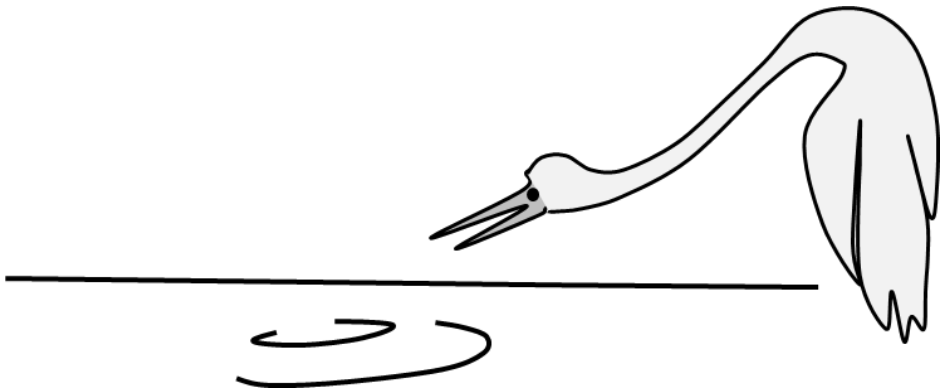
Specified Skills
Educational Textbook for the Fishing Industry Skills Proficiency Test
(Fishing)
(Line Fishing)



Japan Fisheries Association
(First Edition: December 2019)
(Partially revised: September 2025)

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Pole-and-Line Bonito Fishing

1. Fishing Grounds

Fishing grounds for pole-and-line bonito fishing are in the waters near Japan, the international waters of the Pacific Ocean, and the tropical regions of island countries.

2. Caught Fish

The main types of fish targeted in pole-and-line bonito fishing are bonito, albacore tuna, yellowfin tuna, and bigeye tuna. In addition to these species, dolphins, mackerel tuna, frigate tuna (bullet tuna, auxis thazard), yellowtail amberjacks, and rainbow runners are also caught.

3. Fishing Tools

(1) Fishing Poles, Automatic Fishing Machines

For fishing poles, while bamboo poles are used as well, fiberglass poles are the most common. They range from 2.5 m to 4.5 m in length depending on the fishing location (the height of the side of the ship). Fishing locations closer to the tip of the ship use longer poles. Furthermore, longer poles are used for fishing with bait, while shorter poles are used for fishing with lures.

Fishing poles are prepared by attaching a main line, a snell, and a hook (Figure 1). In addition, in order to address crew shortages and energy reductions, "automatic fishing machines" which move poles automatically using hydraulic pressure or electricity, are also utilized for bonito fishing.

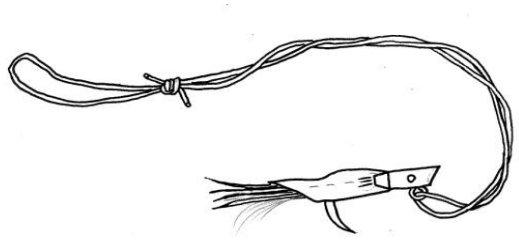

Figure 1: Snell and lure

(2) Fishing Lines

Fishing lines are composed of two different lines: one called a “main line” and one called a “snell.” When using lures, the length of the main line is about 40 cm shorter than the length of the fishing pole used. A snell of about 20 to 30 cm is attached to the end of the main line in this case.

(3) Fishing Hooks

Fishing hook types differ depending on whether a lure is used or live bait is attached.

Lures are used in fishing when bonito are actively biting (Figure 2), and live bait is attached to a barbed fishing hook (Figure 3) when there are fewer bites. Lures do not have barbs, so when bonito caught on the hooks are reeled in, the bonito will detach from the hook while in the air.

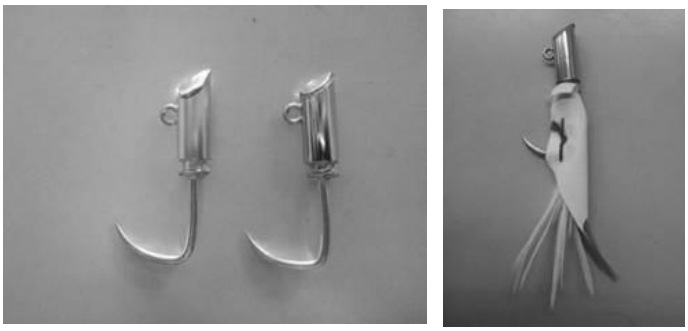

Figure 2: A fishing hook for lure and a hook with artificial bait

Figure 3: A fishing hook for fishing with bait

4. Operations

(1) Sighting a School of Fish and Commencing Fishing Operations

When a school of fish is sighted, the fishing vessel approaches it at full speed. Fishing preparations begin when the fishing vessel reaches the school of fish and the bow of the ship comes into contact with it.

In the time between sighting a school of fish and commencing fishing operations, live bait is transferred into a throwing bucket along with seawater, and this bucket is then inserted into a barrel on the left side of the bow. The fishing location is predetermined, and bonito are landed from a fishing stand installed on the side or bow of the boat. Veterans or fishermen with superior technique are usually positioned on the bow side. As the stations move to the left side and rear, fishermen are stationed in order of descending skill levels, first intermediates and then beginners.

(2) Commencement of Bait-Throwing Operations

When the fishing vessel arrives at the fishing grounds, seawater is sprinkled using sprinkler systems extending from the bow of the ship to the left side as a means of improving the movement of the bonito. The crew member in charge of throwing the bait scoops the live bait into a round net and scatters it onto the sea surface (Figure 4).

Figure 4: Live bait is scattered while the water sprinkler systems operate

(3) Fishing

When the bonito start biting in response to the sprinkled water and the scattered lived bait, lures are used. If they are not biting, fishing is conducted with live bait attached to a fishing hook. When fishing with lures, fish caught on the hooks are grounded quickly (Figure 5). Because lures do not have barbs attached, bonito reeled in will quickly detach from the hooks while in the air or above the deck. When the bonito fall onto the ship, they slide into the fish hold via a slope. The most important point when catching bonito is reeling them in from directly in front of you. If you attempt to reel in a fish when it is swimming horizontally, the fishing hook may become entangled in another person or fishing line and cause an injury, so be careful.

Figure 5: When the fish are biting, the crew members spread out along the central cabin and fish

When fishing with bait, the fishing hook has a barb attached. Accordingly, a fish that has been reeled in should not be swung overhead, but instead held under one's left arm. After removing the hook with your right hand, throw the fish onto the slope behind you, allowing it to slide into the fish hold.

5. Processing Catch

(1) Fresh Processing

For near-sea fishing ships that unload fish fresh, the catch must be stored in cooled water which is a mixture of seawater and fresh water using a refrigeration system in order to maintain the freshness of the fish. The cooling temperature depends on the fishing vessel, but ranges from 0 to 2°C.

(2) Unloading

When unloading fresh bonito, each fish is carefully unloaded from the ship by hand. The crew members, wearing raincoats and gloves, enter the fish hold, grab one or two fish in each hand, line up along the wall from the fish hold to the wharf, and pass the fish out of the boat by hand.

