INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS
COMMISSION INTERNATIONALE POUR LA CONSERVATION DES THONIDES DE L'ATLANTIQUE
ICCAT CICTA CICAA
COMISIÓN INTERNACIONAL PARA LA CONSERVACIÓN DEL ATÚN ATLÁNTICO

Madrid, 15 March 2019

ICCAT CIRCULAR # 1510 / 2019

SUBJECT: TERMS OF REFERENCE – CALL FOR TENDERS – SWORDFISH GROWTH, REPRODUCTION AND GENETICS STUDIES: BIOLOGICAL SAMPLES COLLECTION AND PRELIMINARY ANALYSIS

I should like to transmit to you the attached Call for tenders for swordfish growth, reproduction and genetics studies: biological samples collection and preliminary analysis.

Please accept the assurances of my highest consideration.

Executive Secretary

Camille Jean Pierre Manel

COMISION INTERNACIONAL - ICCAT - Conservación AT ATL.

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Attachment: Call for tenders for swordfish growth, reproduction and genetics studies: biological samples collection and preliminary analysis.

TERMS OF REFERENCE – CALL FOR TENDERS
SWORDFISH GROWTH, REPRODUCTION AND GENETICS STUDIES: BIOLOGICAL SAMPLES COLLECTION AND PRELIMINARY ANALYSIS

Background and objectives

As approved by the SCRS in 2017, the Swordfish Species Group initiated in 2018 a biological sample collection programme to collect biological data for swordfish (SWO), which aims to improve knowledge of the stock distribution, age and gender of the catch, growth rate, age at maturation, maturation rate, spawning season and location and diet, and thereby contribute to the next major advance in the assessment of swordfish status, by permitting the development of more spatially and biologically realistic population models used in both Atlantic and Mediterranean populations assessments and within the ICCAT Management Strategy Evaluation (MSE) for North Atlantic swordfish. This should translate into more reliable advice on stock status for an internationally and collectively managed resource. The Swordfish Species Group has identified this work to be of a very high priority which will address critical deficiencies in our understanding of the population dynamics and ecology of swordfish.

The objectives of this Swordfish Species Group project are to:

1. Resolve the spatial-temporal distribution of the three known swordfish stocks found within the Atlantic Ocean and Mediterranean Sea using a genetic analysis of tissue sampled from the catch of participating CPCs.
2. Resolve the age and size at maturity of the three known swordfish stocks found within the Atlantic Ocean and Mediterranean Sea using samples/measurements provided by participating CPCs.
3. Characterize the age composition of the catch and validate the growth curves for each swordfish stock.
4. Determine the spawning period and areas of each stock.
5. Identify the seasonal and spatial species composition of the swordfish diet using stomach content and/or tissues.
6. Develop a protocol/template based on genetic analysis that will allow for the assignment of tissue samples to a particular stock.
7. Develop a biological database that links the sample information to the age, stock origin, gender, size, diet and maturity data of each fish.
8. Update the ICCAT Manual with new pertinent information.

This work will be closely linked to the sampling programmes of CPCs that support the goals and objectives of ICCAT and the Swordfish Species Group. The points of contact for participants of this programme are the Swordfish Species Group rapporteurs for the Atlantic and Mediterranean stocks, with contributions from the Group members, the SCRS Chair and Vice-Chair, as well as the ICCAT Secretariat.

As part of this biological study, scientific institutes and public or private entities are asked to submit tenders to continue the work started in 2018. In particular the work to be developed includes provision of biological data, collection of samples and performance of samples processing and data analysis, as described below. Submission of a single offer by a consortium of Scientific Institutes/Universities covering all areas would be highly preferable. All the data collected under the research programme will be used for scientific purposes only and in accordance with ICCAT rules. Any other use of these data should be specifically authorized by ICCAT. Samples will be collected and appropriately balanced from the geographical areas/fleets with the highest swordfish catches. For reference, see **Figures 1 and 2** and **Table 1**.

Contractor tasks

The principle objective of the project is to determine the spatial-temporal distribution, age composition, diet, maturity schedule and age at maturity of Atlantic and Mediterranean swordfish. Swordfish are landed in a broad range of ports bordering the Atlantic Ocean and Mediterranean Sea, and over a fishing season that spans the entire year. A further complication is that the species is sexually dimorphic based on size and potentially exhibit gender based spatial segregation.

