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Technical Particulars Concerning the Methods of Fishing Conducted by Means of Equipment Embedded in the Floor of the Sea

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Document A/CONF.13/12

TECHNICAL PARTICULARS CONCERNING THE METHODS OF FISHING CONDUCTED BY MEANS OF EQUIPMENT EMBEDDED IN THE FLOOR OF THE SEA

MEMORANDUM BY THE FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

(Preparatory document No. 9)

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CONTENTS

INTRODUCTION

The paper gives a description of the principal types of gear attached to the bottom of the sea. Details as to construction and operation are given of representative examples of each type but, although in some instances other similar gear is mentioned as being used in various countries or regions, no attempt has been made to give a full account of the many minor variations in construction, nor to list all the local names of such diverse gear in various countries.

These principal gear types have been arranged below according to their degree of permanence, i.e. how long they generally remain fixed in one position and according to the means by which they are attached to the floor of the sea:

1. Gear with supporting members embedded in the sea floor, constructed on a site and left there to operate for prolonged periods (some parts left embedded in — or resting on — the sea bottom for several seasons, or even permanently).

A common feature of this gear is that stakes are rammed into the floor of the sea to remain there for extended periods of time, and also large boulders are often used and these are generally not retrieved, but remain permanently embedded in or resting on the sea floor, seriously interfering with such fishing methods as trawling and gill netting. There are, however, exceptions to this: for instance, stakes are often pulled up between fishing seasons to avoid damage by storms, ice or marine borers.

2. Gear tied to anchors or weights embedded in the floor of the sea, normally set for several weeks or a fishing season; the catch can be removed without lifting the entire installation.

The gear listed in this group is normally completely removed from its position at the end of each fishing season, although there are also exceptions to this — e.g., big boulders used to anchor bagnets and floating shade lures are frequently not retrieved.

3. Gear held in one place by anchors or weights embedded in, or resting on, the floor of the sea, but lifted *in toto* for removing each catch.

This gear is normally totally retrieved at the end of each fishing operation (usually daily), leaving no permanent mark on the bottom of the sea and causing no interference with navigation or fishing, except when actually in use.

The location and operation of "fixed gear" as discussed under (1) and (2) is governed by regulations in many countries, specifying markings and lights to reduce navigational hazards. Large stake nets and anchored traps, which extend far out from the coast, are sometimes marked on sea charts.

DESCRIPTION OF GEAR

1. *Gear with supporting members embedded in the sea floor, constructed on a site and left there to operate for prolonged periods (some parts left embedded in — or resting on — the sea bottom for several seasons, or even permanently).*

1.1 *Barricades and hedges*

(*a*) *Construction:* Walls or fences built of stone, wood, etc.; with or without labyrinths and/or collecting pounds of wicker or network. Brushwood and/or stones are heaped between stakes driven in the ground, screening the water during ebb.

(*b*) *Dimensions:* The height depends on the fall of the tide; extension is largely a matter of the natural topography of the area where the gear is built and of the flow of the tide.

(*c*) *Mobility:* The nature of this gear makes it practically immovable, and generally it stays in its initial position as long as it lasts, sometimes for several years, if maintained.

(*d*) *Location:* Usually set up in non-navigated estuaries, creeks, etc., in a position where they become dry at low water (L.W.), or slightly below L.W.-mark.

(*e*) *Operations:* The barrier is submerged during high water (H.W.). During the ebb it blocks the return to the sea for fish and crustaceans from the moment the barrier becomes awash. Water can still run out through screened openings, so that, at L.W., the catch can be retrieved.

(*f*) *Navigation:* In nearly all cases it is constructed in non-navigable waters; it can, however, cause obstruction and damage to vessels sailing outside of the normal channels at high tide. It is usually connected with some form of fishing rights and practically excludes the use of other fishing gear for that area.

(*g*) *Geographic distribution:* To be found nearly all over the world where suitable non-navigable flats have an appropriate tidal range.

1.2 *Weirs and corrals* (see Fig. 0)

(*a*) *Construction:* Wooden stakes, rammed into the bottom and connected with brushwood, wicker, etc., to form a screen; the whole structure is usually set out in a V-shape and may have staked webbing leaders. One or more retrieving pounds with their apex towards the ebb-direction, are built in. Extensive rebuilding is often required before each season.

(*b*) *Dimensions:* The height depends on the depth in which the gear is set and the tidal range of the area. The length of the wings can exceed 1,000 feet (300 m.).

(*c*) *Mobility:* As the gear is held down by stakes driven into the sea floor, it is practically immovable.

(*d*) *Location:* The structure is often set in estuarine bays, etc., where there is a fairly strong tidal flow. Also found in shallow waters offshore, yet rarely or never further than about 3 miles from the L.W.-mark.

(*e*) *Operation:* During the flood tide, the fish is led upstream past the corral wings. During the ebb, the wings lead the fish to the collecting pounds at the apex of the structure, or to non-return pockets built in, at intervals, along the wings.

(*f*) *Navigation:* Usually erected in shallow, non-navigable waters, the gear can reach further into open water than a barricade. As such, it can be a hindrance to vessels sailing outside of the normal navigation channels. Usually connected with some form of fishing rights and practically excludes the use of other fishing gear in that area.

(*g*) *Geographic distribution:* Found in the Persian Gulf, Red Sea, South-Eastern Asia, Mediterranean, America and other regions.

1.3 *Staked gill nets* (See Fig. 1)

(*a*) *Construction:* Sections of webbing are hung between stakes which are driven into the sea floor. The stakes are commonly at about 20 foot-intervals and the nets are submerged only at high water.

(*b*) *Dimensions:* The height depends on the tidal range and the length on the topography of the bays or flats where the nets are fished.

(*c*) *Mobility:* Stakes are firmly embedded and braced with pegged stays; therefore practically immovable.

