Purse Line Counter

To measure the length of wire pays out from the drum of purse winch.
To measure the length of wire remains in the drum of purse winch

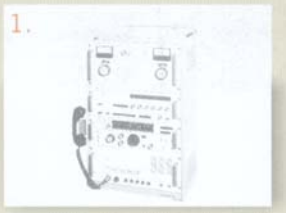
Weather Facsimile&NOAA Receiver

To print out the weather information, sent from the metrological land-base station.
To show satellite image for weather forecasting.

Radio Communication Instrument

The Radio Communication Unit Consists of
1. The MF/HF radio system.
2. VHF radio and two ways VHF radio telephone.
3.All wave receiver with scanning units.
4. GMDSS Unit
5. Inmarsat A and C
6. SSB radio and CB radio

1.



2.

3.

4.

5.

5.

6.

ELECTRONICFISHINGINSTRUMENTS

Selective Calling Buoy

Buoy transmits the signal to the ship while the selective-calling buoy receives the digital code from the transmitter at purse seiner.
Direction of buoy is shown at the radio direction finder.

Radio Direction Finder

To show the position from the radio buoy to purser seiner.

GPS Buoy Position Receiver

Instrument control and display the position of the GPS buoy

GPS Buoy

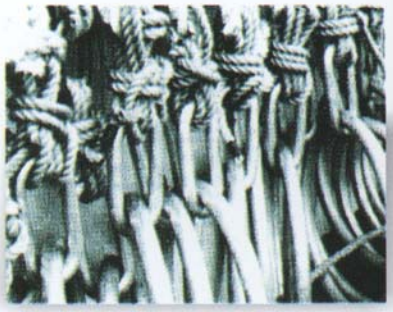
Buoy transmits the signal to the ship while the GPS buoy receives the digital code from the transmitter at purse seiner.
Position of the GPS buoy is shown by GPS buoy position receiver

FISHING GEAR

Tuna and skipjack purse seine net of M.V. SEAFDEC was made by Nichomo Co.,Ltd. Length after hanging is 1266.9 m., composed by 22 portions. Net materials are Nylon (PA) and Polyester (PES).

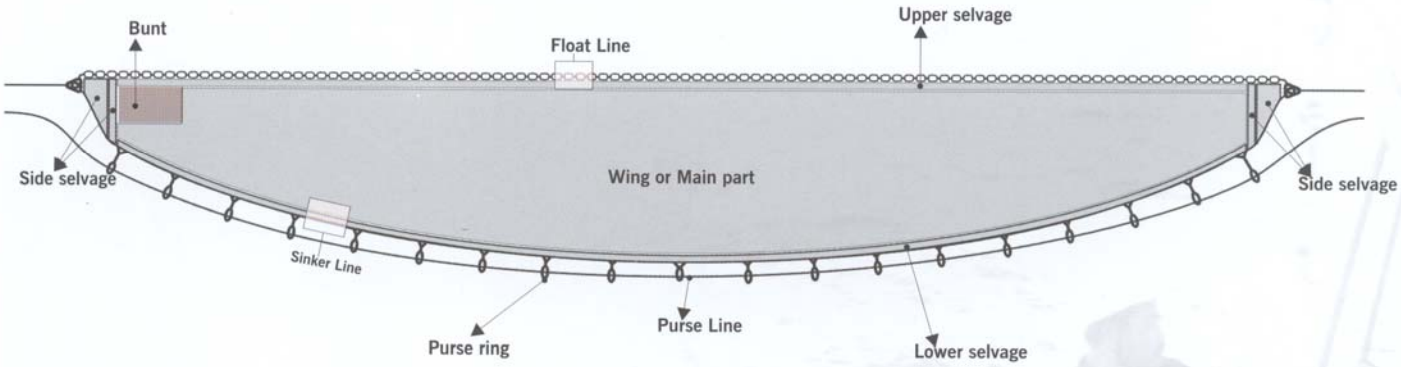
FLOAT and FLOAT LINE
Float material is made from Ethylene Vinyl Acetate (EVA) E-500 buoyancy force 5000 gram. The number of floats are 4200 and are fixed at the cork line. Cork line is Polypropylene rope. The diameter of cork line is 45 mm and length is 1266.9 m. Rope for fixed float with cork line is Polypropylene, diameter 22 mm.

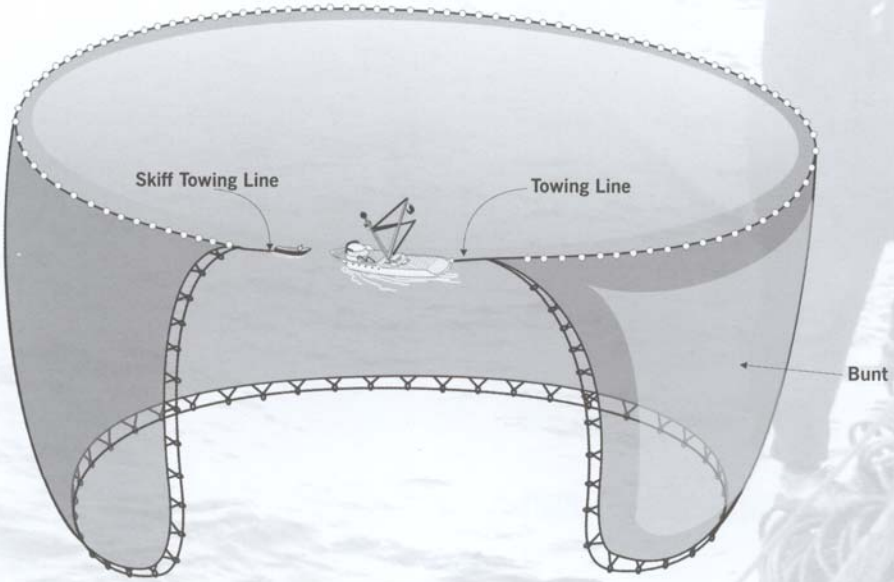
SINKER & SINKER LINE
Sinker line is made from alloy chain size 11, 13 mm.



