

EVIDENCE BASED APPROACH FOR SUSTAINABLE MANAGEMENT OF TUNA RESOURCES IN THE ATLANTIC – ATLANTIC OCEAN TROPICAL TUNA TAGGING PROGRAMME (AOTTP)

INTERIM NARRATIVE REPORT 29 JUNE 2015 TO 28 JUNE 2016

CONTENTS

List of acronyms used in the report	2
1 Description	3
1.1 Name of Coordinator of the ICCAT contract	3
1.2 Name and title of the Contact person:.....	3
1.3 Name of Beneficiary(ies) and affiliated entity(ies) in the Activity:.....	3
1.4 Title of the Action:.....	3
1.5 Contract number:	3
1.6 Start date and end date of the reporting period:.....	3
1.7 Target country(ies) or region(s):.....	3
1.8 Final beneficiaries &/or target groups (if different) (including numbers of women and men):	3
1.9 Country(ies) in which the activities take place (if different from 1.7):.....	4
2 Assessment of implementation of Action activities	4
2.1 Executive summary of the Action	4
2.2 Results and Activities.....	4
2.2.1 Expected Result 1 – Tag-recapture and associated data from the three main tropical tuna and on neritic tuna species in the Atlantic are stored in a database at the ICCAT Secretariat.....	5
2.2.2 Activity 1.1.Tagging of tropical tunas	6
2.2.3 Activity 1.2. Awareness campaigns and recovery schemes.....	8
2.2.4 Activity 1.3. Recovery of tags and transmission to ICCAT Secretariat.....	9
2.2.5 Revised log-frame.....	10
2.2.6 Updated Action Plan.....	11
2.3 Expected Result 2 – Key parameters supporting stock assessments are estimated on the basis of data collected through the programme and integrated in stock assessments of yellowfin, bigeye, and skipjack.....	12
2.3.1 Activity 2.1. Reading of hard parts	13
2.3.2 Activity 2.2. Tagging data analyses.....	14
2.3.3 Activity 2.3. Information of stakeholders	14
2.4 Expected Result 3 – Scientists from developing country Contracting Parties of ICCAT are trained in tagging, data collection, and tagging data/stock assessment analysis.	14

2.4.1 Activity 3.1. Training in tagging techniques and data collection	15
2.4.2 Activity 3.2. Data collection and sampling at recovery	15
2.4.3 Activity 3.3. Training in data analysis	16
3 Beneficiaries/affiliated entities and other Cooperation	16
3.1 How would you assess the relationship between your organisation and State authorities in the Action countries. How has this relationship affected the Action?	16
3.2 Where applicable, describe your relationship with any other organisations involved in implementing the Tagging Activities:	16
3.3 Final Beneficiaries and Target groups	17
3.4 Where applicable, outline any links and synergies you have developed with other Projects, especially those funded by the European Union.	17
3.5 If your organisation has received previous EU grants in view of strengthening the same target group, in how far has this Action been able to build upon/complement the previous one(s)? (List all previous EU grants).	17
4 Visibility	17
4.1 How was the visibility of the EU contribution ensured during the Action?	17

1 LIST OF ACRONYMS USED IN THE REPORT

AOTTP	Atlantic Ocean Tropical tuna Tagging Programme
AZTI	Centro Tecnológico experto en innovación marina y alimentaria
BET	Bigeye tuna (<i>Thunnus obesus</i>)
CRO – CI	Centre Recherches Oceanologiques (Cote d'Ivoire)
CRODT	Centre Recherches Oceanologiques de Dakar (Senegal)
DG-DEVCO	The Commission's Directorate-General for International Cooperation and Development
DG-MARE	Directorate-General for Maritime Affairs and Fisheries
EEZ	Exclusive Economic Zone
FSSD	Fisheries Scientific Survey Division (Ghana)
ICCAT	International Commission for the Conservation of Atlantic Tunas
IEO	Instituto Espanol de Oceanografia
IMAR	Instituto do Mar
MFRD	Marine Fisheries Research Division (Ghana)
MFV	Motor Fishing Vessel
MSE	Management Strategy Evaluation
RV	Research Vessel
SC	Steering Committee

SCRS	Standing Committee on Research and Statistics
SKJ	Skipjack tuna (<i>Katsuwonus pelamis</i>)
tRFMO	Tuna Regional Fisheries Management Organizations
TRO	Tag Recovery Officer
UPV	Universidad Politecnica de Valencia (Spain)
YFT	Yellowfin tuna (<i>Thunnus albacares</i>)

2 DESCRIPTION

2.1 NAME OF COORDINATOR OF THE ICCAT CONTRACT

Douglas Beare

2.2 NAME AND TITLE OF THE CONTACT PERSON:

Driss Meski (ICCAT Executive Secretary)

2.3 NAME OF BENEFICIARY(IES) AND AFFILIATED ENTITY(IES) IN THE ACTIVITY:

International Commission for the Conservation of Atlantic Tunas

2.4 TITLE OF THE ACTION:

Evidence based approach for sustainable management of tuna resources in the Atlantic – Atlantic Ocean Tropical tuna Tagging Programme (AOTTP).