(*d*) *Location:* Estuaries, tidal flats.

(*e*) *Operation:* During the high tide the nets are submerged. Fish are gilled or entangled in the webbing between the stakes. When the water retreats during the ebb, the nets dry out and the fish can be removed.

(*f*) *Navigation:* The gear is normally outside of navigation channels; unlikely to cause serious obstruction to other types of fishing gear.

(*g*) *Geographic distribution:* Found in many parts of the world.

Example: in Bay of Fundy area in Nova Scotia, Canada, stakes 10 to 15 ft. (3 to 4.6 m.); depth of webbing 6 ft. (1.8 m.); tidal range up to 50 ft. (15 m.) in some areas; catch is retrieved at low water by driving along the line of stakes with horse and cart.

1.4 *Fixed staked traps* (See Fig. 2)

(*a*) *Construction:* The trap commonly consists of a chamber or heart which leads to the inner chamber or pocket; built on stakes rammed into the sea floor; wire or fibre webbing is hung between the stakes, forming the walls of the chambers. A leader fence, staked or floating, leads shoreward. The inner chamber often has bottom webbing.

(*b*) *Dimensions:* The heart can measure up to 100 ft. (30 m.) across, while the leader, extending shorewards, can be 1,000 ft. (300 m.) long. In some cases a series of traps may form a string extending several miles out from the coast.

(*c*) *Mobility:* Constructed on stakes firmly embedded in the sea bottom, it is practically immovable.

(*d*) *Location:* In shallow areas close to shore and across the established routes of migratory fish; usually less than 3 miles from shore.

(*e*) *Operation:* The fish travelling along the shore strike the leader and follow the webbing which leads them into the heart of the trap. From here, they are led to the inner chamber where they can be retrieved, by brailing, by a spiller or by hauling up the bottom web.

(*f*) *Navigation:* Usually built outside navigation routes and clearly visible, they generally cause no danger, but conceivably may cause some obstruction to navigation and fishing with other gear.

(*g*) *Geographic distribution:* Used in U.S.A., Canada, Denmark, Baltic countries, Japan and other eastern countries.

Example (A): fixed Alaska salmon trap. Set traps used in Alaska are stationary and constructed on stakes outward from the shore line. The stakes are connected by wooden stringers used primarily for the hanging of the leading webbing and to form walks from the shore to the pot of the trap. At present the maximum length of the lead and trap is 1,000 ft. (305 m.). The trap is V-shaped and so constructed that its walls lead the salmon to the pot or spiller. It may have hearts on only one side, or hearts on both sides or any arrangement applicable to local conditions, as the construction depends largely on the direction and strength of tides. Three-inch (76 mm.) mesh is used throughout the net.

Example (B): Danish staked traps. On the east coast of Northern Jutland numerous rows of staked traps extend a few miles offshore, with approximately 300 ft. (100 m.) between pounds. The wooden (or sometimes iron) stakes are rammed about 3-6 ft. (1-2 m.) into the sea floor and tarred cotton webbing is hung thereon. During the summer the webbing must be removed at least once a month for cleaning and drying. The stakes are generally pulled up in the fall to avoid damage by ice in the winter. The catch (mainly cod, herring, mackerel) is removed daily from the pound. In Denmark and Sweden regulations prohibit the building of such traps in many places where they would obstruct navigation. The location of fixed traps in Northern Kattegat is shown on sea-charts.

1.5 *Staked bagnets* (see Fig. 3)

(*a*) *Construction:* Two stakes driven into the sea floor are braced by anchors or stones. A conical bagnet is attached between the stakes, so that the tide flows through the net.

(*b*) *Dimensions:* The distance between the stakes can be up to 120 ft. (36.6 m.) and the stakes rise just above H.W.-mark. As many as a hundred such stakes may stand out in a row, each fishing crew working two nets.

(c) *Mobility:* The stakes are firmly embedded and fixed with large boulders. Every year after the fishing season the boulders are cut loose and the stakes brought in.

(*d*) *Location:* Normally the stakes are set in shallow tidal waters, such as estuaries, etc. In India, however, the stakes may be set as far as 15 miles offshore, in depths of up to 12 fathoms (22 m.). Positions are permanent year after year and net locations are protected by heritage or family rights.

(*e*) *Operation:* The bagnet, attached to the stakes with sliding rings, is lifted at every tide and the catch retrieved. It is then reset in the opposite direction for the following tide. Stakes are removed only during the monsoon periods.

(*f*) *Navigation:* Stakes are normally clearly visible to approaching vessels. Nets may, however, be dangerous to ships' propellers, especially during the seasons when the headlines are kept just below the surface. The anchoring boulders prevent fishing with other gear, such as trawls and gill nets in these offshore waters, even when the stakes have been pulled out.

(*g*) *Geographic distribution:* India and other Far Eastern countries.

1.6 *Fish Culture Racks* built on stakes embedded in the sea floor. *Oyster and Mussel Racks*

(*a*) *Construction:* Platforms are built on stakes driven into the sea floor, from which trays carrying oyster seed (spat) are lowered into the sea. The whole construction is usually surrounded by a protective screen of wire netting. For mussel culture, ropes or sticks, carrying the mussel seed, are suspended from the platforms.

(*b*) *Dimensions:* Rows of stakes carrying the platforms range from a few yards to more than a hundred yards (90 m.) in length. The platform is above H.W. and usually well visible.

(*c*) *Mobility:* The structures, when built around embedded stakes, may be regarded as immovable; but when constructed as floating anchored rafts they can be moved to other suitable anchorage.

(*d*) *Location:* Mostly set up in low-range tidal waters less than one mile offshore, often close enough to have a fixed gangway to shore.

(*e*) *Operation:* Not a fishing gear, but equipment used in the culture of oysters and mussels which are grown under constant surveillance.

