

Classification of Fishery Vessel types

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Based on the type of fishing employed, the FAO has classified fishing vessels into many categories.

Trawlers

The fishing gear used by these vessels are trawls as and are provided with powerful engines tow the net and vessel at the appropriate trawling speed. They are fitted with trawl winches and mast and boom arrangement to haul the net on board and lift the cod-end over the deck. Depending on the area of operation and the trawl used, trawlers range in size from open boats with inboard motors up to large freezer and factory trawlers.

Bottom as well as midwater trawls can be used with only minor modifications of fishing equipment. Pair (two-boat) trawling achieves the spread of the net by towing the warps between two trawlers of the same or reasonably similar traction power. Lay-out of a typical pair trawler is often similar to that of a side trawler, the larger vessels frequently having a net drum to handle the pair trawl which are larger than those of single (one-boat) trawlers of similar size.

Side trawlers

Side trawlers set the trawl net over the side and the warps pass through blocks hanging from two gallows, one forward and one aft. Usually the superstructure and the wheelhouse are placed aft, the fish hold is situated amidships and the trawl winch transversally at the front of the superstructure as shown in the figure below. Around the gallows the hull is strengthened against chafing of the otterboards. When the vessel is not trawling the otterboards are stowed between the gallows and the bulwark.

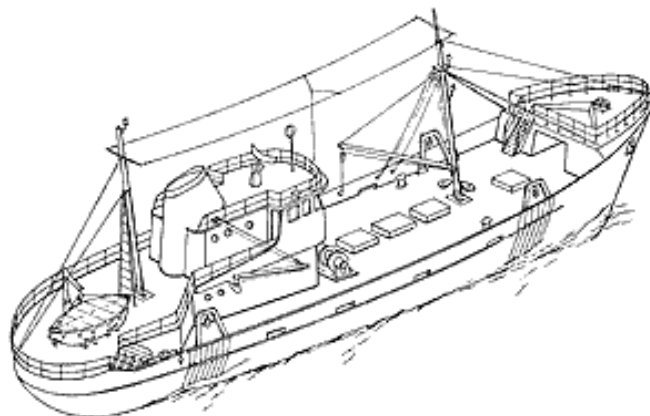


Fig.1.1 Side trawler

Stern trawlers

The stern trawlers lead the warps from the trawl winch through various lead blocks to the after deck and over the stern. The wheel house or bridge is usually situated in the forward part of the vessel. Medium sized and large stern trawlers are often fitted with a stern ramp, on which the trawl is hauled on to the deck. On small vessels a stern roller is used to reduce friction when shooting and hauling up the trawl. The trawl winch is placed transversely usually behind the wheel house. On small vessels the fish hold is situated amidships and on medium sized and large stern trawlers in the forward part of the vessel.

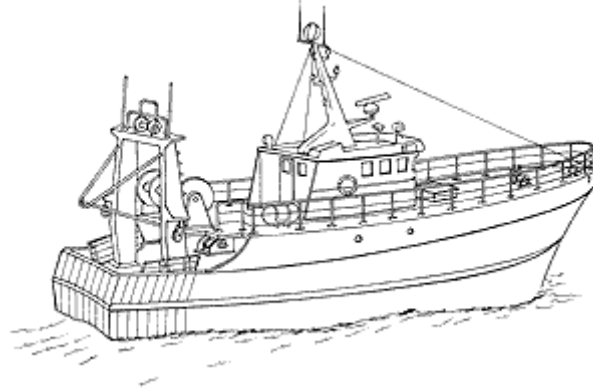


Fig 1.2. Stern trawler

Freezer trawlers

In these vessels the fish is preserved by freezing. Freezer trawlers are outfitted with refrigerating plant and freezing equipment. The holds are insulated and refrigerated.