2.5 CONTRACT NUMBER:

DCI-FOOD/2015/361-161

2.6 START DATE AND END DATE OF THE REPORTING PERIOD:

29 June 2015 to 28 June 2016

2.7 TARGET COUNTRY(IES) OR REGION(S):

Atlantic Ocean Coastal states

2.8 FINAL BENEFICIARIES &/OR TARGET GROUPS¹ (IF DIFFERENT) (INCLUDING NUMBERS OF WOMEN AND MEN):

The final beneficiaries of the project are fishing communities and operators depending on the exploitation of tuna resources plus consumers of tuna fish.

2.9 COUNTRY(IES) IN WHICH THE ACTIVITIES TAKE PLACE (IF DIFFERENT FROM 1.7):

They are not different.

3 ASSESSMENT OF IMPLEMENTATION OF ACTION ACTIVITIES

3.1 EXECUTIVE SUMMARY OF THE ACTION

AOTTP has made substantial progress during this reporting period. The project start was slightly delayed but the overall objectives and targets are well on course to be met. An AOTTP coordination team has been recruited to implement the Actions, and a Steering Committee set up to provide guidance and advice. International Calls for Tenders for tagging at sea, for tag recovery and awareness activities and procurement of electronic tags have been drafted, translated, published and evaluated. A consortium run by AZTI with partners from Senegal, Cote d'Ivoire, Portugal and Ghana started tagging in the eastern Atlantic in late June (2016) and some tags have already been recovered in the Azores. A total of 86,000 conventional tags, 130 satellite pop-ups, and 440 internal archival tags have been purchased, prepared and distributed for use. Publicity and tag recovery campaigns are under-way with focal points in the Azores and offices set up in Dakar and Abidjan. Publicity materials (posters, t-shirts etc.) have been designed in four languages and reward schemes and payment systems are in place. A tagging and tag-recovery database is now ready for use, together with Android smartphone Apps to facilitate easy data uploading. All data collected can be viewed in an interactive online map with a minimal lag-time between data-collection and their availability for download or visualization. AOTTP and ICCAT have also been working with Atlantic Coastal states to secure access to their territorial waters (EEZs) and thus far permission has been granted to tag tuna in the EEZs of eight coastal countries. AOTTP, and its subcontractors have been training scientists from developing countries in all aspects of tagging at sea, data collection and tag-recovery. A training course on the use (programming and deployment) of satellite tags was also run recently by AOTTP in Madrid. Tagging manuals have been drafted in three languages and video tutorials in tagging, and the use of the smartphone App for data upload have been made. AOTTP coordination is also closely working with SCRS aiming at effective use of the tagging data to improve the tropical tuna stock assessments and the provision of scientific advice for management of these fishing resources. The AOTTP project spent just over 75% of the allocated budget for its first year,

1 “Target groups” are the groups/entities who will be directly positively affected by the project at the Project Purpose level, and “final beneficiaries” are those who will benefit from the project in the long term at the level of the society or sector at large.

and AOTTP coordination is proposing to transfer underspent Travel budget (2015/2016) to support future Awareness and Tag-Recovery campaigns (2016/2017).

3.2 RESULTS AND ACTIVITIES

The AOTTP Programme is divided into the following five Phases: 1. Inception (6 months); 2. Tagging-Recovery 1 (18 months); 3. Tagging Recovery 2 (12 months); 4. Recovery and Analyses; and 5. Analyses and Symposium. The project is making satisfactory progress. At this stage we have completed most of Phase 1 and Phase 2 is about to begin. A summary of the AOTTP recruitment process and the make-up of its steering committee can be found in Appendix 1.

The Specific Objective for AOTTP outlined in the Grant Contract is to 'provide evidence based scientific advice to developing coastal states, and other Contracting Parties, to support the adoption of effective Conservation and Management Measures in the framework of ICCAT'. The two objectively verifiable indicators for this specific objective are described below for Expected Result 1:

Qualitative objectives

- *The accuracy in the estimation of reference points is increased and the uncertainty in the formulation of scientific advice is reduced;*
- *The probability to achieve the management objectives is increased.*

Quantitative objectives

- *Science-based advices and management measures on the following elements are produced, e.g.: TACs, Reference Points and Harvest Control Rules for main tropical tuna species;*
- *Spatial management measures such as time-area closures;*
- *FAD moratorium and/or management plans;*
- *Development of index for neritic tunas.*

It is too early to have made substantial progress on the specific objective indicators for AOTTP, but as discussed below under Activity 2.2 the AOTTP is preparing to meet them by collaborating with the SCRS, trFMO MSE WG, and other ICCAT Working Groups, in order to determine the best tagging and data collection protocols to ensure that ICCAT management objectives can be met in the most cost effective manner.

