 1 year or less, while in the Bay of Biscay most individuals tagged were 1 or 2 years old. The numbers of fish recaptured were 67 and 19 in 2005 and 2006, respectively. Relative recapture rates based on 14700 tagged individuals and 702 recaptures show a close relationship between the west Mediterranean and the Bay of Biscay, thus indicating that the relative abundance index of juveniles in the Bay of Biscay may be representative of the Mediterranean western bluefin tuna population. A relationship was seen between the number of fish tagged and recaptured within the same year. Mean displacements of fish tagged and recaptured in the Bay of Biscay during the same year were also analyzed. This study also summarizes the application of conventional tagging data to obtain information useful to the assessment of the bluefin tuna population.

Document SCRS/2007/039 examines the ICCAT bigeye tuna tagging database. The tagging database compiled since the 1960s by the secretariat of ICCAT was used to assess the effects of several release factors on the recovery rate of bigeye tuna. The length of the fish, latitude, longitude, the gear used during the tagging operation, the kind of tag used, the year and the month as well as the interactions between length and tag type and length and year significantly influenced the probability of the return of the fish. Consequently they were used within a binomial GLM framework to predict the probability of recapture of the fish. Results from this model reinforce previous findings concerning the lower efficiency of the Betytag compared with Spaghetti tag but also highlighted the fact that this detrimental effect concerns only fish of less than 80 cm (FL). As expected, baitboat appears to be the most efficient tagging gear in terms of recovery rate. Among the release factors considered some may represent variables over which an experimental designer has no control regarding use in future tagging studies: e.g. year of release (which may reflect historical change in fishing effort and/or in fishing practice), latitude and longitude (may be partially imposed by the autonomy of the tagging gear). In contrast, other factors can be controlled with the aim of improving recovery rates. Even if no seasonal pattern had been detected with respect to the month at release, it makes sense to admit that some environmental factors (e.g., air temperature) may affect post-release mortality. Since small bigeye gave the poorest recoveries, caution should be taken when juveniles are targeted by the tagging protocol. Independently of the interest in collecting information on these small fish, the scientists involved in tagging activities must evaluate whether it is worth the time and cost to tag the small fish or conversely whether it is worth excluding them.

Although the reporting rate probably affects the return rate more than the release factors considered, this information is difficult to estimate without the aid of a specific program. The Working Group raised the matter of the importance of accounting for the characteristics of the tagging survey in this type of statistical analysis. This information should be available in the ongoing ICCAT tagging database. Further studies should be made to evaluate the statistical power of this type of analysis and specifically the minimum size of some strata (i.e. combination of factors/level) from which the impact on the recovery rate can be detected.

Document SCRS/2007/046 describes conventional, sonic and archival tagging activity contributions from Azti and BIM on albacore, bluefin and bigeye tunas. Different kinds of tuna tagging techniques have been performed and investigated, mainly in the Bay of Biscay, for albacore and bluefin juveniles: conventional tagging by recreational fishery is promoted by training fishermen in tagging methods and providing material and collecting the information. This tagging activity has increased exponentially, with 2531 tunas tagged in 2006. Tag recaptures are 1.13% for albacore and surprisingly high (13.08%) for bluefin, but with a lower number of releases. A 2.4% recovery rate has been obtained for juvenile bluefin tuna with a 125 dummy internal archival tagging campaign. A low (1.5%) recovery rate has been obtained for albacore in a similar campaign led by BIM (Ireland), but all the recoveries were found within around one year at liberty. Within the BETYP (Bigeye Tuna Year Program) framework, several Microwave Telemetry pop-up archival tags were implanted in bigeye tunas between April and early June 2001 and 2002, 18 individuals from 20 to 60 Kg were tagged in cooperation with Azores University. During the summers of 2005 and 2006, six albacore and four bluefin tunas were tracked by sonic tracking. During 2005 and 2006, 12 real tags were deployed, with one recovery, which for the first time provides information over an entire winter between successive feeding migrations to the Bay of Biscay. Despite the dependency on numerous hazardous conditions this technique may provide useful data on juvenile tunas.

Document SCRS/2007/048 presents swordfish conventional tagging in the Mediterranean Sea. In 2006 the Spanish Institute of Oceanography carried out the swordfish tagging activities scheduled by the European Tagging Program. A total of 260 swordfish, whose size (LJFL) ranged between 45 and 124 cm, were tagged by means of conventional tags. Several hooks, including circular ones, were used during tagging activities; as a result 79% of the swordfish were hooked on the mouth, which is supposed to favor fish survival. This document reports information on the first tag from a swordfish released in the Mediterranean Sea and recaptured in the Atlantic.

Document SCRS/2007/049 describes the logistical efforts made in order to spot and to collect conventional and electronic tags from bluefin tuna taken into bluefin farms in the Adriatic Sea by Croatian scientists. It has been noticed that in some circumstances, because of marketing and handling procedures, it is difficult and/or impossible to properly remove or identify internal archival tags in this operation particularly for medium and large size bluefin. As of recently, a significant part of the bluefin catch from the Mediterranean is not landed, but live fish are instead used for eventual farming purposes. This practice significantly reduced the probability of fishermen and/or observers spotting the tagged bluefin tuna on fishing vessels or in the fishing ports. Within the framework of the Bluefin Year Program (BYP), during the harvesting period from November 2006 to February 2007, observers were employed to follow the harvest from growth-out cages at different tuna farms along the

eastern Adriatic coast, with the aim of increasing the probability of spotting tagged specimens on the bluefin tuna farms. The observers' findings and experiences are presented in this paper.

Active tagging programs from Contracting Parties

This section reviews programs from countries that participated at the workshop.

Western programs

Cooperative Tagging Center (CTC)

The Southeast Fisheries Science Center's Cooperative Tagging Program (CTC) continues to operate its constituent based tagging program for highly migratory species, focusing on pelagic tuna, billfish (istiophorids) and swordfish. This program uses streamer tags and a double barb medical grade nylon anchor. This is one of the largest and oldest constituent based tagging programs in the world and has been operating since 1954 (**Figures 1 and 2**).

Billfish Foundation Tagging Program (TBF)

The Billfish Foundation (TBF), located in Ft. Lauderdale, FL, USA, continues to operate its constituent based tagging program targeting Istiophorid billfish. This program started in 1990 and has been working in collaboration with the CTC to enhance tagging efforts in the Atlantic Ocean and elsewhere. This program uses streamer tags and a double barb medical grade nylon anchor. Over the last few years, TBF deployment activities have dominated Atlantic billfish releases.

Adopt A billfish

The Southeast Fisheries Science Center in conjunction with the Southwest Fisheries Science Center continues to operate its electronic tagging program, using popup satellite archival tag technology (PSAT) for billfish (istiophorids), swordfish and tuna (**Figure 3**). This program is being run under the Adopt A Billfish program, which accepts funds from constituents who sponsor PSAT tags and includes the following partners: The Billfish Foundation, the International Game Fish Association, University of Miami Rosenstiel School of Marine and Atmospheric Sciences, Bermuda Department of Fisheries, and the Presidential Challenge Series of billfish tournaments off Central America (**Figure 4**).

Tag A Giant

Stanford University, in conjunction with the Monterey Bay Aquarium, runs the Tag A Giant program, with PSAT and implantable archival tag deployments on large bluefin tuna tagged mostly off North Carolina, USA. In more recent years, both types of electronic tags have been deployed on fish off New England USA and Ireland. All electronic deployments also have streamer tags. Streamer tags on archival equipped bluefin tuna are green and white and have an AR acronym in front of the tag number (**Figures 5 and 6**).

South Carolina Department of Natural Resources (SCDNR)

The SCDNR, through the Marine Resources Research Institute, has been focusing on deploying popup satellite archival tags (PSATs) on swordfish, billfish, and pelagic sharks and billfish since 2001. Tag information is printed on the leader of PSATs to act as a streamer tag after the PSAT jettisons. In addition, SCDNR also has a constituent based tagging program that includes pelagic species, such as tunas, billfish, swordfish, and dorado.

Tag A Tiny

The University of New Hampshire, in conjunction with the Virginia Institute of Marine Science, is conducting electronic tagging of Atlantic bluefin tuna using implantable archival tag technology on school size fish (**Figure 7**). PSAT tagging has focused on giant bluefin (see **Figure 6**). All electronic tagged bluefin also have streamer tags. The bluefin equipped with implantable archival tags have a green streamer tag (**Figure 7**) while those with PSATs have yellow streamer tag (not shown).

Atlantic Shark Tagging Program

The Northeast Fisheries Science Center's Cooperative Shark Tagging Program (CSTP), centered in the Narragansett, RI Laboratory, uses dart tags (with a capsule legend) (**Figure 8**) to target primarily pelagic and coastal sharks, but also includes a small amount of tunas, billfish, and swordfish. This program, one of the largest shark tagging programs in the Atlantic, was started in 1962 and continues to work with recreational and commercial constituents to deploy tags on sharks.

Eastern programs

European Tuna Tagging Program (ETTP)

Several European countries are involved in this tagging program that began in 2005 and will finish in 2007. Cyprus, France, Greece, Italy, Malta, Portugal and Spain have tagged and are tagging bluefin tuna and swordfish with conventional, pop-up satellite and internal archival tags (for a detailed description see **Table 1**). This Program is co-funded by the Data Collection Program from DG Fish, European Union, and the participating European countries.