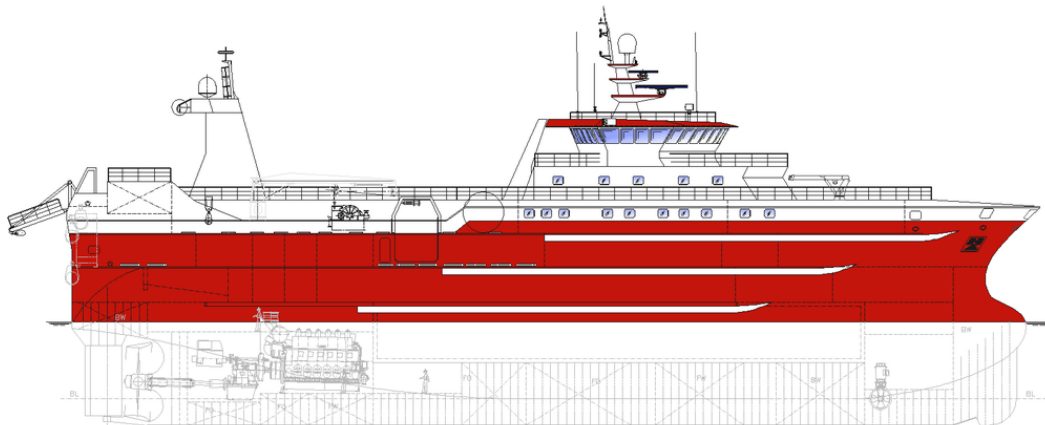


Fig 1.3. Freezer trawler

Factory trawlers

Factory trawler are generally large stern trawlers equipped with processing plants including mechanised gutting and filtering equipment with accompanying freezing installation, fish oil, fish meal and sometimes canning plants. Separate holds are provided for each of the products. Extensive superstructures are typical feature of factory trawlers.



Fig.1.4 Factory trawler

Outrigger trawlers

These vessels have strong outrigger booms to tow the fishing gear. The outriggers are usually fastened to the mast and extend out from the sides of the vessel each towing one or two trawls. These are used for shrimp trawling. Another method using outrigger, is the use of very heavy outrigger and gear for towing trawls fitted with beams and heavy bottom gear which is principally used for the capture of flat fish.

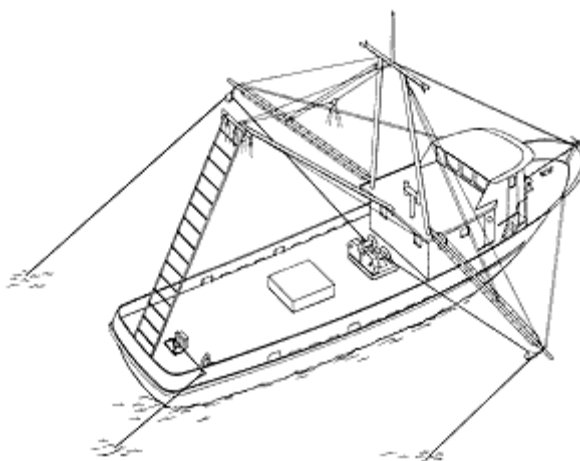


Fig.1.5. Outrigger trawler

Seiners

Seiners use surrounding and seine nets. They comprise a large group ranging from open boats and canoes up to large ocean going vessels. They are used to catch predominantly pelagic species. Relatively high manoeuvrability is required for operation of the surrounding and seine nets. Large seiners are therefore often fitted with lateral thrusters. To assist in fish school spotting observation crows nests are fitted on masts. The equipment of seiners consists usually of a power block and a net drum for hauling and stowing the net aboard and one or more winches

for setting and hauling operations. Small boat and canoe type seine netting, all operations are generally performed by hand. For removing of fish collected in the purse, a brailer attached to a derrick is provided. Species of small size are often removed by pumping arrangement. In that case a pump is lowered from the derrick into the pursed seine and the fish is pumped through a hose and a water separator on deck into the hold.

Purse seiners

Vessels using purse seines are equipped with pursing gallows and pursing winches for hauling the purse lines which close the net after setting, see Figure 7. From the viewpoint of deck arrangement two main types of one boat purse seiners can be distinguished: the North American type, and the European type.

North American type purse seiners

These seiners have the bridge and accommodation placed forward. The power block is slung from a derrick attached to the mast behind the wheelhouse. The winch is usually fitted with parallel drums and is situated opposite the pursing gallow. The net is carried at the stern of the vessel.

