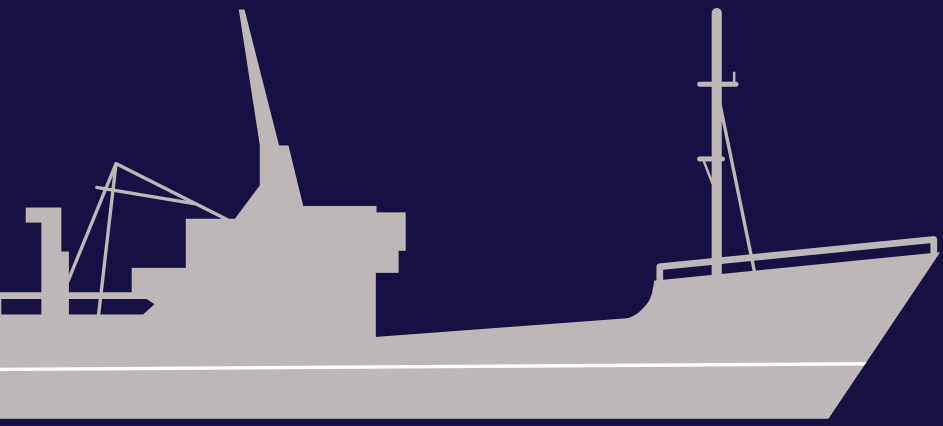
MCS PRACTITIONERS INTRODUCTORY GUIDE TO:

LONGLINE FISHING



TMT

INTERNATIONAL MCS NETWORK

CONTENTS

GLOSSARY OF TERMS

AIS	Automatic Identification System
FAD	Fish Aggregation Device
°C	Degrees Celsius
GPS	Global Positioning System
GRT	Gross Registered Tonnes
IMO	International Maritime Organisation
IUUF	Illegal, Unreported and Unregulated Fishing
MCS	Monitoring, Control and Surveillance
RSW	Refrigerated Seawater
RFMO	Regional Fisheries Management Organisation
VMS	Vessel Monitoring System

This MCS Practitioners Introductory Guide has been developed by TMT in cooperation with the International MCS Network (IMCS Network). The guides in this series are intended to be used as a training tool to introduce common international industrial fisheries vessels and gear types, towards building knowledge in personnel working in all government agencies (Fisheries, Port, Coast Guard and Navy, Maritime etc.) who may play an operational role in fisheries monitoring, control and surveillance (MCS), as well as for use by broader interested stakeholders.

While this guide is a stand-alone tool focussed on fishing vessels that utilise trawl fishing gear, it has been developed as part of a series of similar introductory guides on other major industrial fishing methods and related operations, as well as complementary material on fishing vessel inspection considerations.

We strongly encourage the use, reproduction, and dissemination of this guide. The guide may be copied, downloaded, and printed for private study, research, and teaching purposes, or for use in non-commercial products or services, provided that appropriate acknowledgement of TMT and the IMCS Network as the source and copyright holder is given.

All requests for translation and reproduction rights should be sent to: info@tm-tracking.org and mcs.network@imcsnet.org

This publication should be cited as: TMT and International MCS Network (2021)
MCS PRACTITIONERS INTRODUCTORY GUIDE TO: LONGLINE FISHING. Oslo. Norway.

Technical Content: Francisco Blaha (www.franciscoblaha.info), Duncan Copeland (TMT), Stig Fjellberg (TMT)
Technical Review: Mark Young (IMCS Network), Hugh Walton (Pacific Islands Forum Fisheries Agency)

OPERATIONAL OVERVIEW

Longline fishing, commonly known as longlining, is a commercial fishing technique that is deployed to target numerous different fish species. Longlines can be set near the surface to catch pelagic fish like tuna and swordfish or laid on or close to the seafloor to catch deep-dwelling fish like cod and halibut. Vessels deploying longlines can operate on both coastal and high seas waters and are commonly known as longliners.

HOW LONGLINERS CATCH FISH

As the name implies longlining means catching fish by way of a line and baited hooks. Longlining employs a central fishing line that can range from less than one mile and up to tens of kilometres long; this line is strung with smaller lines of baited hooks, dangling at evenly spaced intervals.

There are two main varieties of longlining used commercially:

1) Drifting / Surface longlines are maintained at the surface or at certain depth by mean of floats
2) Bottom longlines are placed on or near the bottom by mean of weights or a combination of weights and floats.