Bigeye (*Thunnus obesus*) Year Program (BETYP)

The ICCAT research program on bigeye tuna involved conventional tagging operations in Azores, Madeira, Canary Islands, Senegal, Ghana and São Tome and Principe. Pop-up tags were deployed in the Azores Islands area and internal archival tags in the Canary Islands area (for a detailed description see **Table 1**). Two other species, yellowfin tuna (*Thunnus albacares*) and skipjack tuna (*Katsuwonus pelamis*) were also tagged under this program.

TUNASAT

An EU-funded research programme involving Italy, Spain, Greece and the UK, which was carried out over the three-year period 1998-2000 in the Mediterranean Sea and the Strait of Gibraltar, and a subsequent tagging program funded by the Italian Ministry of Agriculture and Forestry Policies, which was carried out during 2003 in the Eastern Mediterranean. Both bluefin tuna tagging programs were accomplished using pop-up satellite tags.

National Programs

Tagging activities are also carried out under national initiatives. Different entities (ministries, universities and research institutions) continue to tag tuna, swordfish, billfish and sharks in the Atlantic and Mediterranean Sea. Some of these tagging activities are achieved during scientific tagging surveys or are continued with opportunistic tagging on board commercial vessels or with the collaboration of recreational vessels (see **Table 1**).

Tagging project of the Spanish Institute of Oceanography (IEO) on swordfish, billfish and sharks

The IEO has been tagging swordfish, billfish and sharks in the Atlantic and Mediterranean Sea using different tagging strategies based on convention tags. Scientific tagging surveys were also done in combination with other formulas, using limited and year-specific funds provided by the IEO and the EU. However, the lack of funds afterward forced to only keep opportunistic tagging activities based on a very limited scientific observer activity during commercial trips and the voluntary releases of the small sized swordfishes, billfish and sharks, done by the surface longline fleet within a collaborative work with the IEO. Scientific tagging surveys were restarted during 2006 in the Mediterranean Sea with limited funds from the IEO and UE (ETTP, previously mentioned) providing recently the first direct evidence of a swordfish movement between the occidental Mediterranean and NE Atlantic areas close to Gibraltar (see SCRS/2007/048). These tagging activities expanded to the Atlantic areas are planned for 2007, including 10 pop-up releases probably in the second half of the year. During the beginning of 2007 the IEO is already testing pop-up tagging activities on swordfish, but initially outside of the ICCAT convention areas. Opportunistic tagging activities will be kept during 2007 and next years. The IEO have maintained an efficient system for reporting recaptures of swordfish, billfish, sharks and tunas caught by the surface longline fleets. Protocols were fit during years to improve the quantity and the quality of the recaptures obtained. Additionally to the IEO tagging program, other tagging programs done by Ireland, USA (several programs), UK, Japan, among others, have received during decades the benefits of these efforts (see docs SCRS/1999/113; SCRS/2002/080, SCRS/2004/104 for more details).

Tagging project of the Institute of Oceanography (IEO) on tropical tunas

In the Canary Islands, several studies have been undertaken in relation to the different aspects of tropical tuna biology and behaviour by means of tagging techniques, in line with recommendations from the various Regional Fisheries Organisations (RFOs), specifically in the Atlantic Ocean, since the 1970s. The recapture rates obtained in these experiments vary between species and years, although they are generally considered to be high (around 17%). Until now, the technique used was traditional tagging. In the early years, scientific tagging was carried out in specific campaigns by hiring a commercial vessel. However, costs meant that opportunistic tagging was later decided upon. An initial tagging experiment with archival tags carried out in 2005. Seventeen bigeye were tagged with archival tags, manufactured by the firm Wildlife Computers, model MK9. Of these, five have already been recaptured (see SCRS/2006/054).

Tagging project headed by IFREMER on bluefin tuna

A research project focused on the ecology of bluefin tuna has been presented within the framework of EU proposal ENV.2007.2.2.1.2. « Ecology of important marine species ». The main objectives will be to describe and to model the key processes of the Bluefin tuna's life such as spatial dynamic, habitat, reproductive strategy, population structure, etc. The methodology will consist in the combination of electronic tagging analyses (50-100 pop-up tags of the new archival tag from Microwave on adults in the Mediterranean Sea and 20-50 on juveniles in eastern Atlantic and Mediterranean) with genetic and isotopic studies; with some additional micro chemical analyses.

3. Review of the report from the Secretariat on tagging coordination activities

The Secretariat presented document SCRS/2007/047 summarizing the tagging information held at the Secretariat to facilitate the improvement of the coordination of tagging programs carried out for tunas and tuna like species in the Convention area. Currently, the dissemination of information is done through an updated ICCAT Manual as well as the ICCAT webpage. Regarding data collection and database management, the Secretariat presented the inventory of conventional tags, which includes tags delivered by ICCAT as well as by other sources. This inventory is circulated annually to the ICCAT scientists for review. Tagging forms asking for release and recovery information are also circulated yearly. Document SCRS/2007/047 also presented the database structures, similar for both inventory and database. In the database structure special attention is paid to keeping track of each individual tag using identity numbers. The number of tags delivered by the Secretariat by year was also presented as well as information on other activities addressed to encourage the return of tags (tag lottery) or coordination work. The *Statistical Bulletin, Vol. 35*, published in September 2006 by the Secretariat, included details of tag releases and recoveries received and the geographical movement of fish tagged. In 2005 and 2006, the Secretariat presented reports to the SCRS meeting on the situation of the review of the tagging database, the lack of protocol for data exchange, and the difficulties in reward payment.

Discussion focused on the efficiency of the system currently used by the Secretariat to deliver the tags. The percentage of feedback release information from the tags delivered was estimated by the Secretariat as 35%. During the meeting the percentage of tags distributed for which ICCAT has received release information was calculated for all the distributed tags for which the date of distribution was known. There are two groups of tags for which such a date is known and together they represent 9% of all tags distributed by ICCAT and recorded in the inventory. For the first group of tags, distributed in 1993-1996, the percentage of feedback is 21% and for the second group of tags, distributed between 2002-2006, the percentage of feedback is 24%. So if anything, the percentage of feedback from the tags for which we know when ICCAT distributed them is lower than that of the average tag in the database. Regardless that these tags are representative of recently distributed tags, the amount of feedback on release information provided to ICCAT is rather incomplete.

In general it was confirmed by participants that the return of information is much higher when the tags are delivered to ICCAT scientists than when they are delivered to other institutions such as recreational associations. Other possible reasons for the low rate of reporting were also discussed but they were considered of minor importance. The Secretariat pointed out the lack of a clear protocol for the delivery of tags as a problem and asked for some guidance.

The Group agreed with the Secretariat that some rules should be given for the Secretariat to provide tags, emphasizing the importance of channeling tag distribution and reports on tag deployment through a scientist responsible at the national level. It was decided that in the future all tags should be requested and delivered either through the ICCAT tagging correspondents or national research institutes.

The Group also discussed the information included in the database. It was recognized the effort made by the Secretariat on filtering the information and accommodating it to a general structure taking into account that in many cases the format on which the information is presented and the level of detail is very heterogeneous. The exchange of databases between the Secretariat and the national institutions was considered to be a good way of sharing and validating information. The Group also considered that in addition to the general information on tagging surveys more detailed information on release as well as recovery data was also needed. In order to get such information the Group identified the information of interest and defined new forms, which are included in section 4.6.

The Group agreed that a letter should be sent by the Secretariat to tagging correspondants to provide more complete information on their programs so as to complete the **Table 1** with the summary of ongoing tagging programs.

Finally the Group recognized the importance of keeping the ICCAT webpage as a reference for tagging information. Under this consideration the structure and contents of the webpage should closely reflect the tagging work carried out for tunas and tunas like species in the ICCAT area. The Group considered that the current contents of the webpage should be analyzed in order to define possible improvements that might be implemented in the future.

4. Proposals for harmonization

4.1 Posters

It was recognized that for the last ten years and due to the increasing number of ongoing tagging programs, posters are very heterogeneous. To achieve better harmonization, the Group agreed to identify a set of common elements that should be included when designing a tagging poster. The idea is to have different paragraphs, drawings and figures so that, with a common ICCAT logotype frame, an ICCAT poster will have the same appearance, such that it can be identified as an ICCAT poster, can be edited for different species, tags or institutions involved. The system will allow all the different situations to be included with flexibility. Those standard paragraphs and poster components are attached as **Appendix 4**.

The Group recommended that the posters asking people to return these tags with recapture information be developed in accordance with the guideline in this section. The Secretariat announced that the Japan Data Improvement Project (JDIP) will contribute to facilitating the development and dissemination of the above-mentioned posters.

The Working Group agreed that the development of a standard poster is of the highest priority and that these posters should be available as soon as possible.

4.2 Dissemination of information

The need was expressed to improve reporting rates. Hence, the Group agreed to facilitate information on how to report fish recapture data not only to ports, fishermen's associations and first sale fish markets but to fish markets as well as canning factories, which currently process tuna and tuna like species from all the oceans, in order to ensure the effectiveness of the existent tagging programs. This dissemination needs to be dynamic and should take into account the new marketing or fish processing procedures. For example the fattening practices in the Mediterranean means that most of the bluefin tuna go through cages, so an increase in tagging information dissemination is needed on tuna farms. At the same time, the systems to report the release data from tagged fish should be efficiently kept to ensure that the full release information is provided to the recapturer as soon as possible.