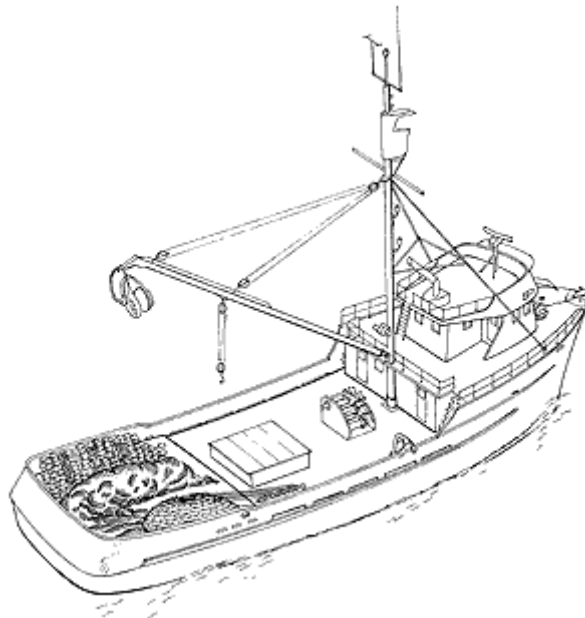


Fig.2.1.1 Purse seiner



Fig.2.1.1.A.Purse seiner

European type purse seiner

This type of purse seiner has the bridge and accommodation located aft. The fish hold is situated amidships. The net is mostly carried on the upper deck and the power block is fitted to the side of the bridge with separate transport blocks or rollers to stow the net on the aft deck as in Figure 2.1.2. The purse winch is situated forward with the drums facing the pursing davit.

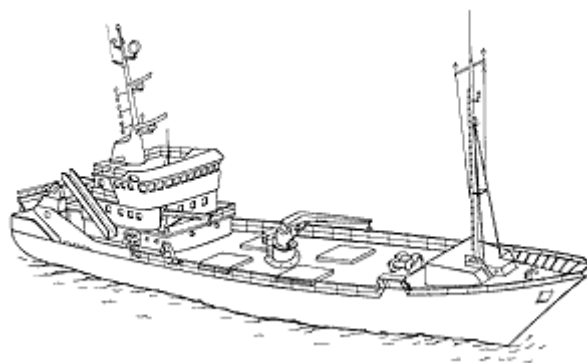


Fig.2.1.2. European purse seiner

Tuna purse seiners

These vessels are large purse seiner with the same general arrangement as the North American type, equipped to handle very large and heavy purse seines for tuna. They are normally equipped with a skiff located on top of the net at the sloped part of the stern of the vessel. Their

deck equipment consists of a three drum purse-seine winch and a power block, with topping, vang, cork and other specific winches to handle the heavy boom and net. A crows nest is placed at the top of the mast. The search for tuna schools is often carried out by a helicopter, for which a landing platform is provided.