Squid Fishing

1. Main Types Targeted

In the area near Japan, the main types of squid caught are the Japanese common squid, the spear squid, the swordtip squid, and the neon flying squid.

2. Squid Fishing Techniques

Although squid fishing is also conducted during the day, it is mainly carried out at night. In nighttime operations, lights called fish-luring lights are used to cause squid to gather around the fishing vessel, and the squid are caught using lures called squid jigs.

(1) Parachute Anchors

Squid fishing is carried out with the ship in motion together with the current to avoid having the fishing lines get tangled. For this reason, a parachute anchor (para-anchor) is cast into the sea from the bow of the ship. Inserting a para-anchor allows the ship to move with the current (Figure 6).

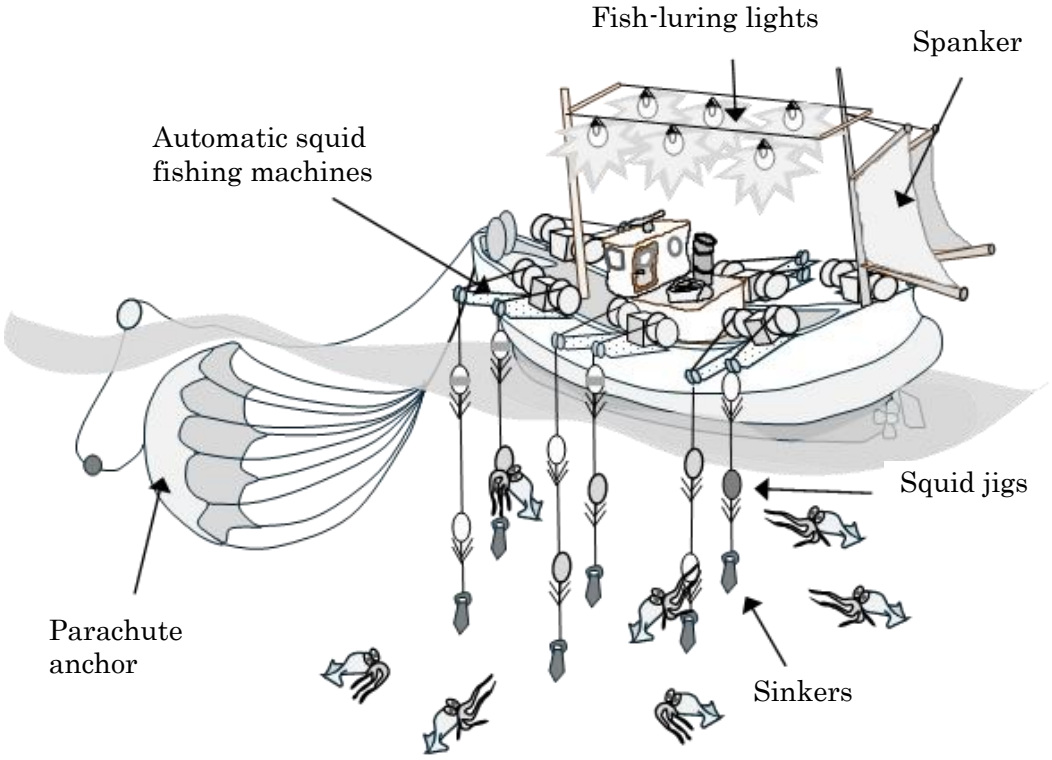

Figure 6: Squid fishing vessel

(2) Automatic Squid Fishing Machines

Winding reels (drums) that wind the fishing lines are attached to the automatic squid fishing machines (Figure 7). Rotating the winding reel (drum) automatically raises or lowers the fishing gear, reeling in squid. An operating panel is attached to the fishing machines which allows users to adjust the casting speed and depth of the fishing line, as well as the winding speed. In addition, these machines are also equipped with a squid receptacle (sink), a front roller, and an escape-prevention board (Figure 8). The fishing gear is attached by winding back the main line and the fishing line, 20 to 30 squid jigs are attached to the fishing line in intervals of about 1 m, and an anchor is attached at the very bottom (Figure 9). Squid that have been reeled in are dropped into the squid receptacle installed on the bottom of the drum. Afterward, they are slid down a chute attached to the side of the ship which leads to the location where packing is performed.