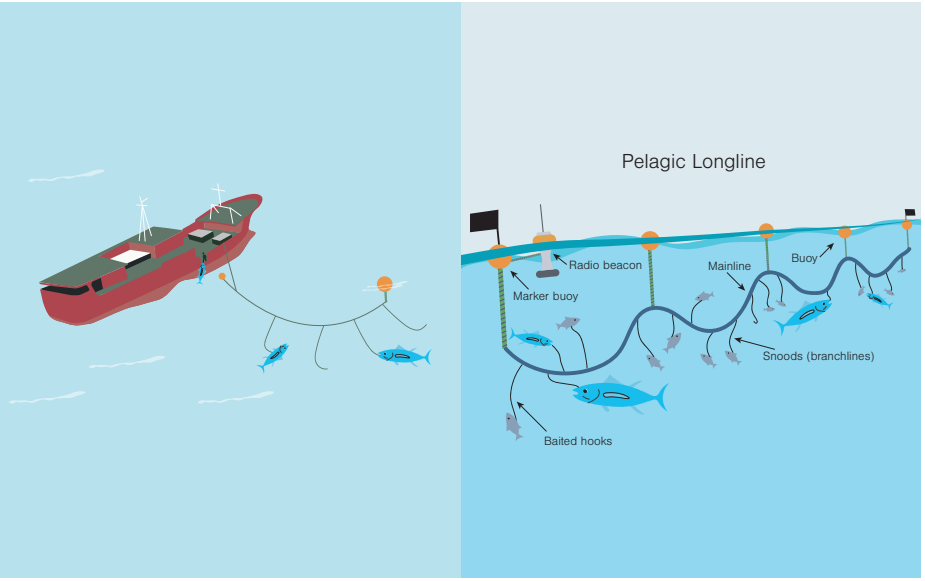
SURFACE LONGLINING

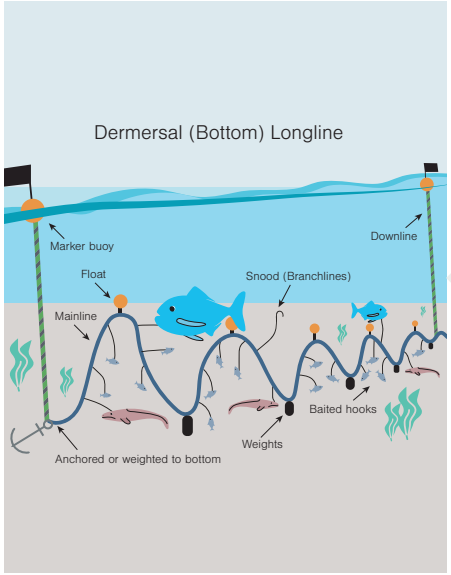
Surface longlines are used mainly in the tuna and other pelagic fisheries. They consist of a main line that can be many kilometres long, supported in the water by a series of floats. Off the main line are branch lines (also known as 'snoods'). Each branch line carries a baited hook.

The line is set as the boat moves forward. Most vessels also use a `line shooter' which propels the line into the water at greater than boat speed to allow it to sink to various depths in the water column depending on the species being targeted. Once the line is fully extended, fishing time (called 'soaking') is allowed. During this time, another line can be set, or the vessel steams back to the point where the first hook was set to start the recovery there.

Most pelagic fishing utilises drifting longlines (as opposed to anchored ones), which consists of a mainline kept near the surface or at a decided depth by means of regularly spaced floats and with relatively branch lines with baited hooks, evenly spaced on the mainline. The longline drifts with marine currents and has radio beacons that allow the fishing vessel to find it again for hauling. Drifting longlines may be of varied length, up to tens of kilometres.

Traditional longlines were made of rope but since the early 1980's this has transitioned to monofilament mainlines.





BOTTOM LONGLINING

The principle of demersal longlining is the same, however the mainline does not drift. At one end of the line is an anchor which is dropped to the sea floor. The other end has a weight attached. Depending on the length of the line a series of hauling lines are attached that come to the surface and are marked with buoys. The line is then set from a moving boat and left in the water, typically for 8-12 hours, before being hauled in using the surface lines.

Anchored longlines can be set as bottom lines (including on very rough bottom and/or coral reefs) or, less commonly, in midwater.

This briefing primarily focuses on the operations of surface longlining vessels, though many of the principles are the same across both varieties.

HOW TO RECOGNISE A LONGLINE VESSEL

Due to the different longline fishing methods and types, there is a wide variety of industrial fishing vessels in this fishery. There are differences among longline gears and vessels, depending on the origin of the fleet and the target species.

These can be broadly characterised in three types:

1) Longline fleets operating in coastal countries have small vessels that land their product fresh, and therefore carry out trips lasting less than 20 days.

2) Longer range coastal country fleets can land frozen product frozen (-4/-30°C) or combine this with fresh product. Their trips generally are not longer than 30 days.