4.3 Tag coding standardization

The Group developed the proposal below for a Coding Standard for marks to be used on highly migratory species.

The need of standardization was justify because tagging has been used for many years to study highly migratory fish and will continue to be a research tool in the future. Most tagging programs rely on a unique identifier code for each fish. Unfortunately, there is and has been limited coordination within ICCAT, or with other international groups studying tuna elsewhere, in the matter of ensuring that codes used by the different studies conform to a pattern that would reduce the possibility of duplication of codes across studies. This problem is already evident in the duplication of some codes contained in the ICCAT tagging inventory.

Based on this need the Group considered as an objective the development of a coding standard for marks to be used on highly migratory fish and the establishment of a shared inventory of tag codes. This will eliminate duplication for all studies that choose to abide to the standard and register their codes in the inventory. This standard is voluntary but it is hoped that if adopted by the majority of studies, it will virtually eliminate the presence of duplicated codes and facilitate the identification of the origin of tags.

Details of the proposal

Types of marks

This standard should be applied to all new manufactured tags that require a code that needs to be identified visually and is physically displayed on the surface of the tag. This includes conventional tags, archival tags, telemetry tags and satellite tags. Electronic tags will have, in addition, electronic codes but these codes are typically controlled by the manufacturer and are not dealt with in this document.

Coding standard

Given the number of tags and variety of research groups that require unique identifiers it is proposed to have a standard code composed of nine alphanumeric characters. The first three of these should be capital letters, the last six should be numbers:

Examples: BHH128300 JJJ000234

No special characters or spaces will be allowed so all numbers in the numeric section of the code should include leading zeros. The letters O and I should be avoided in the first three characters of the code to avoid confusion with numbers 0 or 1. All codes starting with the letter H will be reserved to link the new inventory to previous tagging studies and will not be available for use for new tags (see below for more details). The character or numeric part of the codes does not intend to be an identifier for species, country or organization. Codes starting with the combination of AR should be reserved for conventional tags that denote the presence of an internal archival tag.

Inventory

It is proposed that an inventory of tag codes be developed for the purposes of holding information on tagging studies and as a tool to coordinate the reservation of unique tag codes by the different researchers interested in using the standard coding system. The inventory will be accessible and maintained in www.tuna-org.org by the organizations supporting this web page. The inventory will only contain information on the code ranges that are available for reserve, the codes that have already been reserved and the organization that holds the detailed information on the tagging study that reserved them. Those interested in accessing more detailed information on the tagging studies must contact the organization that agreed to reserve the codes. Any researcher can access or contribute to the inventory regardless of whether they are or not associated with one of the www.tuna-org.org organizations.

Reservation of codes

Researchers interested in reserving a set of codes will need to check on the web page which codes are available and then contact their www.tuna-org.org organization of choice with a request to reserve the codes. If the organization grants the right to reserve such codes the inventory will reflect such codes have been reserved. Each organization will have to develop their own protocol to decide whether request for codes sets are granted. Codes should be granted in sets of a minimum of 5000 codes. The numeration of the numerical part of the set will always start at a multiple of 5000 (e.g., BGB005000 to BGB009999). Multiple sets can be requested. However, organizations are encouraged to request sufficient information from researchers justifying the number of sets requested, to avoid unnecessary reservation of codes. Researchers should seek reservation of codes prior to ordering tags with the manufacturer. Organizations granting the reserved codes should have streamlined procedures so as to ensure the granting of reserved codes is a quick process that does not unnecessarily burden the researcher or delay the process of ordering marks.

Historical inventory of tag codes

The many studies that have already issued tag codes will be incorporated to the inventory by using codes starting with the letter H. Each organization will need to inform the other organizations their desire to reserve some of the historical codes to describe a specific code series used in the past.

Development of draft inventory

Two possible options can be considered: the first one is that the development be done in collaboration with all organizations in www.tuna-org.org, alternatively ICCAT could develop an initial draft of the inventory and then transfer it to the other organizations for comments/modification. This process should include contacts with tag manufacturers to make them aware of the initiative.

Additional marking standards

The inventory of tag codes may also contain a short set of guidelines for marking standards; some of these standards may be organization specific.

ICCAT should consider the following standards:

- Information to be printed in tag
 - Tag code (should be printed three times)
 - Name of organization offering the reward
 - The word REWARD
 - Email address contact, or www.iccat.int
- Tag color
 - Conventional tags used to identify the presence of an internal archival tag should be green and white or green.
 - Conventional tags used in experiments that use OxyTetraCycline should be of the color red.

4.4 Standardization of tag rewards

The key to the success of tagging programs is to have incentives that encourage fishermen and the public to report the recapture of tagged animals. This, of course, requires information dissemination, both to publicize the goals of the program and its results. Tag rewards are a necessary component of a successful tagging program because they provide incentives to those collecting tags. These rewards, specially the monetary ones, should not however, be the only tool used to ensure high reporting rates and high information quality. Especially important is the establishment of trust between those conducting the tagging and those likely to recapture tagged fish. Additionally, many tag collectors are interested in the information conveyed by the tag (location of recapture, traveling time etc...). This information should be provided back to the collectors in a prompt fashion and should at least include a leaflet with broad information on the overall goals and importance of the tagging program -and its preliminary results if available- and detailed information on the particular fish caught by the fisherman/angler.

Because of the variety of stakeholders that may capture a tagged fish, it is difficult to standardize the amount of reward offered. In general rewards will have to be tailored to each group to be an effective incentive for the individuals in each group. Typically however, monetary rewards have a relatively well known range of values depending on the type of tag, and thus the information, provided by the recapture. As a rough guide, conventional tags presently offer a \$10 or equivalently priced item, a PSAT tag \$500 and an archival tag \$1,000. These amounts are only indicative, however, and examination of tag rewards across the ICCAT area show some substantially different amounts. It would be interesting to request information from all ICCAT-related tagging programs to provide information on rewards to ICCAT so that they can be incorporated in the tagging inventory.

Tagging programs also need to have procedures in place to ensure that rewards are offered long after the active tag release program has been completed. These procedures should include reserves of money and/or other incentives.

Another key to the success of the incentive program is to clearly and transparently communicate to those who may recapture a tagged fish the nature of the reward and the procedures for obtaining it. Posters should therefore be clear about the specific nature of such rewards.

4.5 Tag recovery procedures

Recovery procedures are potentially the most hazardous aspect of any tagging programme even though the results of these programmes depend upon tag return and information on tag recovery. Encouraging recapture reporting and ensuring correct information will ensure useful information. As a means of encouraging tag finders to provide assistance, some kind of reward must be used. Substantial efforts have been made to publicize tagging projects and establish tag recovery procedures in the main locations where recoveries are likely to occur. Tagging posters have been produced in different languages by ICCAT in the past, providing information to tag finders on what information to collect, where to send the tags and information and the rewards that will be paid. The Group encourages this recovery activity in a harmonized way so as to obtain better feedback from the recapturers (see section 4.1).

The Working Group agreed to continue and reinforce the tag recovery activities under the auspices of ICCAT. To achieve this objective, the ICCAT Secretary must receive basic information about on-going tagging activities. This general information about tag release activities (see section 4.6) will be published on the ICCAT web page and will serve as a minimum reference inventory for tag recoveries.

Information required on recoveries was also analyzed during the meeting and a suggested form for tag recoveries (**Appendix 5**) and the corresponding recovery data base was proposed (see section 4.6)

The potential influence of management regulations on recoveries was argued. When minimum size, spatial closures or seasonal closure regulations are established for a fish stock, provisions should be made in these regulations to ensure that tagged fish that are captured can be reported without the person collecting them been persecuted for not abiding by the regulations.

4.6 Tagging information requirements to ICCAT and coordination by the Secretariat

The Group recognized three sets of tagging information that should be submitted to ICCAT:

- 1) *General information about tag release activities (tagging survey)*. This form should be sent to ICCAT when the scientific tagging survey has just finished. This is also applicable for opportunistic tagging by sporting or professional fishermen at the end of the fishing season or every year.

The advantages of this new set of information are to obtain rapidly basic information on the tagging survey, to avoid reluctance of scientists to send too much detailed information to ICCAT and to save time in opportunistic and non scientific surveys in which detailed information needs more time to gather. Detailed data fields are described in **Appendix 6**.

- 2) *Release detailed information (detailed information about tagged individuals)*. This form has been revised and updated taking into account new environmental data, the possibility of tagging the specimen with more than one tag and to tag and release again a recaptured specimen. Detailed data fields are described in **Appendix 6**.

This second form should be submitted to ICCAT regardless of the submission of the first form on *General information about tag release activities*. Sending the second form cannot be substituted by submission of the first form.

- 3) *Recovery detailed information (detailed information about specimens tagged and recaptured)*. This revised form is described in **Appendix 6**.

The ICCAT Secretariat should update the present forms with clear instructions about the options (e.g., type of tag, type of weight ...) and make them available on the ICCAT web page in coordination with Sub-Committee on Statistics.