PURSE RING
Purse ring is galvanize iron 22 mm., diameter 260 mm

FISHINGGEAR





BUNT
Bunt part (Portion1, 2) is constructed by PA90-224ply, mesh size 90 mm. Supporting bunt part (portion 3-6) is constructed by PA40, 60ply, mesh size 90,105 mm.

MAIN
Main body net constructed by 2 materials i.e. PA40 and 60ply, mesh size 90,105 mm. and PES60ply, mesh size 210 mm. Wing net constructed by PA40-60ply, mesh size 105 mm.

SELVAGE
Upper and Lower selvage is constructed by Polyethylene Ultra cross net (PEUC) 350ply, mesh size150 mm.

PURSE LINE 6 x 24
Purse line is made from dry wire diameter 19, 22, 24 mm. total length is approximate 2800 m.

TOWING LINE 6 x 19
towing line is made from dry wire diameter 19 mm. total length 1000 m.

TUNA and SKIPJACK PURSE SEINE NET

P = Portion
1 P = 75 meter
DR = Tufline (Polypropylene) Rope
DCR = Tufline (: :) Cross Rope

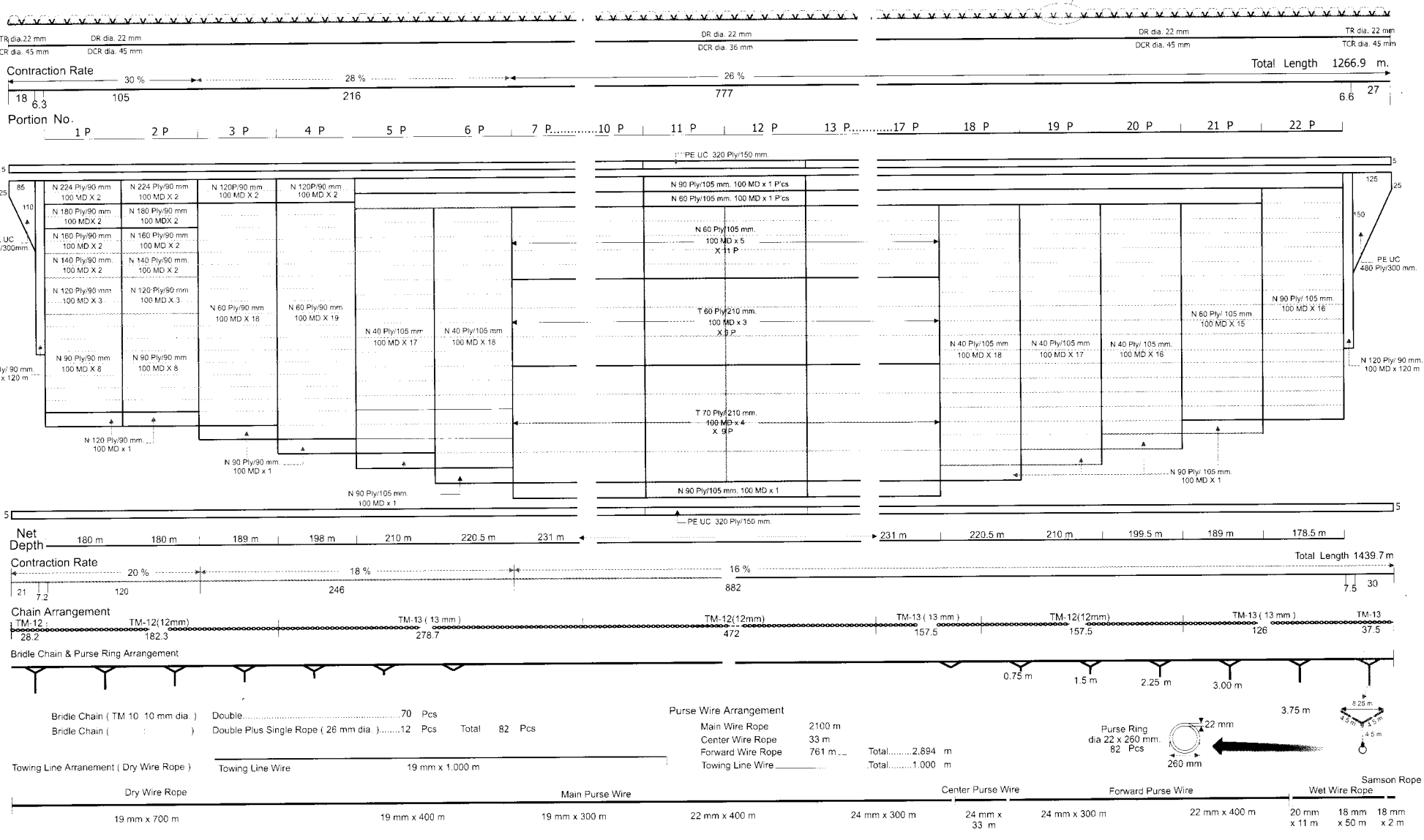
T = Tetron Net
TR = Tetron Rope
TCR = Tetron Cross Rope
TM = Super Alloy Chain Size