3.2.1 EXPECTED RESULT 1 – TAG-RECAPTURE AND ASSOCIATED DATA FROM THE THREE MAIN TROPICAL TUNA AND ON NERITIC TUNA SPECIES IN THE ATLANTIC ARE STORED IN A DATABASE AT THE ICCAT SECRETARIAT

This overall result will be the foundation on which the AOTTP programme is built. Tagging activity began at the end of June 2016 in EU (Azores, Portugal) waters and in the first week of July in Senegalese waters.

The verifiable indicators for this Expected Result 1 are as follows:

1. *Number of tagged tunas: A minimum of 120 000 tunas are tagged;*
2. *Reporting rates: A minimum reporting rate by gear within the range of those obtained in similar tuna tagging programmes in other oceans (e.g. purse seine fleets above=80%).*

ICCAT/AOTTP has so far purchased >86,000 conventional tags and contracted AZTI to tag 44,000 tuna in the eastern Atlantic (Azores, Canaries, Mauritania-Guinea, and Gulf of Guinea). Thus far we have tagged 215 tunas in the Azores and recovered ~20 tags (recovery rate of ~10%). These data are already in ICCAT databases and rewards have been paid.

Reporting rates are being addressed by tag-seeding experiments proposed by the TRO teams contracted by AOTTP in relevant landing ports.

3.2.2 ACTIVITY 1.1.TAGGING OF TROPICAL TUNAS

The verifiable indicators for A1.1 that AOTTP is working towards are as follows:

1. *Fishing vessels will be hired for a total period of 1800 tagging days over 30 months;*
2. *Tagging teams will be deployed on board the hired vessels.*
3. *Tags (conventional, chemical, electronic, sonic) and tagging equipment will be procured.*

Substantial progress has been made this year towards satisfying these indicators. Three MFVs have been chartered on behalf of ICCAT/AOTTP to tag fish in the eastern Atlantic. The EU-Spain registered bait boat, Aita Fraxku, will tag tuna over a period of 12 months between Mauritania in the north and northern Angola in the south; a “Bermeo” type baitboat is being chartered to tag tunas in the Canary Islands, while the MFV Acoriana and RV Aguas Vivas will be used in the Azores (see Appendix 2 – Short report on the activities led by AZTI ...). Tagging activities started in Azores in late June 2016 (see Cruise Report 1 below) and will begin in early July in Senegalese waters. On the first cruise in the Azores, 172 BET and 43 SKJ were tagged and released.

Table 1. Activity 1.1. Cruise Report 1 (Azores)

Vessel	Açoriana
Skipper	Eduino
Crew	Ramiro, Tobias, Camacho, Ferreira, Gabriel
Tagging team	Paulo Àvila (cruise leader), Miguel Capela, Miguel Furtado
Departure date/time	22h37 25 June 2016,
Return date/time	00h58 30 June 2016
Departure port	Horta
Return port	Horta
Tagging area	Azores EEZ
Narrative/log	Açoriana left Horta on 25/06/2016 with 9 persons on board and proceeded south of Faial to bait fishing grounds. Bait were successfully caught at 23h12 on 25/06/2016 at (38.31.006 N 28.38.787 W) and the vessel proceeded to tuna fishing grounds located

	<i>between São Jorge and Graciosa islands. At 9h40 am on 26/06/2016 first SKJ tuna schools were sighted and tagged occurred until 11h37 am with 43 fish tagged. Later, at 17h15 first BET were sighted and tagged with 112 tuna tagged until the end of the day. In the following days 59 BET were tagged in the surrounding areas. She returned to port on 30th June 00h30.</i>
Maps	Tagging locations: 38.58.218 N – 028.09.106 W 38.56.588 N – 028.04.515 W 38.54.089 N – 027.55.570 W 38.57.587 N – 028.06.293 W 38.53.282 N – 028.07.240 W 38.56.997 N – 028.07.790 W 38.55.597 N – 028.03.931 W
Tagging release summary	Conventional tags: 43 SKJ; 172 BET
Tagging recovery	No recovery
Problems/issues	Scoop net to be improved Replacement of fishing hooks in “trochos” fishing gears Improvement of needle tagging pouches
Recommendations	Next cruise the skipper will target BET and SKJ again

Note that the first tagging phase in the eastern Atlantic is being organized by a Consortium led by AZTI (<http://www.azti.es/>) who bid successfully for an International Call for Tender launched by ICCAT/AOTTP (Appendix 3).

All the AZTI Consortium partners (CRO, IEO, CRODT, IMAR and MFRD) are supplying personnel for the tagging teams on board the chartered vessels.

All the tags (conventional, chemical, and electronic) needed for the first phase tagging work have been procured (see below for details) and sent to the AZTI Consortium for distribution among the relevant tagging teams. Different tags, with varying capabilities, are being used to tag tuna during the AOTTP project. Conventional dart or 'spaghetti' tags are the main type of tag being used by AOTTP and at least 120,000 fish will be tagged, with 20% being double-tagged. AOTTP bought 86,000 conventional PDAT type plastic tags (Figure 1) plus sufficient stainless steel applicators for the first 18 month tagging activities from Hallprint Ltd. Each tag has the unique suffix, ATP, followed by a number, 0 to 1 million, which have all been registered in the official ICCAT system <https://www.iccat.int/en/InvTagging.htm>. Note that the red tags will be inserted into fish which are also, either being chemically tagged, and/or electronically tagged, ie. when it is necessary to keep the actual fish in order to make extra determinations or measurements (e.g. sex, reading of hard parts etc.).