5. Future plans and recommendations

Given the high interest in and value of tagging programs for our stock evaluations in general and because of the wide-ranging and highly migratory nature of tuna-like species in particular, there is a need to maintain high levels of coordination and collaboration between tuna (and tuna-like species) tagging programs and activities within the Convention area as well as in other neighboring ocean basins. The volume of work needed to develop and maintain this coordination and collaboration indicates a continuing need for discussions on this topic. The Working Group noted that tagging has been an important element of the ICCAT scientific enterprise since its inception and it was recognized there is a need to continue exchanges on the topic. The Working Group recommended developing annual work plans to guide future discussions on issues related to tagging programs.

The Working Group recommended drawing upon the expertise of the scientific committees of the other tuna commissions, which more fully utilize tagging information in stock status evaluations, to more thoroughly analyze the existing tagging data base (e.g., SCRS/2007/039) to assist in developing broad-scale tagging studies to improve our ability to assess and advise the Commission on the status of Atlantic tuna stocks.

It was noted that the upcoming Second International Symposium on Tagging and Tracking Marine Fish with Electronic Devices, to be held in San Sebastian, Spain, October 8 to 11, 2007, provides an excellent opportunity to enhance collaboration on electronic tagging activities and the Working Group encouraged participation in that symposium. Interactions at this Symposium could promote improvements on a wide variety of tagging issues including premature detachment and transmission problems.

The Working Group recalled the GFCM/ICCAT discussions held in Malta in 2002 identifying the difficulties in recovering satellite data from electronic tags in the Mediterranean and some eastern Atlantic regions. Based upon recent studies (e.g., SCRS/2007/037 and similar experiences reported to the Working Group), it is apparent that these difficulties have not yet been overcome. The Working Group recommended that consultations with electronic tag manufacturers be initiated to investigate options for overcoming this limitation.

The Working Group recommended that efforts be continued to coordinate tag numbering and coloring conventions to reduce the possibility of utilizing duplicative tags by different tagging programs. These guidelines should be shared with the scientific committees of the other tuna commissions for their review since it is possible for vessels fishing in other Convention areas to recover tags placed on tunas in the Atlantic or vice versa and thus compromise our ability to utilize these data. Guidelines should be provided to tag manufacturers for their information.

The Working Group recommended that guidelines developed for enhancing the ICCAT network for tag recovery be implemented and the resulting products, including posters, be widely distributed to the tuna and tuna-like fishing community in appropriate languages. Tagging programs should make sure that they promptly provide feedback on the importance of the tag information collected to those providing tag returns. This feedback should include information obtained from the particular tag returned. These materials should accompany additional educational materials proposed by the Sub-Committee on Ecosystems regarding potential voluntary mitigation measures to reduce the fishery impacts on incidentally caught species such as sea turtles and sea birds.

The Working Group recommended that as far as possible, historical tuna tagging program data be recovered and incorporated into the ICCAT tagging data base. Policies need to be developed which will improve the likelihood of receiving release and recapture information from tags distributed by ICCAT, possibly by restricting the supply of tags to certain organizations based on past performance. It was also recommended that efforts be continued to verify and quality assure the existing tagging data base. In this regard, it was also recommended that species groups make efforts to fully incorporate tag/recapture data held in the ICCAT data base into stock assessments if they have not yet done so.

6. Other matters

Several additional matters were discussed by the Working Group. It was suggested that tagging coordinators be solicited to provide web site links, to be included on the ICCAT web site's tagging page, which might provide additional information on various topics related to tagging, including the possibility of improvement of geolocation errors from electronic tags.

The issue of data ownership and the appropriate level of acknowledgement for data supplied/verified within the ICCAT tagging database were discussed. This issue is quite important and would require a considerable discussion to fully address. The Working Group identified the importance of taking steps to ensure that adequate recognition of the efforts of scientists and contributors to the tagging data base is made. This issue should be more fully discussed by the Sub-Committee on Statistics before policies be recommended.

The issue of the impact of conservation measures (size limits/closed seasons, etc) on tagging program results and design should be considered at some future discussion.

7. Report adoption and closure

The report was adopted by correspondence.

The Chairman thanked participants for their hard work.

The meeting was adjourned.

Table 1. Summary of ongoing tagging programs.

Country	Species	Technology			Tagging programs / Years	Location	Contact	
		Conventional	Pop up satellite	Archival				
Cyprus	BFT		6		ETTP 2006	Eastern Mediterranean	Department of Fisheries and marine Research - vpapadopoulos@dfmr.moa.gov.cy	
Greece	BFT	2			ETTP 2005	Aegean Sea	Hellenic Center for Marine Research (HCMR) - gtserpes@her.hcmr.gr	
	SWO	183			ETTP 2005	Aegean Sea		
	SWO	158			ETTP 2006	Aegean Sea		
Italy - Spain - Greece	BFT		84		TUNASAT A - 1998-2001	Eastern and Western Mediterranean	?	
	BFT		64		TUNASAT B - 2003-2004	Eastern and Western Mediterranean		
Italy	BFT		9		ETTP 2005	Malta	SIBM - Bari University- g.demetrio@veterinaria.uniba.it	
	BFT		5			Sicily		
	BFT		10			Cyprus		
	BFT		15		ETTP 2006	Eastern Mediterranean		
	BFT		4			Eastern Atlantic		
	BFT		2			Western Mediterranean		
	BFT		8			Sicily		
	BFT		4			Cyprus		
	SWO	25			ETTP 2005	Ionian Sea		Co-ordinator SIBM - Genoa University - largepel@unige.it
	SWO	5				Tyrrhenian Sea		

	SWO	2				Sardinia	
	SWO	161			ETTP 2006	Ionian Sea	
	SWO	35				Tyrrhenian Sea	
	SWO	2				Sardinia	
	SWO	32				Ligurian Sea	
	SWO	16				Adriatic Sea	
	SWO		2		ICRAM	Messina Strait	ICRAM Istituto centrale per la ricerca scientifica e tecnologica applicata al mare - s.canese@icram.org / Genoa University - largepel@unige.it
	SWO		2			Ligurian Sea	
	SWO		10		Ministry of the Agricultural Policies - 2004-2006	Messina Strait	
	SWO		5			Ligurian Sea	
Spain IEO	BFT	918			IEO 2004	Western Mediterranean	IEO Spanish Institute of Oceanography
	BFT	1696			ETTP 2005	Eastern Atlantic	
	BFT	42			ETTP 2006	Eastern Atlantic	
	BFT	25			ETTP 2006	Alboran Sea	
	BFT	283			ETTP 2006	Balearic Islands	
	BFT		20		ETTP 2006	Western Mediterranean	
	SWO	260			ETTP	Western Mediterranean	
	ALB	180			IEO	Eastern Atlantic	
	YFT	59			BET Year Programme	Eastern Atlantic	
	BET	2576		17	BET Year Programme	Eastern Atlantic	
SKJ	49			BET Year Programme	Eastern Atlantic		
Spain AZTI	BFT	140 ? / 316 ?			ETTP 2005	Bay of Biscay	AZTI - harri@pas.azti.es

	BFT	24			ETTP 2006	Bay of Biscay	
Portugal/Spain AZTI	BFT			5	ETTP - 2006	Eastern Atlantic	IPIMAR/CRIPSul - mnsantos@cripsul.ipimar.pt / AZTI - harri@pas.azti.es
Portugal	BFT		8		ETTP 2006	Eastern Atlantic	IPIMAR/CRIPSul - mnsantos@cripsul.ipimar.pt
	SWO	4			ETTP 2005	Eastern Atlantic	
	SWO	2			ETTP 2006	Eastern Atlantic	
Ghana	BET	396			BETYP 2000 (dedicated)	Eastern Atlantic (2°S-4°30N; 5°E-4°W).	MFRG (P. Bannerman)
	SKJ	566			BETYP 2000 (dedicated)	Eastern Atlantic (2°S-4°30N; 5°E-4°W).	MFRG (P. Bannerman)
	YFT	628			BETYP 2000 (dedicated)	Eastern Atlantic (2°S-4°30N; 5°E-4°W).	MFRG (P. Bannerman)
	BET	604			BETYP 2000 (opportunistic)	Eastern Atlantic (2°S-4°30N; 5°E-4°W).	MFRG (P. Bannerman)
	SKJ	1490			BETYP 2000 (opportunistic)	Eastern Atlantic (2°S-4°30N; 5°E-4°W).	MFRG (P. Bannerman)
	YFT	780			BETYP 2000 (opportunistic)	Eastern Atlantic (2°S-4°30N; 5°E-4°W).	MFRG (P. Bannerman)
France / Sao Tomé	BET	824			BETYP 2001- 2002 (dedicated)	Eastern Atlantic (Sao Tome- Cape Lopez)).	IRD
	SKJ	8191			BETYP 2001- 2002 (dedicated)	Eastern Atlantic (Sao Tome- Cape Lopez)).	IRD
	YFT	3642			BETYP 2001- 2002 (dedicated)	Eastern Atlantic (Sao Tome- Cape Lopez)).	IRD

France / Senegal	BET	804			MAC 1994-2000	Eastern Atlantic (Senegal).	IRD (JP Hallier)
	SKJ	?			MAC 1994-2000	Eastern Atlantic (Senegal).	IRD (JP Hallier)
	YFT	?			MAC 1994-2000	Eastern Atlantic (Senegal).	IRD (JP Hallier)
	BET	2398			BETYP 1999-2003	Eastern Atlantic (Senegal).	IRD (JP Hallier)
	SKJ	?			BETYP 1999-2003	Eastern Atlantic (Senegal).	IRD (JP Hallier)
	YFT	?			BETYP 1999-2003	Eastern Atlantic (Senegal).	IRD (JP Hallier)
Japan	BET			?	BETYP	E and W Atlantic	FSR (Kotura Y ?)