N = Nylon Net
MD = Mesh Depth
PE UC = Polyethylene Ultra Cross Net
EVA - 5 = Plastic Float EVA Model E - 50 Buoyancy 5,000 gram Yellow Colour

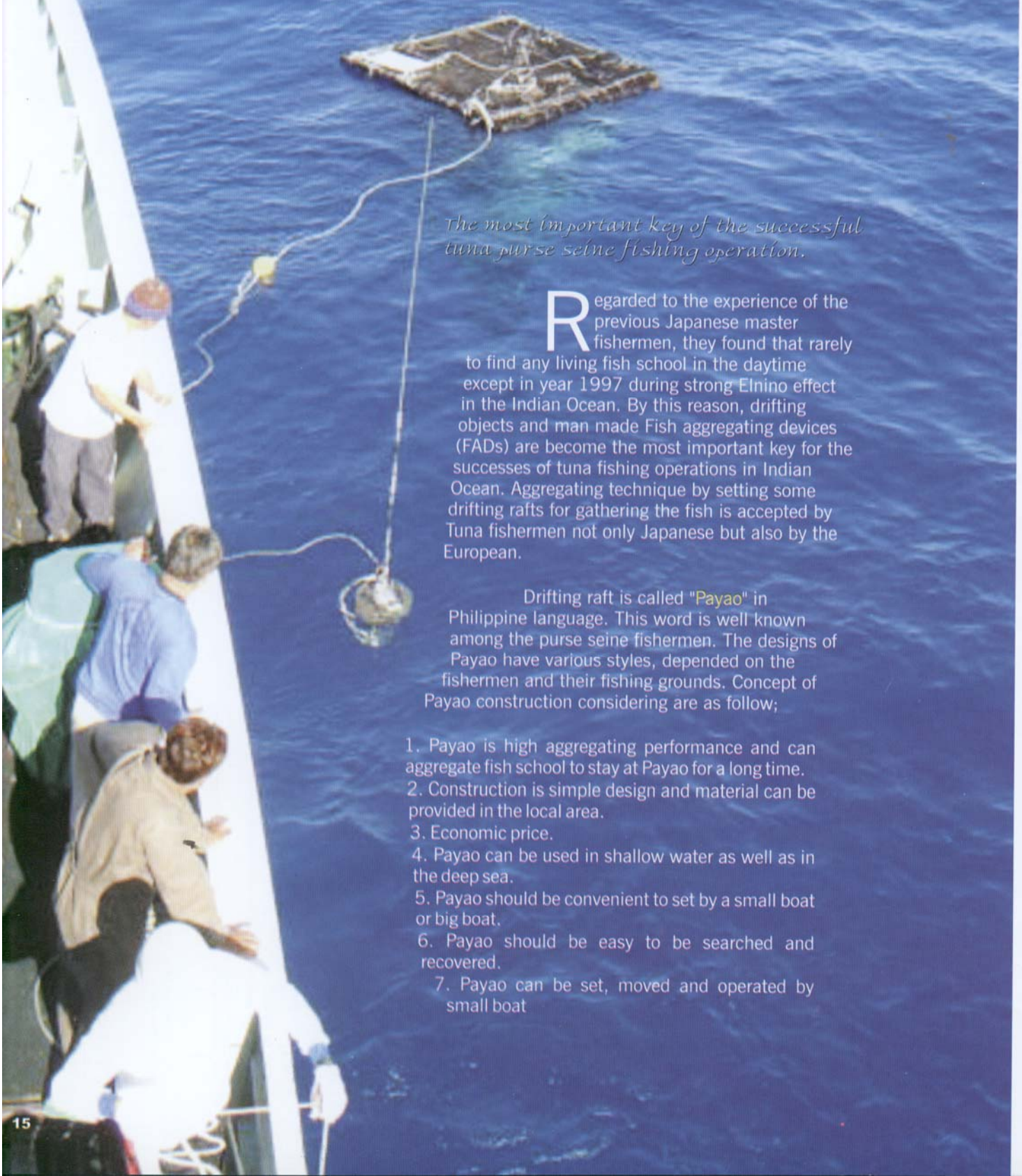
EVA
E - 50

TR & DR
TCR & DCR

The Forth Improve
(2003)



FISH AGGREGATING DEVICE



The most important key of the successful tuna purse seine fishing operation.

Regarded to the experience of the previous Japanese master fishermen, they found that rarely to find any living fish school in the daytime except in year 1997 during strong Elnino effect in the Indian Ocean. By this reason, drifting objects and man made Fish aggregating devices (FADs) are become the most important key for the successes of tuna fishing operations in Indian Ocean. Aggregating technique by setting some drifting rafts for gathering the fish is accepted by Tuna fishermen not only Japanese but also by the European.

