

TTFD

CONSTRUCTION OF THAI TURTLE FREE DEVICE



SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER
TRAINING DEPARTMENT [SEAFDEC/TD](#)

Prepared under FAO/GEF Project



What is SEAFDEC?

SEAFDEC is an autonomous intergovernmental body established as a regional treaty organization in 1967 to promote fisheries development in Southeast Asia.

Objectives

SEAFDEC aims specifically to develop fishery potentials in the region through training, research and information services in order to improve food supply through rational utilization of fishery resources in the region.

Functions

To achieve its objectives, the Center has the following functions :

- 1) To offer training courses, and to organize workshops and seminars, in fishing technology, marine engineering, extension methodology, post-harvest technology, and aquaculture;
- 2) To conduct research and development in fishing gear technology, fishing ground surveys, post-harvest technology and aquaculture, to examine problems related to the handling of fish at sea and quality control, and to undertake studies on the fisheries resources in the region; and
- 3) To arrange for the transfer of technology to the countries in the region and to make available the printed and non-printed media, which include the publication of statistical bulletins for the exchange and dissemination related to fisheries and aquaculture development.

Membership

SEAFDEC membership is open to all Southeast Asian Countries. The member countries of SEAFDEC at present are Brunei Darussalam, Cambodia, Indonesia, Japan, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam.

Construction of Thai Turtle Free Device (TTFD)

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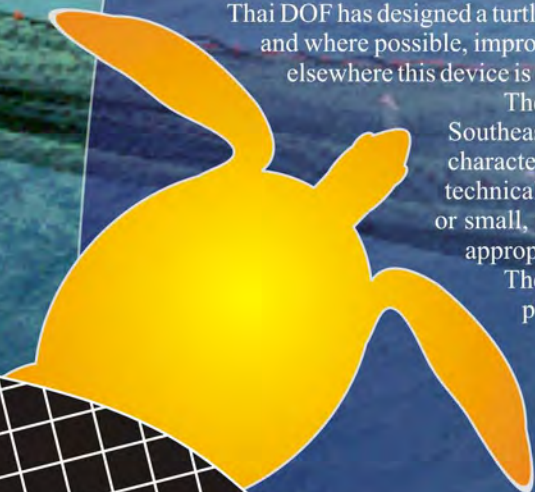
Preface