Electronic tags of various types are also being used during the AOTTP programme since they make regular observations (~every minute) on the actual path taken by a fish between tagging and capture (or pop-up). Electronic tags can be categorized into three main types: satellite pop-up tags; internal archival tags; and sonic/acoustic tags. The electronic tags for AOTTP were procured by International Call for Tender (see Appendix 4 – Call for Tender for Procurement of Electronic Tags). Note that the

balance between the numbers of pop-ups and internal archivals was decided at the AOTTP Steering Committee Meeting in Pasaia in March 2016 (Appendix 5). Desert Star (Figure 2) and Wildlife Computers (Figure 3) will supply AOTTP with 40 Seatag 3D and 90 Mini PAT-348C pop-up tags, respectively, while Lotek Wireless are providing 400 (LAT 2810) internal tags (Figure 4). Note that as part of Lotek's deal, 40 ARCGeo-9 internal tags were supplied 'free'. As of writing, 25 Lotek internal tags have arrived in Madrid, been programmed and sent to the Azores. Ten Desert Star tags were delivered to Madrid on 21 June, in conjunction with a three-day training course in their deployment which was attended by the ICCAT/AOTTP Coordination and the leader of the AZTI Consortium.

ICCAT has already developed a database infrastructure for storing tagging data (<https://www.iccat.int/en/Tag-Desc.htm>), which the AOTTP programme is exploiting and developing. A key element is to transfer the data collected by tagging teams at sea. Two Android Applications for smartphones have been developed: one specialized for tagging at sea (Figure 5) and one for the recovery teams. The data collected by the smartphone Apps are then in the correct format for uploading to the main ICCAT database in Madrid. Other advantages such as accurate determination of location and time-stamp are also obvious. Tests we have done indicate that it is at least as fast to use the smartphone App as to use the traditional method of pencil and paper. Data transferred from the smartphones to the database can then be displayed and explored using online maps, e.g. https://aottp.cartodb.com/viz/c1193fc2-3c54-11e6-9e63-0e5db1731f59/public_map. Thus far the maps have been populated with the available historical tagging data collected by ICCAT over the last five decades (Figure 6).

3.2.3 ACTIVITY 1.2. AWARENESS CAMPAIGNS AND RECOVERY SCHEMES

The verifiable indicators for A1.2 are as follows:

- *Awareness and publicity campaigns will be designed and implemented in Atlantic coastal States and Distant Water Fishing Nations*
- *Awareness and publicity campaigns will target fishermen and crew, stevedores and other fishing fleet service providers, processors and workers, etc.*
- *Reward scheme will be designed and developed for the different target groups*

The AOTTP Publicity and Tag Recovery Officer started at ICCAT HQ in March 2016, and developed a tag-recovery and awareness campaign workplan for 2016 for the most important Atlantic Coastal States which is summarized in Appendix 6.

Awareness campaigning is underway aided, and informed by the AOTTP Communication Plan. AOTTP has designed and disseminated t-shirts (e.g. Figure 7) and posters (Figure 8), FM radio broadcasts will start, and newspaper articles have been written and published. SMS messages will be broadcast to relevant stakeholders, and a range of informational videos on YouTube are available. Reward schemes are tailored to each geographic location. They involve the payment of a cash reward plus a mobile phone credit 'top-up', and a t-shirt for the return of a tag and the vitally important metadata

(fish length, location of capture). The geographic database set up by AOTTP, will also be used for awareness-raising and publicity.

AOTTP has held meetings with representatives of important Distant Water Fishing Nations (e.g. Japan) and is discussing the practicalities of awareness raising among these fleets.

3.2.4 ACTIVITY 1.3. RECOVERY OF TAGS AND TRANSMISSION TO ICCAT SECRETARIAT

The verifiable indicators for A1.3 are as follows:

- *Tag Recovery Officers (TRO) teams will be deployed in strategic ports to collect recovery data*
- *A large network of counterparts will be developed to ensure recovery data collection and transmission to ICCAT*
- *Quantity of the recovery data on board purse-seiners is assessed thanks to tag-seeding operations: In 1st year identify bias and error by sampling strata in tag recovery date, position and vessel identification, and species identification and size (length and weight).*

AOTTP is using the following two different 'models' to effect tag-recovery across the tropical Atlantic:

1. AOTTP Tag Recovery Officers.
2. AOTTP Focal Points.

AOTTP Tag Recovery Officers (TROs) are part of dedicated teams, formally contracted by AOTTP (see Appendix 7) , with office space, and transport available. These large, full-time teams are needed in the most important west African ports where landings of tropical tunas can be very high, and where most tags are likely to be found. AOTTP has recently set up TRO offices and tag-recovery teams Senegal and Cote d'Ivoire. AOTTP Coordination visited Dakar between 27th and 30th June 2016 and Abidjan between 11th-15th July 2016 to meet the teams and provide training. Negotiations with teams in Ghana and the Canary Islands are underway.