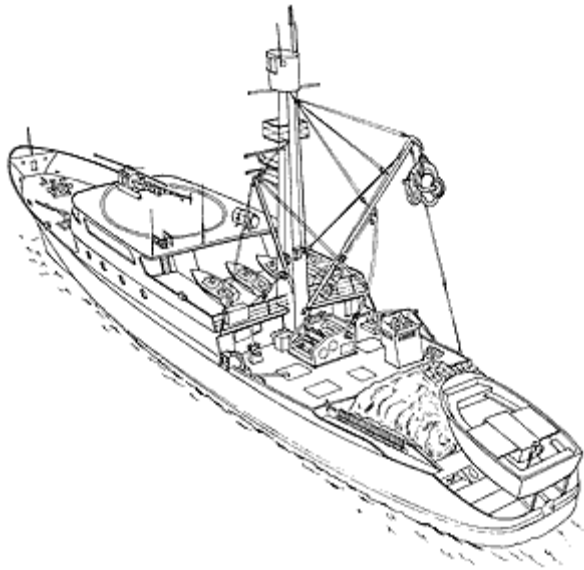


Fig.2.1.3.Tuna purse seiner

Seine Netters

For this fishing method, fishing area is surrounded by a net attached to very long ropes. Next the net is towed or dragged over the bottom. It is not to be confused with purse seining which is an encircling net used for catching schooling fish. The nets used in this type of fishery are similar to light high opening bottom trawls but they use long lengths of seine rope spread out on the sea bed on each side of the net as shown in Figure 2.2. Anchor seining (dragging), often known as anish seining due to its country of origin, uses an anchor which is buoyed and to which the first rope is attached. - 15 - The vessel lays out the ropes and net returning to pick up the anchor line to which the vessel lies during the hauling process. The second variation, fly dragging or Scottish seining, does not use an anchor, instead a combination of winch and propeller is used to simultaneously pull and close the gear. The vessels using this gear resemble side trawlers as almost all have the wheelhouse and accommodation aft. The main problem in deck layout is stowing the ropes. They may be laid in coils on the side deck, or in bins extending from the deck to the fish hold floor. The best modern way of handling them is to put them on hydraulic reels fitted on deck. The winch itself is a small but fast and powerful two-barrel type to which a coiler maybe attached if the ropes are coiled on deck or in bins. A power block is fitted aft and the net is hauled in there. The cod-end is lifted aboard on the side deck. A variation of the method is used by modern Japanese seiners in which the gear handling area is located aft and the wheelhouse forward.

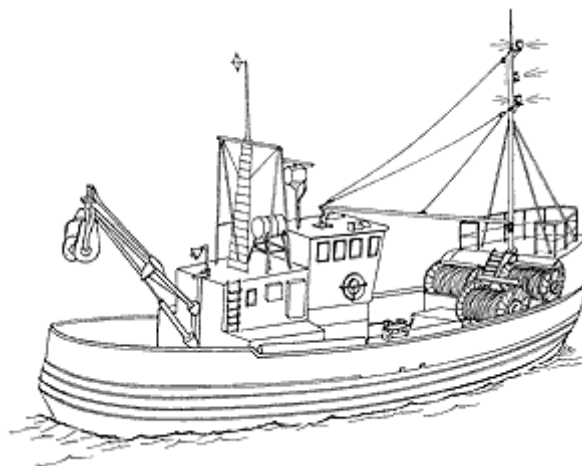


Fig.2.2.Seine netter

Dredgers

Dredge fishing vessels use a dredge for collecting molluscs from the bottom. The vessel drags the gear and the power requirements can therefore be similar to those of a small trawler. A powerful water pump is necessary to operate the waterjets of a mechanical dredge. For lowering and lifting of the dredge, derricks and winches are installed. Small boat dredges are operated from boats and other small vessels. Some small inshore dredgers operating in shallow waters can also push a gear fixed to a beam extended from the bow.