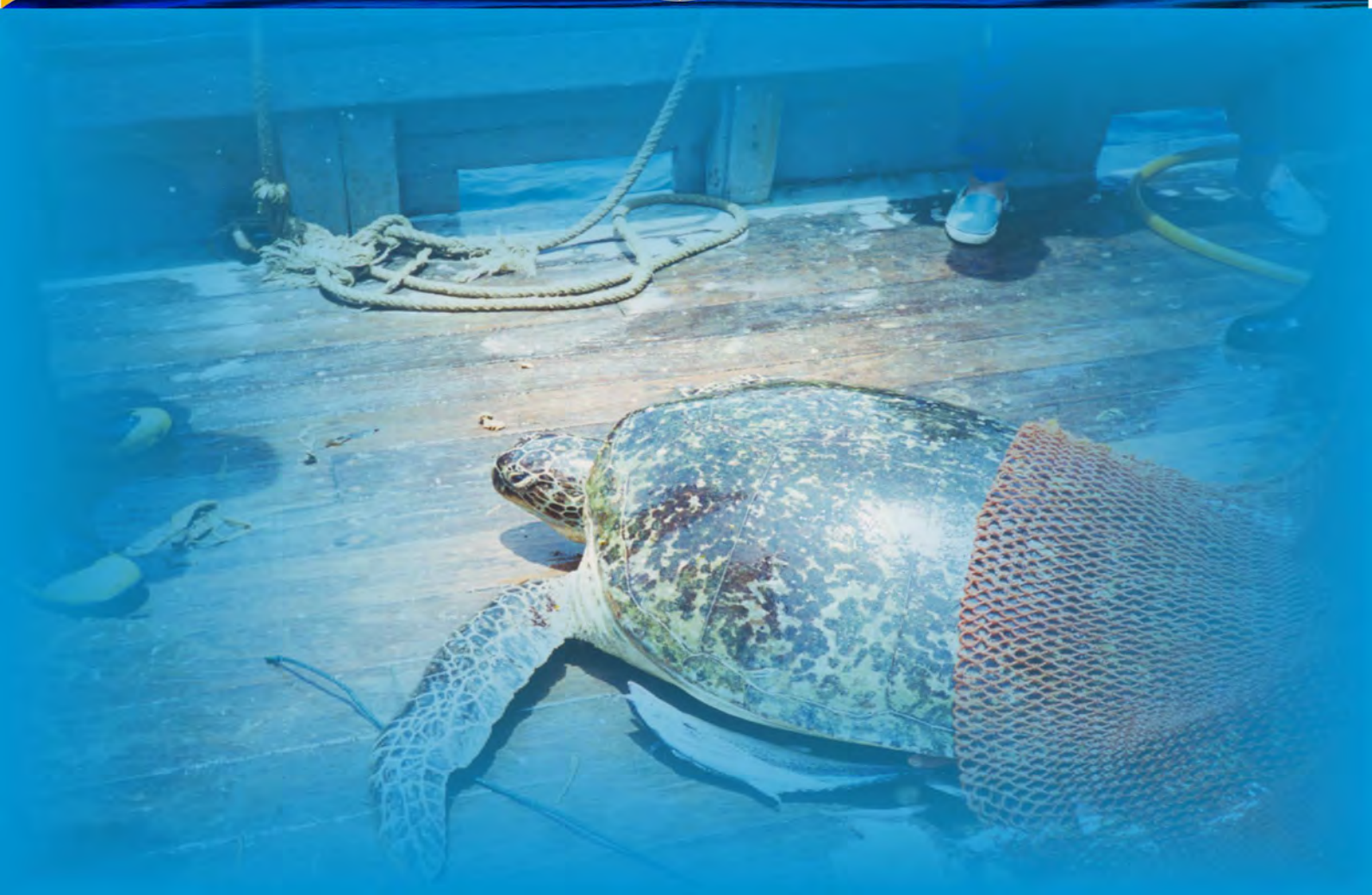
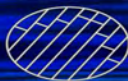
While SEAFDEC and the Thai Department of Fisheries are cognizant and very supportive of the worldwide necessity of adopting responsible fishing technologies and practices they also very well recognize the royalties that the using of foreign designs of equipment attract. The Turtle Excluder Device as its name suggests is a very adequate method for the release of turtles during fishing trawling operations. However, in the Southeast Asian environment the fishing boats are generally smaller and are unable to handle heavy equipment in the sea conditions that prevail in the region.

Thus, working in harmony to meet the needs of responsible fishing technologies and practices the Thai DOF has designed a turtle excluder device and SEAFDEC has invested time and effort into the testing and where possible, improvements in the design. To segregate this device from other designs available elsewhere this device is entitled the THAI TURTLE FREE DEVICE of TTFD for short.

The TTFD has been proven to operate very well in the sea conditions of Southeast Asia, but this device is significantly lighter and displays similar characteristics both of towing load and operation to those of foreign imports. This technical handbook gives accurate details and specifications for any workshop, large or small, to manufacture them at minimal cost to the individual fisherman or where appropriate to local fisher groups.

The manufacturing details provided are detailed and provide a good working platform both for manufacture and installation. These details not only include the materials of manufacture they also provide details of net cutting for the release point and the fixing details to maintain the proper towing angle to facilitate the release of larger animals than the target catch.



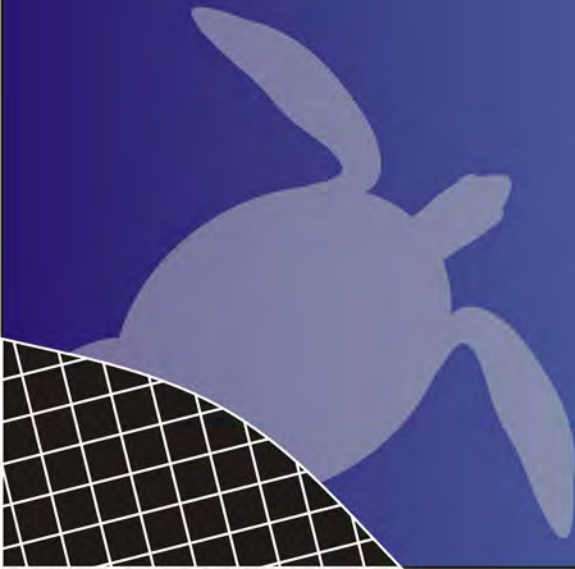




Introduction

This booklet outlines the construction of a Thai Turtle Free Device (TTFD). This Device is a Responsible fishing device, which was developed for trawl fisheries in this region with the aim to exclude live sea turtle by-catch in the trawl net while having a minimal effect on the target catch.