Drifting raft is called "Payao" in Philippine language. This word is well known among the purse seine fishermen. The designs of Payao have various styles, depended on the fishermen and their fishing grounds. Concept of Payao construction considering are as follow;

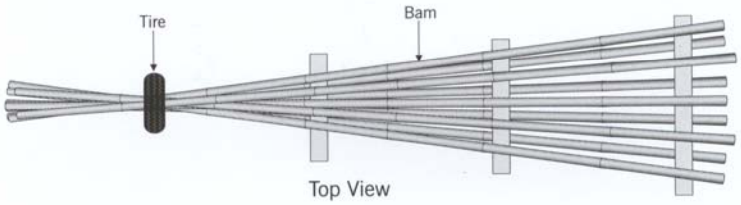
1. Payao is high aggregating performance and can aggregate fish school to stay at Payao for a long time.
2. Construction is simple design and material can be provided in the local area.
3. Economic price.
4. Payao can be used in shallow water as well as in the deep sea.
5. Payao should be convenient to set by a small boat or big boat.
6. Payao should be easy to be searched and recovered.
7. Payao can be set, moved and operated by small boat

FADs Classification

Fish aggregating devices or Payao can be classified to 2 types which are:

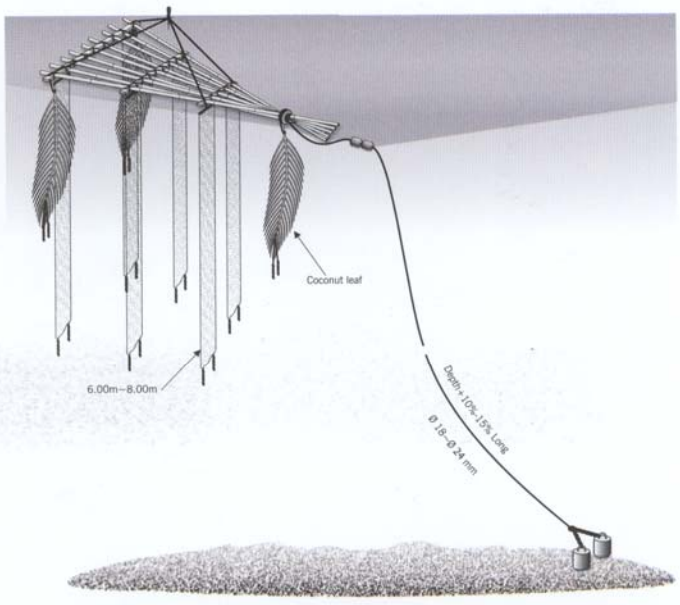
1. Anchoring Payao

Anchor payao is attached to the sea bottom by an anchor line and left to drift at the surface.



Top View

Side view



Perspective of operation

Figures show the construction plan of raft Payao.

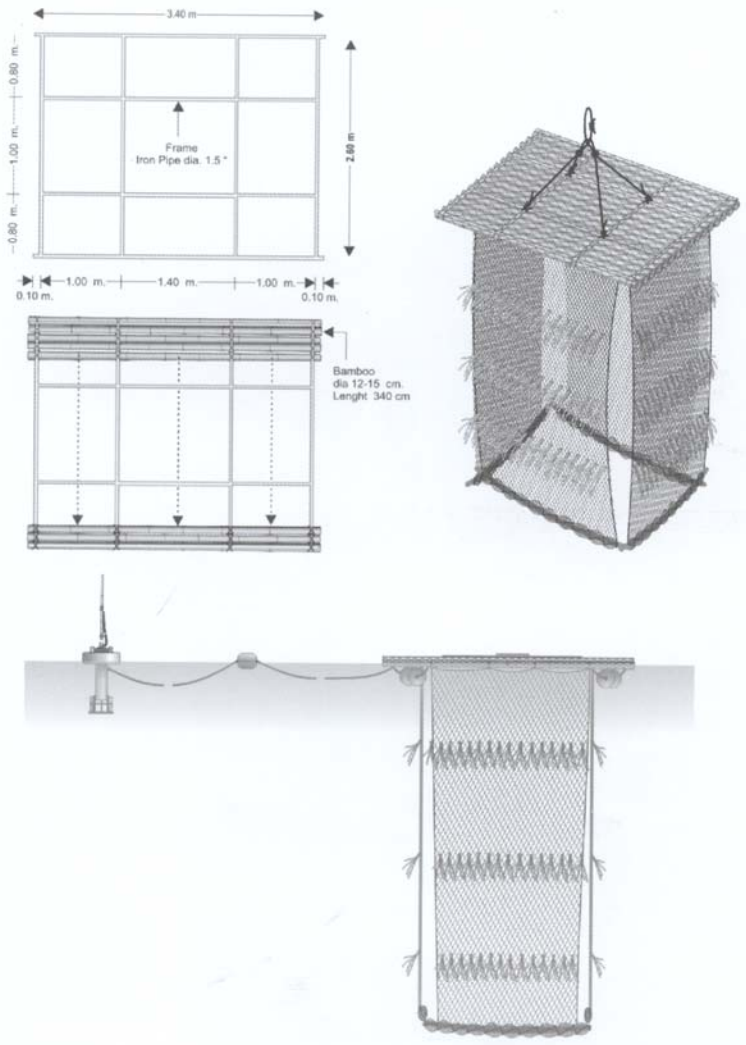
FISHAGGREGATINGDEVICE

2. Drifting Payao

Drifting Payao is drifted by the sea current. This kind of Payao is more suitable for the deep sea and far sea fishing ground than the anchor Payao. SEAFDEC drifting Payao has 2 designs, i.e. Raft type and curtain type.