(*f*) *Navigation:* Built or anchored near the shore, they normally present no danger or hindrance to navigation or fishing.

(*g*) *Geographic distribution:* Northern and Western Europe, Mediterranean Region, Japan, America.

2. *Gear tied to anchors or weights embedded in the floor of the sea, normally set for several weeks or a fishing season, and the catch can be removed without the need to lift the entire installation.*

2.1 *Floating Salmon Traps* (see Fig. 4)

(*a*) *Construction:* The trap is constructed of floating logs which are solidly bolted together. Webbing is hung from this framework and forms the walls of the heart and trailing chamber. The whole construction is anchored offshore and held in place by several large anchors. A leader joins the trap to the shore and consists of a buoyed cable from which a wall of webbing is hung and held vertically by the weight of heavy stones. When set in deep water, all chambers have bottom webbing.

(*b*) *Dimensions:* The heart can measure up to 100 ft. (30 m.) across, while the leader, extending shorewards, can have 1,000 ft. (305 m.) length.

(*c*) *Mobility:* Because of the size and rigid construction, the traps are built as permanent structures. However, they are only fastened to the sea floor with heavy anchors, so that the trap actually can be moved to another anchorage, but this is rarely done.

(*d*) *Location:* Set across known migration routes of the fish along the coastline, often about 1,000 ft. (305 m.) offshore.

(*e*) *Operation:* The fish, swimming against the tide, strike the leader and, following it, are led into the heart of the trap from whence they are led into the inner chamber or pocket. From here they are removed by brailing or spilling.

(*f*) *Navigation:* The traps are placed outside the navigation channels and normally cause no hindrance.

(*g*) *Geographic distribution:* Used in Alaska (prohibited in Canada).

Example: In a typical average-sized Alaska trap, the leader is 400 ft. (122 m.) long; the wings, which form the heart, are 70 ft. (21.3 m.) long, while the pocket or brailing piece is 22 by 28 ft. (6.7 × 8.5 m.).

2.2 *Tuna Traps* (see Fig. 5)

(*a*) *Construction:* Walls of webbing, hung from heavy ropes, are held up by floats and weighted down by heavy hawsers and stones, form an enclosing structure (body) comprising several chambers. The last chamber (death chamber) has a bottom section which can be lifted. A vertical leader of webbing extends towards the shore and leads the fish to the entrance. The whole structure is firmly anchored. These tuna traps as well as the Alaska salmon traps and big Japanese set nets are the largest and costliest fishing gear in use.

(*b*) *Dimensions:* The trap is about 100 ft. (30 m.) broad and often has a length of about 1,300 ft. (400 m.). The shore leader can be 5½ miles (10,000 m.) in length, depending on the locality where the trap is set.

(*c*) *Mobility:* The trap and leader are held in position by a large number of heavy anchors, 165 to 1,100 lbs. (75 to 500 kg.) each, and is a permanent fixture during a fishing season.

(*d*) *Location:* The distance from the shore depends on the trail the tuna follow during their migrations.

(*e*) *Operation:* The fish striking the leader net are led into the trap and pass through the successive chambers into the death chamber. Several boats are employed to lift the bottom of this chamber to retrieve the catch, which is done eight-twenty times during each season.

(*f*) *Navigation:* Form a dangerous obstruction to vessels sailing inshore. The traps are usually marked by lights at night depending on local regulations. Trap locations are sometimes shown on sea-charts and mentioned in Pilot-books.

(*g*) *Geographic distribution:* To be found from the Southern coasts of Portugal, Spain, in the Mediterranean to the Black Sea.

Example: In a typical Mediterranean "Tuna Trap", the webbing may weigh as much as 100 tons and is supported by a frame of 22 mm. wire. Total length of the net is from 1,000 to 1,300 feet (300 to 400 m.); 100 to 200 large anchors are used. The leader may be up to 3 miles in length, while the trap itself may be located up to 5 miles offshore.

2.3 *Japanese Set Nets* (see Fig. 6)

(*a*) *Construction:* This type of trap consists of a large entrapping webbing structure, held up with floats, and heavily anchored offshore. A vertical wall of webbing extends towards the shore and leads the fish to the trap. The gear is anchored with a great number of heavy stones or sandbags.

(*b*) *Dimensions:* The size of these nets differs very much. A typical Japanese set net (Otoshi-ami) has a leader net often over 3,000 feet (915 m.); length of the trap itself ranges up to over 1,800 feet (550 m.) and the depth to over 200 feet (61 m.).

(*c*) *Mobility:* Owing to its size and the amount of boulders or sandbags required to anchor it firmly, it can be termed a permanent fixture — during each fishing season.

(*d*) *Location:* Anchored offshore, across the known fish migration routes. In Japan, special permits are needed for operating these big traps and their number and exact location is strictly regulated.

(*e*) *Operation:* The heart of the net is lifted, at intervals of one or more days, by a large number of men in small boats to retrieve the catch, which consists of various species.

(*f*) *Navigation:* Placed near the shore, outside of normal shipping routes. Causes some hindrance to fishermen using other gear.

(*g*) *Geographic distribution:* Mainly found in Japan. Recently being introduced experimentally in neighbouring countries, such as the Philippines and Thailand.

2.4 *Diverse types of Pound Nets and Simple Floating Traps*

Other smaller set nets and traps than those mentioned under 2.1, 2.2, and 2.3 differ widely in size, shape and construction, but all are non-rigid, buoyed and anchored nets. They are generally located rather close to shore. Among these belong:

Newfoundland Cod Traps,

Nova Scotia Mackerel Traps,

Various U.S.A. Pound Nets, e.g. in Virginia and Great Lakes,

Japanese Koko-ami Nets (also used in the Baltic countries),

An infinite variety of anchored traps are used throughout the Indo-Pacific region.