The authors would like to encourage the owners and operators of trawl fishing vessels to investigate the use of TTFD in their fisheries.



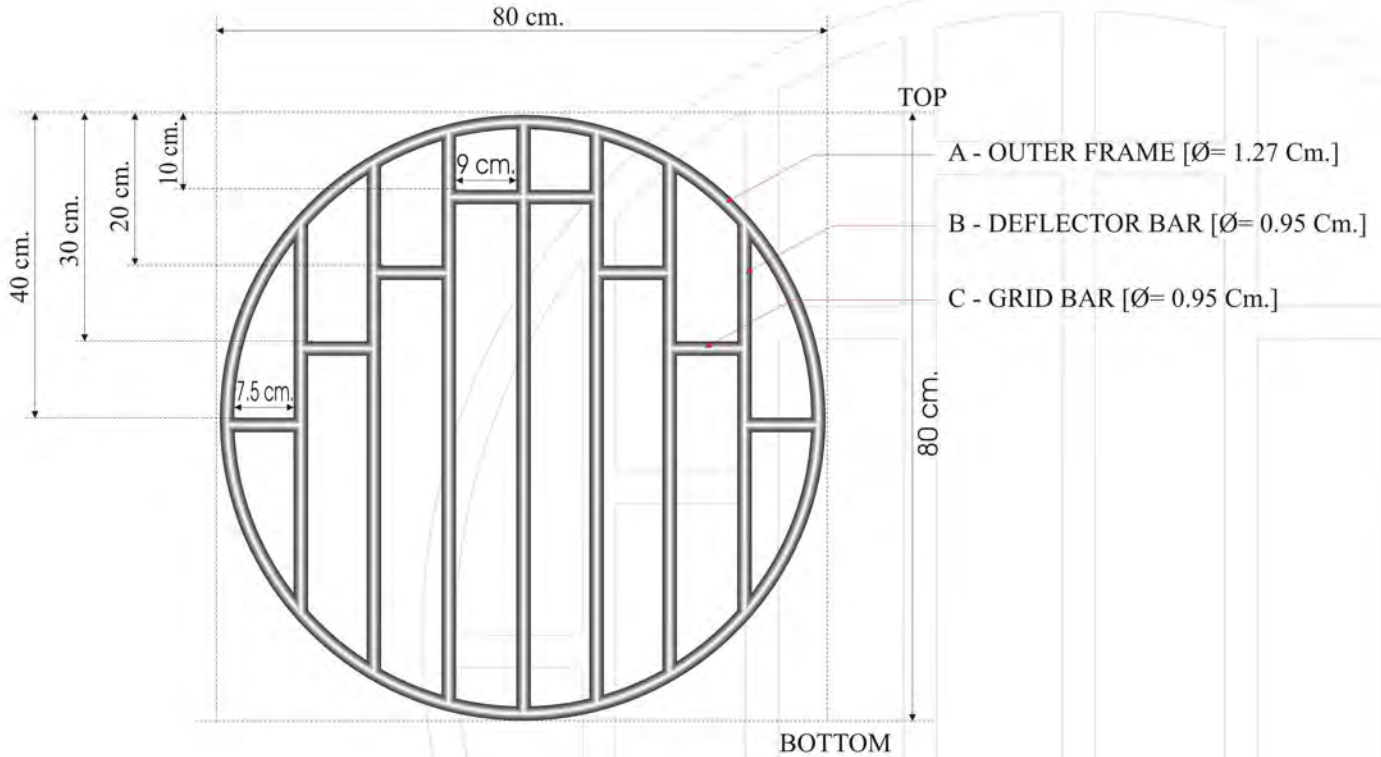


Figure 1. Frame dimensions





Thai Turtle Free Device (TTFD) Procedures for Construction and Installation

1. Constructing the Frame

The circular frame should measure 80 cm in length and 80 cm in width. The outer ring of the frame (A) should be composed of 1.27 cm diameter steel rod and the deflector bars (B) and grid bars (C) made from 0.95 cm diameter steel rod. Ensure there is a 9 cm space between deflector bars and a 7.5 cm space between the two outer deflector bars and the circular frame.