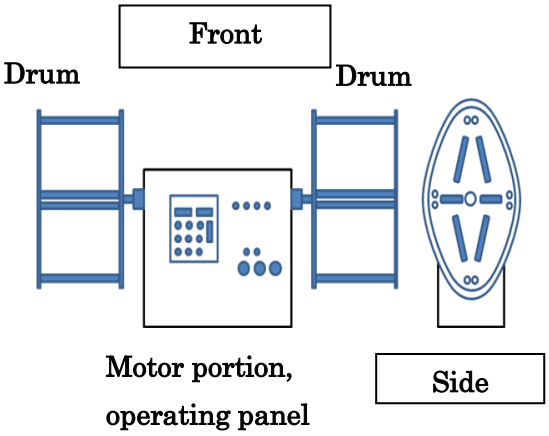

Figure 7: Automatic squid fishing machine

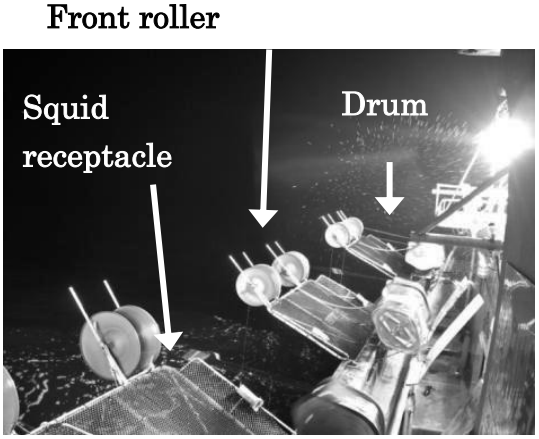

Figure 8: Automatic squid fishing machine in operation

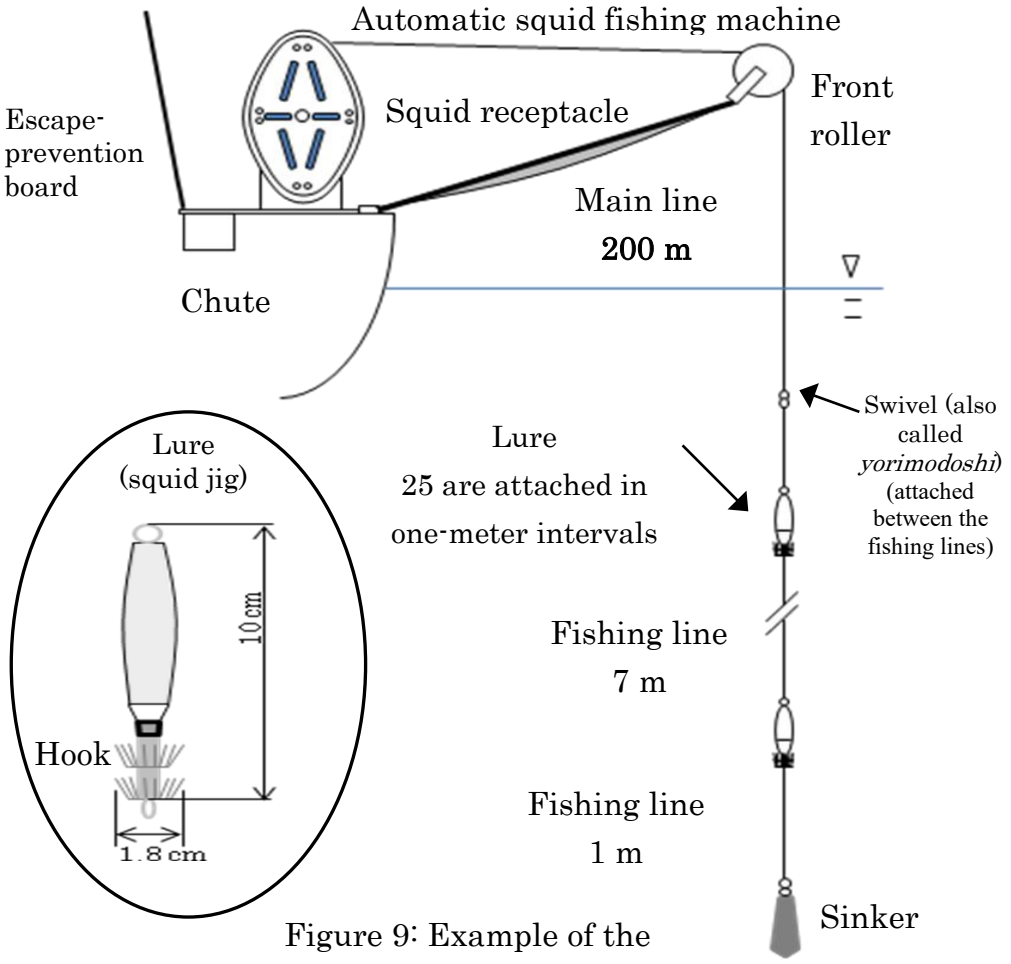

Figure 9: Example of the structure of fishing gear

(3) Fish-Luring Lights

In squid fishing, metal halides are often used as fish-luring lights (Figure 10). These are sometimes also used in combination with halogen lights, which have a long working life.

Figure 10: Metal halide fish-luring lights

3. Operation Procedures and Content

(1) A ship departs from the port carrying boxes and ice. The ship reaches the fishing grounds by sunset and determines the site for operations by considering such factors as the water temperature, wind, current, information from the fish school detectors, and the positions of other ships.

(2) After arriving at the fishing grounds, the squid fishing machines and receptacles are prepared, and then the para-anchor is cast, and the ship moves with the current. In addition, the bow of the ship is turned to face toward the wind using a spanker sail.

(3) Around nightfall, the fish-luring lights are lit. The number of lights is adjusted based on the fishing conditions. Generally, the largest number of fish-luring lights are lit in the initial stages of operations. When the fishing depth is deep or operations are carried out before nightfall, the number of lights may be reduced to guide the squids to a shallower depth.

(4) Based on information from the fish school detectors or sonar devices, the fishing gear is lowered to the depth of the squid, and they are reeled in using the automatic squid fishing machines. Adjacent automatic squid fishing machines lower their fishing lines a few seconds apart from each other to avoid tangling.

(5) Squid that have been reeled in detach from the lures and then flow with the seawater along the chute installed on the side of the ship and are collected in the center of the ship. These squid are then sorted according to size and packed either as live or fresh fish (coastal squid fishing vessels) or as frozen fish (deep-sea and short-sea squid fishing vessels).

(6) After completing squid fishing, the following operations are conducted: the sinkers are loaded, the receptacles are put away, the spanker sail is stowed, and the para-anchor is pulled up, in that order.

(7) Coastal squid fishing vessels return to harbor around sunrise and unload their catch. When the fishing grounds are distant, fishing vessels may stay offshore without returning to the harbor in some cases. In this case, one short-sea squid fishing vessel voyage lasts anywhere from around a few weeks to one month from departure to return to the harbor. During the offshore period, squid fishing operations are repeatedly carried out.

4. Packing and Unloading

When shipping fresh fish, the caught squid are gathered in one location and packed. For the boxes, Styrofoam (foam boxes) are typically used.

The quality of the squid is evaluated based on factors such as the body color, texture, and the transparency of the sashimi (raw meat). If the squid are in direct contact with ice, their body color will turn white. The foamed boxes are first lined with crushed ice and plastic sheets, then squid about the same size are packed into the boxes above these layers. This ice-lining method is referred to as *shitagoori* (bottom-ice). Storing squid using *shitagoori* preserves the same brown body color after squid are caught. The number of squid packed per box differs depending on their sizes, but generally each box is packed with between 5 and 6 kg of squid. Furthermore, some small ships are equipped with a fish tank for bringing the squid back as live catch.

For deep-sea and short-sea fishing vessels, each voyage lasts a number of days, so the caught squid are preserved by freezing. After they are sorted, the squid are lined up in a case called a *pan*, and flash-frozen using the ship's refrigeration system. Afterward, the clump of frozen squid is removed from the *pan* and stored in a freezer on the ship. In addition, freezing is sometimes conducted after carrying out processing known as *tsubo-nuki* (degutting), which removes the guts and tentacles so that only the body remains.

Tuna Longline Fishing

1. Overview

Tuna longlines consist of a main line, branch lines, floats, and float lines. As illustrated in Figure 11, a tuna longline is an item in which one long main line has many branch lines attached to it that hang down. The branch lines each have a fishing hook attached, and each hook has bait attached. There are also floats attached at certain intervals.

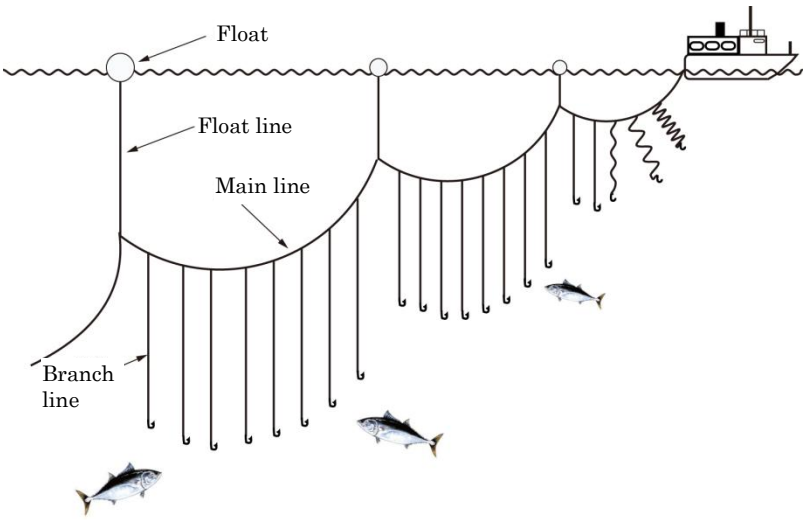

Figure 11: Outline of tuna longline fishing

The distance between floats is called one *hachi*.