3) Long-range fleets, mostly operating as distant water vessels from extra-regional countries, that land their products frozen up to -60°C and have autonomy to carry out trips that can last between 140 and 180 days or even longer if re-supplied at sea.

Longline vessels can have their superstructure in the bow or in the stern. Depending on the vessel, longline gear is deployed either at the stern or through a specific area on the starboard side of the vessel. Many vessels carry out the haul back of the gear on the starboard side. The work or processing area, which may or may not be sheltered, can be at the bow or at the stern.

GENERAL VESSEL TYPES BY COUNTRY / REGION OF DESIGN

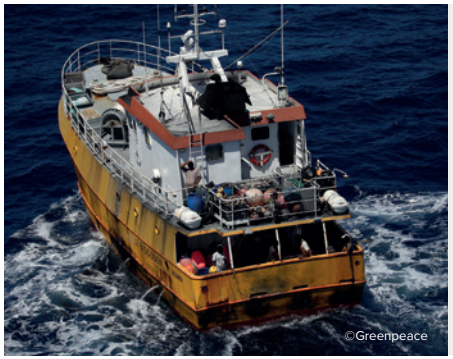
Longline vessels can vary significantly in size, from less than 50 GRT to some between 900 and 1000 GRT. Most vessels are either less than 50 GRT or between 200 and 300 GRT.

Taiwan smaller pelagic longliner (fiberglass)

Common Target Species:
- Tuna species
- Billfish species
- Shark Species

Sri Lankan (fiberglass)

Common Target Species:
- Tuna species
- Billfish species
- Shark Species



European pelagic (steel)

Common Target Species:
- Tuna species
- Billfish species
- Shark Species

Japanese Style, also used by Korean and Taiwanese operators (steel)

Common Target Species:
- Tuna species
- Billfish species
- Shark Species
- Oilfish

Australian (aluminium)

Common Target Species:
- Tuna species
- Billfish species
- Shark Species

European Demersal (steel)

Common Target Species:
- Toothfish
- Ling
- Long tail snapper

DESCRIPTION OF THE FISHING OPERATION

GEAR DEPLOYMENT

In surface longline fleets, it is easier to set the gear going downhill, or with the wind, and it is easier to haul going uphill, or against the wind and/or current.

Deployment (or shooting) of gear usually starts at dusk and takes from 3 to 6 hours of work depending on the length of the line and the number of hooks and it is weather dependent. The setting process depends on the vessel configuration. In some cases, a line-setter or 'shooter' is used so that the launch speed of the main line is independent from the speed of the vessel. In other cases, the main line is launched by the tension produced by the equipment once it is launched in the sea and the movement of the vessel. This limits the possibilities of regulating the amount of main line launched per nautical mile navigated and thus makes it more difficult to position the gear in depth. The use of the line-setter enables a better positioning of the gear, reaching greater depths.

The setting operation requires from 3 to 5 crew members, depending on the vessel, the number of hooks and the degree of automation available. Normal setting speeds are above 8 knots; this is generally faster than hauling speeds which are in the range of 2 to 6 knots (a consideration when analysing AIS or VMS data to determine if a vessel is setting or hauling the line).

As the main line moves by the movement of the vessel, one of the crew works on connecting the floats to the main line. Another crew member baits the hook and tosses the hook to the water, while a third member of the crew attaches the branch line, by fitting a snap to the main line. More crew members can work in supporting this operation. The hooks are left soaking for various periods of times. The skipper may decide to set another longline and then come back to the beginning of the last one and start hauling for example, or simply travel to the start of the line he has just set. However, there is a lot of variability dependent on the operation.

Longliners also generally use beacons so the position and drift of the line can be tracked. Traditionally radio beacons have been deployed in this capacity, but increasingly AIS transponders are being used.

Setting for bottom longlines follows a similar principle, yet the mainline is weighted to the seafloor with buoy lines marked by flags and radio/AIS buoys on either end. The first piece of gear that enters the water are the grapnel anchors at either end, that hold the longline in position and buoys are attached to the start and end of the line to mark the longline location. Sometimes, buoys attached with long leads that can float on the surface are added at intervals to the main line. This allows the line to be recovered in case of line breakages due to currents and/or being tangled on benthonic features (rock, corals, etc).

HAUL BACK

Weather depending, four to eight hours after finishing the line setting, the haul back of the gear is started. Frequently, the last hook / buoy deployed into the water is the first buoy retrieved back into the fishing vessel. While this has the disadvantage that the first hooks in the set have a much longer soak than the last hooks in the set, it has advantage that it allows the line to be set going downwind and hauled going upwind. It can also give the crew a chance to rest without having to backtrack to the first buoy.