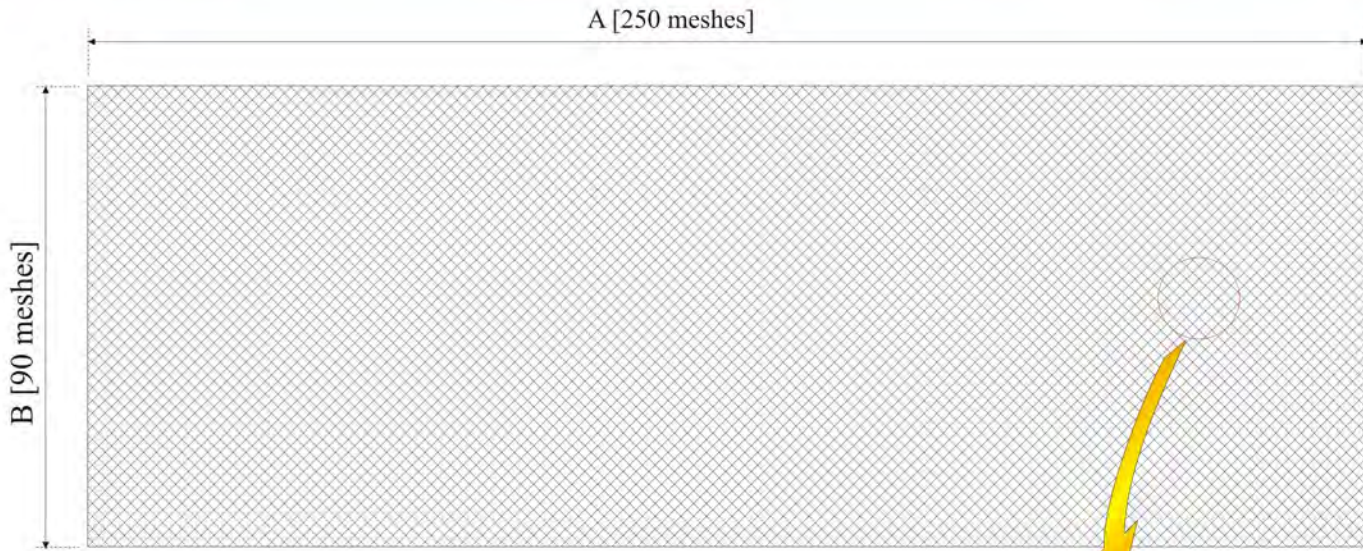
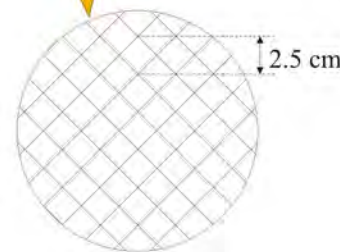


Figure 2. Polyethylene net [2.5 cm mesh size]



2. Forming the TTFD Extension

The TTFD extension is made using a single piece of 250d/6 polyethylene net measuring 250 meshes (A) by 90 meshes (B). Mesh size for the net is 2.5 cm.