The number of branch lines suspended in one *hachi* varies depending on the swimming depth of the type of fish being targeted.

Operations are conducted in waters around the world, including near the coasts of Japan.

2. Targeted Fish

(1) Types of Tuna

- Bluefin tuna: known as *kuromaguro*, *honmaguro*, or *shibi* in Japanese. Young fish of this species are known as *yokowa* and *meji* in Japanese.
- Bigeye tuna: Young fish of this species are also known as *daruma* in Japanese.
- Yellowfin tuna: Also known as *kihada*, *kiwada*, and *kiwada maguro* in Japanese. Young fish of this species are also known as *kimeji* in Japanese.
- Albacore tuna: Also known as *binnaga*, *bincho*, *tombo*, and *binnaga maguro* in Japanese.

(2) Marlins

・Striped marlin

・Indo-Pacific blue marlin: also known as *kurokajiki*, *kurokawa*, and *kurokawa kajiki* in Japanese.

・Black marlin: Also known as *shirokajiki*, *shirokawa*, and *shirokawa kajiki* in Japanese.

・Swordfish: Also known as *mekajiki* and *meka* in Japanese.

・Indo-Pacific sailfish: Also known as *basho-kajiki* and *akitaro* in Japanese.

3. Main Fish Bycatch

Bonito, Spanish mackerel, mahi, opah, ocean sunfish, and sharks.

4. Bait Used

Types of horse mackerel (such as Japanese horse mackerel, amberstripe scad, and bigeye scad), as well as other seafood such as squid, sardines, and gizzard shad, are used.

5. Structure of Fishing Tools

As shown in Fig. 12, the tuna longline is a fishing tool in which a main line with numerous branch lines with barbed hooks attached is suspended in the ocean using floats. Typically, the interval between branch lines is about 50 m, resulting in fishing hooks with bait attached being interspersed to depths from 100 m to 350 m, even within a range of one *hachi*, due to the main line bending.

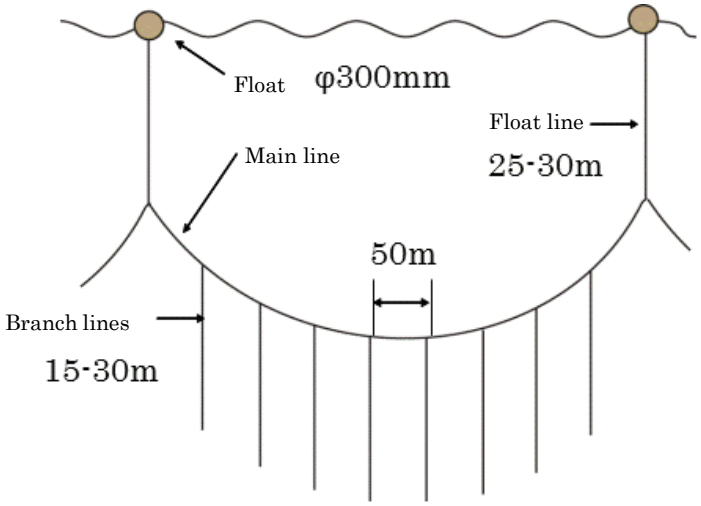

Figure 12: Structure of fishing tools

(1) Main Line

The main line has a length ranging from about 100 to 120 km. The main line is stored on the ship in a line box or on a reel.

(2) Branch Lines

Branch lines are the lines attached to a main line with fishing hooks attached to them. They can be attached to the main line with a snap (Figure 13).

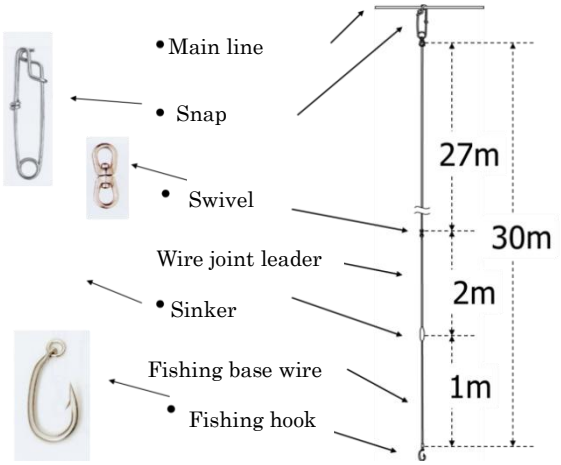

Figure 13: Structure of branch line

(3) Float

Floats are spherical objects made of plastic with a diameter of 300 mm. 2 to 3 are connected to adjust the buoyancy (Figure 14).


Figure 14: Floats (2) and float line

(4) Float Lines

Float lines are lines connecting the floats and the main line. They are generally about 30 m long. The placement depth of the main line is determined by adjusting the length of the float lines (Figure 14).

(5) Flag Pole

Flag poles are flags attached to flag buoys. They are attached at the end of the main line when the line casting is complete to serve as a mark for the beginning point of line hoisting.

(6) Radio Buoys

Radio buoys are buoys that emit radio waves. The location of these buoys can be confirmed when a ship receives the radio waves emitted from the buoy (Figure 15).

Figure 15: Radio buoy

(7) Lighted Buoys

Lighted buoys are lights attached to a float so that the location of lines can be confirmed at night when performing line hoisting (Figure 16).

Figure 16: Lighted buoys

6. Fishing Devices

(1) Line Casters

・Line Shooter

A line shooter is a device that casts a main line that was stored in a line box or a reel into the water at a set speed. It is set in the area of the central stern. A person sits facing the stern, then attaches a snap to the right side of the line shooter.

・Hooking Master

A hooking master is a device for giving a sound signal for a branch line or a float to be attached to a main line at a certain interval. A different sound is emitted at the respective locations for attaching branch lines and floats.

・Bait Caster

A bait caster is a machine for casting bait attached to a fishing hook. It runs out of bait less often than throwing by hand and also enables casting to specified locations.

(2) Line Hoisting Devices

・Line Hauler

A line hauler is a device for hauling a main line onto the ship. It is operated either hydraulically or electrically (Figure 17).

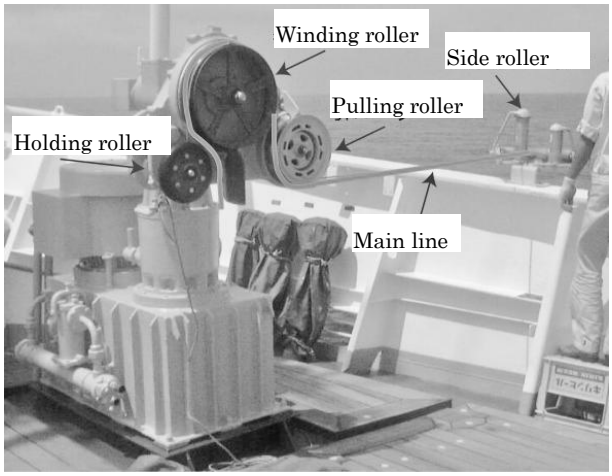

Figure 17: Line hauler

・Branch Reeler

A branch reeler is a device for winding a branch line in a coiled shape. A snapping portion of a branch line disconnected from the main line is hung between claws in a side roller portion, and the branch line is mechanically wound by rotating the claws (Figure 18).

