



Food and Agriculture
Organization of the
United Nations



Indian Ocean Tuna Commission
Commission des Thons de l'Océan Indien

Pelagic Longline Fishery

IOTC ROS SFO TR13

Category: IOTC fishery: Pelagic longline fishery

[IOTC ROS SFO TR13]



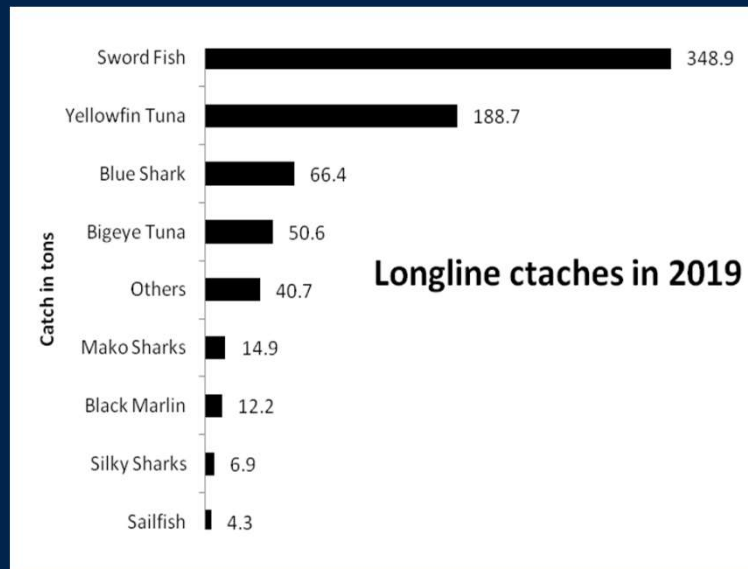
CapMarine
Capricorn Marine Environmental

This module aims to familiarize Observers with tuna pelagic longline vessels, fishing gear and fishing operations as these will be used daily in their routine work. It is important for observer to be familiar with the following:

- vessels & fisheries background
- the basic layout of a pelagic longline vessel
- longline fishing gear
- pelagic longline fishing operations



Target species



The statistic here show the main species targeted by longline vessels. Be good to discuss the composition in respect to the main IOTC target species and commercial by-catch



Food and Agriculture
Organization of the
United Nations



Indian Ocean Tuna Commission
Commission des Thons de l'Océan Indien

PELAGIC LONGLINE

1. Longlining is a passive fishing technique using baited hooks to attract and catch fish.
2. Pelagic longlines (surface or drifting longline) are not anchored and typically drifts with the ocean currents while fishing.
3. It consists of a mainline, kept near the surface by buoys or float and branch lines with baited hooks suspended from the main line at regular intervals along its length
4. The vessels ranges between 30 and 70m in length
5. Some vessels set their hooks deeper than 300m



CapMarine
Capricorn Marine Environmental

Important to note the points above. The size of the vessel is often the most important factor that determines the gear type. However, the basic operations are the same on all longline vessels.

One of the observer primary objectives is to record the gear specifications used onboard a longline vessel and some of these are covered in the following slides



Food and Agriculture
Organization of the
United Nations



Indian Ocean Tuna Commission
Commission des Thons de l'Océan Indien

iotc ctot

PELAGIC LONGLINE

1. Longline fishing entails two main operations setting of the line and hauling the line
2. The wide opening at astern is designed to allow a setting operation.
3. The forward starboard side is normally characterized by a large deck and open area which is where the line hauling, and fish processing takes place.
4. The landing door is often present at the starboard side.
5. Most longline vessels have the bridge set aft of the workspace so that the fishing master can view the line being hauled and the fish being landed.



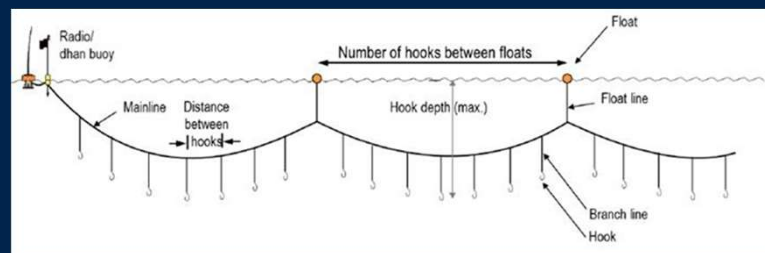
CapMarine
Capricorn Marine Environmental

Essentially the longline operations are the same on all vessels, both large and small, and most longline vessels will have the same basic structure listed in the slide to carry out these operations .



PELAGIC LONGLINE

- The pelagic longline consists of a mainline that is held near the surface or at a certain depth by regularly spaced **buoys or float**
- **Branch lines** with baited hooks are suspended from the main line at regular intervals along its length.
- The entire line can extend from 20 to over 120km.



When we look at the make-up of longlines and operations it helps to break it up into the components that make up the line and the order that they are found. In this way we break up the line into sections:

- a mainline forms the “backbone” of the whole line;
- single section between **surface floats** will have a number of **branch lines** attached (traces with baited hooks); and
- longer sections between **radio buoys** have a number of surface floats between radio buoys.