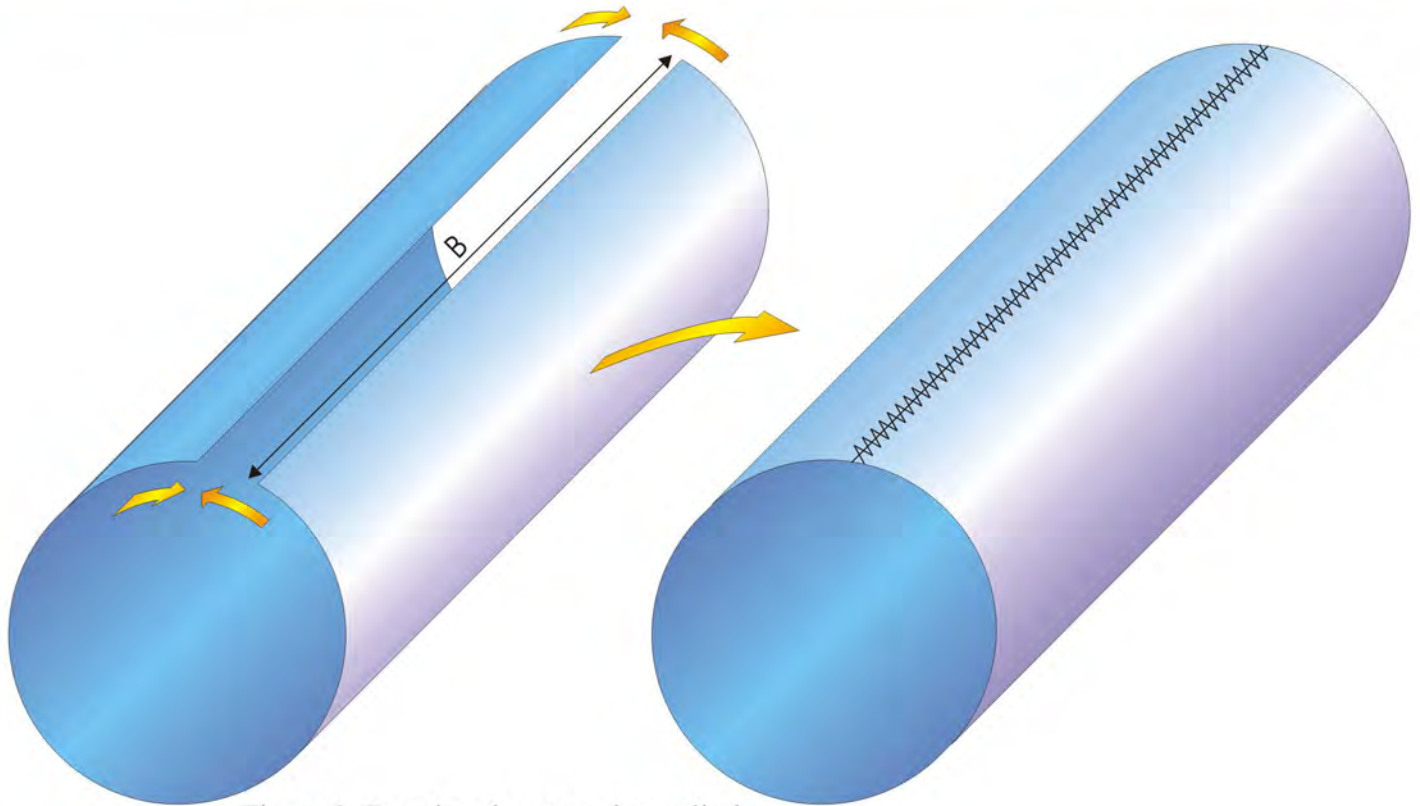


Figure 3. Forming the extension cylinder

From a cylinder by attaching the two 90 mesh sides (B).