The Contractor will ensure that biological samples from this heterogeneous population will be made available according to the sampling design established by the Swordfish Species Group which will ensure that the fishery is covered on a proportionate basis by gender, age, size, season and area.

It must be noted that for biological sampling and analysis, small-scale and short term sampling is considered of little use for meeting the project objectives. As such tenders should be made on a **regional and collaborative basis**.

It is expected that the Contractor will use trained field technicians to obtain the necessary biological samples (fish length, weight, assess maturity, assess gender, classify stomach contents, collect fin or muscle tissue, anal fin spine, record sample meta data) on every fish sampled if possible. In recognition of the difficulty in collecting stomach samples, the sample will be considered complete if that component is missing.

The Contractor must ensure that all sample information is properly cross referenced, Quality Assured and Quality Controlled (QA/QC) and stored in a relational database. Uniquely identified tissue samples and anal fin spines must be sent to an entity to be determined by the Swordfish Species Group. Otoliths will also be collected and processed, mostly for comparative purposes and calibration with ages estimated from spines. Protocols used during the sampling must be developed based on current best practices and, in the case of tissue and anal fin spines, not interfere with further processing or cause degradation of the samples. Replicate tissue samples are required. These protocols must be approved by the Swordfish Species Group Rapporteur before any collection starts. In addition, the Contractor(s) will ensure participation in a workshop to: 1) update the sampling protocols as needed; 2) establish protocols related to aging and assignment of sexual maturity stage; and, 3) enable training of the teams to be involved in the processing and data analysis.

Contractor minimum qualifications

- Documented multi-year experience research on large pelagic species with experience in fishery data collection, biological sampling, life history studies (particularly age and growth, and reproduction), and population genetics.
- University degree in one of the following: fisheries science, marine biology, statistics, natural sciences, biological sciences, environmental sciences or closely related fields (in case of individual scientists).
- Excellent working knowledge of one of the three official languages of ICCAT (English, French or Spanish). A high level of knowledge of English is desirable.

Deliverables

1. **Ensure participation in a technical workshop** on aging and reproduction, aiming to refine sampling protocols and allow training of the Swordfish Species Group team members to be involved in the processing and data analysis of the samples collected. The workshop will be hosted by IPMA (Olhão, Portugal) (tentatively 18-21 June 2019).

2. **SCRS documents and/or power point presentations** at 2019 Swordfish Species Group meeting (September 2019) regarding the:
   a) Distribution of the collected samples by area, season, and gender will be made to the SCRS;
   b) Protocols for sampling, aging and assignment of maturity stage;
   c) Report on the level of completion of sample collection and processing;

3. Labelled anal spines, otoliths and tissue **samples to be shipped** according to the updated protocols established during the technical workshop.

4. A **relational database** containing the sample data that **has undergone thorough QA/QC is to be provided. This database will reside at the ICCAT Secretariat** and will be made available for distribution upon request.

5. **Shipping and processing of samples** determined to be analyzed by the selected laboratories.

6. **Analysis of the samples and reporting** of preliminary findings.

7. A **draft final report** to be submitted by **7 December 2019 at the latest**, which will include:

    a) Executive summary;

    b) Full description of the work carried out;

    c) Description of preliminary results;

    d) Proposals of further activities to be developed for achieving the objectives of the project.

8. The **final report** shall be updated taking into account the comments provided by the ICCAT Secretariat, the Swordfish Species Group rapporteurs and the SCRS Chair and Vice-Chair, be submitted **by 20 December 2019 at the latest**.

