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Commission des Thons de l'Océan Indien

Type of Information to be Gathered Onboard

IOTC ROS TR18.2, 19.2, 20.2 and 21.2

Category: Onboard Data Collection and Recording

[IOTC ROS TR18, 19, 20 and 21]



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- All training modules under the *Data Collection, Verification, Input and Reporting Training Course* (TR 18 to 21), require observers to be familiar with the information to be gathered from industrial fisheries operating in the IOTC area.
- This module aims to familiarize Observers with information to be gathered from Tuna Purse-seine, Tuna Pole and Line, Pelagic Longline and Pelagic Drift Gillnet fishing operations and IOTC sampling priorities.



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On-board Data Collection

When at-sea Observers are to collect data that fall under the following categories:

- Operational data
- Biological data
- Environmental data
- Control data



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- The IOTC Regional Observer Scheme (ROS) has as its core objective: to collect verified catch data and other scientific data related to the fisheries for tuna and tuna-like species in the IOTC area.
- Information on the catch composition of a fishing event can be obtained from the vessel logbook (catch statistics) of recorded production. The Fishing Master will typically only record in his logbook the total retained catch.
- The catch composition of the target and commercial by-catch species is routinely recorded from monitoring landings ashore. The length frequencies of these species can also be recorded from shore-based sampling.
- To capture information that is not routinely available, Observers are deployed onboard vessels to provide independent information.



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- The observers are required to collect information on the timing and location of fishing operations, the total effort deployed by the vessel and the vessel total catch composition.
- In addition, the observers are required to carry out scientific work as requested by the IOTC Scientific Committee.
- Observer data collection protocols can be separated into several categories and these can be adapted to the vessel and specific fishery being monitored that include:
 - Operational data: generic data and fisheries vessel & gear specific data;
 - Biological data collection;
 - Environmental monitoring data; and
 - Control data.



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Fisheries Observer Data

Operational Data

(general, gear, daily activity, fishing event, catch and bycatch information)

1. Observer and observed trip details
2. Vessel and trip details
3. Gear Characteristics
4. Catch & Effort
 - Transit
 - Searching
 - Fishing
 - Catch Composition





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Operational data encompasses all vessel types and fisheries. These data are generally trip specific and headings in this category will include:

- observer and deployment details;
- vessel owners and compliment;
- vessel details;
- vessel electronics;
- trip information; and
- catch information.



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Fisheries specific data will cover vessel and gear parameters pertaining to the fishery and include catch and effort information that is collected continuously during the trip specific to each fishing event. Data headings in this category will include:

- operational vessel and gear details;
- catch per unit fishing effort;
- catch processing and storage;
- by-catch and environmental mitigation measures; and
- tagging and tag returns.



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Biological Data

(biometric and biological sampling information)

- Length frequencies
- Length & Weight ratio
- Sex & Maturity
- Age & Growth
- DNA
- Diet
- Etc.





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Specific sampling requirements referenced in the IOTC Resolution 11/04 require observers also to biometrically sample the catch and collect biological data:

- taking and recording specific biological samples of the catch that includes;
- measuring fish length and weight according to species type and anatomical features
- length and weight ratios;
- sex and maturity
- collect, preserve, store and label samples for DNA analysis.



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Further sampling requirements referenced in the IOTC Resolution 11/04 require observers also to record interactions of the fishing activities with the environment and assess negative interactions.

Environmental

- Interactions with Species of Special Interest (SSI) including Protected Endangered and Threatened species (PET)
- Monitoring effectiveness of mitigation measures
- Vulnerable Marine Ecosystems (VME)
- Waste management



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IOTC Resolution 11/04 also require observers also to monitor the effectiveness of mitigation measures.