1) Raft type

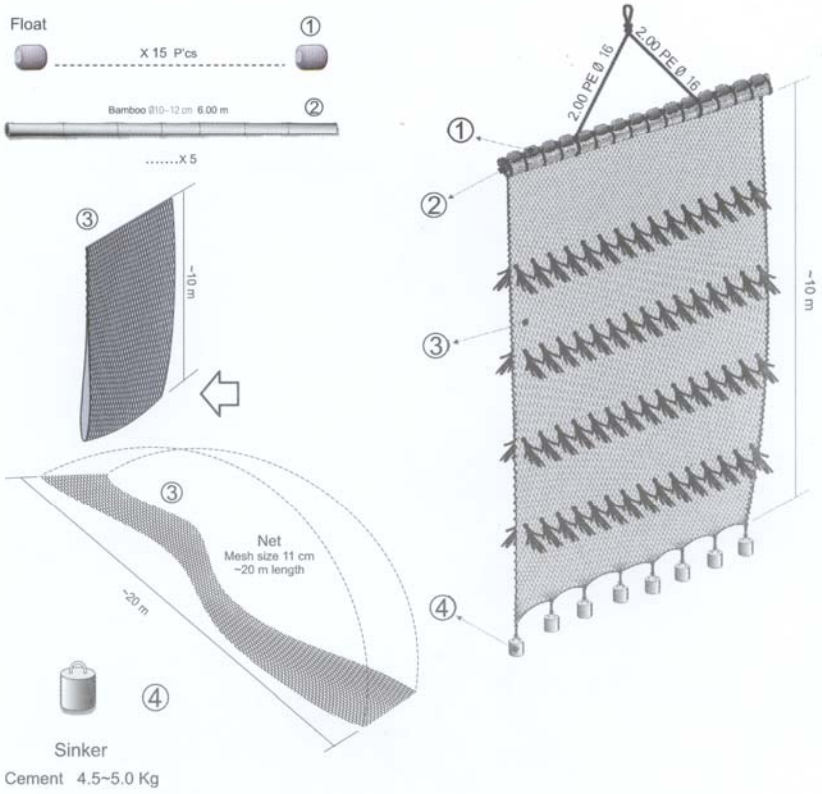
The raft is 2.4(2.7 meters, square shape. The square frames of Payao are made from iron pipe, diameter 2 inches. The supporting bar of frame is made from iron pipe, diameter 1.5 inch. There are 20 - 25 bamboo poles, 3 meter length and 10-12 cm diameter, tight together with the frame of Payao. There are 8 purse seine floats fixed at the angles of Payao. They used for support the buoyancy of Payao. The Payao is covered by sheet of fishing net to prevent the braking of raft.



Figures show the construction plan of raft Payao.

2) Curtain type

The raft is 5-6 bamboo poles, tight together. Bamboo pole length is 5-6 m. length and diameter about 10-12 cm. The raft may be buoyancy supported by 10-15 purse seine floats. Payao is covered by sheet of fishing net to prevent the braking of raft.



Figures show the construction plan of Curtain Payao.

Skirt

Both types of designs are fixed with old purse seine net sheets. These old net sheets are always called "skirt" and tight at below part of drifting payao. The skirt has 10 m length, is made from the old fishing net sheets.