However, some operations will backtrack to the first buoy and start hauling with the first buoy of the set. This is usually done to save travel time or to allow all the hooks in the set to have a more even soak time. Also, it may be a good idea to routinely reverse the line to spread the wear evenly, as the line closest to the drum gets more compressed than the line on the outside layers.

This work can start at any time, but traditionally sunrise is preferred. In most cases today the line is hauled with line haulers or hydraulically powered drums winches which wind in the line, but in all cases manual assistance is used. In the majority of the longliners the haul back is carried out on the starboard side of the vessel. Generally, the catch is hoisted aboard manually using boathooks, except for the largest fish for which a winch is used.

On vessels where a line hauler is used, a crew member oversees the line hauler, which is positioned in such a way that enables him to see both the boat's course and the longline. This crew member can operate the hauler, the spool/reel that stores the line, while also controlling the speed and course of the fishing vessel during the manoeuvre. This operation is carried out at a vessel speed between 2 to 6 knots (weather dependent), but the vessel is often stopped when there are large fish and/or species of high market value on a hook. On vessels where a longline drum winch is used and the line is hauled back through blocks to the drum, the main job for the crew is to unclip the branch lines for storage in bins and to land and prepare fish for storage.

The haul back operation requires that most crew is on deck as there are many jobs happening at once and progressively, with fish being hauled, gear (float, branch lines, buoys, radio boys, etc.) being stored, and catch being processed, prechilled, frozen and stored. Depending on several factors, including the number of fish on the longline, the haul back process can take 10 to 20 hours.

PRESERVING FISH

Once the catch is on board it is processed (normally only bled and gutted for tuna, plus beheading for other species). Tuna are normally pre-chilled in a slurry (ice and seawater) and then either stored in ice, refrigerated seawater (RSW) or taken to be frozen, depending on the type of vessel. Smaller longline vessels carry ice in their fish holds and some can even make ice on board, so will preserve the fish iced. Bigger vessels can combine the ice storage method with having a freezing capacity; in these cases, the fish is normally frozen in blast freezers (designed to rapidly freeze the fish without any loss of product quality) and then stored in holding freezers (designed to keep the fish frozen). The final holding temperature can range from -35°C -60°C depending on the refrigeration capacity. The largest longline vessels have holds with freezer tunnels that enable them to freeze product up to -60°C, which can be stored for several months.

Many longliners operating in the high seas tranship their catches to carrier vessels at certain pre-arranged rendezvous points at sea. They raft beside the carriers and transfer fish in nets that are hoisted from the carrier cranes, or "slings", where all frozen fish is tied up by the tail through ropes to a hook and hoisted to the carrier. The fish there is maintained frozen at -30°C or -60°C according to the species and temperatures of the fish they are receiving. Depending on the RFMO and the flag State, there are specific rules that control transhipment at sea, however in many parts of the world transhipment is considered to be an area of high risk of illegal transfer or catch under mis-reporting.

LONGLINE FISHING GEAR AND RELATED EQUIPMENT

While the shape of a fishing vessel gives a good clue in regards the type of gear that the vessel operates, it is the fishing gear on board that defines the type of fishing that is conducted, and that the vessel should be authorised for on its license. The gear of longliners and the equipment needed to deploy it consists of the following several distinct parts:

THE LONGLINE CLIP

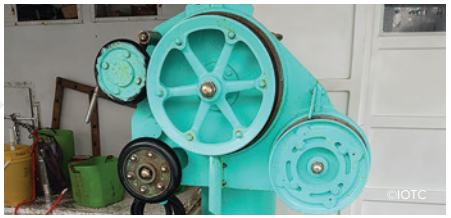
The longline clip allows easy attachment and removal of branchlines (snoods), floatlines, beacons and other gear from the mainline. When setting, branchlines and floats are attached as the line travels off the vessel. When hauling, the clip permits easy removal of gear and catch. The picture shows the attachment of the longline clip to the mainline.

BASKETS, HOOK BINS

The branchlines are stored in special bins. Approximately 500 or more branchlines can be neatly stored and deployed with each bin. Bins are moved to the setting area as needed.

HAULER

Depending on the type of longliner an independent line hauler may be found on deck to assist with hauling operations.

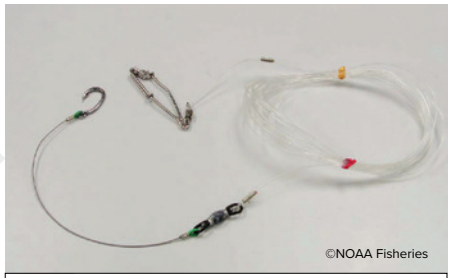


THE BRANCHLINE AND HOOK

Branchlines are left connected to the mainline and either placed on top of each successive coil of mainline or coiled and stored in a separate basket. The branchlines can also be detached and coiled individually and placed in stacks or baskets for storage. Basket gear generally uses short floatlines and long branchlines to achieve a deep set, although there are exceptions such as shallow sets for swordfish (in some fisheries the vessel needs to declare if it is deep setting or shallow setting).