Figure 18 Branch Reeler

・Float Winder

A float winder is a device that brings floats onto a ship and winds a float line in a coiled shape. The last few meters are pulled up by hand.

7. Main Line Storage Devices

(1) Winder

A winder is a device in which a main line having a length of over 100 km is stored in a line box which is installed near the stern. The line is coiled and dropped evenly into the box. Also called a line arranger.

(2) Reel

A reel is a device that winds the entirety of a main line on a large reel without the use of a line box.

(3) Mag Reel

A mag reel is a different type of reel. Instead of winding an entire main line on one large reel, this method uses small, replaceable reels. The main line is divided into several of these small reels.

8. Waiting Time

Wait until the behavior of a cast longline fishing tool stabilizes and a fish bites. The waiting time is typically about 4 hours. For line returns, return to the starting point of casting during this period.

9. Line Hoisting Work

Line hoisting is carried out by all of the crew members. They gather in a predetermined configuration, collect the flag pole in the sea, and commence the line hoisting, beginning work that typically extends for as long as 12 hours. The work is carried out with periodic rotations between each station.

10. Fish Processing Methods

When fish such as bigeye tuna, bluefin tuna, and yellowfin tuna are caught on a longline, they are quickly processed on the ship. There are four typical processing methods: rounding, semi-dressing, dressing, and filleting. This section describes the semi-dressing processing method.

(1) Cut Off the Caudal Fin

Cut off the caudal fin of the fish that has been brought on deck. When cutting off the caudal fin, the location shown in Figure 19 is cut. After cutting off the caudal fin, the fish is killed in a single, quick movement.

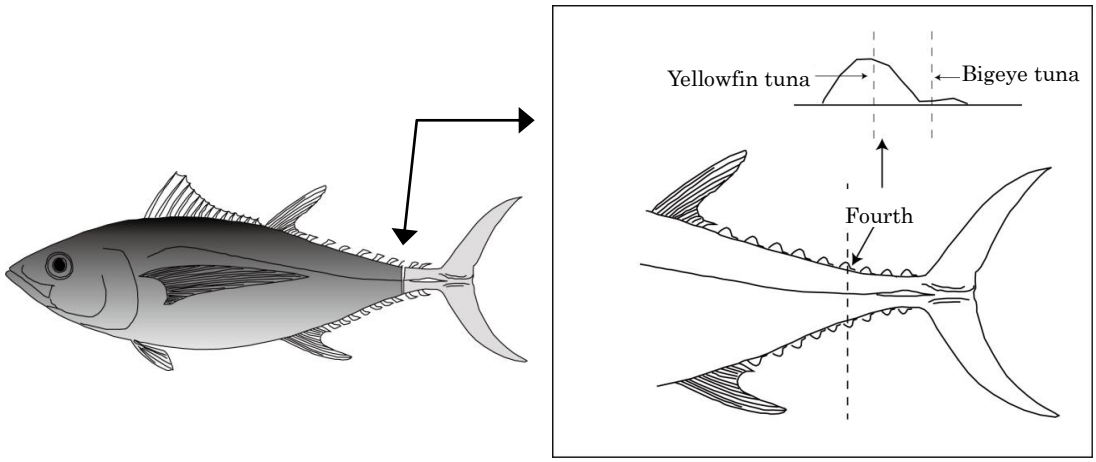

Figure 19: Caudal fin cutting location

(2) Killing

The fish is killed quickly in order to maintain freshness. For small fish, the head is struck with a mallet or similar implement (Figure 20). Alternatively, the crown of the head may be pierced with the pointed end of a metal bar (Figure 21). For large fish, cut a hole in the white part of the head as shown and pass a wire along the spine (Figure 22).

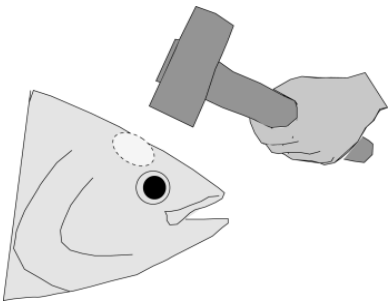

Figure 20: Strike

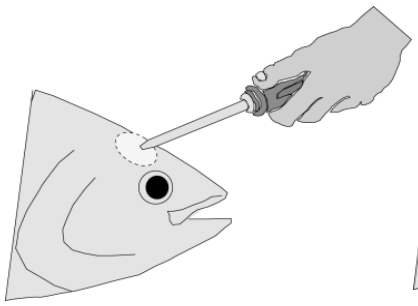

Figure 21: Pierce

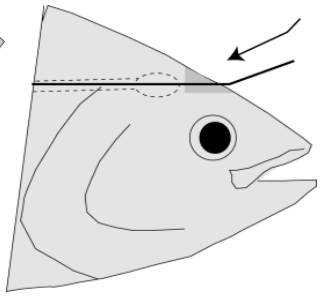

Figure 22: Insert

(3) Draining Blood

Make a cut in the region of the base of the pectoral fin. Stick a pipe into the operculum, and feed seawater in (Figure 23)

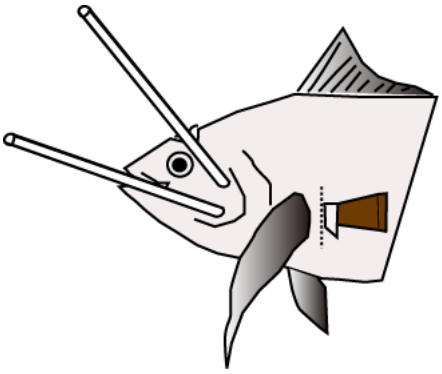

Figure 23: Draining blood

(4) Removing Gills (Degutting)

Insert a knife and split the belly from the anus to the ventral fin. Cut off the anus and the intestines (Figure 24).

Lift the operculum and cut off the portion connecting the gill cleft to the lower jaw.

Next, from the gap, insert the knife along the collar, and separate the guts and the body by cutting. If you hold and pull from the gill cleft, it will be removed along with the organs. Lastly, cut the operculum straight off, and cut off the remaining fins at their bases (Figure 25).

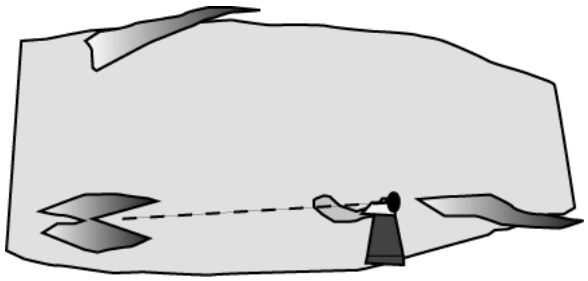

Figure 24: Cutting the belly open

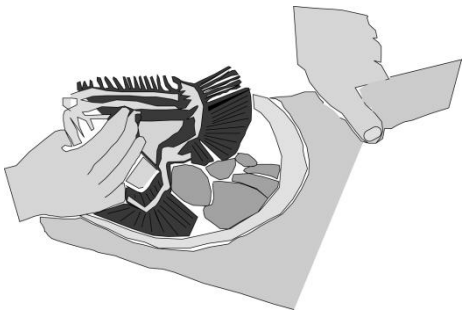

Figure 25: Removing gills

(5) Flash Freezing

After a fish body has been weighed, insert it into the freezing preparation chamber to chill. Next, insert each fish into the flash freezing chamber in the order of processing. Align each fish with gaps in between, making sure the fish do not touch each other, so that the cold air can circulate sufficiently.