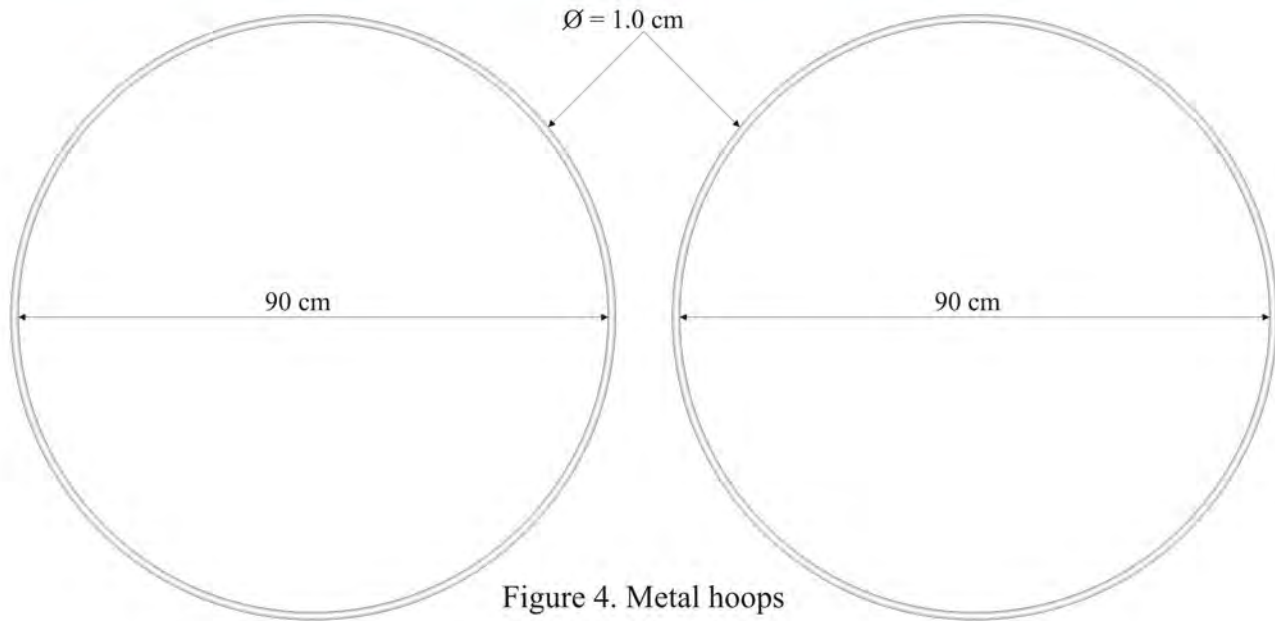


Figure 4. Metal hoops

3. Constructing the Metal Hoops

The metal hoops should be 90 cm in diameter and be constructed using 1.0 cm diameter steel rod.



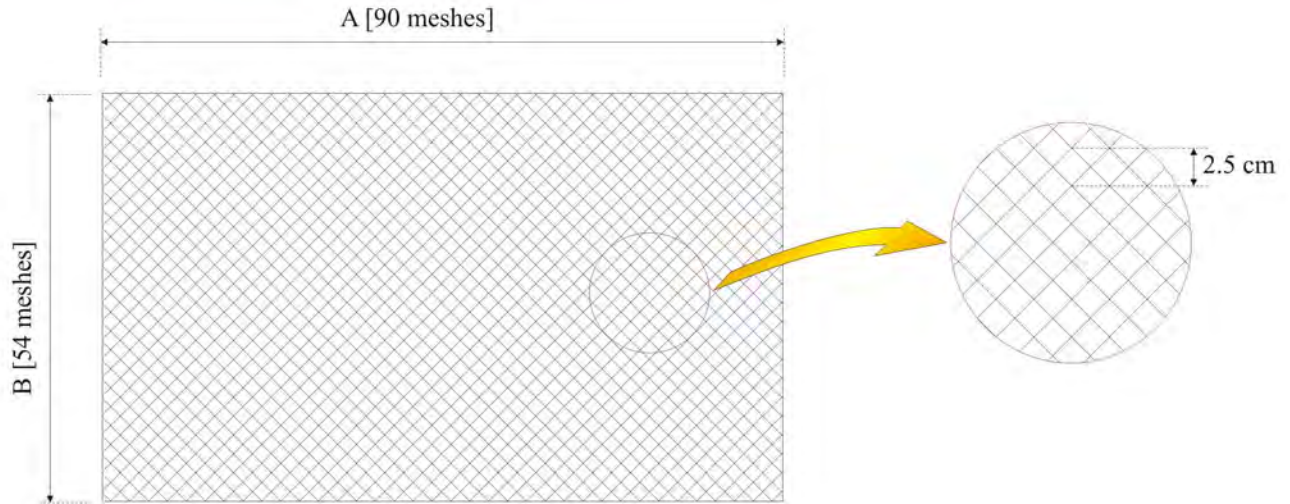


Figure 5. Flap extension

4. Flap Extension

The flap extension is should consist of a single piece of 250d/6 polyethylene net measuring 90 meshes (A) by 54 meshes (B) with a 2.5 cm mesh size.