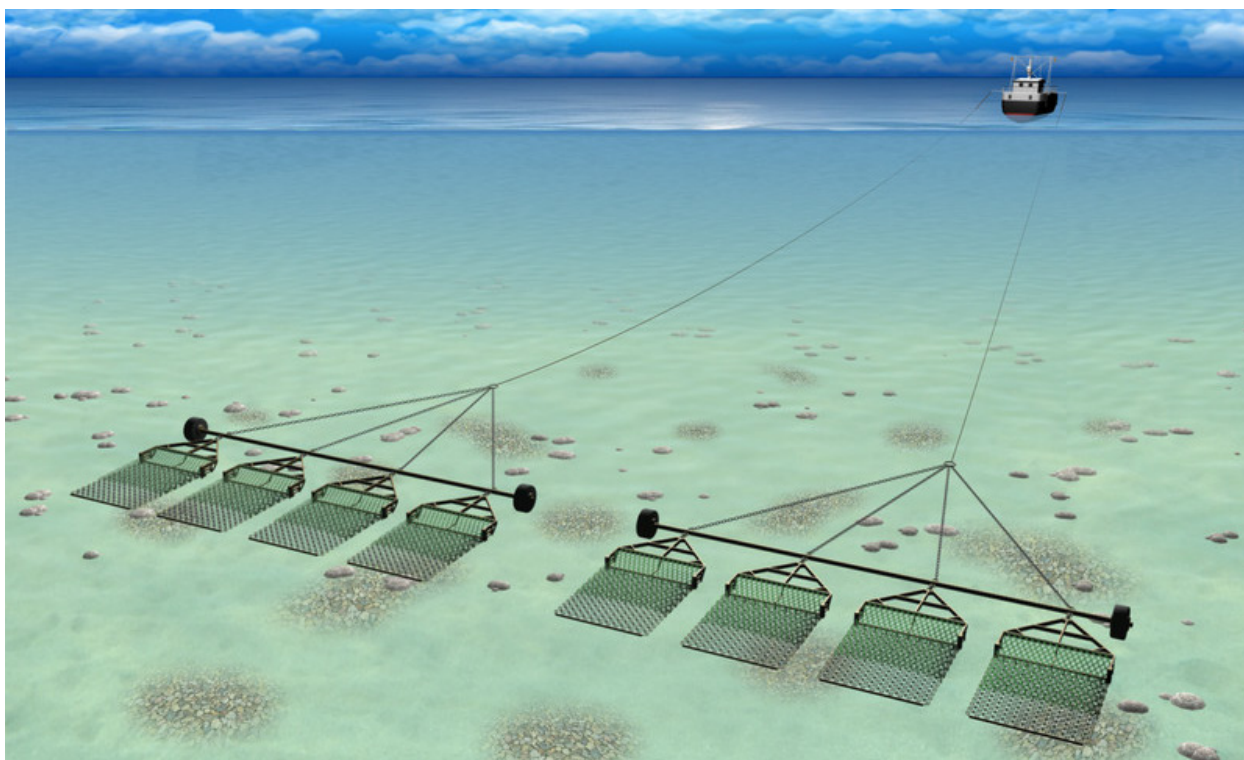


Fig.3. Dredger

Lift Netters

These vessels are equipped for the operation of large lift nets which are held out from the ship's side and raised and lowered by means of outriggers as seen in Figure 4. Sets of powerful lights for fish attraction are mounted as shown, and are often used simultaneously with underwater lights. The vessels have the bridge amidships and are fitted with derricks and winches for handling the lifting lines, outriggers and light booms.

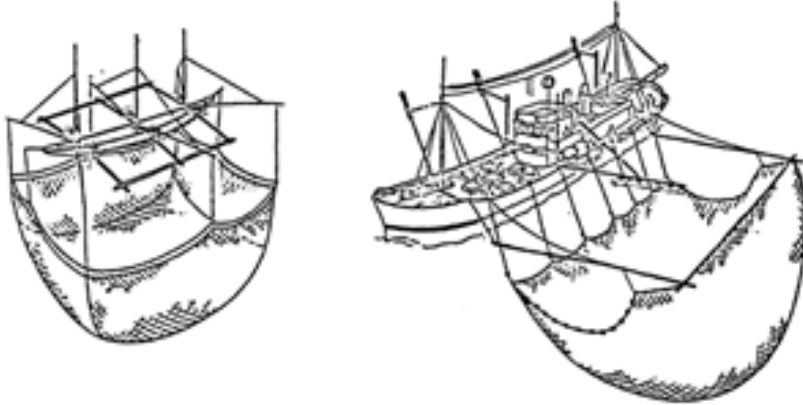
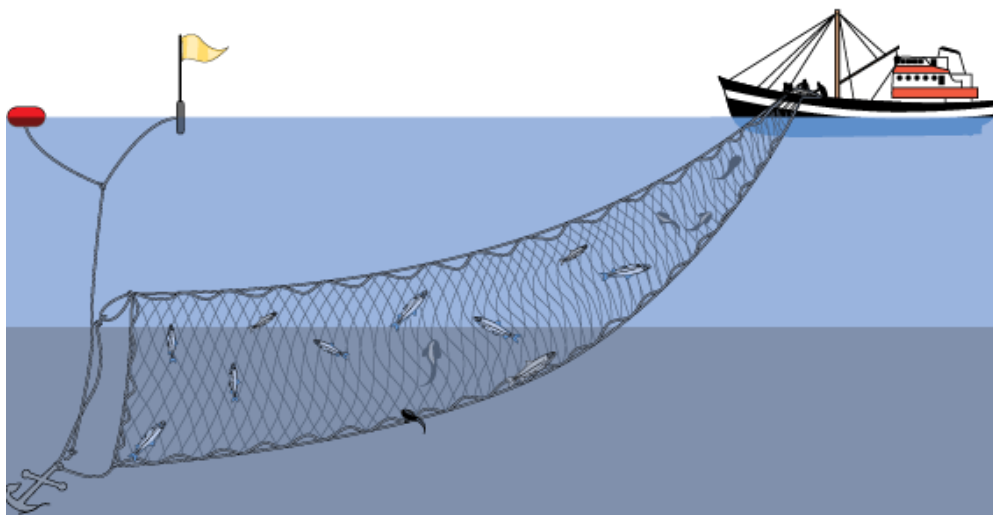