In some fisheries the use of steel cable leads (as seen in the picture) in between the line and the hook is forbidden as it heavily contributes to bycath or targeting landing of sharks.

At the end of the lead is the hook, to which the bait is attached, generally whole or pieces of fish, or squid.



LINE AND BUOYS

Drifting longline has a main line or mother line which can be either monofilament or multifilament and which is currently made of synthetic materials such as nylon, polyamide, polyester, etc.

There are several different types of floats used in longline fishing including glass floats, hard plastic floats, inflatable buoys, bullet buoys, and solid foam floats. The most popular are hard plastic floats that range from 165 to 360 mm in diameter. These floats usually have one or two points for attaching line and are ribbed on the outside, so they pull through the water easily. Their number and distribution along the main line partially determines the depth at which the hooks will be set.

BEACONS

Beacons (commonly known as Radio buoys) are placed on the ends of the gear and at regular intervals, in order to locate the gear in the event of line breaks.

The most common beacons use a radio goniometer, allowing the location of the signal to be determined and the course to follow set in order to locate it. Special select call radio buoys (Sel-Call) are available that give out a signal only when they are called. When these buoys are used, other boats cannot eavesdrop on the signal and figure out where the boat is fishing. There are also RDF and radio buoy systems that provide GPS positions and sea surface temperature.

AIS buoys are also emerging as a cheaper alternative in certain fisheries due to the longer range of transponders and easier visibility. This has the advantage to the MCS practitioner of being able to see the longline gear on AIS, but the disadvantage of significantly 'clouding' the AIS picture.

©TM-TRACKING.ORG

REEL OR SPOOL

A longline reel hauls and stores the mainline (normally nylon monofilament), and is generally hydraulically operated. Depending on the size of the boat, smaller or larger spools are used with some boats using two spools. A traveling block runs the length of the spool slowly guiding the line from one end of the spool to the other when hauling to ensure an even distribution on the spool.


©NOAA Fisheries

THE LINE SHOOTER

The monofilament mainline is fed through the line shooter that pushes the line off the boat. The mainline is paid out from the back of the stern normally, although some boats are now setting from the side in an effort to reduce seabird interactions.

Some smaller vessels don't use a line shooter, instead using only a pully on the stern to set the line, using the vessels controls to manage the deployment speed.


©NOAA Fisheries

©TM-TRACKING.ORG

LONGLINER POSITIONAL TRACKING (AIS AND VMS)

The ability to get a clear indication of what gear type is being used by an individual fishing vessel, based on vessel movement patterns from remote monitoring sources such as AIS and VMS varies considerably across gear types, the length of the fishing operation, and the frequency and availability (temporal/spatial resolution) of the position signals. However, in general it is important to understand that vessels that use different gear types do generally have distinctive positional movement patterns. The longer that fishing operations go on, the more likely the vessel can be identifiable by fishing method due to the likelihood of an increased number of vessel positions being received. One characteristic that is common to all fishing operations is that there is always a stop or drop in vessel speed at some point in the fishing operation.

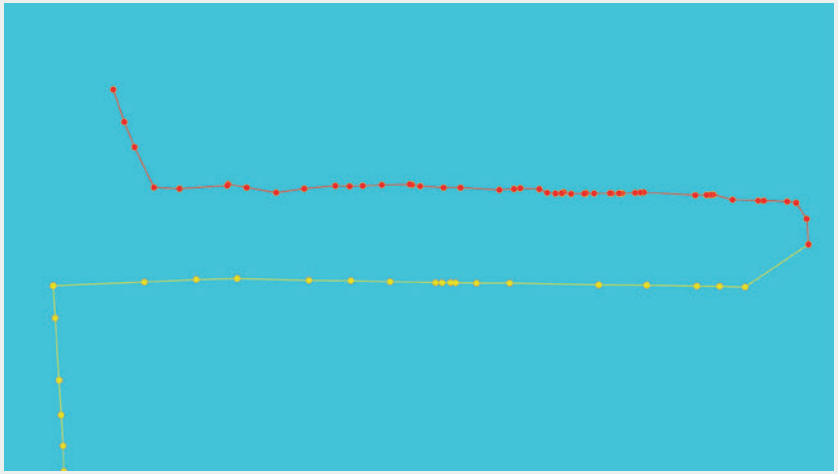
Surface set longlines are a gear type that normally leave a very distinctive pattern in AIS and VMS systems. Longlines take time to set, and the longer the line and the longer the setting operation takes, the more distinct the positional pattern is. These patterns are generally straightforward to identify through positional data analysis.

