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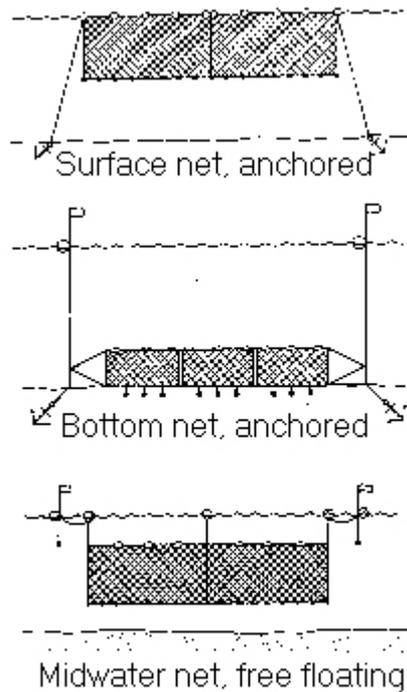
## Series 1: Programme 1 of 11 'Reports 1 - 6'

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### Report 3 (of 6): Fishing for Change

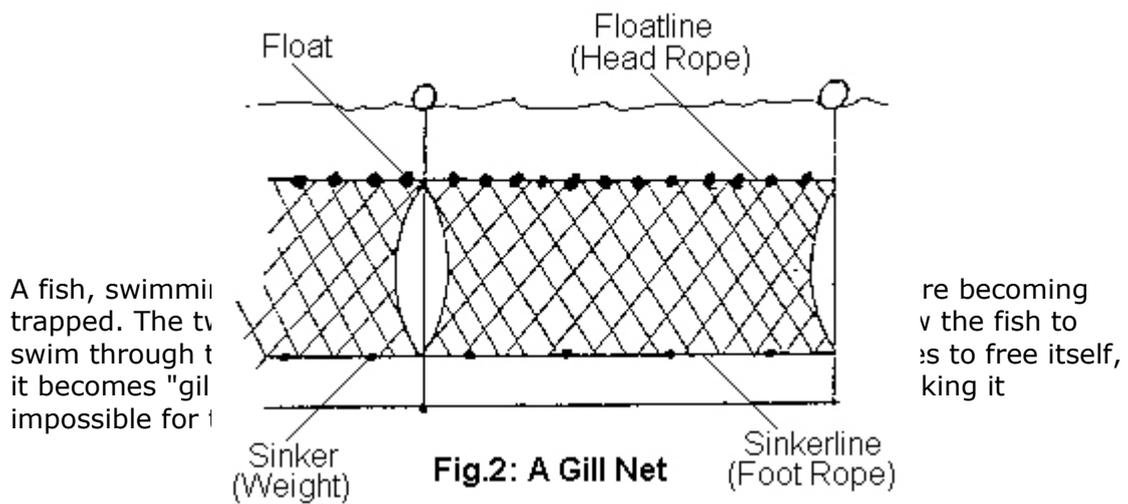
#### GILL NETS

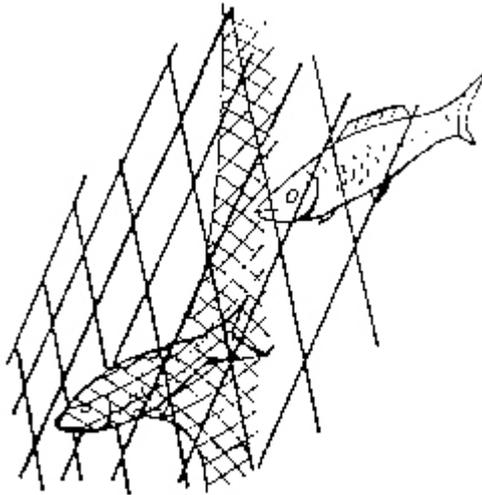
A gill net is a special kind of fishing net comprising a long length of fibre (cotton or nylon etc.) meshes. It may be set on the sea bottom, surface or midwater (figure 1) and is usually left overnight.



**Fig.1: Surface, midwater and bottom set gill nets which can be either anchored or free-floating**

It may be anchored or freefloating. To be effective, a net should not be detectable to the fish. The bottom of the net is generally weighted while the top is supported by floats (figure 2). There are also other ways of "rigging" the net without weights or floats.