The whole line is then made up from the longer sections determined by the number of radio buoys used.



Food and Agriculture
Organization of the
United Nations



Indian Ocean Tuna Commission
Commission des Thons de l'Océan Indien

PELAGIC LONGLINE

Japanese system



American system



The longline gear differs based on the mainline type and storage specifications and can be divide into three types:

1. industrial Large Scale Tuna Longline Vessels (LSTVs) from the distant water Asian fleet normally use the **braided monofilament**;
2. smaller semi-industrial vessels use a tarred 4-strand **twisted cord** (rope) stored in a special bin or coiled at astern; and
3. industrial and semi-industrial vessels that use a **single-strand** 5 mm to 6 mm nylon which is stored on a drum or spool called American or monofilament system.



Food and Agriculture
Organization of the
United Nations



Indian Ocean Tuna Commission
Commission des Thons de l'Océan Indien

PELAGIC LONGLINE GEAR

The main line forms the backbone of the longline

Branch lines and the Buoy lines are attached to the mainline



CapMarine
Capricorn Marine Environmental

The slide shows the three materials used to make up the mainline and the specialized storage compartment found on the large industrial vessels that use braided monofilament line and a drum used to store and haul a monofilament line.



Food and Agriculture
Organization of the
United Nations

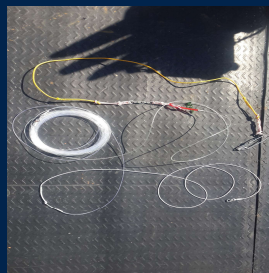


Indian Ocean Tuna Commission
Commission des Thons de l'Océan Indien

PELAGIC LONGLINE GEAR

The branch lines are clipped onto the main line when setting and the hooks are baited at the same time.

A typical branch line can vary between 30 m to 50 m in length and are attached to the mainline with a stainless-steel tuna clip.



The branch line can be a composite line made up from several different materials or just consist of monofilament.

The means of storing branch lines also varies on different vessels:

- Large Scale Tuna Longline Vessels typically have composite branch lines and store them in baskets with the number of branch line in a basket being the number set between surface buoys.
- semi-industrial vessels store a larger number of branch lines in a basket with the one coiled up over the other.
- Vessels that use the monofilament system use large square bins to store branch lines.



PELAGIC LONGLINE GEAR

- The buoys and floats are attached to the mainline with buoylines of various length.
- Two main types Ridged Plastic buoys & Foam Bullet buoys
- Radio buoy are attached to the longline at intervals dividing the longline up into sections.



There are several different buoy types found on longline vessels that are referred to in the presentations and notes. These shown here are the most common.

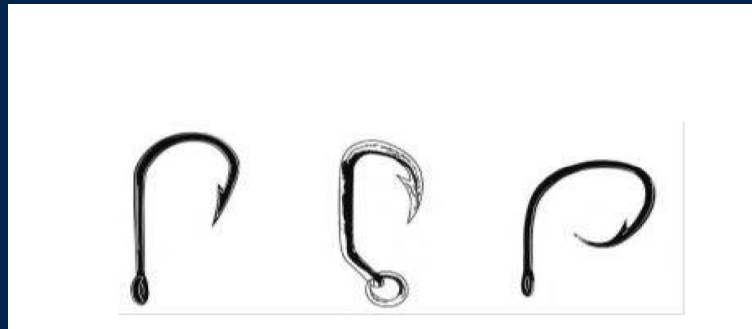


Food and Agriculture
Organization of the
United Nations



Indian Ocean Tuna Commission
Commission des Thons de l'Océan Indien

PELAGIC LONGLINE GEAR



J
Hook

Japanese
Hook

Circular
Hook



The type of hook used often is often determined by the target species.

J-hook used mostly to target swordfish and if a steel trace is attached then to target sharks

The Japanese hook with a ring is used to target large tuna

The circular hook is used to target both swordfish and billfish. It is also a mitigation measure to limit catches of turtles



Food and Agriculture
Organization of the
United Nations



Indian Ocean Tuna Commission
Commission des Thons de l'Océan Indien

PELAGIC LONGLINE GEAR

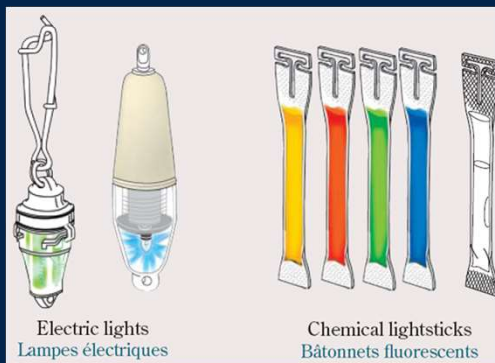
Electric lights

Chemical light sticks

*Indication of vessels targeting
swordfish*



CapMarine
Capricorn Marine Environmental



Two main types of light sticks and clear indication of a vessel targeting swordfish



PELAGIC LONGLINE GEAR

(Observers need to be able to identify and record specifications)

Line hauler: situated on starboard side forward of bridge

Branch line hauler/coiler: situated next to hauler

Line setter: Situated against centre of stern gunwale

Line thrower: situated port side of line setter



There is some basic equipment that the observer should be familiar with. These covered in the slide are equipment that is continuously referred to when discussing longline operations.