Control

- Monitoring the follow up of CMMs
- Monitoring compliance with national and international legislation
- Monitoring transhipments
- Monitoring IUU vessels and fishing



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Observer Data Usages

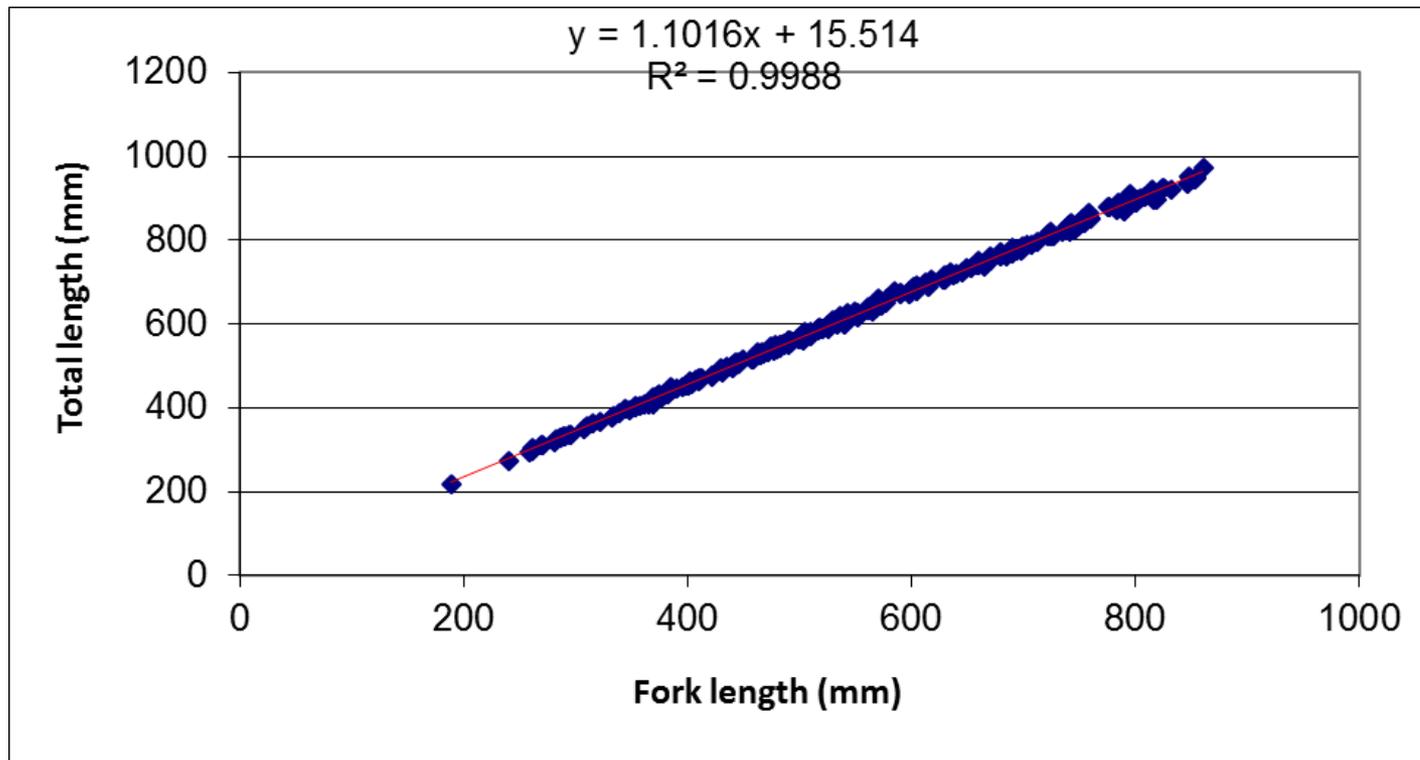
- The following slides provide some examples of processed information of data collected onboard by Observers.
 - Length regressions
 - Length weight regressions
 - Length frequency histogram
 - Spatial distribution of catches