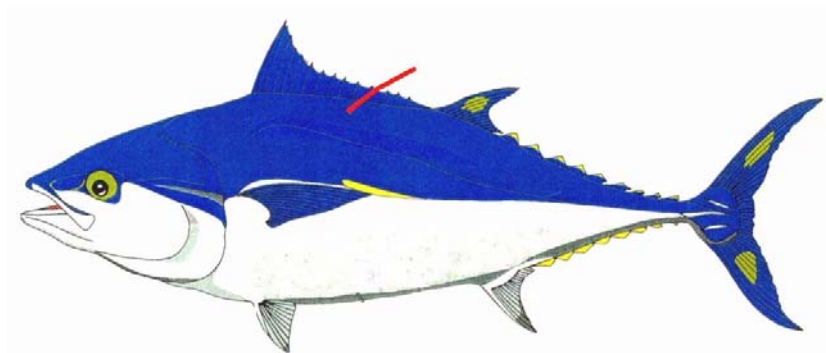


Figure 1. The Cooperative Tagging Center uses streamer tags in Atlantic tuna.

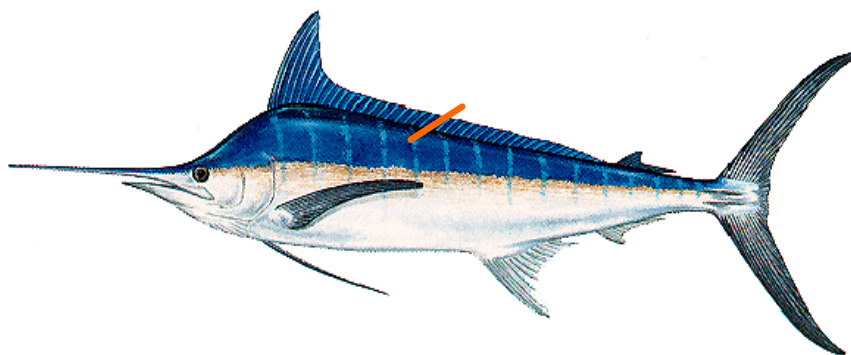


Figure 2. The Cooperative Tagging Center uses streamer tags on Atlantic billfish and swordfish.

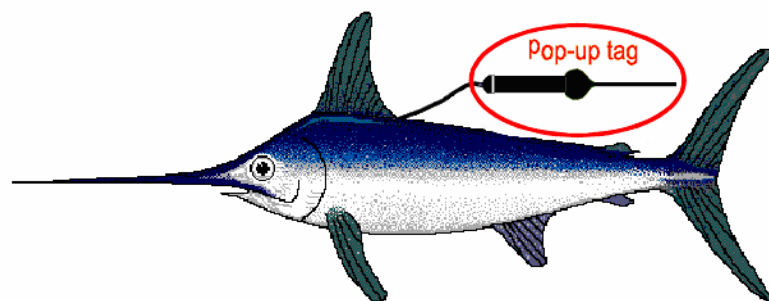
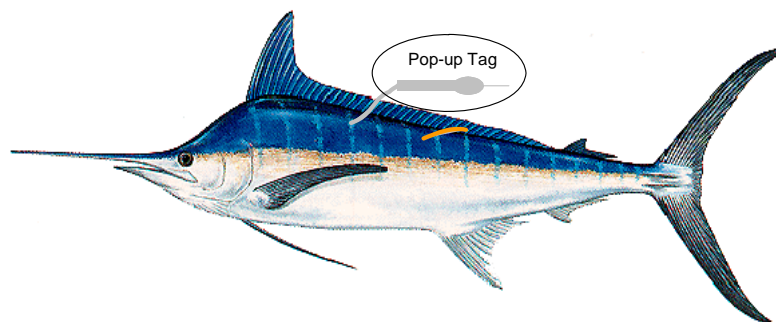


Figure 3. The Adopt a Billfish program uses PSAT technology on istiophorid billfish and tunas in the Atlantic and eastern Pacific Oceans.

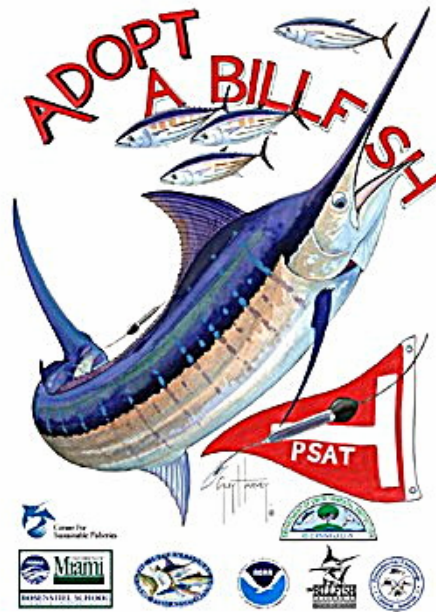


Figure 4. The Adopt A Billfish is operated by the Southeast and Southwest Fisheries Science Centers of NOAA Fisheries.

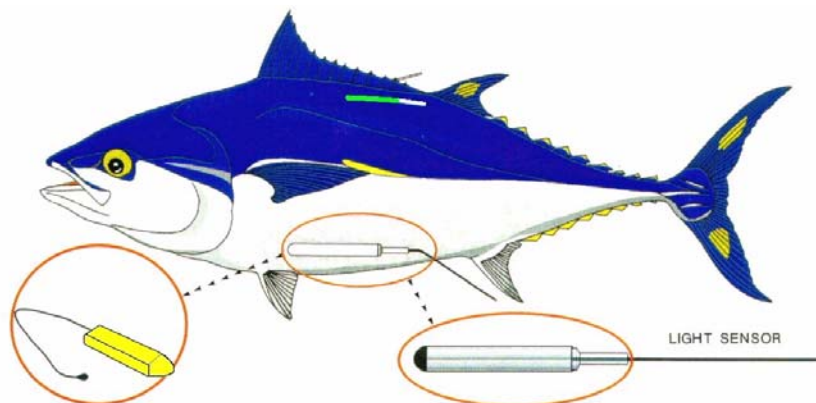


Figure 5. The Tag A Giant program uses implantable archival tags, in combination with green and white streamer tags, to monitor movements Atlantic bluefin tuna deployed primarily in the western North Atlantic Ocean. However, more recently, these tags have been deployed off Ireland as well.

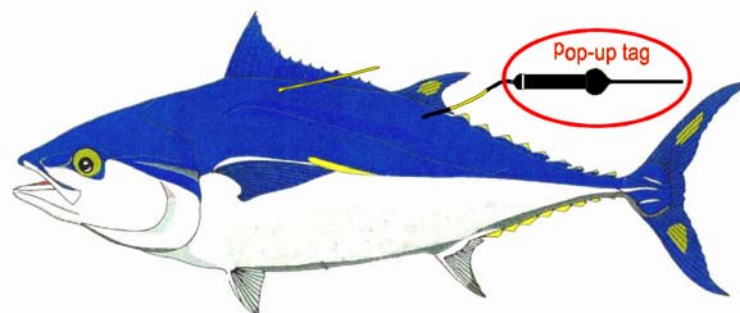


Figure 6. Tag A Giant and the University of New Hampshire use PSAT technology to monitor Atlantic bluefin tuna in the northwestern Atlantic Ocean. More recently, PSATs have been deployed on bluefin off Ireland as well.

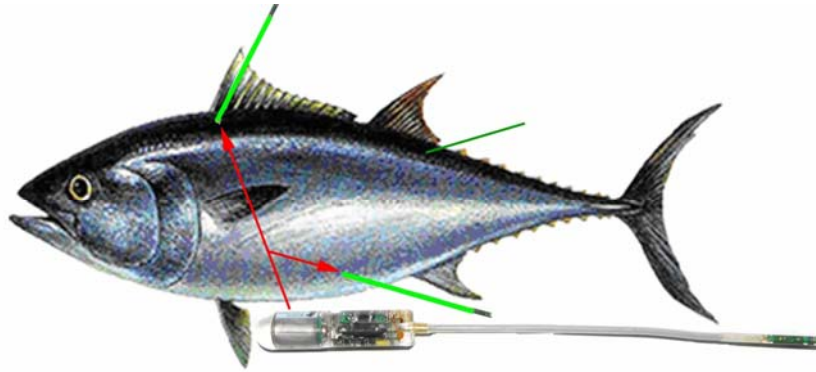


Figure 7. Tag A Tiny program, conducted through the University of New Hampshire, uses implantable archival tags, in conjunction with green streamer tags, to monitor school size bluefin tuna deployed in the western North Atlantic Ocean.