Submission of bids

Scientists and public or private Scientific Institutes or entities interested should submit detailed offer(s) **only to the attention of Mr. Camille Jean Pierre Manel**, the Executive Secretary of ICCAT, at the following address: camille.manel@iccat.int by **5 April 2019,** including:

a) A detailed offer that includes: a detailed description of the biological sampling scheme, the full cost of collection of biological samples and preliminary analysis for the genetics study.
b) The curriculum vitae of the tenderer (in case of individual scientists) and of any collaborator.
c) The curriculum vitae of the institution (if an institution is the tenderer), with any documented experience in research on swordfish, or other large pelagic species or in data collection, including recent and relevant contracts for the same or similar items and other references (contract numbers, points of contact with telephone numbers and other relevant information to be included).
d) The name, address, and telephone number of the tendering body.
e) The institutional and administrative background of the tendering body (e.g. statutes, type of institution, annual budget, budget control procedures, etc.) if applicable.
f) A detailed list of any subcontracting activities.
g) A declaration that the offering entity will follow the ICCAT procedures and formats for provision of data.
h) A declaration that all the comments eventually made on data and/or documentation reported will be incorporated prior to submission to the ICCAT SCRS.
i) Acknowledgment of this Call for tenders (if applicable).
j) A statement specifying the extent of agreement with all terms, conditions and provisions herein included.

Offers that fail to furnish the required documentation and information, or reject the terms and conditions of this Call for tenders will not be considered.

The Contractors can be either research institutes such as government or private laboratories, universities, or private consultancy firms or individual scientists or other entities having the qualifications required.

The Contractor should be available to report to any meeting requested by ICCAT.

The ICCAT Secretariat will make a selection of the offers. Following the selection process, the ICCAT Executive Secretary will notify the entity selected for the contract by **24 April 2019**.

Payment details

Disbursement will be made according to the following schedule:

- 30% of the total amount of the contract upon signing the contract;
- 30% after the provision of documents and/or presentations to the 2019 Swordfish Species Group meeting in September 2019;
- 20% after receipt by the ICCAT Secretariat of the draft final report;
- 20% after the approval of the final report by the ICCAT Secretariat, following incorporation of comments made by the ICCAT Secretariat.

Logistics

All documents provided by the Contractor must be in open format ODF 1.2 (click here) such as MS word or "*.odf" of Apache OpenOffice and LibreOffice, figures must be in Excel format or compatible, figures and pictures must be in JPEG or TIFF format or compatible. All documents submitted must be in English, French or Spanish.

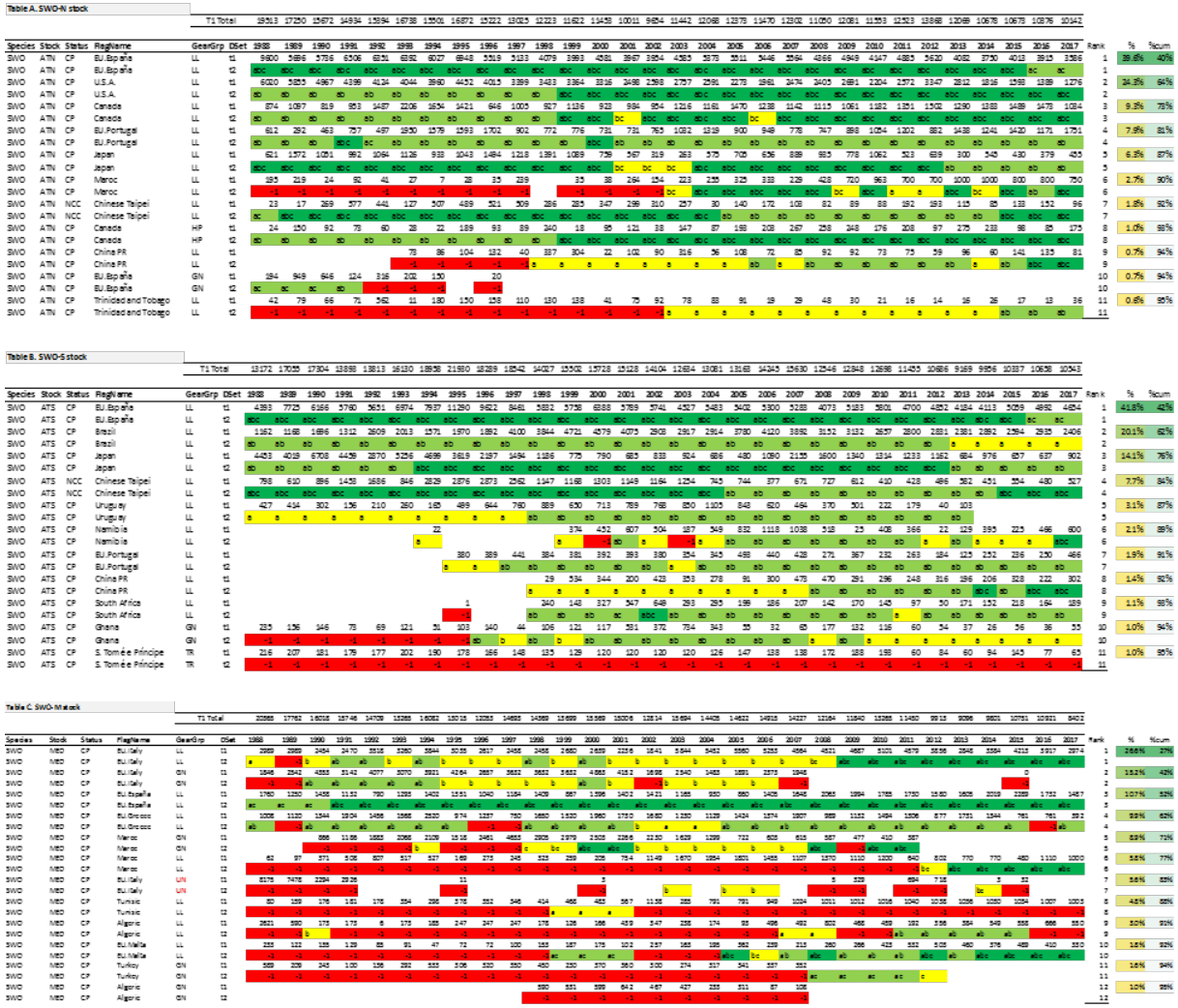
Data must be provided in the standard ICCAT format for statistics. The biological data must be submitted in a format to be defined by the ICCAT Secretariat.