Example of processed information

Length regressions for different measurements on same fish

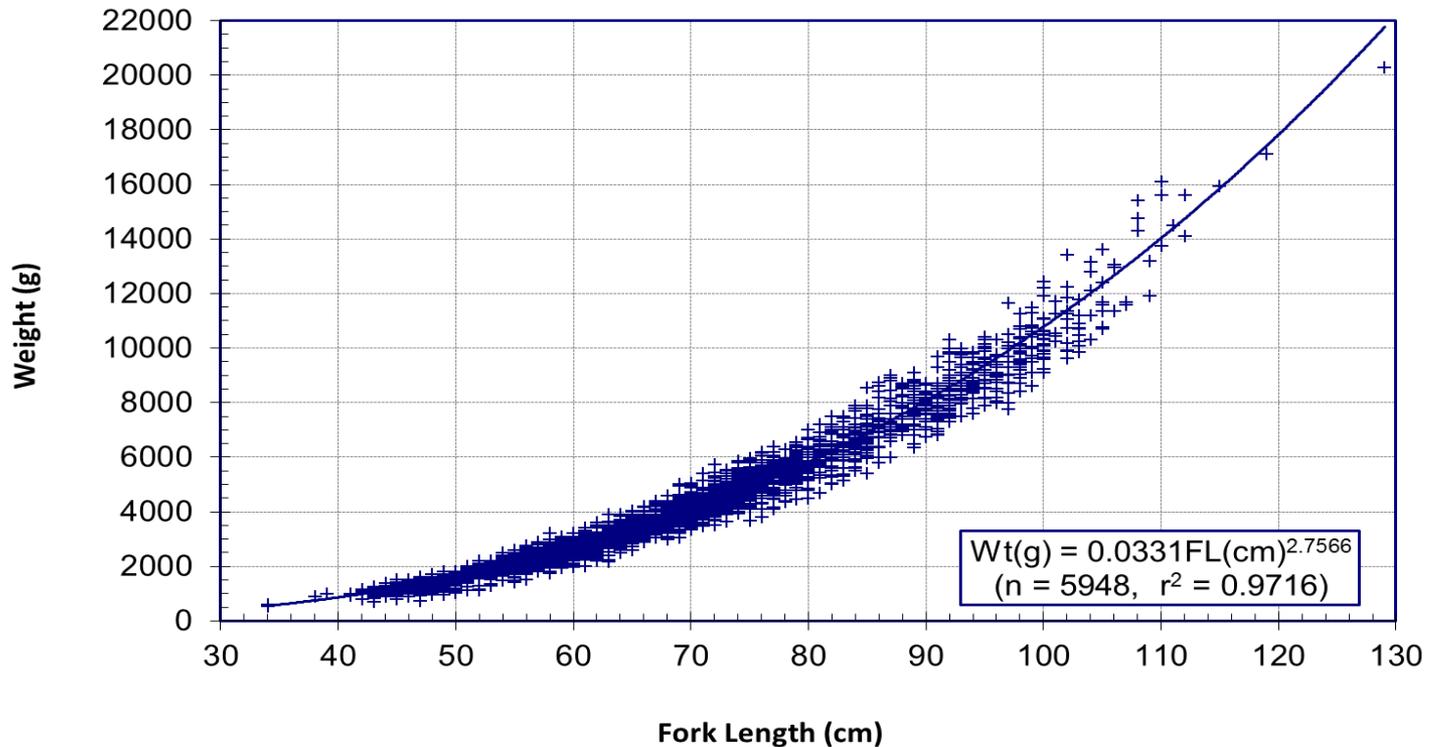