Fig.4.Lift Netter

Gill Netters

Boats and canoes use gill net in inland waters. The decked small gill netters fish in coastal waters and medium sized vessels operate gillnets in offshore. Small gillnetters have their wheelhouse either aft or forward. On medium sized vessels, using drifting gillnets and called drifters, the bridge is usually located aft. For drifters it is essential that they lay to windwards when drifting with the net. They are therefore often fitted with a steadying sail. On small vessels setting and hauling operations are performed by hand. Larger vessels are often equipped with hydraulic net haulers or net drums



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Fig. 5. Gill netter

Pot Vessels

These vessels are used for setting pots for catching lobsters, crabs, crayfish and other similar species. Pot vessels range from open boats operating inshore up to larger decked vessels of 20-50 m operating to the edge of a continental shelf. On open and partly open boats the wheelhouse is placed forward. In the cockpit a suitable place to store pots is provided. A live well with sea water for transport of the catch is also situated on the cockpit. On small decked pot vessels the wheelhouse is located either forward or aft and the fish hold amidships. Larger pot vessels are equipped with derricks, cranes or davits for setting and hauling of pots. On smaller vessels mechanized pot haulers are fitted.

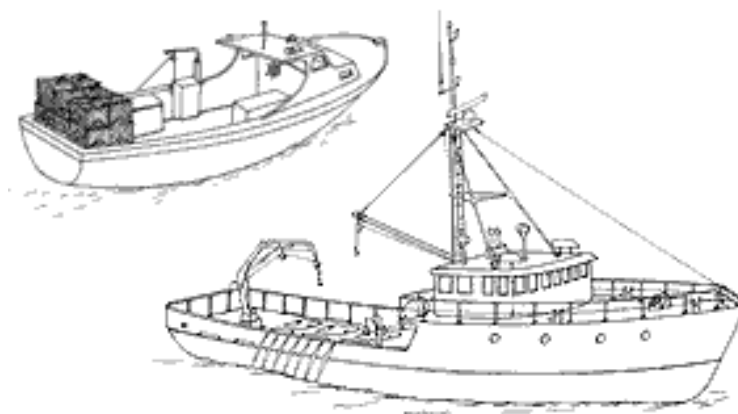


Fig. 6. Pot vessel

Liners

These vessels use lines and hooks with or without bait or lure. Depending on the method of fishing with lines, area of operation and species to be caught, liners comprise vessels of all size classes. Containers or tanks for storing the bait, sufficient deck area for attaching the bait to the hooks and a convenient place for preparing the lines for setting and hauling are typical features for line fishing vessels.

Hand liners

Hand lines are operated from boats, canoes and other small vessels, without any special features for gear handling. Hand lines can be set and hauled either manually or by mechanised reel. If mechanized reels are used, these are fastened to the gunwale.

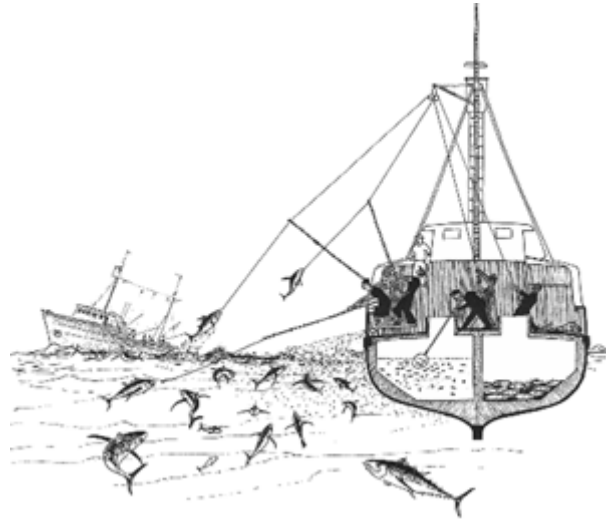


Fig.7.1.Hand liner

Long liners

Long lines can be operated from vessels of any size adapted for the length of long line to be set. Bottom long lines are placed on or near the bottom and drifting long lines are maintained at the surface or at a certain depth by means of floats. In typical arrangements the gear is hauled from the bow or from the side with a mechanical or hydraulic line hauler and the lines are set over the stern. The wheelhouse can be situated aft or forward~ but on larger vessels the bridge is generally placed aft. Several automatic or semi-automatic systems are used on bigger boats to bait the hooks and to shoot and haul the lines.