FADs Preparation

Photographs explain the steps in FADs preparation

1

Structuring the iron pipe frame

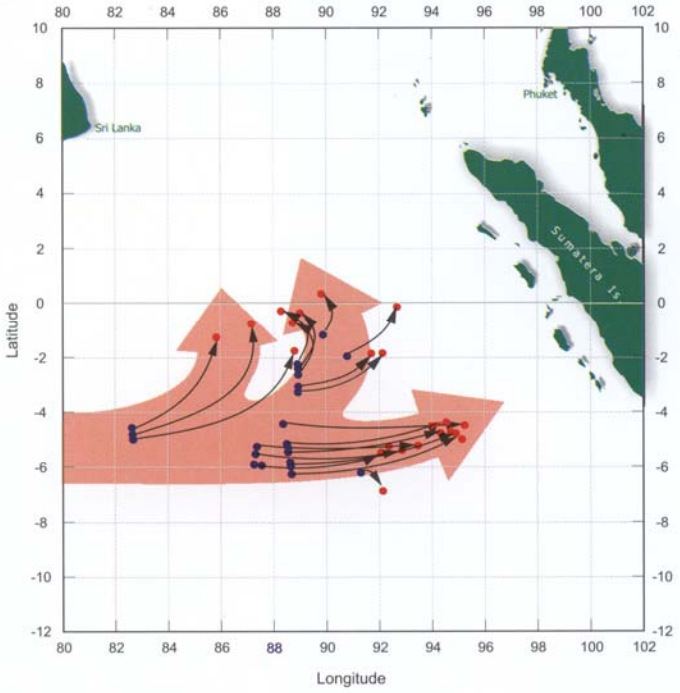
2

Bamboo poles are tied tightly with the iron frame

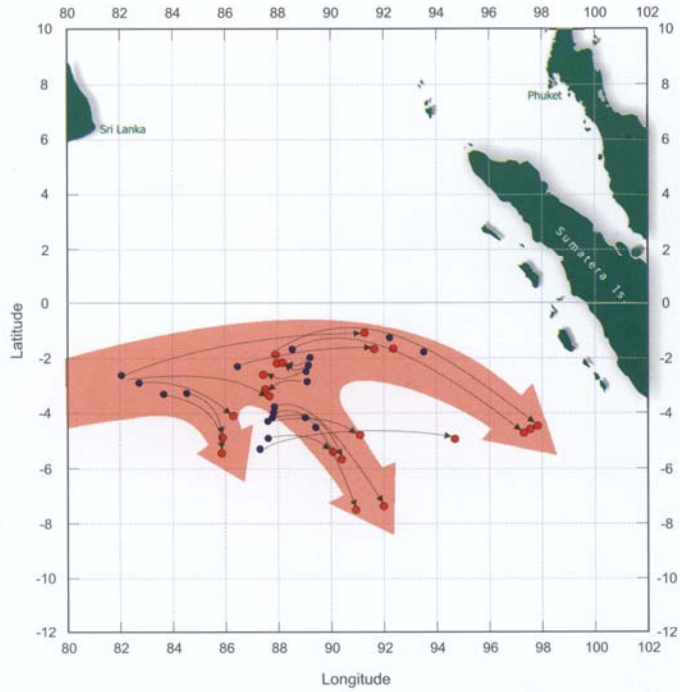
3

After covered by the sheet of fishing net to prevent the breaking of raft, the FAD is ready for launching

FADs Drifting Pattern

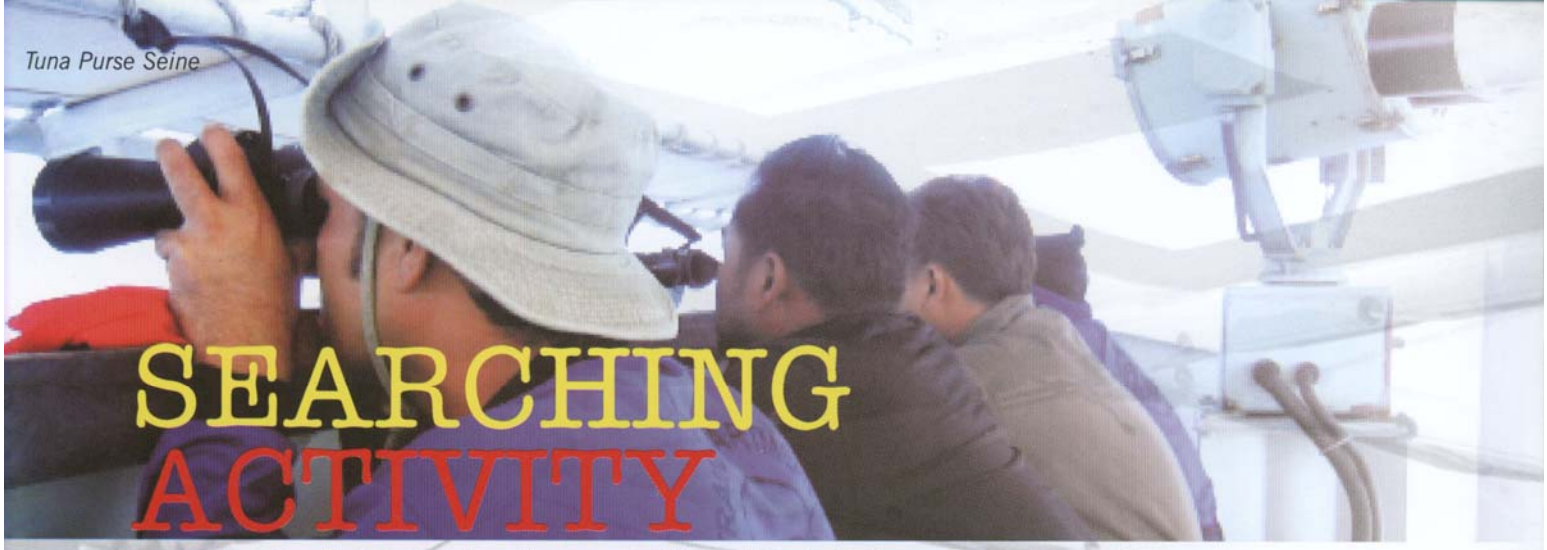


*Overlaid drifting routes of FADs and model of surface current during Feb-Mar. in 1994-96 and 1998



*Overlaid drifting routes of FADs and model of surface current during Oct.-Nov. in 1994-96 and 1998

*By Mr. Pratakphol Prajakjitt., 2002.



SEARCHING ACTIVITY

Searching the fish school and some drifting objects is important step of the purse seine activities. There are 2 major types of fish school searching.