(6) Removal from Freezer (Glazing)

Fish bodies that have been frozen by flash freezing for 12 or more hours are transferred to a fish hatch. At this time, glazing is conducted in order to prevent drying or freezer burn as a result of the freezing. The fish are inserted into a metal tank filled with fresh water that has been placed in a freezing chamber, and the fish are dipped inside such that a layer of ice forms over the entire body, including both the surface and the inside the stomach. For a fish such as a marlin which has a body bigger than the tank, water is poured over the entire body using a ladle or similar tool. After the glazing, each fish is transferred into the fish hatch. Note that when fish are caught in the waters near Japan, they may also be preserved with a refrigerating method using materials such as coolant or crushed ice in some cases.

Bottom Longline and Bottom Vertical Longline Fishing

1. Overview

The "longline fishing" is a fishing method that is widely used in the coastal areas of Japan, and a wide variety of fish are caught, ranging from pelagic fish to bottom-dwelling fish. The structure of fishing tools for longlines varies slightly depending on the type, but the basics are the same. Here, the bottom longlines and bottom vertical longlines are explained.

The basic structure of fishing tools is similar for the bottom longlines and bottom vertical longlines. The structure consists of a main line routed horizontally along the seabed with floats and sinkers to set the main line in a designated deep water layer near the seabed, and fishing hook devices (snells) are attached to the main line at regular intervals. For the floats and sinkers, their depth from the sea surface and their height from the seabed are adjusted by the float lines (vertical lines) and sinker lines. The anchor lines are connected to the lower ends of the float lines (the upper ends of the sinker lines, tying portions).

For each fishing hook (with snell and other) attached to the main line at regular intervals in the case of bottom longlines, a joint or tying loop (called *tsubo*) to which each branch line (snell) is tied at regular intervals, or a hook fastener that holds the hook-type snatch of each branch line (snell) is connected to the main line. On the other hand, a tying line or a clip is attached to the top end of each branch line to be tied to the main line. In some cases, snells are directly tied to the main line without branch lines.

In the case of bottom vertical longlines, the branch lines become thicker. In order to attach multiple fishing hooks to a branch line, the structure will be as follows: rolling double swivels (*yorimodoshi* for branching) are attached at regular intervals, and a snell and fishing hook are tied to each swivel.

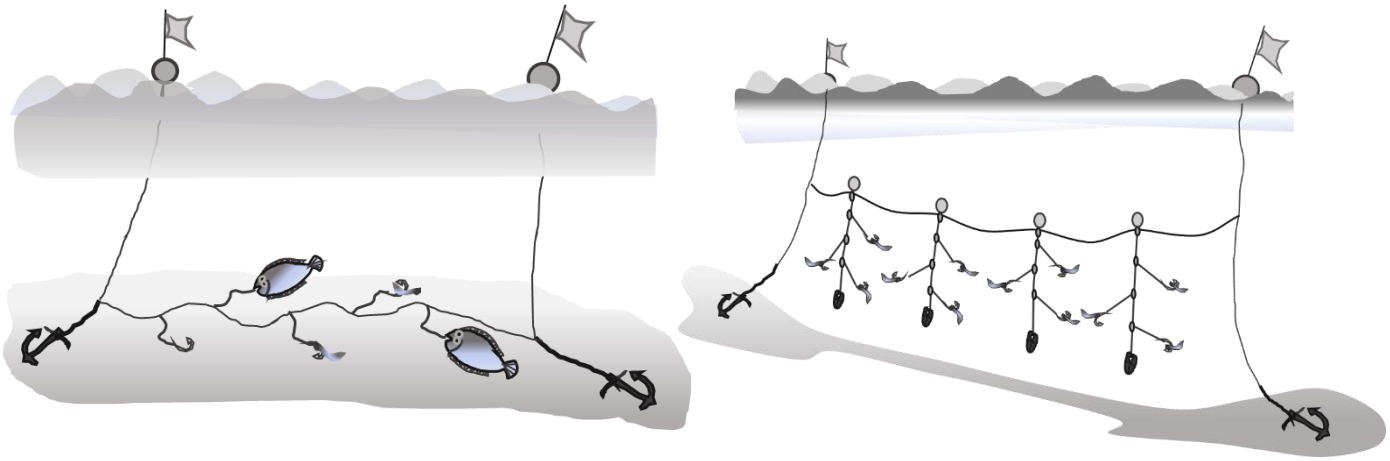

Figure 26: Bottom longline (left) and bottom vertical longline (right)

2. Targeted Fish

・Bottom longlines: Flounders, flatfish, tilefish, red sea bream, Pacific cod, ocean perch, marbled rockfish, Atka mackerel, etc.

・Bottom vertical longlines: *Kinmedai* (red bream), *Medai* (Japanese butterfish), rockfish, blackthroat seaperch, Japanese bluefish, ocean perch, etc.

3. Structure of Fishing Tools for Bottom Longline

The basic fishing tools for bottom longlines consist of a main line, branch lines (fishing lines, snells), float lines, flag buoys (flag poles), fishing hooks, sinkers, and anchors. The fishing tools for one main line are organized as one basket (*hachi*). (Figure 27)