The AOTTP Focal Point 'model' is less formal, less expensive, and exploits existing ICCAT networks. Focal Points are being identified at relevant Fisheries Department and/or Research Institutes/Universities and asked to publicize tag-recovery incentives, recover tags/fish, and transfer the data to ICCAT. AOTTP will use Focal Points in all other important locations across the tropical Atlantic such as the Azores and Canary Islands, South Africa, Brazil, Caribbean, the less important (for landings) West African countries, the U.S.A. and also possibly in Japan (long-line caught fish). Note that the Azorean Focal point has already recovered >30 tags suggesting that the model is working well.

Practical functioning of both Tag Recovery Officers and Focal Points is, however, the same. They are both provided with t-shirts (e.g. Figures 7), posters (e.g. Figure 8), and other publicity materials in all relevant languages, which are distributed. All the publicity materials have a mobile phone number displayed, which will be used by tag-finders to contact, either the Tag Recovery Officer, or Focal Point whenever a tag is found. The TROs or Focal Points then liaise with tag-finders to ensure rewards are paid/given, and relevant meta-data properly collected. The collection of the data is being facilitated

by the smartphone Application developed by AOTTP and described above (see also Figure 5) which can then be uploaded to the ICCAT database and visualized online (see Figure 6).

3.2.5 REVISED LOG-FRAME

There is no need to revise the log-frame at this early stage of the project. The contracts awarded by ICCAT are listed below.

Table 2: List of Contracts (>60,000 euros) awarded by ICCAT during the Reporting Period.

DATE	SUPPLIER	OBJECT	TOTAL	AWARD PROCEDURE
1/13/2016	HALLPRINT	Supply of conventional tags	122,084€	Competitive quotation
2/12/2016	BDO AUDITORES S.L.P.	Expenditure Verification Audit	13,189€	Competitive quotation
4/12/2016	AZTI CONSORCIUM	Tagging activities in the East Atlantic	4,001,032 €	International Call for Tender
4/21/2016	SERVIGIS	IT consultant for AOTTP database	48,300€	ICCAT position announcement
6/2/2016	DESERT STAR SYSTEMS	Supply of electronic tags	107,408€	International Call for Tender
6/3/2016	LOTEK WIRELESS	Supply of electronic tags	278,429€	International Call for Tender
6/6/2016	WILDLIFE COMPUTERS	Supply of electronic tags	313,513€	International Call for Tender.

3.2.6 UPDATED ACTION PLAN

An updated overall AOTTP Action plan based on Appendix 2 in the original Grant Contract (Indicative Action Plan for Implementing the Action: 60 months) is provided in Table 3. The project started slightly late due to administrative issues but we are catching up successfully. It was originally planned that activity A1.1 – Tagging of Tunas would begin six months after the AOTTP Grant Contract was signed, but we have actually only just begun (June 2016) almost 1 year after the official start of the project. We are confident, however, that all the tagging will be complete by end of June 2018 corresponding to the original Action Plan.

Table 3: AOTTP updated Action Plan

Activities	2015		2016				2017				2018				2019				2020	
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
A1.1–Tagging of tunas																				
A1.2–Awareness campaigns & recovery schemes																				

[illegible]

In the immediate future there are a number of priorities for AOTTP Coordination. AOTTP has still not received a proposal for tagging in the Caribbean Sea and is, therefore, considering how to establish additional contacts with relevant stakeholders in the region.

In the western Atlantic (territorial waters of the U.S.A.) tropical tuna will be tagged by recreational fishers. There is no specific budget in AOTTP for chartering vessels for tagging in the territorial waters of the U.S.A., so sport fishers must be mobilized to do this work, and preparations are under way. At the SC meeting on 27th June, the AOTTP coordinator suggested issuing a Call for Tender to build a network (for the remainder of the project) among sport fishers encompassing the entire tropical Atlantic. Sport fishing charter skippers would be contacted, and a database built-up. Each skipper would be issued with a 'tagging kit' including, for example, ten spaghetti tags, t-shirts, brochures etc. The sport fishers would be trained in conventional tagging, and the use of the android data collection smart-phone application. Those charter boat skippers doing well, sending in the data accurately, would then be asked take out a scientifically trained and experienced technician who would tag fish caught with electronic pop-up tags. Online maps, etc., would also be used to motivate the sport fishers.