**Fig.3: Fish become "gilled" in the net.**

According to the desired size of fish, the mesh size is varied. Fish with a smaller girth than that of the mesh opening are able to swim through. A large mesh size, e.g. 230mm to 300mm, can be used for larger fish, such as sharks or tuna, and a small mesh size, e.g. 153mm to 178mm, can be used for smaller fish. The way the net is constructed and the depth it is set also determines the size and species of fish captured.

### **Gill Net Operations**

Setting gill nets may involve using a marker buoy with a rope (buoyline) and anchor attached to one end of the net. These are thrown into the sea from the stern of the boat. As the net flows out into the water, the floatline and sinkerline are arranged so as to ensure that the net does not tangle.

When the gill net is taken from the water, it is generally the buoyline and anchor that are hauled in first. The crew then haul in the net using the float and sinkerlines, removing and collecting the fish which are caught in the mesh.

### **Net Braiding and Rigging**

Braiding the term for net making, may be done by machine or by hand. Any size of mesh can be braided.

Rigging is the process of attaching ropes, floats, weights and other accessories to the net to make it ready for fishing. Rigging is very important because it determines the shape of the meshes. The way the netting is hung from the floatline and sinkerline determines the shape of all meshes in the net. The staples (loops of twine) that connect the netting with the head rope should be exactly the same distance apart so that all the meshes have the same shape.

Materials required for making a gill net include ropes, twine, floats, sinkers,

buoys, anchor, netting needles, knives, and mesh gauges. Two fixed posts, for example, trees, are required to secure the head rope while the braiding is carried out.

All netting, twine and ropes are generally made of synthetic fibres which tend to be more durable than natural materials. However, floats and sinkers are often made from local materials such as bamboo, wood, bottles, or stones.

### **Floats and Sinkers**

The purpose of the floats in a gill net is to ensure the buoyancy of the floatline (head rope) is correct. They must be strong enough to withstand heavy pressure in deep waters and must not absorb water or become entangled in the netting. Therefore, the shape, size and materials of the floats is crucial. They are usually attached directly to the floatline or threaded onto it.

Sinkers (weights) are fastened to the sinkerline (foot rope) and must have sufficient weight to sink the bottom part of the fishing net. They must also be smooth to ensure that they do not become entangled in the netting. The number of floats and sinkers and the distance between them depends on the type of fishing method being used, or whether the net is a surface, midwater or bottom set net. The type of material used in the gill net, the buoyancy of the floats and the weight of the sinkers will also affect the number of floats and sinkers required for the gill net and the efficiency with which a net will catch fish.

### **Buoys**

Surface buoys (generally called marker buoys) should have enough buoyancy to prevent the nets from sinking even with heavy catches and be large enough to be seen from a distance.

### **Types of Knots**

Various kinds of knots are used for joining ropes and lengths of net together. The kind of knot used will depend on the type of rope (material, width etc.); the use of the knot (i.e. for attaching to the anchor, buoy or other nets etc.); whether the knot should slip; or whether the knot is permanent.

### **Netting Needles**

A special kind of needle (figure 4) is used for making nets by hand. It may be made of wood

, bone, plastic or metal and comes in different sizes to suit the size of the mesh. The use of netting needles is essential for net making and repair.

### Mesh Gauge

For hand made nets, a mesh gauge (or mesh stick) is used to determine the mesh size and ensure uniformity. This is usually made from a piece of hard smooth wood which is either flat or rounded.

### Selection of Mesh Size

A mesh is composed of four knots and four bars (figure 5). It must be the right size for the target species of fish. fishing is essential for

### Double Selvedging

After the completion of and foot rope bottom are called "double mesh made of double it is strong enough to withstand the forces against it while at sea (figure 6).