Smaller trapnets, such as fykenets (often not floating, but resting on the sea floor) are used for catching eel and shrimp in Northern Europe; mainly in estuarine and shallow waters.

2.5 *Anchored Bag Nets (dolnets)* (see Fig. 7)

(*a*) *Construction:* Two large buoys are firmly anchored about 120 feet (37 m.) apart. Between the buoys, and attached to the anchor cables, a large bag net is held open so that the tide can flow through.

(*b*) *Dimensions:* Same as for the staked bag nets, under 1.5.

(*c*) *Mobility:* Anchors are lifted once a year (during monsoon period) for renewal of cables. Very often small anchors are used, together with large boulders, the latter are cut loose when the buoys are lifted.

The gear is permanent and fixed in one position during each fishing season.

(*d*) *Location:* On the east coast of India they are to be found at all depths, from the shore line to about 16 fathoms (30 m.), as far as 20 miles out.

(*e*) *Operation:* Same as for staked bag net under 1.5.

(*f*) *Navigation:* Buoys are not always visible, as they submerge at full tide strength and can be dangerous to ships' propellers. The rows of buoys set at right angles to the shore and the jettisoned boulders and anchors prevent fishing with other gears, such as trawls and bottom-set gill nets in these offshore waters.

(*g*) *Geographic distribution:* India and other S.E. Asian countries.

2.6 *Rumpon Lures and other Fish Shades.*

2.61 *Rumpon* (see Fig. 8)

(*a*) *Construction:* From a raft of bamboo sticks or other floating material, a weight or anchor is attached on a coir rope. At intervals of a fathom (1.8 m.) or more, clusters of palm or banana leaves are attached.

(*b*) *Dimensions:* Six to 12 bamboo sticks of about 8 ft. (2.5 m.) length, or other available materials, are tied together.

(*c*) *Mobility:* Can be moved by hauling up, if depth and anchoring weight are not too great; otherwise, the anchor weight (stone) is not retrieved.

(*d*) *Location:* Often anchored in deep, clear water, over 10 miles from the coast.

(*e*) *Operation:* The gear is left out for several days; the leaves form a shade in which the fish gather. Lift nets, encircling nets, etc., are then used to catch the fish.

(*f*) *Navigation:* Presents slight danger to fouling of propellers, if not spotted in time.

(*g*) *Geographic distribution:* Mainly in South East Asia (Indonesia, Malaya).

2.62 *Kannizzati*

(*a*) *Construction:* Floats, made up of bunched corks with a small marker buoy attached, are anchored off-shore with heavy boulders. Several such floats are set up in line, at about 2-mile (3.7 km.) intervals. Light sisal line is used and the boulders cannot be retrieved.

(*b*) *Dimensions:* The float covers only a few square feet on the sea-surface.

(c) *Mobility:* Immovable, as the anchoring line is not strong enough for hauling up the boulder.

(*d*) *Location:* The floats are set in depths up to 600 fathoms (1,100 m.) at distances of up to 80 miles offshore.

(*e*) *Operation:* Certain species of migratory fish (mainly dolphins) collect around the floats. They are caught by setting an encircling net around the float and closing up. A series of such floats are worked, one after the other.

(*f*) *Navigation:* Floats and markers are well visible in daylight — yet the line could be dangerous for ships' propellers.

(*g*) *Geographic distribution:* Mediterranean, mainly around Malta.

3. *Gear held in one place by anchors or weights embedded in, or resting on, the floor of the sea, but lifted* in toto *for removing the catch.*

3.1 *Stow nets* (see Fig. 9)

(*a*) *Construction:* Consist of a conical bag net held open by horizontal and vertical beams. The gear is lowered to the bottom and firmly anchored.

(*b*) *Dimensions:* The horizontal beams are up to 50 ft. (15 m.) in length, vertical beams up to 18 ft. (5.5 m.). Bridles and anchor line are often about 250 ft. (76 m.) long.

(*c*) *Mobility:* Net and anchor are lifted at each operation of the gear; i.e. at every turn of the tide.

(*d*) *Location:* Used mostly in coastal areas with tides of two to three knots, for catching herring, sprat, etc.

(*e*) *Operation:* The gear is set out on the same anchor at which the vessel rides, in such a way that the tide flows through the net. It is lifted at each turn of the tide or when sufficient fish have been caught.

(*f*) *Navigation:* The vessel lies at anchor above her gear and shows the regulation lights and daymarks. The gear does not hinder other fishing.

(*g*) *Geographic distribution:* Mainly in the North Sea, up to over 10 miles offshore (German Hamen nets; Dutch Stroopnets).

3.2 *Bottom-set Gill Nets and Tangle Nets* (see Fig. 10)

(*a*) *Construction:* A vertical wall of webbing, held up by floats and weighted down by sinkers, anchored to the sea bottom. Anchor lines are buoyed and usually marked by flags.

(*b*) *Dimensions:* Normally tied together to form sets of 200 to 400 fathoms length (370 to 740 m.); but one vessel may work several such sets of nets. Fishing height is usually less than 20 feet (6 m.).

(*c*) *Mobility:* During each operation, the nets and anchors are hauled aboard and then re-shot.

(*d*) *Location:* Normally in depths of up to 60 fathoms (110 m.), often over 10 miles from shore.

(*e*) *Operation:* The fish are gilled or entangled in the webbing of the net; the nets are lifted every day to retrieve the fish and reset in the same or different location.

(*f*) *Navigation:* The gear forms no obstruction to navigation, but interferes with — and is in turn interfered with by — trawling.

(*g*) *Geographic distribution:* In all seas.