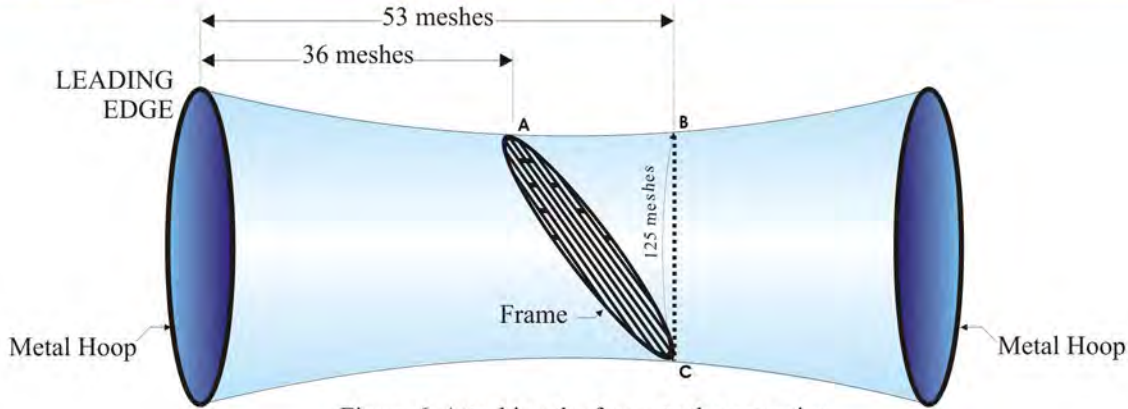


Figure 6. Attaching the frame to the extension

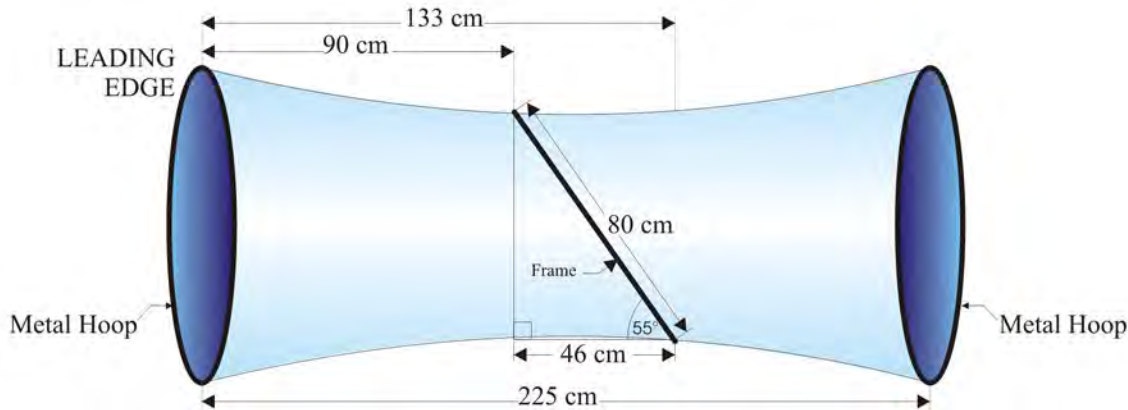


Figure 7. Dimensions for the frame and extension combined

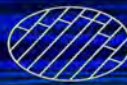
Note : $\cos \theta = \frac{46 \text{ cm}}{80 \text{ cm}} = 55$





5. Combining the Frame, TTFD Extension and Metal Hoops

- Step 1 : Slide the frame into the TTFD extension.
- Step 2 : Attach a metal hoop at each end of the extension. Using the hoops, stretch the extension cylinder so it is taut.
- Step 3 : Position the stretched extension so the seam is positioned along the top.
- Step 4 : Starting at the leading edge of the extension, count back 36 meshes along the seam and attach the top of the frame to the netting (A).
- Step 5 : In order to find the bottom attachment point for the frame, count 53 meshes along the seam from the leading edge of the extension (B). From this point, count 125 meshes perpendicular to the seam. Attach the bottom of the frame to the extension at this point (C).
- Step 6 : Sew the rest of the frame to the extension while maintaining the proper grid angle.



6. Cutting the exit hole

Begin with all bar cutting from the 1 and 7 grid bars frame. Continue the cut along the bars, maintaining all bar cut distance until the distance from G to H measured 28 meshes.

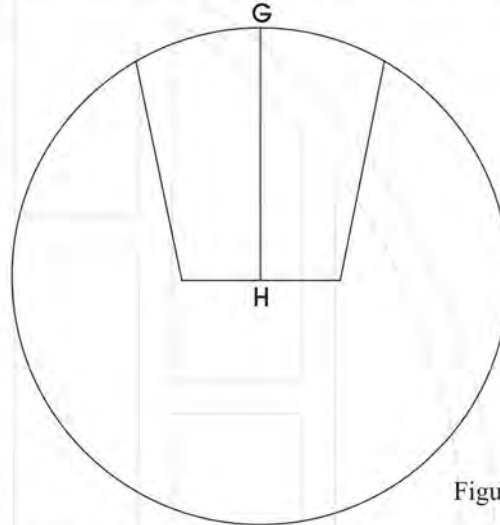


Figure 8. Cutting line for the exit hole

7. Attachment of the exit hole cover (flap)

Attach the side of the flap to the side of the opening by sewing the flap to the extension ahead from $A > B > C > D$, remaining 4 meshes of the flap to 6 meshes of the extension behind the TTFD frame. The remaining 20 meshes of the flap behind the TTFD frame should be left unattached.