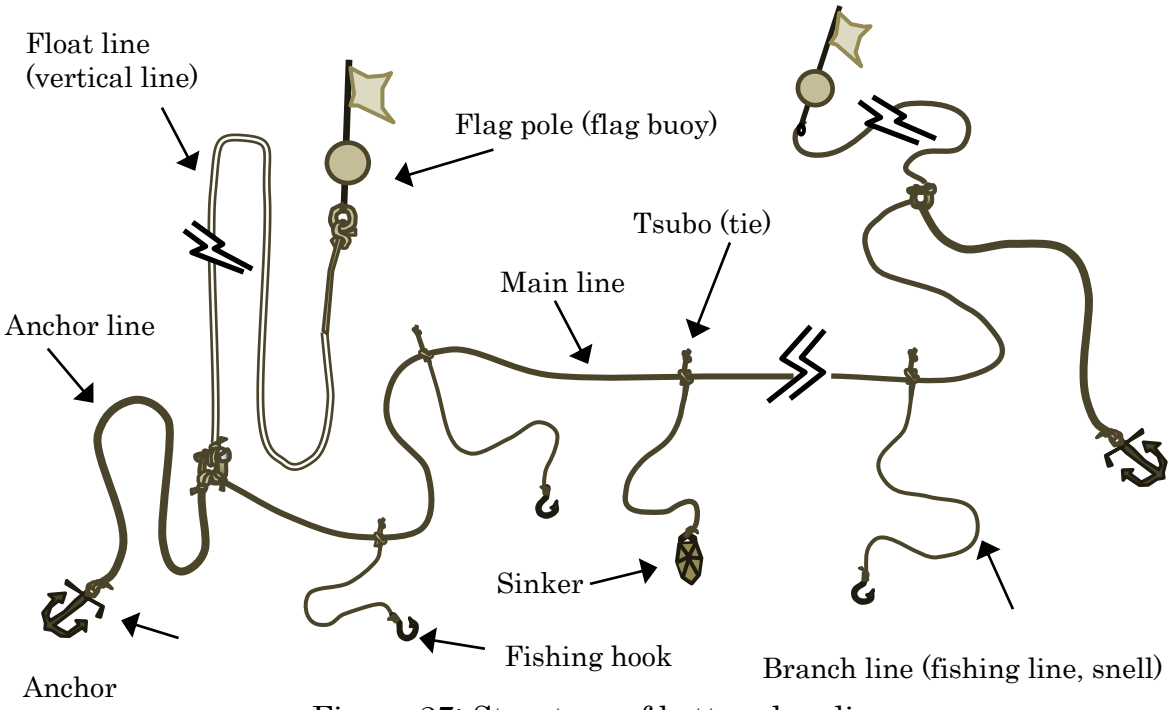

Figure 27: Structure of bottom longline

(1) Main Line

・Main line is a thin, strong and long rope that has a specific gravity heavier than water

・It is left on the seabed with sinkers attached at regular intervals.

・If the tool has separate main line and branch lines, a line loop (string loop) is provided to attach each branch line at regular intervals. Such a loop is called "*tsubo*."

・Some tools organize the main line and branch lines together in a certain length (100 to 200 m) in one basket (*hachi*).

(2) Branch Line (Fishing Line, Snell)

・A fishing line between a snell tied with a fishing hook and the main line is called a branch line. In some cases, the fishing line is omitted and a snell is attached directly to the main line. There is only one fishing hook per branch line.

(3) Float Line

・This is also called a vertical line. It is attached to a flag buoy with a flag pole attached, and is connected to an anchor line and the main line. It is used to pull up the anchor line or the main line. It is also the base for setting up fishing tools.

(4) Flag Buoy (Flag Pole)

・A float hanging a float line serves as a marker to indicate the location where fishing tools are set up. It is usually used with a flag pole attached.

(5) Fishing Hook

・A fishing hook is tied with a fishing line with a snell. The fishing line is a little thicker than the snell and one that easy to tie to the main line is used.

・A fishing hook with bait has a barb.

The barb serves the purpose of preventing the fish caught on the hook from escaping.

(6) Anchor

・An instrument to fix the fishing tools on the seabed

・Instead of anchors, sinkers or stones may be used.

4. Structure of Fishing Tools for Bottom Vertical Longline

The structure of fishing tools for bottom longlines consists of a main line, branch lines, float lines, floats, flag buoys (flag poles), snells, fishing hooks, sinkers, and anchors (Figure 28). Fishing tools for one main line are organized as one basket (*hachi*).

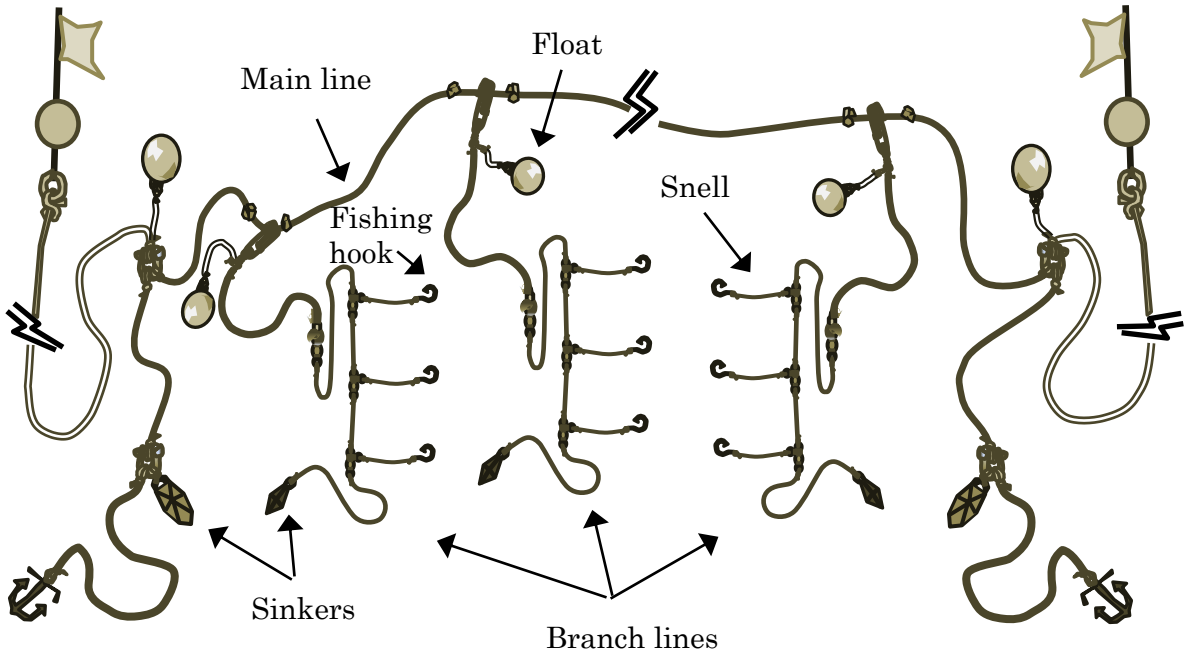

Figure 28: Structure of fishing tools for bottom vertical longline

(1) Main Line

- Main line is a thin, strong and long rope that has a specific gravity lighter than water
- Small floats (ball floats) are attached at regular intervals and the fishing tools are suspended above the seabed depending on the length of the vertical lines to be connected.
- Tying lines (tying strings) are looped and connected to the main line to attach branch lines at regular intervals. Such loops are called "*tsubo*." Some tools have fittings to fasten clips of branch lines instead of the loops.

(2) Branch Line (Thicker)

・A fishing line with multiple fishing hooks attached, which is hung from the main line, is called a branch line.

・The mechanism of a fishing line is as follows: multiple snells (usually 5 to 10 snells) with fishing hooks tied are attached to a fishing line, with an anchor attached at the bottom and, in many cases, a clip used at the top to tie the fishing line to the main line. In many cases, 5 to 10 fishing hooks are provided for one branch line.

・Floats (ball floats) are attached to locations where the branch lines are connected to the main line so that the branch lines will be suspended above the seabed.

・When a branch line is connected to the main line, a space is provided between branch lines to prevent them from being tangled.

(3) Float lines, flag buoys (flag poles), fishing hooks, and anchors included in the structure of fishing tools are the same as those for the bottom longlines.

