

COMISION INTERAMERICANA DEL ATUN TROPICAL INTER-AMERICAN TROPICAL TUNA COMMISSION

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Provision of Services Announcement

Proof-of-Concept Study on Electronic Monitoring of Small Purse-Seine Vessel Activities, Catches and Discards

The Inter-American Tropical Tuna Commission (IATTC) invites all interested entities to submit an application to provide their services for carrying out a proof-of-concept study on electronic monitoring (EM) of small purse-seine vessel activities, catches and discards in the eastern Pacific Ocean (EPO).

The IATTC is the regional fisheries management organization responsible for the implementation of the 2003 Antigua Convention, the objective of which is to ensure the long-term conservation and sustainable use of the stocks of tunas and tuna-like species and other species of fish taken by vessels fishing for tunas and tuna like species in the eastern Pacific Ocean. More information about the IATTC can be found at www.iattc.org.

The contract for the provision of services is for 8 months, from July 1, 2018 to February 28, 2019.

The scope of the work to be completed during the 8-month service provisions contract, including expected deliverables, is outlined in the Terms of Reference below.

Selection Criteria

The entity selected must possess extensive experience in conducting EM studies aboard research and/or fishing vessels at sea. Important attributes of the key individual(s) of the entity that are to be involved in the contract include: excellent communication skills, both oral and written, in either English or Spanish; and, availability to travel to ports in the following countries: Colombia, Ecuador, Mexico, Panama, Peru and the United States.

Availability

The selected entity must be available to begin work on July 1, 2018.

Applications

Applications may be submitted in either English or Spanish and should be sent no later than May 15, 2018, in electronic format to tmusano@iattc.org, or to the following address:

Teresa Musano
Inter-American Tropical Tuna Commission
8901 La Jolla Shores Drive,
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USA

Applications should include the following:

- A cover letter containing a statement of purpose of the application and succinct descriptions of the relevant experiences and abilities of individuals that will be involved in the proposed work.
- A detailed description of the services to be provided and their associated costs.
- A list of references with recent knowledge of the entity's qualifications and experience that may be contacted by IATTC staff.

Terms of Reference

Proof-of-Concept Study on Electronic Monitoring of Small Purse-Seine Vessel Activities, Catches and Discards

BACKGROUND

For the Inter-American Tropical Tuna Commission (IATTC) to meet its scientific responsibilities for management under the Antigua Convention, quality data on vessel activities, and catch of target and non-target species are needed from all eastern Pacific Ocean (EPO) purse-seine fleets. The AIDCP onboard observer program provides detailed data for all Class-6 (“large”; carrying capacity > 363 t) vessel trips. However, trips by Class 1-5 (“small”; carrying capacity ≤ 363 t) vessels are rarely sampled by observer programs. When these vessels’ logbooks are abstracted, and cannery data from their trips collected, those data provide basic catch information with respect to target species, but information on tuna discards is usually unavailable and catch of non-target species can be incomplete or unavailable. Thus, where fisheries management or assessment requires complete catch and bycatch information, other data collection tools are needed. Electronic monitoring (EM) systems offer the possibility of providing solutions for some of these challenges.

The utility of EM for monitoring purse-seine catch and bycatch, particularly for small vessels, has not been unequivocally established. Existing comparisons of EM and onboard observer data from purse-seine fisheries in other oceans have shown a high correlation between counts from the two methods for large-bodied species, but conversely a low correlation for small-sized species. Therefore, it is necessary to further evaluate what types of data can be reliably collected by EM aboard purse-seine vessels. In addition, it remains to be determined whether small purse-seine vessels have suitable locations for placement of EM equipment. Existing studies have all been conducted aboard large purse-seine vessels where there is adequate space to place cameras aimed at wells being loaded via conveyor belts and where there is perhaps less crew or structure interferences than aboard small vessels.

To evaluate EM as a tool for addressing the need for increasing and improving the quality of data collected from the EPO small-vessel purse-seine fleet component, a project designed to conduct a proof-of-concept EM pilot study for these small vessels was approved to be carried out during 2018-2019.

OBJECTIVE

The objectives of the project are the following:

- 1) Identify what types of data can be collected by EM on board small purse-seine vessel for monitoring of vessel activities and catch and bycatch, both with video camera systems and still-imagery systems.

- 2) Identify locations aboard small purse-seiners for mounting EM equipment, taking into consideration different brailing strategies and vessel configurations, and the types of sets typically made by the vessels.
- 3) Collect data aboard a variety of small purse-seine vessels using both EM and an on-board observer, simultaneously.
- 4) Compare EM and observer data to obtain a preliminary evaluation of the utility of EM for the small-vessel purse-seine fleet.
- 5) If EM appears promising, develop a sampling design for a pilot study using EM aboard small purse-seine vessels.

SCOPE

Cameras installation and subsequent EM data collection will take place during 8 months, from July 2018 to February 2019, aboard 4-6 small purse-seine vessels. The exact vessels remain to be identified, however, participating vessels are expected to be from one or more of the following countries: Ecuador, Colombia, Mexico, Peru, and the United States. These vessels range in size from 80 to 360 t in fish-carrying capacity. EM data will be collected on two trips per vessel, preferably on back-to-back trips.