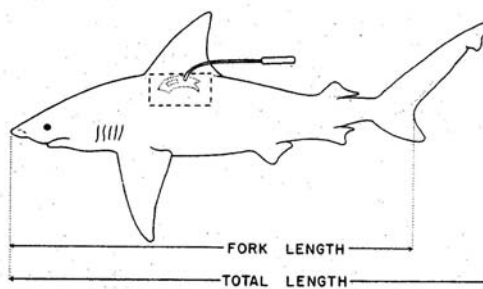
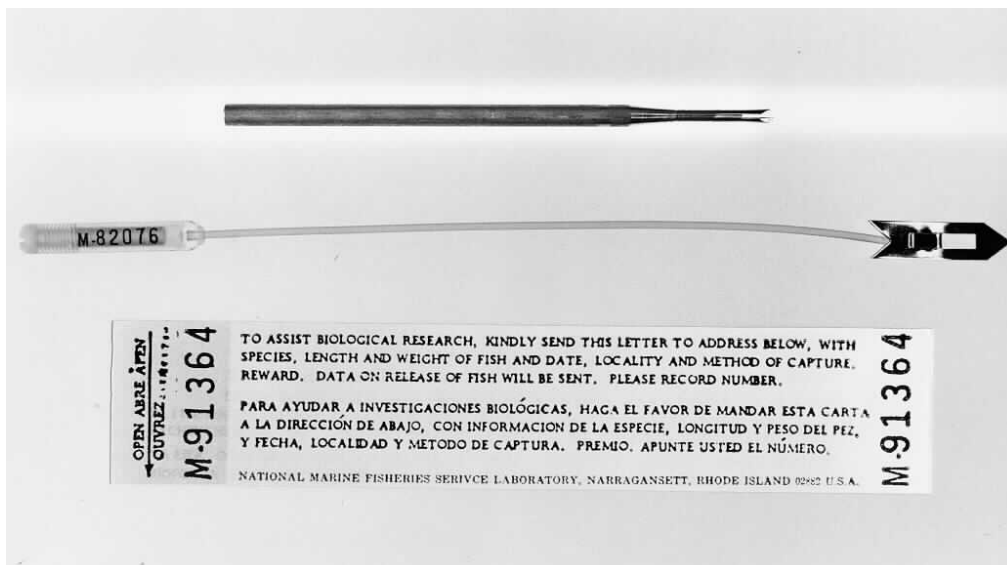


Figure 8. The Northeast Fisheries Science Center uses dart tags (with a capsule legend) with stainless steel anchors to target mostly pelagic and coastal sharks (upper panel). However, numerous tuna and billfish are also tagged. The legend is inside the capsule written on water proof paper. The tags are placed in the dorsal musculature near the dorsal fish (lower panel).

Appendix 1

Agenda

1. Opening, adoption of the Agenda and meeting arrangements
2. Review of ongoing tagging programs in Contracting Parties
 - Target species
 - Geographic location and season
 - Tag types and methodology
 - Publicity and rewards amounts
 - Reporting procedures
 - Other information
3. Review of Report from the Secretariat on Tagging Coordination Activities
4. Proposals for harmonization
 - Posters
 - Dissemination of information
 - Tag coding standardization
 - Standardization of tag rewards
 - Tag recovery procedures
 - Tagging information requirements to ICCAT and coordination by the Secretariat
5. Future plans and recommendations
6. Other matters
7. Adoption of the report and closure

Appendix 2

List of Participants

CONTRACTING PARTIES

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Kebe, Papa

Pallarés, Pilar

Palma, Carlos

Appendix 3

List of Documents Presented

- SCRS/2007/037 Swordfish tagging with pop up satellite tags in the Mediterranean Sea. CANESE, S., F. Garibaldi, L. Orsi Relini and S.Greco.
- SCRS/2007/038 Bluefin tuna (*Thunnus thynnus*) conventional tagging carried out by the Spanish Institute of Oceanography (IEO) in 2005 and 2006. Results and analysis including previous tagging activities. RODRÍGUEZ-MARÍN, E., C. Rodríguez-Cabello, E. Alot, J.L. Cort; J.M. de la Serna, J.M. Ortiz de Urbina and M. Quintans.
- SCRS/2007/039 Effects of release factors affecting the recovery rates of tagged tunas: Application to bigeye tuna. GAERTNER, D. P. Kebe and C. Palma.
- SCRS/2007/046 Review of azti-tecnalia's tuna tagging activities. ARREGUI, I., H. Arrizabalaga and R. Cosgrove.
- SCRS/2007/047 Secretariat Review on Tagging activities
- SCRS/2007/048 Primera recaptura en el Atlántico de un pez espada (*Xiphias gladius*) marcado en el Mediterráneo. DE LA SERNA, J.M., J.M. Ortiz de Urbina, S. García Barcelona and D. Espino.
- SCRS/2007/049 Possibilities and problems in tag-recovery data-collection from tuna farms in the Adriatic Sea (CROATIA). TICINA, V.

Inventory of Pieces for the Poster

Text 1 Reward text

Text 1.1 A general poster for a group of large pelagic tagged species

REWARD for the recapture of a fish tagged.

Text 1.2 Each tagging entity will determine the amount or nature of the reward. Open window with text to be specified by each tagging program.

[*Optional reward amount*] REWARD
OFFERED FOR [*Tag Type*] FROM [*Species or Species Group*]

Text 2 Usefulness of tagging or Pop-up or internal archival tag descriptions and what they measure.

Text 2.1 Usefulness of tagging. Why are tuna tagged?

Tags or marks implanted on fish are used to learn about fish behaviour and migrations and to estimate important population parameters such as abundance, mortality and growth.

Text 2.2 Pop-up tags

Pop-up satellite archival tags (PSATs) are electronic data-logging devices that provide location estimates by measuring light intensity through a light sensor. They also provide data on swimming depth, and ambient water temperature. This information is collected on a daily basis and stored in the tags non-volatile memory. A summary of these data is then transmitted to the Argos satellite system after the tag pops off the fish at a predetermined interval. Pop-up tags are valuable even when found on a beach years later because their memory still maintains the data accurately.

Text 2.3 Internal or implantable archival tags

Archival tags are electronic data-logging devices that provide location estimates by measuring light intensity through a light sensor. They also provide data on swimming depth, water temperature, and body temperature of the fish. This information is collected on a daily basis and stored in the tag for several years until the fish is recovered.

Text 3 Basic information required from the recaptured specimen and tag. What to report.

If you find a fish tagged don't pull out the tag until the specimen is measured or weighted.

If you can save the fish for examination, do so.

The following information needs to be reported (as detailed as possible):

- Tag code (letters and numbers), colour and address.
- Species, sex if possible and size or weight (specify type and units of measurement, see attached figures)
- Date and place where you caught it and the fishing gear used

Text 3.1 Other remarks

Please indicate any additional information as water temperature, condition of fish or wound...

Text 4 Procedure for removing electronic tags

Text 4.1 Procedure for removing pop-up satellite archival tags.

Cut the tether (leader) at the skin line. Wash the tag in warm water and save the tag in a safe place.

Text 4.2 Procedure to remove internal archival tags (i.e. implantables).

All Atlantic tuna that have a green or green/white streamer tag in the dorsal musculature also have an internal archival tag in their stomach cavity. To remove the archival tag, make a carefully placed 15 cm (6") incision in the belly cavity, in front of the area where the sensor enters into the fish. Remove the silver or yellow archival tag (with light sensor attached) by hand. Wash the tag with water and keep it safe at room temperature. Streamer tags can be cut off the fish and the portion of the tag with writing or information should be kept. As archival tags tend to attach to internal viscera over time, many of these tags are discarded when the fish is dressed and viscera are thrown away. If dressing the fish first is a high priority, place the viscera in a bucket along with the streamer tag. When time allows, closely examine the viscera for the tag. In rare instances the tag can also be found attached to the inside lining of the stomach cavity. In addition to saving both the archival and streamer tags, record the information given above.

Text 5 Text about where to report. ICCAT and institution or agency responsible of the tagging programme.

To obtain your reward please contact or send this information together with the tag and your address to:

ICCAT, E-mail: INFO@ICCAT.INT, Phone +34 91 4165600, Fax: +34 91 4152612, Address: ICCAT, C/ Corazon de Maria 8, 28002, Madrid, Spain

Or

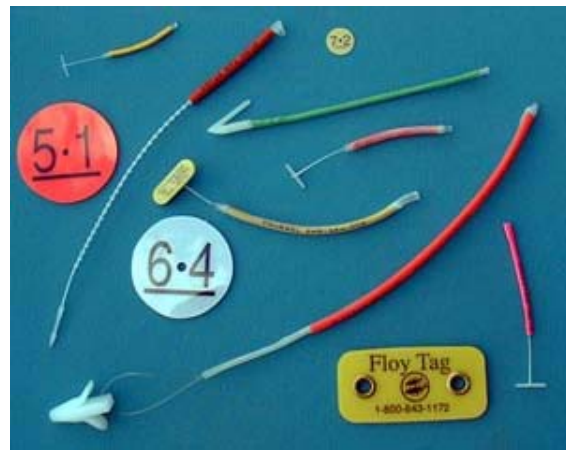
[Name of institution/agency], E-mail: [email of agency], Phone: [Tel of agency], Fax: [fax of agency], Address: [address of agency]