3.3 *Bottom-set Longlines* (see Fig. 11)

(*a*) *Construction:* Sets of lines, with hooks attached

to branch lines, at regular short intervals, set out on or above the sea floor and maintained stationary with anchors at each end; each anchor is normally attached to a marker buoy, and surface floats are attached to the line, every 200-400 fathoms.

(*b*) *Dimensions:* A single string of set longline is normally several miles long and can measure over 10 miles in length with over 15,000 baited hooks.

(*c*) *Mobility:* The anchors are usually lifted during each operation of the gear; the lines are then reset in the same or a different location.

(*d*) *Location:* In depths to over 200 fathoms (370 m.) and up to 100 miles from shore.

(*e*) *Operation:* The lines are lifted at regular intervals, usually daily, to retrieve the catch.

(*f*) *Navigation:* The gear forms no obstruction to navigation (in Northern Europe, the marker buoys show lights at night). It does interfere with, and is often seriously interfered with, by trawling.

(*g*) *Geographic distribution:* In all seas.

3.4 "*Pots*" *for scale fish, lobster, crabs, etc.* (see Fig. 12)

(*a*) *Construction:* Crate-formed traps of various shapes, having non-return entrances; made of wood, wicker, wire-netting, metal, etc.

(*b*) *Dimensions:* Very small, only a few feet across.

(*c*) *Mobility:* The pots are weighted down by stones and lifted periodically.

(*d*) *Location:* Mainly on rocky or firm bottom; in up to 50 fathoms (90 m.) depth and up to 10 miles offshore.

(*e*) *Operation:* Pots are held down by stones, etc., and carry small marker floats. They are lifted at regular intervals (every day or every few days) to retrieve the catch.

(*f*) *Navigation:* Cause no obstruction; as they are normally used on rocky patches, they rarely cause any hindrance to other fishing methods.

(*g*) *Geographic distribution:* In all waters.

ANNEX

FIGURE 0. **A fish weir at low water**

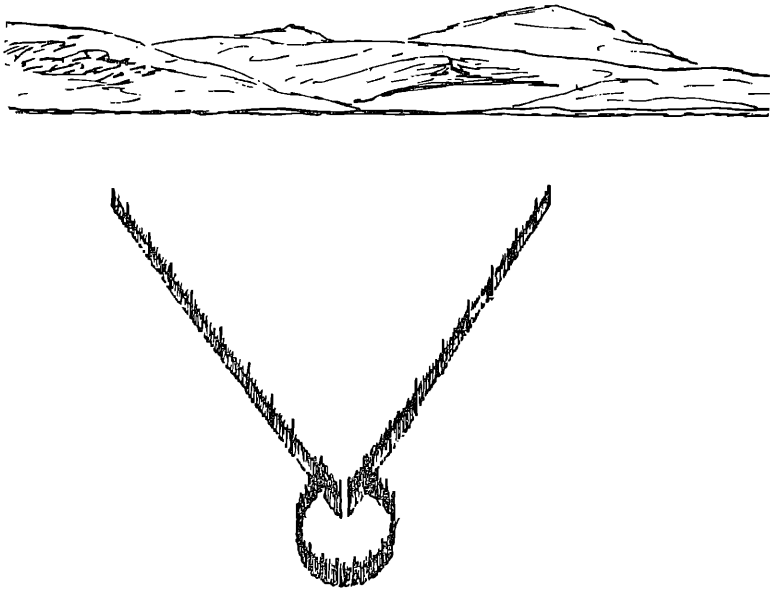


FIGURE 1. **Staked gill nets**

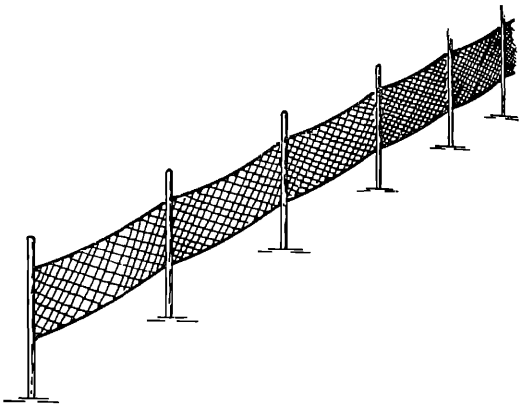
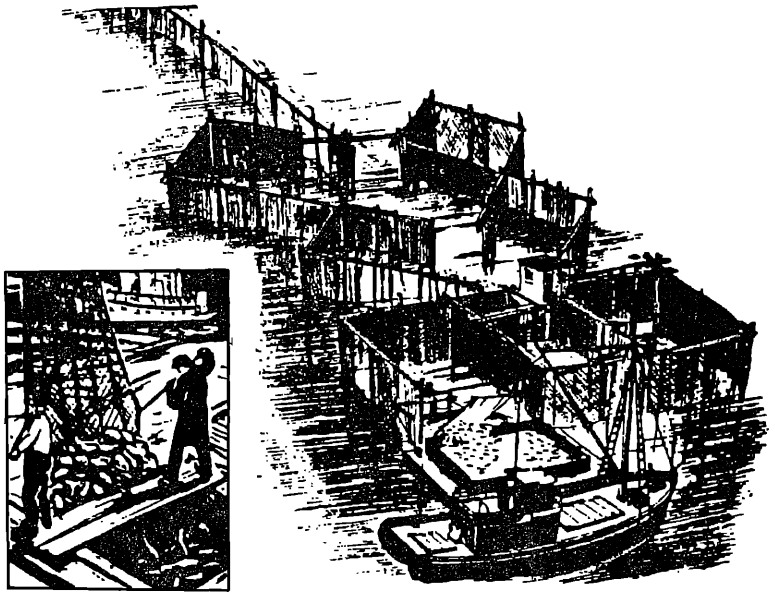


FIGURE 2. **Cannery tender brailing salmon into scow from an Alaska salmon set trap** (detail of brailer shown in insert)



(Courtesy R. J. Ederer Co.)