2 Assent has been obtained for the countries italicised.

AOTTP is also committed to tagging (ca 1000) fish with acoustic or sonic tags. These tags emit sound waves with an individual identification code which can be picked up by stationary buoys or boats equipped with the relevant listening devices/stations (receivers). Triangulation between the listening stations and the fish can allow a researcher to determine the position (latitude, longitude, and depth) of the fish. A good place to do this is around the Azores where large bigeye tuna can be caught and tagged, and where there are arrays of listening buoys maintained by the Portuguese Institute of Marine Research (IMAR, <http://www.imar.pt/>) and the Ocean Tracking Network (OTN, <http://oceantrackingnetwork.org/>). The AOTTP has discussed acoustic tagging with representatives from both IMAR and OTN and it would be straightforward to implement. The AOTTP Steering Committee has, however, been sceptical about implementing acoustic tagging work, suggesting that the approach is better for understanding the fine-scale migrations and behavior of tunas rather than the longer distance ones in which AOTTP is more interested (see Appendix 9, minutes from June AOTTP Steering Committee meeting on 27 June 2016). The AOTTP will not, therefore, undertake acoustic tagging in the short-term until a more thorough assessment of the usefulness of such methodology to the AOTTP objectives is made available (including a proper survey design).

3.3 EXPECTED RESULT 2 – KEY PARAMETERS SUPPORTING STOCK ASSESSMENTS ARE ESTIMATED ON THE BASIS OF DATA COLLECTED THROUGH THE PROGRAMME AND INTEGRATED IN STOCK ASSESSMENTS OF YELLOWFIN, BIGEYE, AND SKIPJACK.

The verifiable indicators for this Expected Result 2 are as follows:

- *Biological parameters are made available to the SCRS by the end of the programme, and integrated stock assessments are undertaken for the three species of tropical tunas.*
- *Indicators³ are developed for neritic tunas*

The AOTTP project is still in its early stages and few new tagging data are yet available. Therefore, we are yet unable to calculate any key parameters for stock assessment.

Nevertheless the AOTTP project was presented by the Coordinator this year at different SCRS Species Group meetings (Small Tunas, April 2016; Tropical Tunas, March and June, 2016) and plans are already in place to begin researching and analyzing the data as they start to arrive.

One objective of the AOTTP is to help reduce the risk of failing to meet ICCAT management objectives for the main tropical tuna stocks, i.e. that B/B_{MSY} is kept above 1 and F/F_{MSY} below 1. To do this requires robust scientific advice; specifically to reduce the uncertainty in estimates of stock status with respect to reference points and to increase the effectiveness of management measures based on total allowable catches (TACs), harvest control rules (HCRs) and spatial management measures. The AOTTP is, therefore, collaborating with other SCRS and t-RFMO working groups in order to determine the best tagging and data collection protocols to ensure that ICCAT management objectives can be met in a cost effective way.

3 Stock structure, Information on movements, Growth information

At the Small Tunas Species Group the issue of indicators for neritic tunas was discussed. There are many potential neritic tuna species that could be studied but the Group thought that it would be better for AOTTP to focus on only two species: Wahoo (*Acanthocybium solandri*) and Little Tunny (*Euthynnus aletteratus*). The tagging teams, therefore, have instructions to tag only these species in addition to the three tropical species. In this way AOTTP will (at least) ensure that plausible indicators are developed for two neritic species without effort being spread too thinly.

3.3.1 ACTIVITY 2.1. READING OF HARD PARTS

Relevant Verifiable Indicators for Activity 2.1 are:

- *Hard parts (otolith, vertebrae, spines) will be sampled on recovered tunas;*
- *Reading of the hard parts will be undertaken by specialists.*

Thus far AOTTP has not recovered any chemically marked fish with red tags. The required infrastructure and expertise for doing this is, however, in place among the TROs and Focal Point networks described under Activity 1.3.

Note that during the AOTTP programme around ten percent (12,000) of the fish tagged with conventional tags will be 'chemically tagged', which means they will be injected with a chemical marker that allows their otoliths (or other hard parts) to be 'read', and the fish thus aged more easily. Chemically tagged fish will have 2 conventional tags; one yellow and one red, marked with 'KEEP WHOLE FISH' (see Figure 1). When a fish with a red tag is found and reported, the TRO or Focal Points will arrange to buy the fish, pay any reward etc. and organise the reading of the hard-parts.

3.3.2 ACTIVITY 2.2. TAGGING DATA ANALYSES

The relevant Verifiable Indicator is:

- *Tag-recovery data collected during the AOTTP will be analysed by scientific consultants before the end of the programme to estimate missing key parameters for stock assessments*

There are few AOTTP data yet available and this activity has not yet started. It is important, however, that we now plan properly how the data collected will be researched and integrated into the tropical tuna stock-assessment and management process. Activity 2.2 will be coordinated by the Chair of the SCRS (Dr David Die) and the associated SCRS scientific community. Note that an official ICCAT/AOTTP Data Policy has been drafted (Appendix 10 – AOTTP/ICCAT Data Policy).

3.3.3 ACTIVITY 2.3. INFORMATION OF STAKEHOLDERS

The verifiable indicator for Activity 2.3 is:

- *An International Symposium will be organised towards the end of the AOTTP in order to present and publicize the results of the AOTTP and of the analyses of the tagging data*

This activity relates to the organisation of the Symposium planned for the final months of the AOTTP project, ie. probably between April and June 2020.