Example of processed information

Length Weight regressions

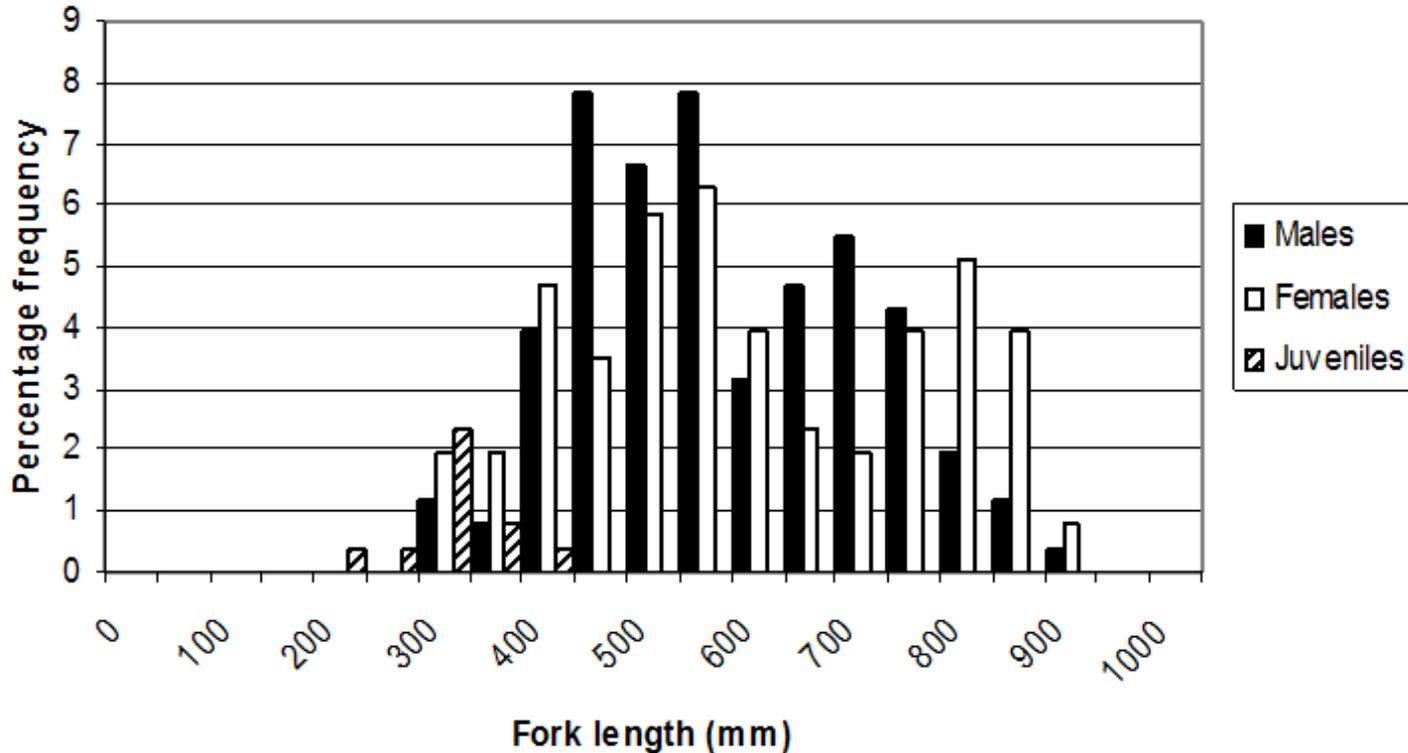
**Fork Length - Weight Regression
(Males and Females Combined)**