Copyright

All the material produced by the Contractor will remain the property of ICCAT, will be kept confidential, and cannot, in any case, be circulated by the Contractor selected. Use of the data for scientific purposes by the Contractor must always be notified to ICCAT in advance for clearance.

For information concerning this Call for tenders, please contact the ICCAT Secretariat at the following address: info@iccat.int

Table 1. Catalogue of nominal catches and size data for the main swordfish fleets (ranked by cumulative catches) for the North Atlantic, South Atlantic and Mediterranean.



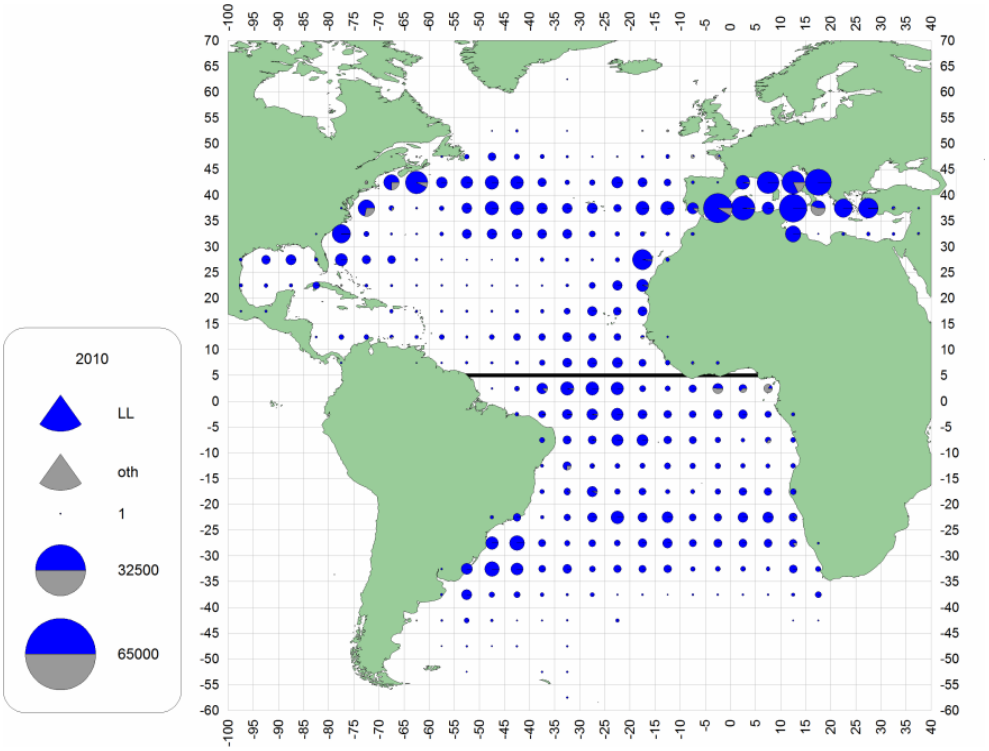


Figure 1. Geographic distribution of swordfish cumulative catch (t) by gear, in the Convention area, shown for the 2010-2016 period (2017 SCRS Report - SWO Executive Summary, Anon. 2017).