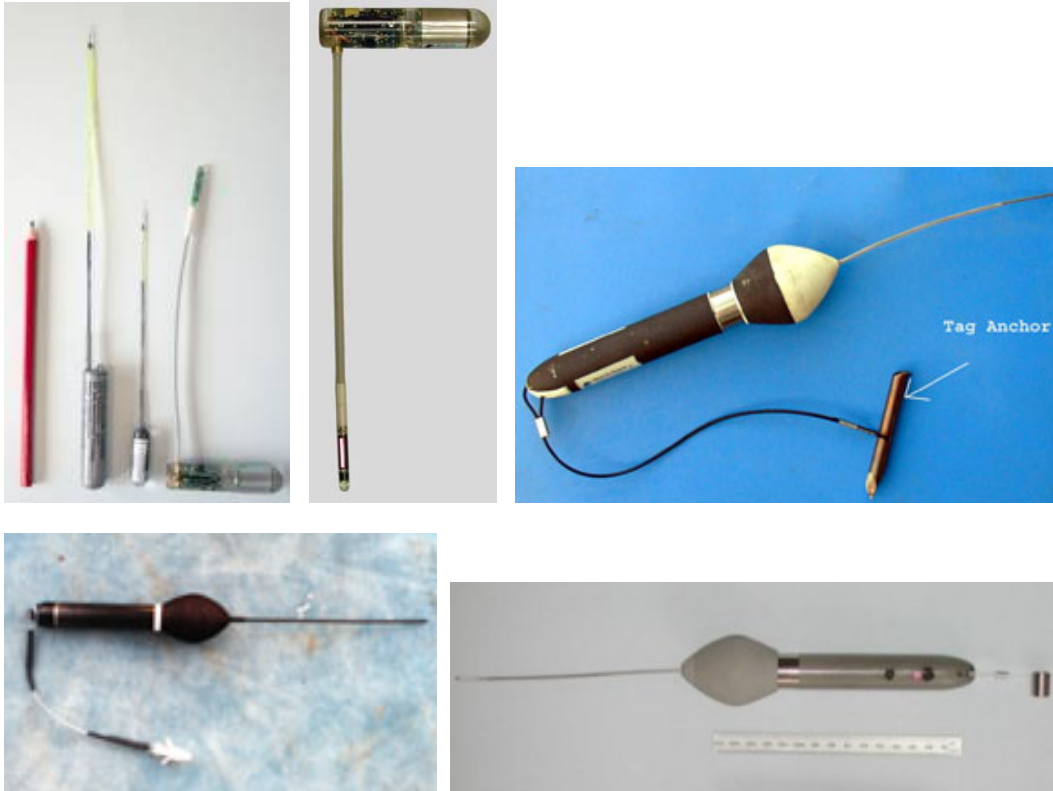
Or

Closest Local Fishing Agency

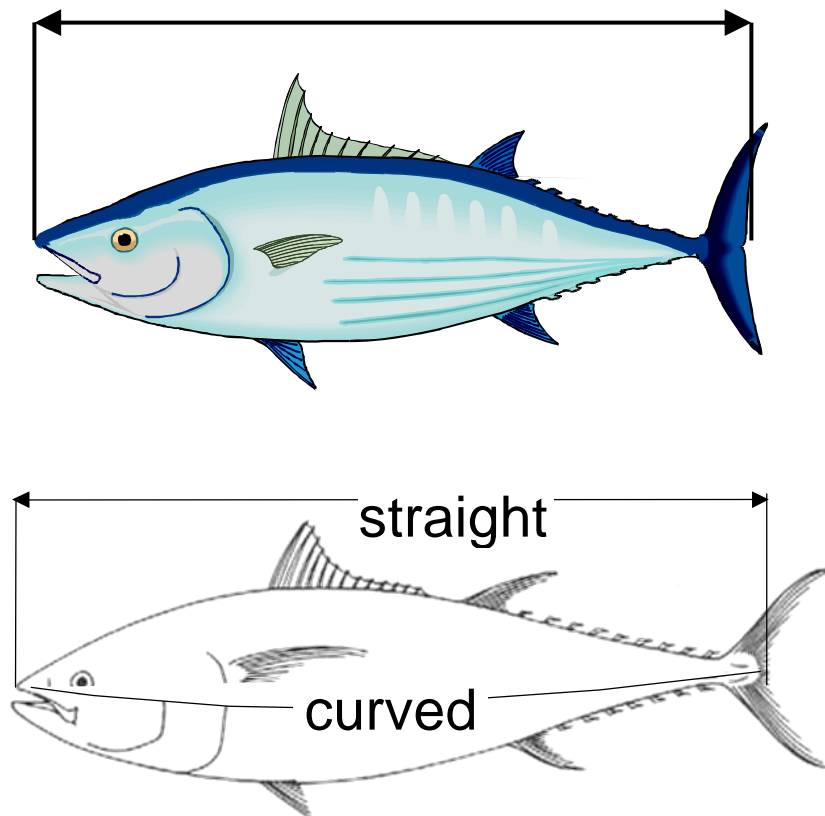
Some standard drawings and pictures about types of tags and types of measurements and tagging operations are needed for the poster, see the following examples:

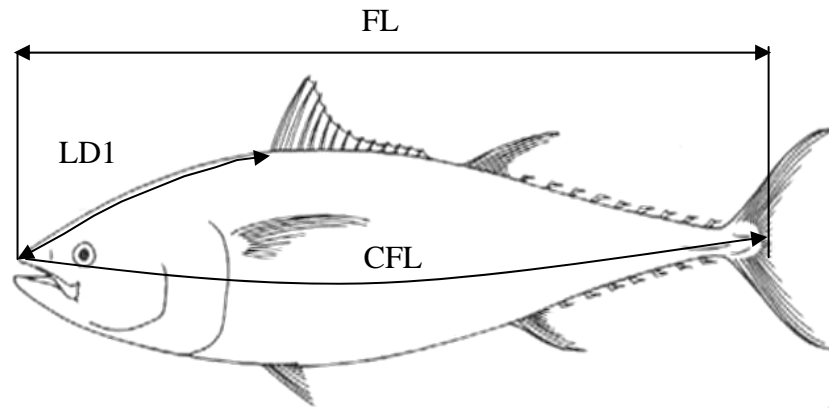
1 Some useful examples of conventional and electronic tag pictures. These pictures should come with text 2.



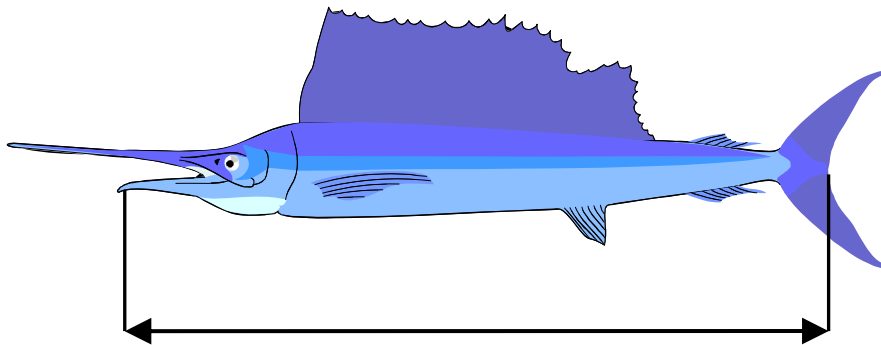


2 Some drawings showing how to measure. Accompanying text 3
Drawings for tuna and tuna like—mostly straight fork length, but also curved fork length and pre-dorsal length.

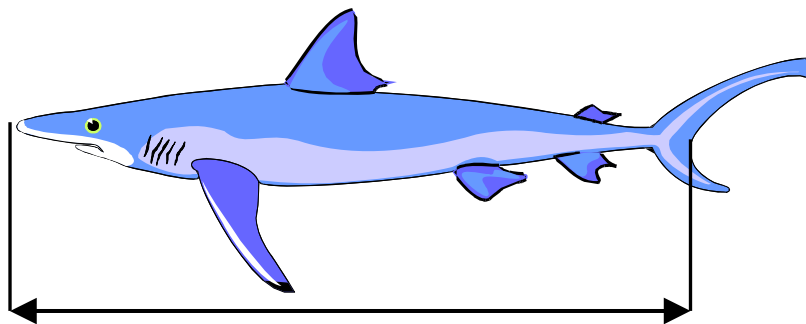


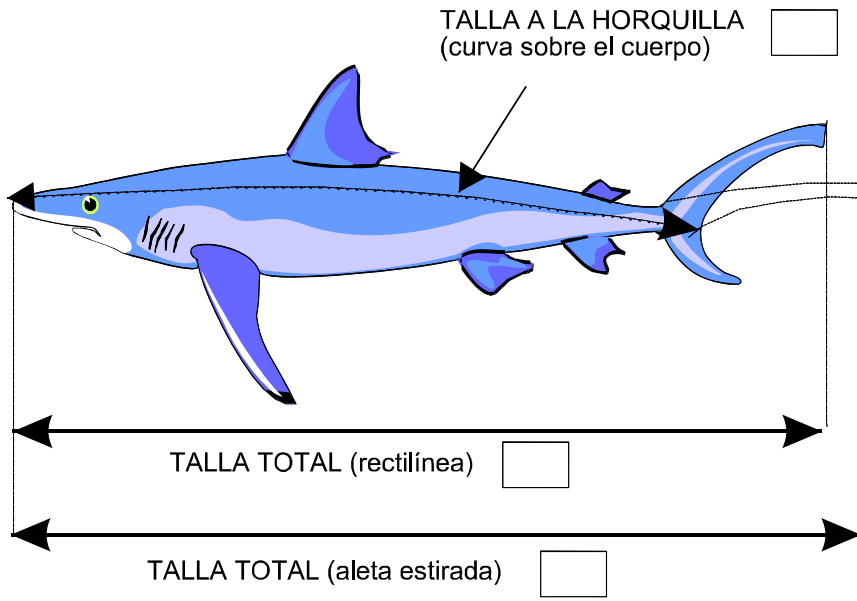


Drawing for swordfish and billfishes—lower jaw fork length or caudal keel length.