EM data that will inform on the following quantities are to be collected:

- i) Date, location, set type, and set time for every purse-seine set (see Table 1 for details);
- ii) Species and size composition (see Table 2 for details), and amounts, of all discards;
- iii) Species and size composition (see Table 2 for details), and amounts, of all catch;
- iv) Number of speed boats used in each set; and,
- v) Date, location and time of each FAD deployment during the fishing trip.

Two EM camera systems are to be tested during this proof-of-concept study. The first is a video system, and the second is a still-image system. It is anticipated that 5-7 cameras will be needed per vessel to collect the above data, however, suggestions on this point from the Service Provider are welcomed. In as much as this is a proof-of-concept study, there is a preference to rent camera systems from the Service Provider rather than purchase those systems.

EM data processing will take place during November 2018 – February 2019. For comparisons, the analysis of EM imagery will be done by both the Service Provider and by the IATTC staff, with software provided by the Service Provider.

SERVICE PROVIDER RESPONSIBILITIES

- Provide the following configured EM systems:

- A high-definition video camera system, with sensors (GPS, hydraulic pressure and winch rotation), wiring, and central computer/hard drives to store the video footage and GPS and other sensor data.
- A still-camera system with sensors wiring, and central computer/hard drives to store the image footage and GPS and other sensor data.
- Provide timely installation of EM systems and guarantee the systems operability prior to each vessel's departure for the fishing grounds.
- Provide and ensure EM service technicians can service primary ports (Manta, Ecuador; Balboa, Panamá; San Carlos, Mexico) and respond quickly to requests.
- Train local technicians and fisheries observers on routine technical aspects of the EM systems so that remote diagnostic and servicing support is made more efficient and timely.
- Track and coordinate service events in close cooperation with the IATTC Project Manager to ensure delivery of services and follow up action when necessary.
- Provide 24-hour technical support by telephone/internet to assist vessels to resolve any EM technical issues.
- Provide IATTC with a performance analysis report of the equipment of each fishing trip no later than 15 days after each fishing trip terminates.
- Provide IATTC staff with files of all imagery for every trip, coupled with the relevant sensor data no later than 15 business days after each fishing trip terminates.
- Provide IATTC staff with the software necessary to review imagery on a computer and train IATTC staff in the use of that software, no later than November 15, 2018.
- Provide IATTC staff with the software necessary to link the sensor data (GPS, date, time, etc.) and the imagery, and train IATTC staff in the use of that software, no later than November 15, 2018.
- Provide IATTC with a CSV file, one file per trip per vessel, that contains the fishery data outlined in the Scope section above (items (i) – (v)) for every set. The file for each fishing trip is to be provided to IATTC no later than 30 days after the completion of the trip.
- Provide technical support to IATTC staff during the EM imagery analyzes between November 2018 and February 2019.

PROJECT TIME LINE

July 2018 - November 2018: Install EM systems on 4-6 vessels in some subset of the following ports: Manta, Ecuador; Balboa, Panamá; San Carlos, México.

August 2018 - January 2019: Collect data on two trips for each of the 4-6 vessels.

November 2018 - February 2019: Provide EM imagery files, sensor data files and summary fishery data files to IATTC staff, and train IATTC staff in the use of software for reviewing and processing EM imagery and reviewing and processing sensor data.

Table 1: Definitions of types of purse-seine sets made in the tuna purse-seine fishery.

Set type	Abbrev.		Definition
Unassociated sets	NOA		A set made on a free-swimming school of tunas
Floating-object sets	FOB	FAD	A set made on a floating object manufactured with the purpose of aggregating tunas. Commonly made of 2 or more components, which may include a bamboo raft. It may or may not have a satellite buoy attached.
		LOG	A set made on a natural or artificial floating object, with no evidence of being modified with the purpose of aggregating tunas. Such objects are typically encountered by random. It may or may not have a satellite buoy attached.

Table 2: Units and catch definitions for the species caught in the tuna purse-seine fishery.

Species groups	Catch amount unit	Size unit for individuals	Size categories for groups
Tunas	Weight, in metric tons	Weight, in kg	Small (<2.5kg); Medium (2.5-15kg); Large (>15kg)
Sharks	Numbers; for individual sharks or for a group of sharks	Total length (TL)	Small (<90 cm); Medium (90-150cm); Large (>150cm)
Billfishes	Numbers; for individual billfishes or for a group of billfishes	Post-orbital length (PO)	Small (<90 cm); Medium (90-150cm); Large (>150cm)
Rays	Numbers; for individual rays or for a group of rays	Disc width/wingspan length (DW)	Small (<90 cm); Medium (90-150cm); Large (>150cm)
Other fishes	Numbers; for a group of other fishes	Fork length (FL)	Small (<30 cm); Medium (30-60cm); Large (>60cm)