Example of processed information

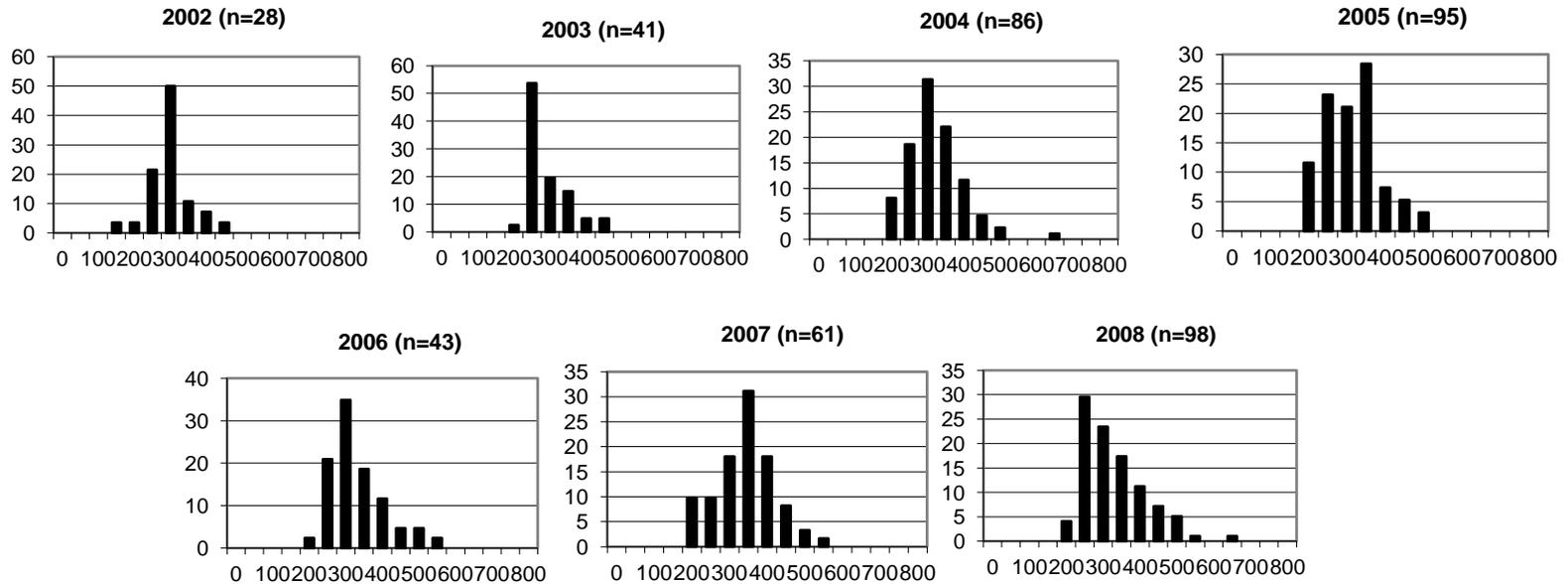
Length frequency histogram





Example of processed information

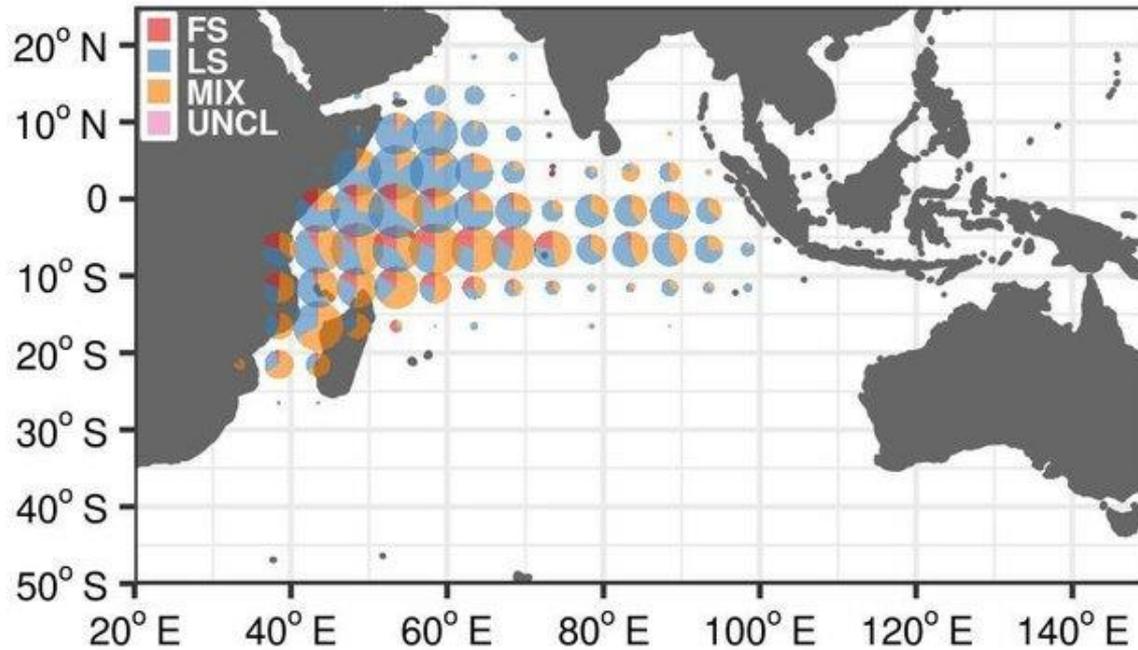
Length frequency histogram





Example of processed information

Spatial distribution of catches



(a)

Total catch (tonnes) : ○ 200 ○ 1000 ○ 70 000





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IOTC Sampling Priorities

the IOTC defines sampling priorities to ensure that Observers collect data that is needed to assess the state of the populations of target and bycatch species caught in the IOTC area of competence.