FIGURE 3. **Staked bag net**

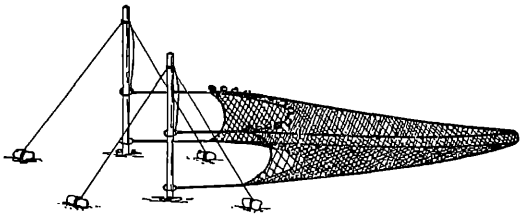
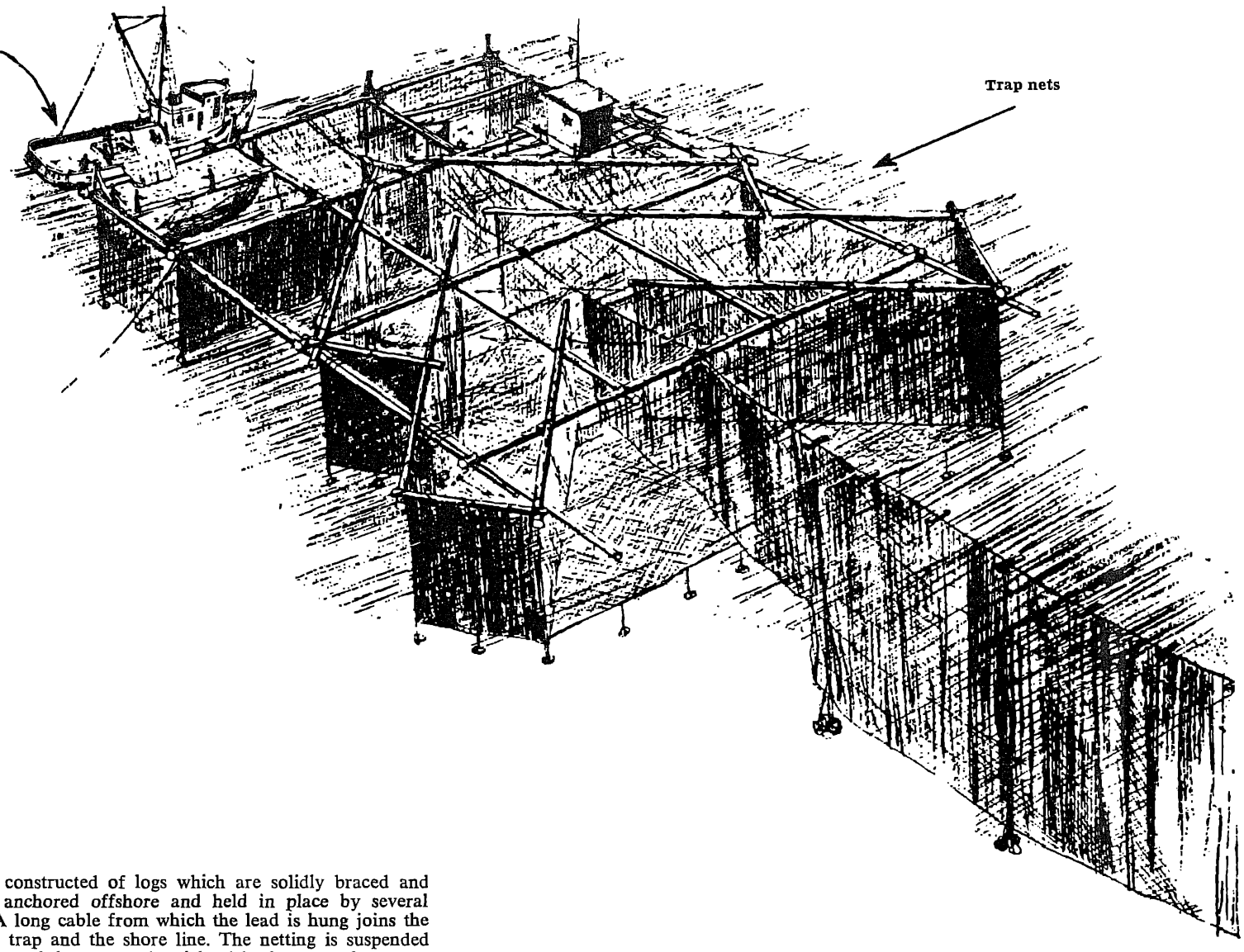


FIGURE 4. Alaska floating trap



The floating trap is constructed of logs which are solidly braced and bolted together. It is anchored offshore and held in place by several 5 and 6 ton anchors. A long cable from which the lead is hung joins the log construction of the trap and the shore line. The netting is suspended from the floating surface of the trap and weighted by heavy rocks.