3.4 EXPECTED RESULT 3 – SCIENTISTS FROM DEVELOPING COUNTRY CONTRACTING PARTIES OF ICCAT ARE TRAINED IN TAGGING, DATA COLLECTION, AND TAGGING DATA/STOCK ASSESSMENT ANALYSIS.

The indicators relevant to Expected Result 3 are as follows:

- *Tagging techniques: 20 scientists/technicians from developing ICCAT States are trained on board the tagging vessels;*
- *Data collection and sampling at recovery: 30 scientists/technicians from developing coastal States trained in data collection and sampling at recovery;*
- *Tagging data analysis and interpretation: 80 participants from developing coastal States to workshops.*

Together with its sub-contractors and other partners the ICCAT/AOTTP programme is providing a wide range of opportunities and training for scientists from developing country ICCAT CPCs and Cooperator countries. Scientists from Senegal, Cote d'Ivoire, and Ghana, for example, are subcontracted within the AZTI Consortium and are actively participating in the tagging activities on board the vessels that have been hired (Appendix 11). Already forty-six scientists and observers have been trained in tagging techniques at sea, including two from Cabo Verde, seven from Cote d'Ivoire, seven from Ghana, and five from Senegal.

Training in data collection and sampling at recovery is ongoing. TRO and Focal Point teams in Senegal (4 persons), Côte d'Ivoire (5-6 persons) and EU-Portugal (Azores, 1 person) have already received training. Training in Ghana is arranged for the last week in August 2016.

Tagging data analysis and interpretation workshops will be organised during the latter stages of the project.

3.4.1 ACTIVITY 3.1. TRAINING IN TAGGING TECHNIQUES AND DATA COLLECTION

The verifiable indicators for Activity 3.1 is as follows:

- *Scientists from developing ICCAT CPCs will be invited and trained to participate to tagging activities on board the tagging vessels*

The individuals listed in Appendix 11 from Senegal, Côte d'Ivoire, and Ghana have already attended training courses run by AZTI in conventional, chemical and electronic tagging, and associated data collection (see Appendix 12 – AOTTP Tagging Manual). It is clear that AOTTP has already made substantial progress towards this indicator. As mentioned above, forty-six scientists and observers have been trained in tagging techniques. Note that scientists from other countries will also be invited on board the tagging vessel, receive training and participate in all the tagging activities as a condition of access to their territorial waters, e.g. Dr Cheik Baye Braham will board Aita Fraxku for the cruise involving Mauritanian territorial waters in August 2016.

3.4.2 ACTIVITY 3.2. DATA COLLECTION AND SAMPLING AT RECOVERY

The Verifiable Indicator for Activity 3.2 is as follows:

- *TRO teams and other counterparts will be trained in recovery data collection and sampling protocols to ensure the good quality of the data*

Focal points have been contracted in the EU-Portugal (Azores), and Tag Recovery Officers contracted in Senegal and Côte d'Ivoire. Focal Point contracts are currently being prepared for Ghana and the Canary Islands and will be in place by the end of August 2016. The AOTTP Publicity and Tag Recovery Officer has visited the Azores twice this year where training in data collection and sampling at recovery has been provided. Similarly training has been provided to the TROs in Dakar (27th to 30th June 2016) and Abidjan (11th and 15th July 2016) to train the TROs and prepare them for tag recovery there.

3.4.3 ACTIVITY 3.3. TRAINING IN DATA ANALYSIS

The Verifiable Indicator for Activity 3.3 is as follows:

- *Dedicated workshops will be organised to reinforce the capacity of ICCAT developing member States in data analyses, interpretation of the scientific results and development of the scientific advice.*

This activity is being planned for the later stages of the project, when substantial data should be available, starting from the second quarter 2018.

4 BENEFICIARIES/AFFILIATED ENTITIES AND OTHER COOPERATION

4.1 HOW WOULD YOU ASSESS THE RELATIONSHIP BETWEEN YOUR ORGANISATION AND STATE AUTHORITIES IN THE ACTION COUNTRIES. HOW HAS THIS RELATIONSHIP AFFECTED THE ACTION?

The AOTTP Action has good relationships with State Authorities in the target countries. Already AOTTP has gained permission to tag tropical tuna in the territorial waters of eight countries, including two that are not ICCAT Contracting parties (Guinea-Bissau and Benin). Only the Gambia has so far refused permission. ICCAT CPCs and Cooperators have also contributed funds to the AOTTP programme, including USA and Chinese-Taipei.

4.2 WHERE APPLICABLE, DESCRIBE YOUR RELATIONSHIP WITH ANY OTHER ORGANISATIONS INVOLVED IN IMPLEMENTING THE TAGGING ACTIVITIES:

AOTTP's largest Contractor is the AZTI Consortium with whom excellent relations are maintained. The Leader of this Consortium, Dr Nicolas Goni discusses issues regularly with the AOTTP

Coordination team by phone. Communications are also being maintained with the tagging teams at sea using a range of modern media including WhatsApp, Telegram and E-mail.