Drawings for sharks— straight fork length, curved fork length, total length, and total length with stretched tail.





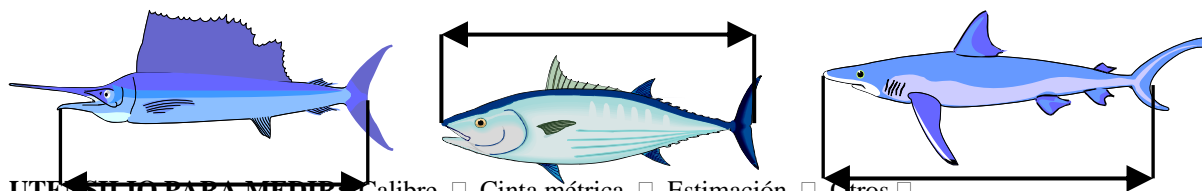
Suggested general text and pictures distribution for the poster

ICCAT logo	Institution/s logo		
Text 1			
Drawing or picture of the highly migratory species tagging programme	Drawing or picture of species tagging programme		
Text 2			
Text 3			
Drawings showing how to measure.			
Text 4			
Text 5			
Institution responsible of the tagging program address			
ICCAT address			
Drawing or picture	Drawing or picture	Drawing or picture	Drawing or picture

Suggested Form for Recoveries
(from the tagging project of A Coruña, Spanish Institute of Oceanography)

Datos de la marca / Tag data	
LETRAS/NÚMERO DE LA MARCA TAG CODE (LETTERS AND NUMBERS)	
TIPO DE LA MARCA / TAG TYPE	
DIRECCIÓN DE LA MARCA ADDRESS OF THE TAG	

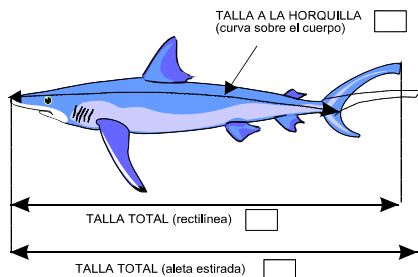
Datos del pez / Fish data	
ESPECIE (nombre común y científico, si es posible) SPECIES (common and scientific name if possible)	
SEXO / SEX	
TALLA (si es posible, según figuras) SIZE (follow the figures if possible)	



UTENSILIO PARA MEDIR: Calibre Cinta métrica Estimación Otros _____
HOW LENGTH WAS MEASURED: Calliper Metric tape Estimated Other

Nota: Si ha realizado otro tipo de medida indique cual (marque con X), dibuje o especifique: _____

Note: If other type of measurement was taken indicate (mark with a cross) draw or specify



PESO DEL PEZ (lo más exacto posible): _____

FISH WEIGHT (as exact as possible)

TIPO DE PESO: Total Eviscerado Canal Otros _____

TYPE OF WEIGHT: Total Guttet Dressed Other

UTENSILIO USADO PARA PESAR: Báscula Dinamómetro Estimación Otros _____

HOW WEIGHT WAS MEASURED: Scales Dynamometer Estimated Other

Precisión estimada de la pesada: Estimated accuracy of the weighting: _____

Datos del lance y la marea / Catch and trip data	
FECHA DE CAPTURA / DATE OF CATCH	
FECHA DESEMBARCO / DATE OF LANDING	
POSICIÓN DE LA CAPTURA (latitud/longitud) LOCATION OF CATCH (latitude/longitude)	
POSICIÓN DE LA MAREA (latitud/longitud) LOCATION OF THE TRIP (latitude/longitude)	
TEMPERATURA EN ÁREA DE PESCA TEMPERATURE IN THE CATCH AREA	
OTRAS OBSERVACIONES/OTHER REMARKS	

Datos del barco y del recapturador / Vessel and recapturer data	
NOMBRE Y BASE DEL BARCO VESSEL NAME AND BASE PORT	
ARTE DE PESCA EMPLEADO / GEAR	
NOMBRE RECAPTURADOR / RECAPTURER NAME	
DIRECCIÓN / ADDRESS Calle, número, piso	
Localidad	
Provincia /País	
Teléfono/e mail	

Por favor, ; Adjunte la marca !

PLEASE SEND THE TAG BACK

**CALIDAD DE LA INFORMACIÓN SUMINISTRADA:
QUALITY OF THE INFORMATION PROVIDED:**

- Los datos fueron obtenidos directamente por:
- Data were obtained directly by:
 Informador-muestreador Patrón Armador Marinero Otros _____
 Observer Skipper Owner Sailor Other
- ¿Los datos fueron comprobados por el informador-muestreador?
- Data were checked by the observer?
 Si / yes No / no
- A juicio del informador-muestreador, la calidad de la información es :
- In observer's opinion the quality of the information is:
 Excelente Buena Regular Mala
 Excellent Good middling Bad
- Nombre, dirección completa y teléfono de la persona/s a la que se le debe enviar recompensa (indicar ID en el caso de que sea el recapturador). Name, address and telephone of the person to whom the reward has to be sent (when different person from recapturer)

- Otros comentarios de interés: Other useful comments:

General information about release (Tagging Survey)

Country (nationality of the scientist responsible of the survey)
 Survey name (acronym)
 Person in charge or chief of the survey (Name and surname)
 Name of scientific Institution
 Type of tagging (scientific / opportunistic scientific / opportunistic non scientific)
 General purpose of the program (migrations, growth, stock identification)
 Targeted species
 Geographic area (as detailed as possible)
 Date of the survey (initial and final)
 Method employed (professional boat, recreational, farmed in cages; indicate base port).
 Gear or gears employed (bait boat, long liner ...)
 Number and species of tagged fish (15 Albacore, 3 Bigeye)
 Type of tag (conventional, sonic, pop-up, internal archival, *guidelines needed*)
 Tag code (letters and numbers) Series ____ From ____ to ____
 Tag colour
 Mean size or range of the specimens tagged.

Release detailed information (Detailed information about tagged individuals)

Country (nationality of the scientist responsible of the survey) (*coding guidelines needed*)
 Survey name (acronym, in the previous form the field was named cruise)
 Gear (*coding guidelines needed*)
 Tag code (letters and numbers)
 Tag type (*coding guidelines needed*)
 Species
 Sex
 Date: Separated fields for Day, Month, Year
 Location of release: Separated fields for Quadrant, Latitude (degrees and minutes) and longitude (degrees and minutes)
 Length type (SFL, Curved, LJ-FL...) (*Coding guidelines needed*)
 Length measurement (how length was measured: metric tape, calliper, estimated) (*Coding guidelines needed*)
 Length units (*coding guidelines needed*)
 Length value
 Weight type (round, dressed ...) (*coding guidelines needed*)
 Weight measurement (how weight was measured: scales, dynamometer, estimated) (*Coding guidelines needed*)
 Weight units (*coding guidelines needed*)
 Weight value
 (Age was in the previous form and now has been deleted) (It is mainly a calculated field)
 SST (Sea Surface temperature)
State of the sea (Douglas Sea scale) (*Coding guidelines needed*)
Speed of the wind (Beaufort scale) (*Coding guidelines needed*)
Sky conditions (sunny, cloudy, clear ...) (*Coding guidelines needed*)
Depth of the catch (mainly useful for longline gear)
Hour of the catch (GMT)
 Second tag number released (letters and numbers)
 Third tag number released (letters and numbers)
 Fourth tag number released (letters and numbers)
 Tag number recaptured (letters and numbers of the tag found on a tagged specimen and released again with a new tag)

New “environmental data” fields are underlined

Recovery detailed information (Detailed information about specimens tagged and recaptured)

Header

Name of scientist in charge of collecting and reporting

Scientific institution involved in the recapture

Date of reporting

Detailed information

Tag code (letters and numbers)

Tag type (conventional streamer, pop up, internal archival, sonic) (*Coding guidelines needed*)

Address of the tag

Species

Sex

Date: Separated fields for Day, Month, Year

Location of recapture: Separated fields for Quadrant, Latitude (degrees and minutes) and longitude (degrees and minutes)

Place or area where tag was recovered (Geographic area, beach ...)

Length type (SFL, Curved, LJ-FL...) (*Coding guidelines needed*)

Length measurement (how length was measured: metric tape, calliper, estimated) (*Coding guidelines needed*)

Length units (*coding guidelines needed*)

Length value

Weight type (round, dressed ...) (*coding guidelines needed*)

Weight measurement (how weight was measured: scales, dynamometer, estimated) (*Coding guidelines needed*)

Weight units (*coding guidelines needed*)

Weight value

Vessel data. Separated fields for: country, name, base port

Gear (*Coding guidelines needed*)

Fishing operation (FAD, free school, other)

Person who recaptured data. Separated fields for: name, address and phone

Quality of data of recovery

Data obtained by (Skipper, owner, crew, scientific, other) (*Coding guidelines needed*)

Data validated by (qualified scientist or observer) (*Coding guidelines needed*)

Surface temperature (SST)

Released again (yes or no)

Condition of fish (*Coding guidelines needed*)

Condition of wound (*Coding guidelines needed*)

Additional remarks