Fig.7.2.Long liner

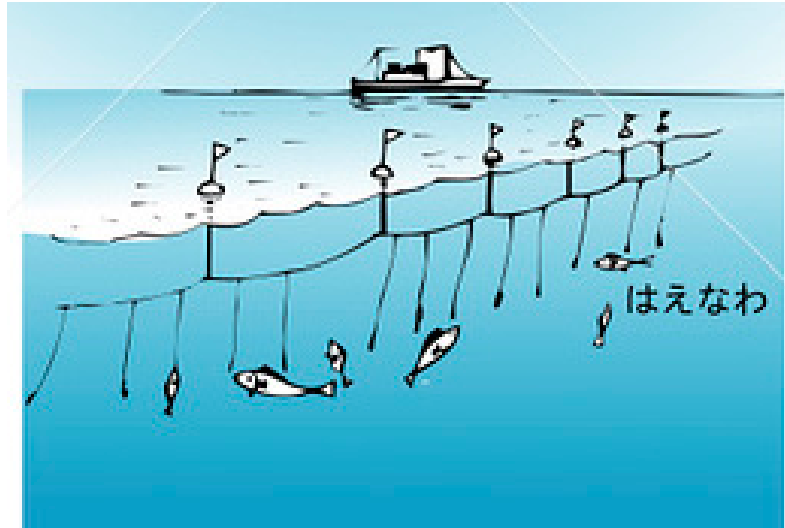


Fig.7.3.Long lining

Pole and line vessels

On these vessels, used primarily for catching of tuna and skipjack, the fishermen stand on the railing or on special platforms and fish with poles, to which a line with hook is attached. Tanks with live bait and a water spray system for fish attraction are typical features of these vessels. Because live bait is used to attract fish, the fishing method is also known as live-bait fishing. Two types of pole and line vessels can be distinguished: the Japanese type, the American type.

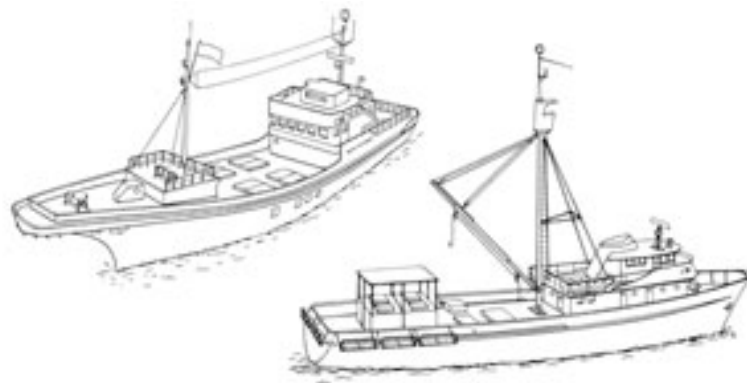


Fig.7.4. Pole and liners

Fig.7.4.1 Pole and liner in Lakshadweep, India

Trollers

Equipped for catching pelagic fish swimming close to the surface these vessels tow a number of lines fitted with lures. The lines are attached to trolling booms which are raised and lowered by topping lifts and fore and aft stays. Hydraulic or electrically powered reels (gurdies) are frequently used to haul in the lines as shown in Figure 7.5. According to area of operation, vessels may be laid out with wheelhouse and mast either forward or in the after part of the vessel.