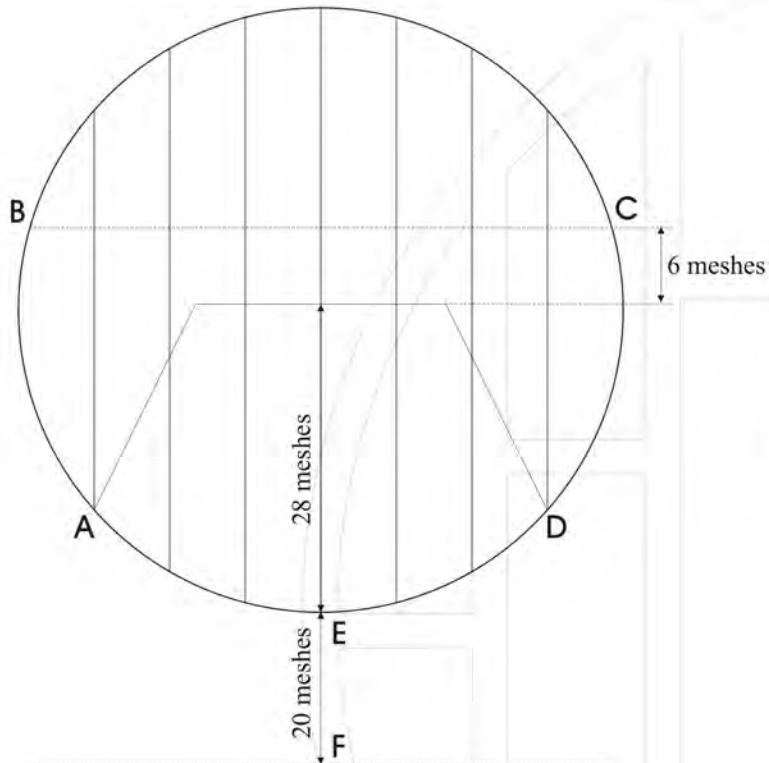
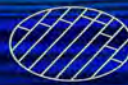


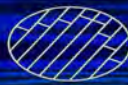
Figure 9. Attach the flab to the exit hole

8. Chafing gear and floatation

To prevent chafing of the net around the TTFD a length of 9.5 meters of 10 mm. polyethylene rope is laced around the frame through alternate meshes.

Attach two PVC floats 9 cm. in diameter by 14 cm. length to the outside of the TTFD for weight compensation and stabilization of the device.





9. Install the TTFD set into the cod-end of trawl net

- Step 1: From the end of the cod-end, measure 10 meter length to the front of the trawl net and mark the 10th meter along the cylindrical shape, then cut it along the cylindrical. This will separate the trawl net into 2 parts.
- Step 2: Remove the metal hoops from the TTFD set.
- Step 3: Connect the TTFD set into the trawl net by hand sewing along both parts of the stitching line

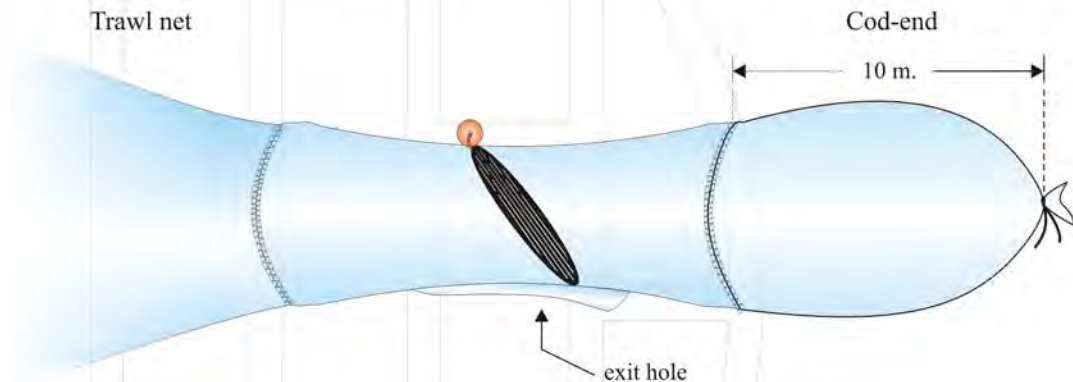


Figure 10. Install the TTFD set into the cod-end of trawl net





During the demonstration of trawl net with TTFD



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