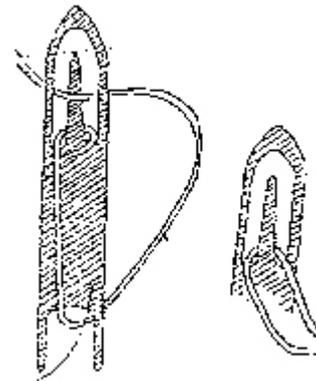
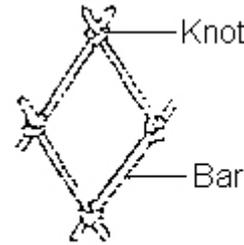


Fig.4 : Netting Needle



Knowledge selecting

Fig.5 : Mesh

net braiding, the head rope strengthened by a technique selvedging". Thicker twine or twine is used, to ensure that

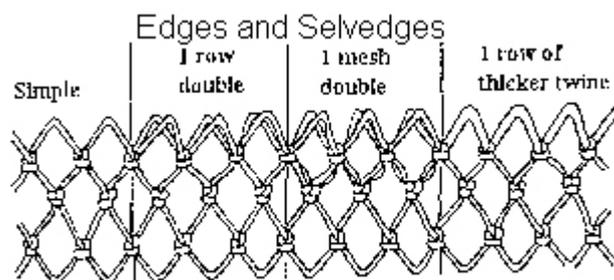


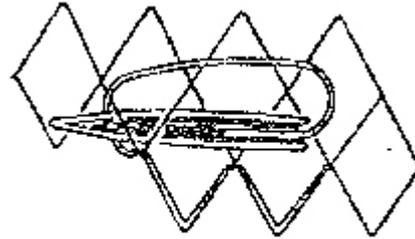
Fig.6: Double Selvedging

### How to start Net Braiding

To start net braiding (figure 7), a number of loops need to be formed, using a clove hitch, on the head rope which will be equivalent to the number of meshes required. This is known as the setting up row. When forming the setting up row the proportion of twine used for the knots is slightly more than the amount used in making the ordinary sheet bend. A smaller mesh gauge is necessary for making the initial row of loops.

## Net Mending

In order to repair tears, needles with either single or double twine should be used depending on the kind of net pieces to be mended and these pieces should be hung squarely so that the meshes are even. The meshes and bars made during net mending must be the same length as the original meshes of the net.



**Fig.7 : Net Braiding  
(from right to left)**

When the tear needs too much braiding to sew up the sides, the repair can be made by replacing the damaged portion of the net by a patch of netting of the same mesh size. In order to avoid complicating the work, the hole prepared should be square or rectangular, without any bars, like the patch itself. If bars are left in the hole, the patch has to have the same number, in the same places, so that they can be connected.

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Acknowledgement is given to the International Committee of the Red Cross [ICRC](http://www.icrc.org) who provided the information for the project.

## References:

Fisheries Technologies for Developing Countries: (National Academy Press) ISBN-0-309-03788-3

Mending of Fishing Nets: L.Libert and A.Maucorps (FAO) ISBN-0-85238-062-3

Rope, Twine and Net Making: A.Sanctuary (Shire Publications Ltd) ISBN-0-85263-502-8

## Further Reading

(T)Fishermans Workbook (A)J Prado (D)ISBN 0852381638, ,1990 (Fishing News Books) £14.99

(T)A Livelihood from Fishing: Globalization and sustainable fisheries policies (A)Alain Le Sann (B)Fish constitutes a limited - and jeopardized - natural resource. Yet, in order to meet expanding demand from consumers and, consequently, industry, developed countries import ever increasing volumes of fish. While decommissioned vessels from Northern fleets are being transferred to the South to alleviate pressure on depleted European stocks, countries in the South are exporting more and more sea products to the North. In these



conditions, how are the food requirements of impoverished populations, for whom fish is a vital source of protein, going to be met? The author argues that solutions do exist, although they entail a number of conditions: the sharing of resources, protection of the environment, implementation of measures for responsible fisheries, and integrated aquaculture. In addition, in order to develop an integrated form of aquaculture, the rights of fishworkers must be reinforced, since government policies bent on modernization and protection of natural resources often lead to their marginalization. This book, based on over ten years' involvement with fishworkers' associations in the North and South, provides an overview of fisheries and makes proposals for the integration of social aspects in a new fishing policy. It will be of interest to all those who are keen to develop their environmental awareness and are concerned about the welfare of fishworkers. (D)ISBN 1853393983, 130pp,1998 (ITP) £8.95

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TVE/ITDG gratefully acknowledge support for the HANDS ON programmes from the [UK's Department for International Development \(DFID\)](#), the [European Commission \(EC\)](#), the [UN Foundation](#) and [UNDP/The Equator Initiative in collaboration with the Government of Canada, IDRC, IUCN, BrasilConnects and the Nature Conservancy.](#)