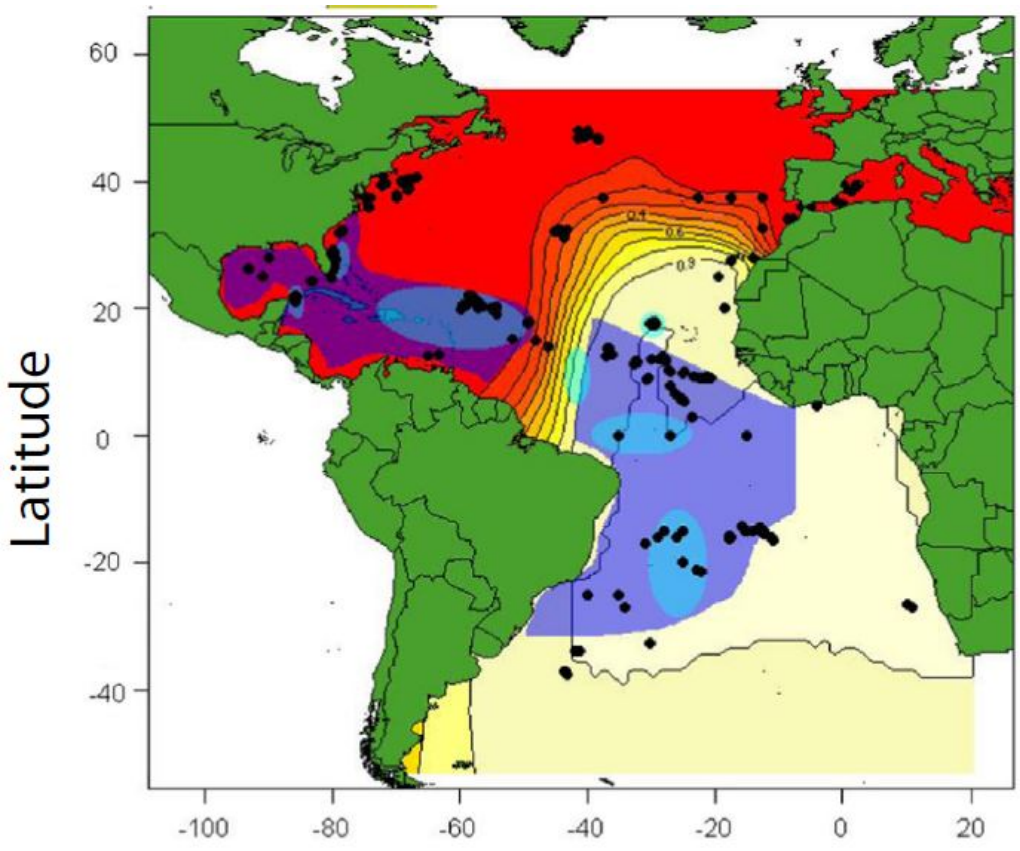


Figure 2. Posterior probability contours range (from 1.0 in light yellow to 0.1 in red) for swordfish belonging to the South Atlantic population vs. all other populations (adapted from Smith *et al*., 2015).

References

Anon. 2017. Report for biennial period, 2016-17 Part I (2017) - Vol. 2 English version SCRS. p. 149.

Smith, B.L., Lu, C-P-., García-Cortés, B., Viñas, J., Yeh, S-Y-., Bremer, J.R.A. 2015. Multilocus Bayesian Estimates of Intra-Oceanic Genetic Differentiation, Connectivity, and Admixture in Atlantic Swordfish (*Xiphias gladius* L.). PlosOne. https://doi.org/10.1371/journal.pone.0127979.