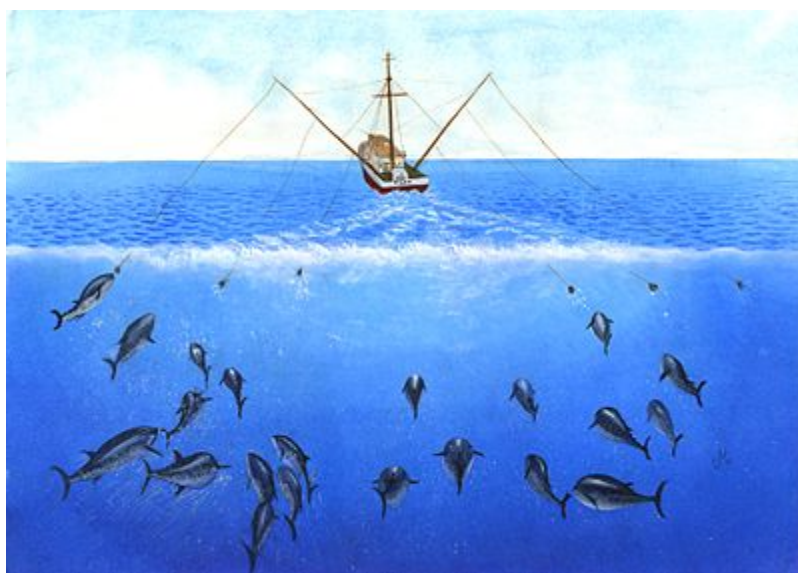


Fig.7.5. Troller

Vessel using pump for fishing

These vessels are provided with pumps of special construction. During the fishing operations the pump is lowered under the surface of the water. The pump is suspended on the hook of a derrick and is operated from the vessel's electrical plant. Small fishes attracted by light

from a lamp situated above the suction side of the pump are sucked and pumped with water on board, where a fish water separator is installed.



Fig. 8. Pump onboard fishing vessel

Multipurpose vessels

These are vessels which are equipped for alternative use of two or more different fishing gear without major modifications to the vessels' outfit and equipment. The simplest examples of this concept are traditional open craft which operate one of the surrounding net types of gear, e.g., purse seine, during the seasonal appearance of pelagic species and handlines for demersal fish during the remainder of the year - no special features or equipment are used and the appearance of the craft is unchanged. Other examples of combinations in common use are gillnetter/longliner, trawler/gillnetter, trawler/purse seiner etc., with a variety of other gear being used in cases where gear and equipment investment is not high and layout changes minimal, e.g., a gillnetter may use handlining, trolling and trap fishing when seasonal variations are appropriate.

Non-fishing vessels

Motherships

These vessels provide fishing vessels at sea with supplies of fuel, provisions, fresh water and other consumable goods, transfer the catch from the vessels, process and preserve the fish, render medical and social services to the crews. They also transport and land fish products in port. In this category the following two types of motherships can be distinguished: salted fish motherships, factory motherships. The term "mothership" is also used for vessels which carry on board small fishing vessels; on arrival ,at the fishing grounds the fishing vessels are launched and perform the fishing operations. The catch is transferred to the mothership for processing and preserving. At the end of the fishing period the fishing vessels are hauled aboard and the mothership returns to the port. This category is represented by the following two types of motherships: motherships with tuna long liners aboard, motherships for two-boat purse seining.

Salted fish mother ships

These vessels cooperate with trawlers or drifters in unloading wet fish on the mothership where the fish is salted, cured and put into barrels which are then stored in dry or refrigerated holds, depending upon the degree of salting. The general arrangement of these vessels is that of the three island type. The accommodation and bridge are concentrated amidships and the holds are situated forward and aft. For the loading operation masts, derricks and winches are installed. The vessel has sufficient tank capacity and provision rooms to provide the fishing vessels with fuel, fresh water and provisions. Bathrooms, medical services, library and cinema are provided for the use of crews from the fishing vessels during the loading operations.

Factory mother ships

In this category of mothership fresh fish transferred at sea from fishing vessels undergoes processing and preserving operations similar to those which are provided on factory trawlers. The engine room and the main part of the crew quarters are located aft. The bridge and the remaining part of the accommodation on larger vessels could be situated forward, In the middle part of the vessel the processing and freezing lines are installed on the tween decks and refrigerated holds are placed under the main deck. Facilities for recreation and medical services are also provided on board.



Fig.10.2. Factory mother ship

Fishery research vessel

Research vessels are mainly engaged experimental fishing using various gear experiments. The size of fishery research operation and on research programmes. The vessels are usually fitted for the operation of two or more fishing gear. Special winches for taking samples and apparatus for measurements of environmental characteristics are provided. The

accommodation comprises space for laboratories and quarters for scientific staff. Store rooms for instruments and samples are also provided.



Fig.11.Fishery research vessel

Fishery training vessels

These vessels are used for training future fishermen and students in navigation, seamanship, fishing operations and fish handling. They are mostly typical fishing vessels with additional accommodation for trainees.

References/ Suggested reading

Ref: Definition and classification of fishery vessel types, FAO fisheries technical paper, No.267-1985