Key indicators include:

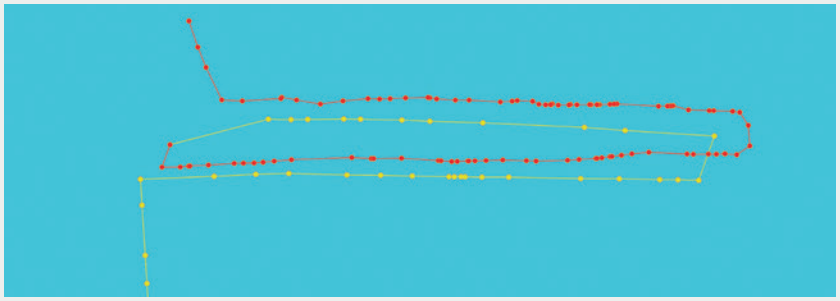
1) linear AIS and/or VMS patterns, often showing two sets of lines of positions (corresponding to the set and haul), with a variation of speeds.
2) slower speeds during hauling and faster during shooting of gear.
3) straight lines at relatively consistent higher speeds as the vessel repositions to new fishing grounds between gear deployments.

Once the vessel begins to deploy longline gear a distinctive track pattern emerges. Standard practice is to set the gear in the same direction as the wind or current. This can be verified by looking at weather data or by comparing VMS or AIS tracks to other known longliners within a local area to ascertain similarities or trends.

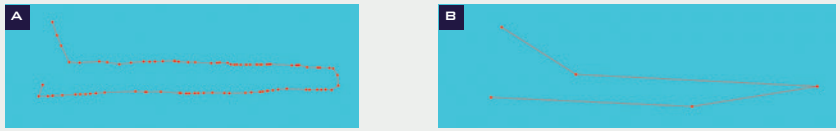
As already discussed, in recent years there has been an emergent trend within commercial longlining (as well as in other fisheries) to use AIS gear locator beacons. The broadcast from these beacons is also sometimes visible on AIS systems, sometimes leaving distinct patterns where the set longline can be clearly observed.



AIS positions showing a distinct pattern for a vessel operating with longlines with a single set and haul of a line, where the set is displayed in yellow, and where the haul is displayed in red.



AIS positions showing a distinct pattern for a vessel operating with longlines with two sets of lines, where the sets can be seen in yellow, and the hauls shown in red.



AIS positions showing longline hauling in isolation, with a) HIGH temporal and spatial resolution (i.e. multiple AIS signals) and b) with LOW temporal and spatial resolution (i.e. limited AIS signals).

AIS tracks generated using exactEarth data

DISTANT WATER TROPICAL TUNA LONGLINERS - OTHER CONSIDERATIONS

Longliners, particularly those involved in the tropical tuna fisheries, have been associated with several operational issues and challenges that the MCS practitioner should be aware of:

BYCATCH

Serious environmental, economic, and social problems can result from bycatch within pelagic longline fisheries. As in any type of fishing gear, bycatch issues can be minimised and mitigated against, but sadly are not totally avoidable. The minimization strategies in longliners are highly dependent on the type (demersal or surface) and the target species. For example, in tuna fisheries, the depth of setting the line below the thermocline[1] is an important element in avoidance of the bycatch of other fish species as most tuna is caught below the thermocline.

Seabirds that get caught while feeding on baited hooks can also be considered as bycatch, and in some longline fisheries bird mortality rates are significant. Many countries now have specific measures in the licensing agreements relating to measures to avoid this, such as weighted branch lines, tori lines (weighted lines that mitigate against bird bycatch), or hook-shielding devices. While it is impossible to check their use unless an observer is onboard or an at-sea boarding is conducted during fishing, their presence on board a fishing vessel can be part of port-based inspections. Setting lines at night also reduces bird bycatch, and it is possible to monitor this through AIS and/or VMS tracking data. In tropical fisheries, turtle species can also be readily hooked as bycatch and many vessels are equipped with dehooking devices. In some fisheries too many turtle interactions or deaths can shut down the fishery. As such it is important to understand and ensure turtle bycatch mitigation approaches.

One of the biggest issues facing the global shark population is the mass mortalities due to bycatch. Sharks are often caught as bycatch in longline fisheries, often with high mortality levels due to their biological requirement for constant movement of water over their gills to breath. Entanglement in the longline prevents sharks from being able to swim resulting in drowning. This issue is difficult to mitigate against, however measures including the use of circular hooks, the banning of wire lines to improve the shark's ability to free themselves, and reducing the longline soak time so that sharks that are hooked can be released before drowning, are emerging within proactive longline fisheries.