1. Direct method

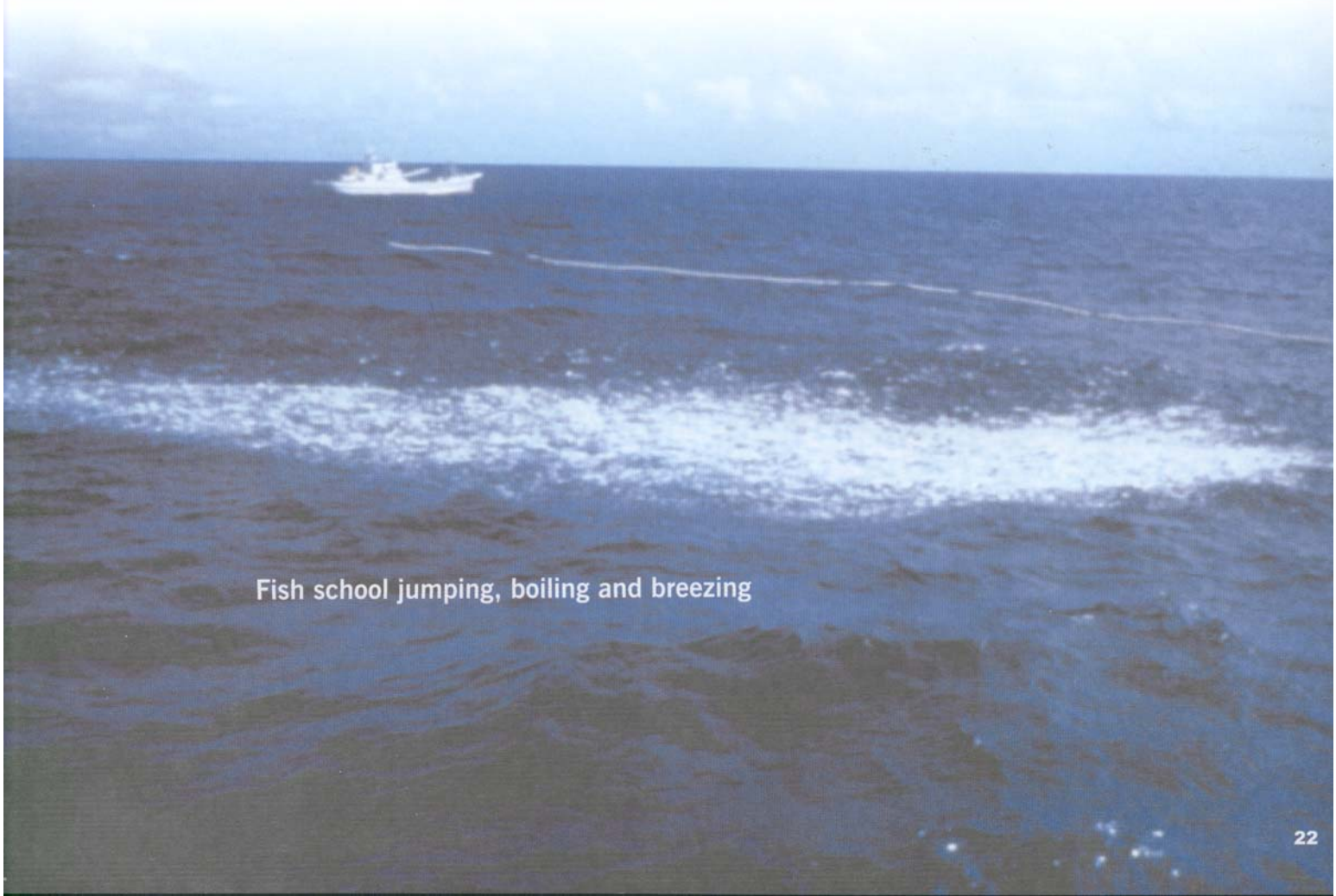
This method is searching for the fish school directly. By this method, fishermen need to use binoculars for searching fish school jumping, boiling and breezing. Fish school jumping is the phenomenon that the fish jump over the sea surface to feed some natural live baits which are boosted by the predator to the sea surface.

2. Indirect method

Tuna purse seine activities always initiate by the activities of searching flock of sea bird. The most of pelagic fish school are accompanied with more and less a flock of bird. Therefore, lookouts to detect fish school always try to find out a flock of sea bird above horizon through the binoculars or bird radar in fishing ground.

Different from Pacific Ocean, searching of drifting object is the most effective indirect method in the Indian Ocean. Because rarely to find flock of birds accompany with large tuna school in the Indian Ocean, the fish detection under the drifting object is more important. Searching for drifting object has become one of the most important key for the successes of tuna fishing operations in Indian Ocean.

Searching through Binoculars.