FIGURE 5. **Tonnara**

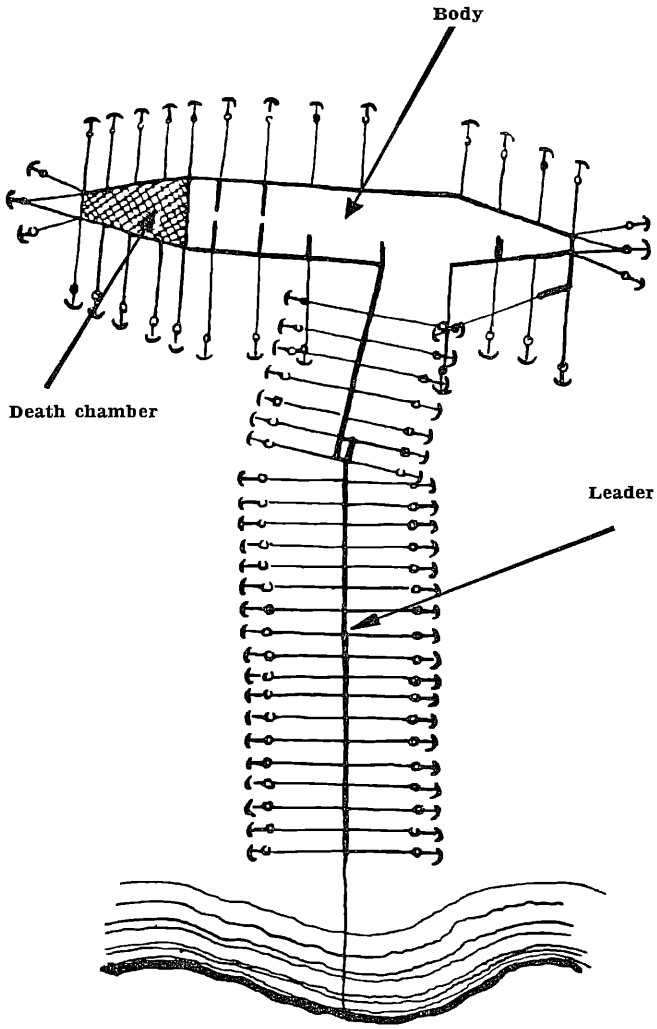


FIGURE 6. **Common type of 1 mouth 1 bag trap net**

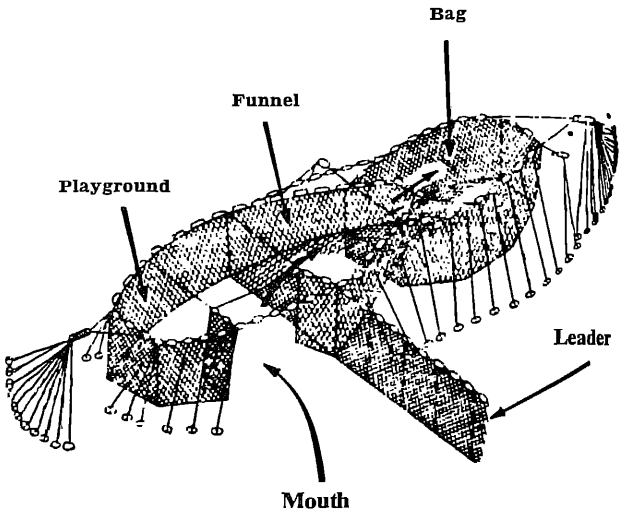


FIGURE 7. **Anchored bag net**

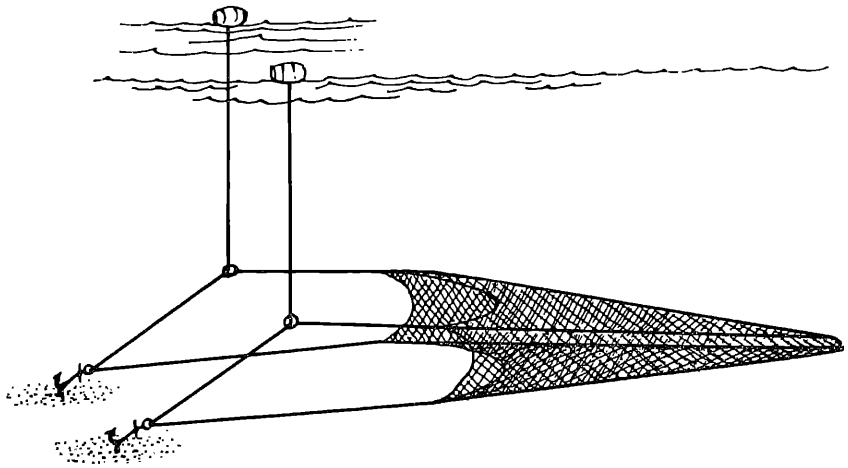


FIGURE 8. **Coconut frond lure " Tendak ", " Rompon "**

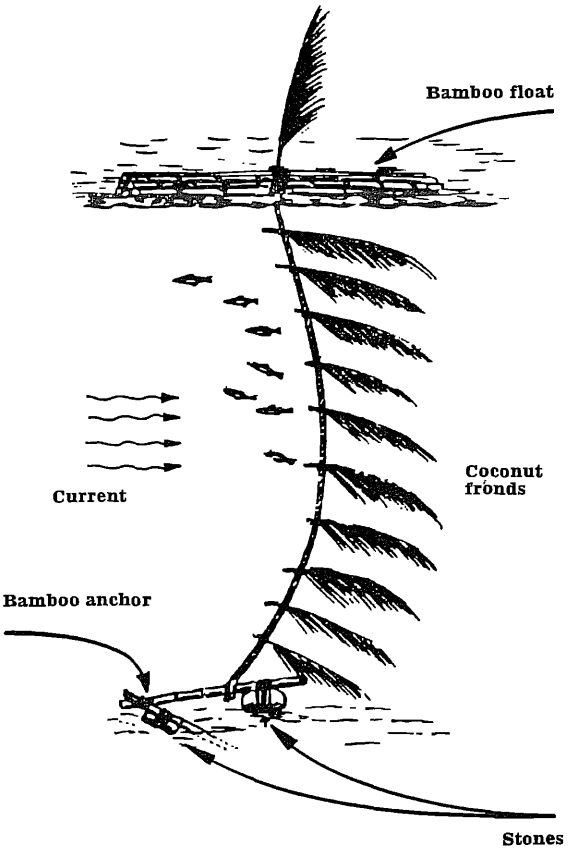


FIGURE 9. **Stow net**

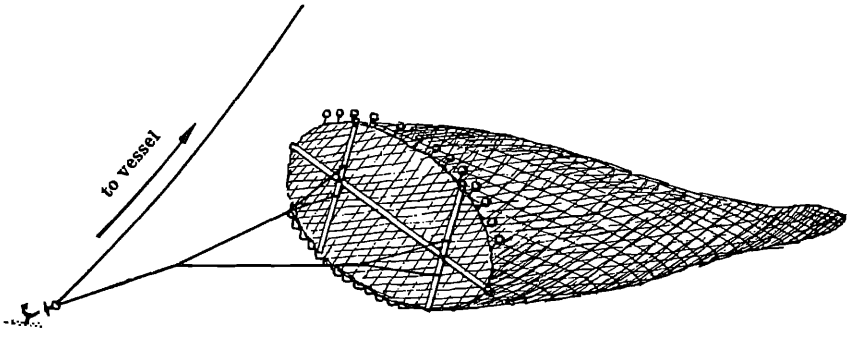


FIGURE 10. **Bottom-set gill nets**

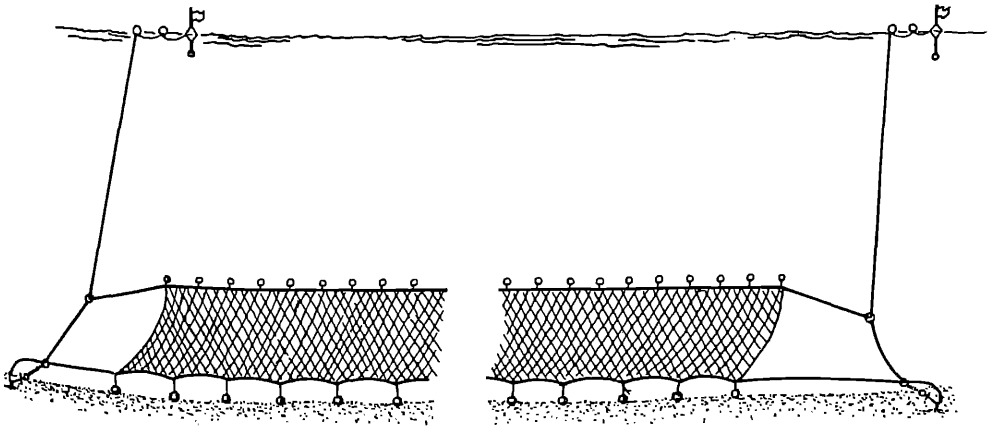
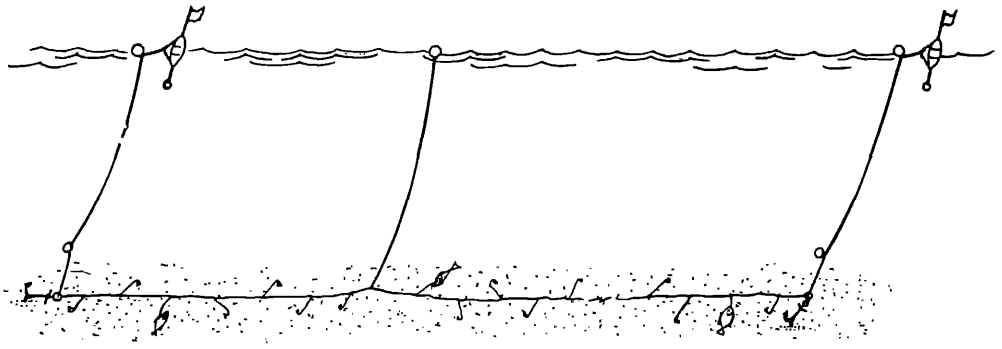
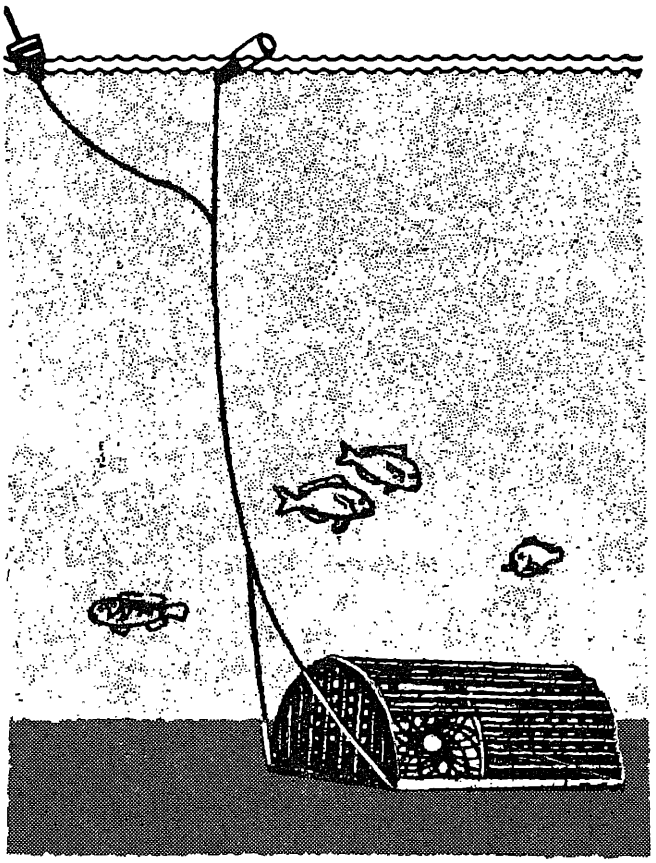


FIGURE 11. **Bottom-set longlines**



The set usually has marker buoys at each extremity and floats every 100-400 fathoms or so. In European countries the marker buoys carry a light at night.

FIGURE 12.



Lobsters are caught in small wooden traps or pots, which are baited with fish and lowered to the bottom at depths of 1 to 30 fathoms. Usually the traps are set singly, but in some localities, a trawl of as many as 12 traps may be fished. The traps are hauled daily or as often as conditions allow. A fisherman may operate 200 or more single traps, but the average is less than 100.