1 A thermocline is the transition layer between the warmer mixed water at the surface and the cooler deep water below, where there is a sudden change in temperature that defines two different densities of water

SHARK FINNING

Shark finning is the practise of cutting off a shark's fins to be sold as a separate product for use primarily in China as the key ingredient in shark fin soup. While sometimes fins are cut off sharks where the rest of the body is retained on board for other use, frequently the fins are cut off and the body discarded back into the sea.

Unfortunately, the high market value of shark fins means that unless regulation requires it, and despite the availability of shark bycatch reduction measures described above, there is often little incentive for longline fishing vessels to avoid shark bycatch. So much so that vessels licenced for 'Tuna and Tuna like Species' have been observed to actively target sharks in certain fisheries. In addition there have also been cases where longliners have switched to gill nets to more effectively target shark species. This practice is currently banned under a global moratorium on gill netting on the high seas. An important MCS consideration is that many longliners that conduct directed effort to catching sharks often operate much nearer reefs or atolls than tuna-focussed fleets operating far offshore.

TRANSHIPMENT AT SEA

In most RFMOs, certain types of longliners are authorised to transhipment at sea. This allows the vessel to unload their catch under very specific conditions to larger carrier vessels and also to receive bait, fuel and supplies from the carrier vessel, thus enabling them to stay at sea and on the fishing grounds for long periods of time. While coastal States can specifically regulate transhipment activities within exclusive economic zones, high seas transhipment is the responsibility of respective RFMOs and flag States.

When transshipment occurs on the high seas, longliners must tranship their catch only with carrier vessels that are also authorized by the respective RFMO. In some RFMOs, the flag States of longliners must provide details of which specific carrier vessels their longliners are authorized to tranship with. There is recent evidence that indicates some longliners selectively tranship certain types of catch at sea while retaining other species onboard. These practices support the widely held view that high seas transhipment is an area of significant risk in terms of misreporting and underreporting and thus a high-risk area in regard to IUUF.

(Above) Longline vessel transhiping to a carrier vessel at sea. The use of large Yokohama fenders can be observed.

CREW LABOUR CONDITIONS

Crews working in any fishing vessel commonly have extremely difficult working conditions. The injury and fatality rates are higher in fisheries than any other sector. Even against this backdrop longline vessels, particularly those operating in distant water fisheries, have been associated with particularly difficult working conditions. The gear characteristics mean very long working hours, and fatigue has been identified as a serious problem. Injury from hooks and line is not uncommon.

For those vessels operating in distant water fisheries, crews can be out at sea for months or even up to a year before the vessel returns to port. Living conditions are frequently cramped, and food and water can be of poor quality. In the worst scenarios, crews can be working under conditions that can be considered as indentured labour and/or physically abusive, up to and including death. For most longline vessels operating around the world, these may not be concerns but for those MCS practitioners working in countries and ports where distant water tuna longliners are operating, these issues should be considerations when inspecting vessels.

VESSEL IDENTITY ISSUES

While the majority of longliners are operating under clear identities and authorisations, there have been many documented cases of tropical tuna longliners involved in vessel identity fraud. This can include changing vessel identifiers on the physical vessel itself, falsifying or forging vessel documents and licenses, and 'spoofing' AIS identities and positions.

There are several reasons an owner or captain may try to conceal the true identity of a fishing vessel; for example, to cover up a history of illegal fishing, avoid compliance with safety regulations, avoid paying license or other fees, or to illegitimately gain access to fishing resources. In particular, the issues of one vessel pretending to be another (often legitimately authorised) vessel, or a vessel claiming to have a particular flag when it is in fact registered elsewhere or is stateless, have been identified. A key mitigator against this practise is to require that licensed or authorised vessels have a unique International Maritime Organisation (IMO) number that stays with the vessel throughout its lifetime.

VESSEL SAFETY ISSUES

As longline fishing vessels can spend weeks or months at sea, ensuring that ship safety standards are met is paramount. Vessels that appear to be in a bad state of repair or having missing or faulty equipment should be the focus of additional attention from the relevant national authorities.

LONGLINE VESSEL INSPECTIONS - WHAT TO LOOK FOR

For an overview of the general needs and considerations for the inspection of all fishing vessels, please refer to the brief MCS Practitioners Introductory Guide to Industrial Fishing Vessel Inspections. Specific considerations for in port and at sea inspections of longline fishing vessels include the following:

CATCH RELATED

Most longline licensing conditions specify the target species as well as the bycatch able to be retained on board. Inspection should include storage hold for species composition, and evaluates if the volumes found are in a similar ratio as in the logbooks / catch declarations, etc. If the vessel has for example only bycatch on board, then potentially an illegal transhipment may have taken place for the target species (see next section).