Food and Agriculture
Organization of the
United Nations



Indian Ocean Tuna Commission
Commission des Thons de l'Océan Indien

SETTING OPERATION

Lines are set from the stern

Vessel setting speed between 9.5 and 11.5 knots (*450 m per minute or 27 km per hour*)

Typical set = 200 or more "units/baskets" (10 to 15 branch lines / basket)

- 4 to 15 branch lines connected between floats (hard buoy)
- Sections ~ 20 floats then 1 radio buoy attached
- 8 to 10 sections per set



The setting operations starts with the deployment of the first radio buoy and then follows immediately by a number of branch lines or the first surface float and then clipping on a number of branch lines. The number of branch lines to be set between surface floats are often stored in separate baskets or tubs. A fixed number of these baskets is then set between radio buoys making up the longer sections.

However, different vessels have different methods, depending on their size and available storage area for gear.



Food and Agriculture
Organization of the
United Nations



Indian Ocean Tuna Commission
Commission des Thons de l'Océan Indien

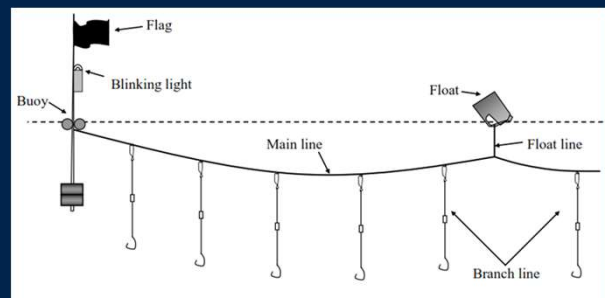
SETTING OPERATION

Baiting of hooks normally manual

Depth of mainline can be varied by the distance between buoys, and by changing the speed of the line setter relative to vessel speed

Setting operations taking approximately 6 hours using 5 crew

- Radio buoys are used for locating the line at the start of the haul or in the event of a broken line



The hooks on the branch lines are generally baited by hand just before setting it. The surface buoys also have a length of rope attached (the buoy line). The length of the buoy line and branch lines determine the minimum depth of the baits are set.



Food and Agriculture
Organization of the
United Nations



Indian Ocean Tuna Commission
Commission des Thons de l'Océan Indien

HAULING OPERATION

Hauling time can take full day (11 hours and more)

Last radio buoy set is the first to be hauled on board

Vessel steams along the mainline at average speed of 6 knots (150 to 250 m / minute)

- Branch lines unclipped off the mainline as they come over the side of the vessel
- Branch lines coiled by hand or using branch line hauler



The hauling is long operation in comparison to setting time. The mainline is hauled in using a “**line hauler**” and the vessel maintains its speed to match the speed of the line hauler and its course to match the direction of the line in the water.

The main line storage depends on the vessel:

- vessels using a monofilament with a large drum, hauls the line and stores the line on the drum. (or reel);
- the larger longline vessels have a specialised storage compartment that automatically packs the line ready for the next set; and
- some of the smaller vessels may coil the mainline by hand into large bins.

As branch lines and buoy lines are unclipped from the main line they are repaired and coiled up and prepared for the next set.



Food and Agriculture
Organization of the
United Nations



Indian Ocean Tuna Commission
Commission des Thons de l'Océan Indien

HAULING OPERATION

When fish detected on a line vessel slows & turn to starboard to follow the fish

Fish brought alongside the vessel, and gaffed/harpoon in head and lifted onto deck & killed on the spot

- On deck monofilament trace is cut so the hooks remains in the mouth until dressing

(Practice that reduce the time a tuna spend on deck in stressful situation, & makes handing of the catch easier)



CapMarine
Capricorn Marine Environmental



For each fish caught the branch line is hauled in by hand and the fish is then gaffed onboard. If the observer is observing the hauling of the branch lines they will also be able to record any by-catch that may be released alive or discarded by cutting the line without it being hauled onboard.



Food and Agriculture
Organization of the
United Nations



Indian Ocean Tuna Commission
Commission des Thons de l'Océan Indien

HAULING OPERATION

For tuna

fish killed using stainless steel rod inserted
down spinal column

the caudal fin is removed immediately

- Blood flushed using water hose
- Fish is dressed and washed (*gill plates, gills and stomach removed*)
- Cord threaded through the caudal peduncle to hang the fish in the blast freezer



CapMarine
Capricorn Marine Environmental

Note that depending on the sampling strategy the observer is following:

- they may be only recording catch and observing each branch line being hauled; or
- they may be on the deck to measure and record biometrics of selected species.

When the crew are processing the fish it provides the opportunity to examine the fish for sex and maturity.



Food and Agriculture
Organization of the
United Nations



Indian Ocean Tuna Commission
Commission des Thons de l'Océan Indien

ANY QUESTIONS?



send us a message via Talents LMS



CapMarine
Capricorn Marine Environmental