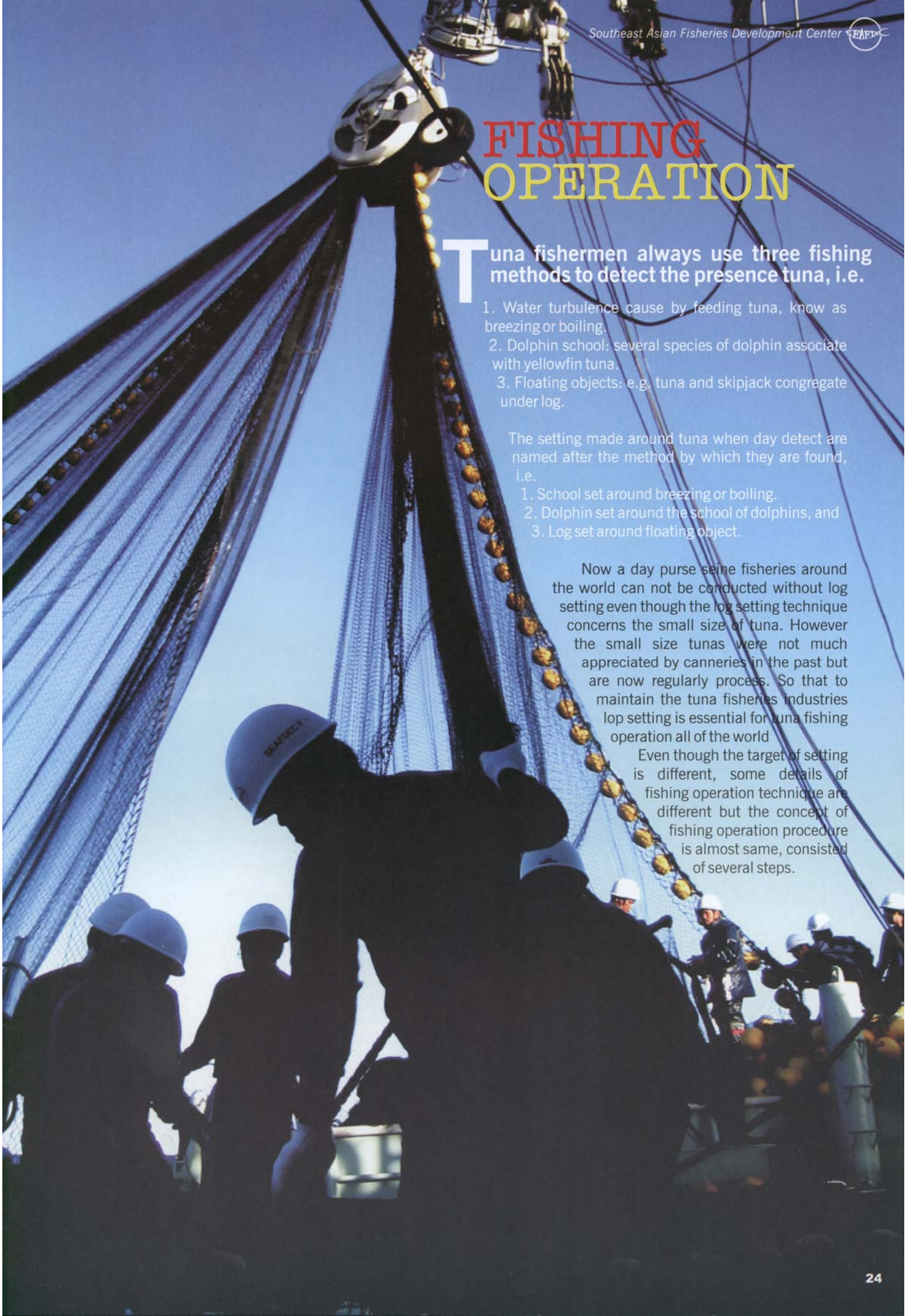
Fish school jumping, boiling and breezing

SEARCHINGACTIVITY

3. Searching by Hydro-acoustic equipment

The fish school under the water can be searched by the hydro-acoustic equipment. This method is checking fish school, directly by acoustic equipment. Nowadays, there are 2 types of hydro-acoustic equipment i.e., Echo sounder and Sonar have been developed and utilized to accurate presence the fish school. M.V. SEAFDEC installs 2 sonar sets for searching fish school. One of the sonar is low frequency, 28 kHz. It use for checking the fish schoo with effectiveness below the 2,000 m. The other is medium frequency, 94 kHz, which is used for checking fish school with effectiveness below the 600 m.

Scanning Sonar



FISHING OPERATION

Tuna fishermen always use three fishing methods to detect the presence tuna, i.e.

1. Water turbulence cause by feeding tuna, know as breezing or boiling.
2. Dolphin school: several species of dolphin associate with yellowfin tuna.
3. Floating objects: e.g. tuna and skipjack congregate under log.

The setting made around tuna when day detect are named after the method by which they are found, i.e.

1. School set around breezing or boiling.
2. Dolphin set around the school of dolphins, and
3. Log set around floating object.

Now a day purse seine fisheries around the world can not be conducted without log setting even though the log setting technique concerns the small size of tuna. However the small size tunas were not much appreciated by canneries in the past but are now regularly process. So that to maintain the tuna fisheries industries lop setting is essential for tuna fishing operation all of the world

Even though the target of setting is different, some details of fishing operation technique are different but the concept of fishing operation procedure is almost same, consisted of several steps.

FISHINGOPERATION

1. Fish detection before fishing operation.

In the early morning, the ship was navigated and approached to Payao or drifting object 1-2 hours before fishing operation starts. The first confirmation by sonar low frequency, 28 kHz, is operated far from payao 1000-1500 m, to prevent the disturbance with the fish school at Payao. After the first fish school confirmation, purse seiner is drifted away from payao about 2000 m. waiting for launch 2 working boats.