4.3 FINAL BENEFICIARIES AND TARGET GROUPS

It is too early to, thoroughly, assess the impact of the Action on Final Beneficiaries and Target Groups. There are, however, very positive signs already. In the Azores, for example, the tagging teams have tagged only around 200 tuna so far but commercial baitboat fishers have already recovered >20 tags and received their rewards. This suggests substantial 'buy-in' already from stakeholders. In Côte d'Ivoire AOTTP has contacted and met with various stakeholder groups including the Manager of the National Observer Program, the Manager of the largest tuna processing factory (SCODI), the Manager of a Purse-Seiner Ship Management Company, and the Artisanal Fisheries Cooperatives in Abobe-Doume (Figure 9). All these potential (direct beneficiaries) were very interested in the AOTTP project and excited to cooperate.

4.4 WHERE APPLICABLE, OUTLINE ANY LINKS AND SYNERGIES YOU HAVE DEVELOPED WITH OTHER PROJECTS, ESPECIALLY THOSE FUNDED BY THE EUROPEAN UNION.

DG-Mare also funds the project: The ICCAT Atlantic wide research programme for Bluefin Tuna (GBYP) with which AOTTP works closely. The GBYP Coordination team have helped the AOTTP substantially during its first phase. Where synergies are sensible, for example, the website, AOTTP works closely with GBYP.

4.5 IF YOUR ORGANISATION HAS RECEIVED PREVIOUS EU GRANTS IN VIEW OF STRENGTHENING THE SAME TARGET GROUP, IN HOW FAR HAS THIS ACTION BEEN ABLE TO BUILD UPON/COMPLEMENT THE PREVIOUS ONE(S)? (LIST ALL PREVIOUS EU GRANTS).

As mentioned above ICCAT receives funding for GBYP from the European Union and there are synergies in view of strengthening the same target groups. AOTTP and GBYP Coordination work together to coordinate effort and activities wherever possible.

5 VISIBILITY

5.1 HOW WAS THE VISIBILITY OF THE EU CONTRIBUTION ENSURED DURING THE ACTION?

The visibility of the EU is ensured whenever the project is being presented in any way. AOTTP has already been presented at a range of fora around the Atlantic Coastal States. When (oral, powerpoint) presentations are given the EU's logo always appears and a summary of the 90% EU contribution is always provided. Similarly EU logos are visible on websites, t-shirts, posters, training manuals, brochures, etc.

ICCAT/AOTTP has also drafted a Communication Plan to ensure the visibility of the Action. The ICCAT/AOTTP Communication Plan ensures the visibility of the implementation of all Programme

activities, at all levels, together with the results achieved, since effective communication during all stages of the AOTTP project is so essential for ensuring the support and cooperation of all groups concerned with the project and with its eventual outcomes.

The Communication Plan is a framework for managing and coordinating the wide variety of media, directed at different audiences, and with differing messages, that will be used during the ICCAT/AOTTP Programme. It delineates and describes four main categories of 'target audience' that have been identified by the project management and how, and in what form, relevant, accurate, and consistent information will be conveyed to them.

ICCAT/AOTTP will direct communication activities/materials/products at the following three main target groups or audiences:

- *Direct stakeholders* who actually work in the commercial fishing, recreational fishing, and fish-processing industries. This group depends most directly on tuna resources in the Atlantic and is most likely to actually find and report the discovery of a tagged fish.
- *Marine/fisheries scientists* (includes ICCAT CPC representatives at the SCRS, and AOTTP Steering Committee) who will analyze and interpret the AOTTP tagging data, using them to make improved estimates of stock abundance.
- *Policy/decision-makers* concerned with the actual management (population assessment, quota-setting etc.) of tropical tuna fisheries.
- *NGOs, donors, and the general public* primarily concerned with sustainable exploitation, socio-economic issues and conservation.

Each of these three four audiences is clearly very distinct from the other, and each will require different communication and messaging strategies. These are outlined in detail in the Communication Plan available on request.

Note that newspaper articles on AOTTP, have already been published in the EU-Portugal and Spain:

- <http://www.tribunadasilhas.pt/index.php/component/k2/item/11855-6000-atuns-dos-acores-marcados>
- <https://www.jornalacores9.net/regional/programa-internacional-quer-marcas-120-mil-atuns-no-atlantico-inclusive-nos-acores/>
- <http://www.europa-azul.es/reportaje-destacado.php?id=72>

The AOTTP youtube channel can be found here:

- https://www.youtube.com/channel/UCICXmfVkvMxqezMU4LFa_hQ.

And the interactive geographic map (with historical data and first AOTTP data) is here:

- https://aottp.carto.com/viz/091569e2-408b-11e6-8e70-0e3ff518bd15/public_map
- https://aottp.cartodb.com/viz/c1193fc2-3c54-11e6-9e63-0e5db1731f59/public_map

The European Commission may wish to publicise the results of Actions. Do you have any objection to this report being published on the EuropeAid website? If so, please state your objections here.

Name of the contact person for the Action:

Driss Meski

Signature:

Location: Madrid

Date report due: 29 August 2016

Date report sent: 28 July 2016