1ST PRIORITY: Species Of Special Interest

2ND PRIORITY: Discards/Rejections Of Target Species

3RD PRIORITY: Bycatch Species

4TH PRIORITY: Retained Target Catch



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1st Priority : SPECIES OF SPECIAL INTEREST

Since the large majority of SSIs species are caught and released (or discarded) at sea, only at-sea observers are in position to collect independent data on these captures.

2nd Priority : DISCARDS OF TARGET SPECIES

Discards/rejections of target species can only be independently quantified by at-sea observers. This information is required to correct vessel logbook catch and unloading information. Furthermore, this information will also help to access compliance with the IOTC CMM, on the ban of discards of tropical tuna spp.

3rd Priority : BYCATCH SPECIES

A large percentage of bycatch species caught are directly discarded at sea. Meaning that independent data on these captures can only be obtained from at-sea observers.

4th Priority : RETAINED TARGET CATCH

The sampling of retained target catch presents the lowest level of priority for at-sea Observer work, since information on retained target catch can also be obtained via fishing vessel logbook and through the port sampling of vessel catches during unloading.



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>> 1ST PRIORITY: SPECIES OF SPECIAL INTEREST

- Observers are to collect catch information on SSI specimens caught (*species, fate and condition at capture & at release*). If it is not possible to conduct size sampling, a mean size or mean weight should be collected, even if it is eye estimation.
- Observers are to collect other catch information on SSI specimens caught (*gear interaction, handling method if brought on-board, revival procedures, photos*);
- Observers are to sample SSI specimens for *length frequency* (and *gender for elasmobranch and turtle spp.*);

IOTC Species of Special Interest (SSI): marine mammals (cetaceans) and turtles, seabirds, whale sharks, oceanic whitetip sharks, thresher sharks, striped, black, blue marlin and Indo-Pacific sailfish).





>> 2ND PRIORITY: DISCARDS/REJECTIONS OF TARGET SPECIES

- ➔ Observers are to collect catch information on 'discarded/rejected' specimens of target species (species and fate);
- ➔ Where possible Observers are to sample 'discarded/rejected' specimens of target species for length frequency and gender. If it is not possible to conduct size sampling, a mean size or mean weight is also needed, even if it is estimated by eye.

The 16 species listed in Annex B of the IOTC Agreement.





>> 3RD PRIORITY: BYCATCH SPECIES

- Collect catch information on bycatch specimens caught (*species, fate and condition at capture and at release*);
- Sample bycatch specimens for *length frequency and gender*;
 - If sampling all bycatch specimens for a particular species note as EXHAUSTIVE for that species;
 - If sampling all bycatch specimens for a particular fishing event (set) note as EXHAUSTIVE for all bycatch species.

All species, other than the 16 species listed in Annex B of the IOTC Agreement, caught or interacted with by fisheries for tuna and tuna-like species in the IOTC area of competence. A bycatch species includes those non-IOTC species which are (a) retained, (b) incidentally taken in a fishery and returned to the sea; or (c) incidentally affected by interacting with fishing equipment in the fishery, but not taken.





>> 4TH PRIORITY: RETAINED TARGET CATCH (EXCEPT MARLINS THAT ARE SSIs)

- Collect catch information on retained target catch specimens caught (*species and fate*);
- Sample retained target catch specimens for *length frequency and gender*.





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ANY QUESTIONS?

A screenshot of a web-based interface for a Learning Management System (LMS). The top navigation bar is black and contains the user's name 'T. Athayde | Instructor', a dropdown menu for 'Messages', a 'Help' link, a search box with the text 'Search', and a home icon. Below the navigation bar is a blue header with the text 'Home / Messages'. On the left side, there are two tabs: 'Inbox' (selected) and 'Sent'. Below the tabs is a blue button labeled 'Send message'. The main content area is a table with a blue header row containing the columns 'From', 'Subject', 'Date', and 'Options'. The table body is currently empty, showing only a single row with a hyphen '-' in the 'From' column.

send us a message via Talents LMS



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