EVIDENCE OF ILLEGAL TRANSHIPMENT

Transhipment is highly regulated in most jurisdictions and associated with conditions and authorizations normally found in licensing conditions. If the vessel does not have this authorisation, and VMS/AIS based proximity analysis as part of the Advance Request for Entry to Port (AREP) assessment indicates that the vessel has spent time in proximity at sea to another vessel (generally 4+ hours) at the low speed required for transhipment (generally less than 2 knots), then the possibility of an illegal transhipment should be investigated as part of an inspection. In this case, logbooks, temperature variations on the cargo hold, and estimates of volumes and catch composition in the fish holds in comparison to those recorded in documents can be used to determine if a non-authorised transhipment took place.

However, it needs to be considered that operationally there are many other valid reasons for which a vessel can get alongside that do not imply transhipment, for example provision of food, new gear, crew, parts, oil, etc.

SHARK FINS

Licensing conditions will determine the legality of retaining all, some, or no shark species on board. If certain sharks are allowed to be retained on board, this is normally associated with requirements for the fins to be naturally attached (i.e. not separated) from the body. If during inspection shark fins are found separated and the captain/master suggests they were accidentally separated, then the number of fins found needs to be checked against the number of bodies.

While most sharks have eight fins (2 pectoral fins, 2 pelvic fins, 2 dorsal fins, 1 anal fin, and 1 caudal/tail fin) generally it is the main dorsal, the 2 pectorals and the whole or part of the caudal/tail that are kept and traded. Inspection should result in complete sets from the same shark, rather than for an assorted mixture. The proportion of fins by quantity should normally be of around 50% for pectoral fins, 25% for dorsal fins and 25% for caudal fins. The search for the presence of shark fins on board should be an integral part of longline vessel inspections; shark fins are normally dried on deck and/or in the engine room, and then stored in sacks in the freezers behind frozen fish. However if the practise is illegal they can be concealed in other areas of the vessel.

CREW CONDITIONS

Identifying if crew are working in unsafe, unsanitary, abusive or even indentured labour conditions can be very difficult. Fisheries inspectors on their own are frequently not trained to identify these issues, and it is recommended that such training, or cooperation with labour agencies, is developed. An important source of information is the crew themselves, and it is important to build a positive rapport with them.

However, if interviewing crew for whatever reason, inspectors need to be aware of the safety and confidentiality issues that potentially arise once the inspection is over, and the crew are left on board to potentially suffer negative consequences from the vessel's officers. While in port a good strategy is to invite the crew to the wharf for interviews, as then they will be under the jurisdiction of the port State, instead of the flag State while they are on board the vessel.

Crew conditions will vary considerably based on the flag State (and increasingly coastal State) requirements, and it is important to understand that what may be seen as poor condition according to the standards set by one country are standard for another. Nonetheless, all crew should be working under reasonable working conditions, and any indications otherwise should be further investigated by the relevant national Labour agency.

DURATION OF FISHING TRIP - DOES THIS MATCH THE NORM?

The duration of a longline vessel fishing trip is dependent on a number of variables. Outside their autonomy (the time that a boat can operate on one load of fuel), one of the most important considerations is the type and size of frozen cargo holds on board.

Vessels that preserve catch using Ice, Refrigerated Sea Water (RSW), and slurry (seawater and ice) are limited to a maximum of 2-3 weeks of operation before returning to port. Vessel that freeze and chill may freeze the first few weeks of catches and preserve in ice or RSW the last 2-3 weeks, thereby staying at sea much longer.

Vessels that legally tranship at sea and are also re-supplied with food, fuel and crew, may stay at sea for months or even more than a year. While total fishing trip time will vary, the average duration for the vessel type and even individual vessel can be determined from AIS/VMS positional analysis and port visit frequency. Any significant deviation from this average should be investigated as it may indicate a change of operations, or transhipment at sea.

NOTES

The MCS Practitioners Introductory Guide series has been developed by TMT in cooperation with the International MCS Network (IMCS Network).

They are intended to be used as training tools to introduce common international industrial fishing vessels, gear types, and operations, towards building knowledge in personnel working in all government agencies (Fisheries, Port, Coast Guard and Navy, Maritime etc.) who may play an operational role in fisheries monitoring, control and surveillance (MCS), as well as for use by broader interested stakeholders.

The tools are also supported and made available by the cooperating organisations of the Joint Analytical Cell (JAC)
www.tm-tracking.org/joint-analytical-cell

The Guides are available for download at
www.tm-tracking.org/updates-and-resources and https://imcsnet.org/documents/

To print high resolution copies, please contact info@tm-tracking.org to request the print file.