5. Operations

The operations (process) of the bottom longlines and bottom vertical longlines are almost the same as follows: (1) line casting work that puts fishing tools into the sea, (2) waiting time, and (3) line hoisting work that hoists up the fishing tools and fish. (Figure 29)

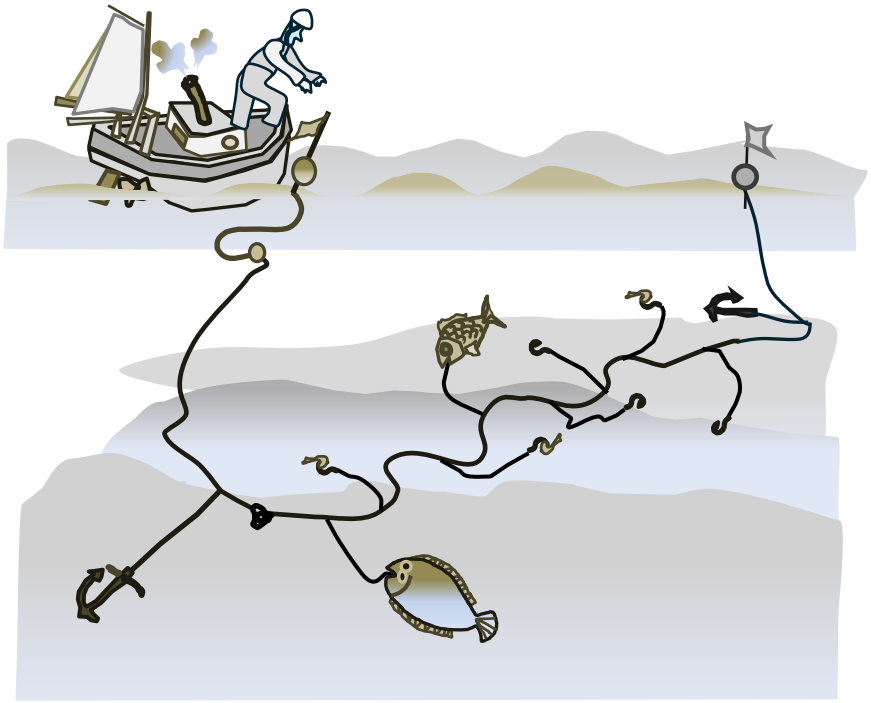

Figure 29: Illustration of longline fishing operations

(1) Line Casting Work

- Before starting a line casting work, the fishing hooks are provided with bait and the fishing tools are organized for each basket (*hachi*).
- The line casting work is performed at the stern of the ship.
- The line casting work is performed while the ship is navigated downstream (in the direction of the tide) along the flow of the tide.
- First, the anchor is put into the sea, and the anchor line is attached to the lower end of each float line, and then the main line is connected. The float line and the main line are paid out at the same time, and a flag buoy with a flag pole and radio buoy are attached to the top of the float line, and casted into the sea.
- After that, while the main line is casted into the sea, branch lines are attached for the bottom longlines, and branch lines (thicker) and ball floats for the bottom vertical longlines one by one.
- The speed of a ship during line casting works is usually 2 to 3 knots for small ships (less than 5 t) and 3 to 5 knots for large ships (5 t or more).

(2) Waiting Time

・After putting into the sea, the fishing tools for bottom longlines or bottom vertical longlines are left to settle in the sea for a while until a fish is caught. This time is called the "waiting time". The waiting time varies from approx. an hour to a day depending on the target fish and the area. You can use the waiting time to return to the place where the fishing tools were first put in and prepare for hoisting the longline.

(3) Line Hoisting Work

・The line hoisting work is performed in different locations on a ship depending on the ship size. On a small ship (less than 5 t) with 2 to 3 crew members, the work is performed at the stern of the ship, while on a large ship (5 t or more) with 5 to 10 crew members, the work is performed at the front of the ship (the deck on the bow side).

・For the line hoisting work, a line hoisting device or three-way rollers are used. The line hoisting devices come in various sizes, from small line haulers used by ocean-going tuna fishing vessels to devices whose sizes are just like a small microwave oven. All of them are devices that clamp the main line between rubber rollers to hoist it up.

・The line hoisting work begins with taking each flag buoy with a flag pole onto the ship, and then pulling up the float lines and anchor lines to raise the anchors. After that, the main line is attached to (wound onto) the line hoisting device through the three-way rollers and hoisted. While hoisting the main line, the branch lines are removed for the bottom longline, and the thicker branch lines and ball floats for the bottom vertical longline. While doing so, the fish caught on the hooks are removed and placed into a fish hold or fish box. (Figure 30)

・The speed of a ship during line hoisting works is usually 2 to 3 knots for small ships (less than 5 t) and 3 to 5 knots for large ships (5 t or more).

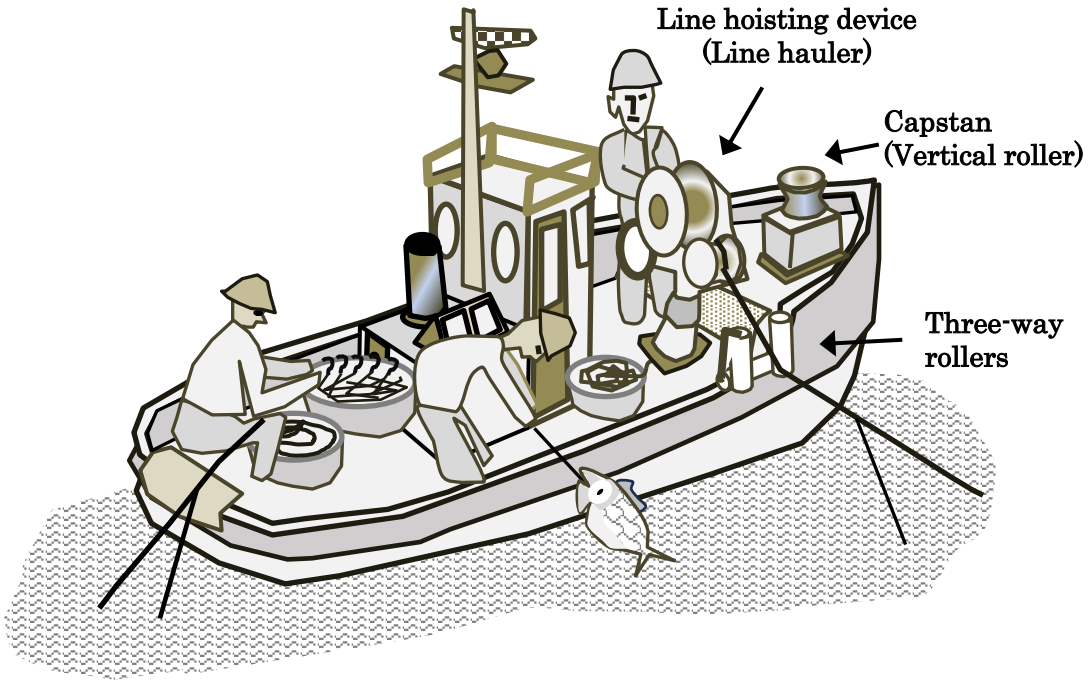

Figure 30: Illustration of longline fishing vessel operations