PRELIMINARY REPORT OF 1990 SURVEY ON BEHAVIOUR OF THE DRIFTING Nets AND ENTANGLEMENT OF MARINE ORGANISMS

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ABSTRACT

Quantitative observations on entangled organisms and observations on the decomposition and dropout processes were made using an underwater camera. It was determined that the drifting direction of the experimental nets had almost no relation to the direction of the ocean currents, and was nearly coincident with the wind direction. The basic experiment follows the elapsed time from the beginning of drifting until the fishing efficiency of drifting nets becomes zero are under way. In addition, the observation on the process on which the drifting nets form a mass and the fishing powers are lost by attachment of organisms are also under way.
Introduction

Some people report that lost or discarded fishing nets (hereafter referred to as "drifting nets") drift in the sea, and continue to catch fish, marine mammals and sea birds, etc. and adversely affect these marine organisms. In order to deal with this problem, the Fisheries Agency of Japan has conducted surveys since 1988 on the effect of drifting nets on marine organisms. In the surveys that have been conducted in the past two years, findings have been obtained on the elapsed time pertaining to changes in the experimental drifting nets, the drifting of lost nets, the configuration of nets, and the fishing efficiencies.

The experiments on the time elapsed from the beginning of drifting until the fishing efficiency becomes zero are mainly under way based on (1) observations on the number of organisms entangled in the lost nets, in particular the number of fishes and the processes of decomposition and dropout and on (2) a change of the fishing efficiency of the lost nets with the passage of time which were obtained from the surveys which were conducted in the previous year.

1. Survey Area and Period

1) Survey Area

See Fig. 1.

2) Period

First survey: June 6 to July 4 (29 days).
Second survey: July 13 to August 10 (29 days).
Third survey: August 20 to September 25 (37 days).

2. Items Surveyed

1) Quantitative Observation on the Organisms Entangled

Two kinds of nets with different lengths, one tan and 40 tans of monofilament gillnet with 115 mm mesh were used for the experiment. A self-call buoy (a kind of radio buoy) and an Argos buoy were attached to the ends of nets. The length of nets actually lost are mostly less than one tan. The objective of the experiments with a net of one tan was to observe the configuration of the net. The objectives of the experiments with a net of 40 tans were to observe configuration of the net and to conduct quantitative observations of entangled organisms. The nets of 40 tans were classified by color every 5 tans to study the relation between the configuration of nets and the quantity of the entangled organisms. The quantitative observations for
the organisms entangled was conducted using an underwater camera which was hung from a small boat. The date, time, location and filming method, etc. was recorded on video tape using the outside microphone. In addition, since the number of fish entangled varies with the configuration of the net, the configuration of nets was carefully recorded before the observation by underwater camera was conducted.

2) Observations on the Decomposition and Dropout Processes of the Organisms Entangled

The live fish jigged were artificially entangled in the net which covered the whole surfaces of a fixed box. The underwater camera was attached to the box and the box was cast in the sea. A self-call buoy and an Argos buoy were attached to the fixed box.

3) Basic Experiment on Fishing Efficiency

We assumed some instances regarding the length of net at which the fishing efficiency approaches zero, and cast those nets and studied the conditions of entanglement of fish.

4) Observation on Attached Organisms

The following surveys were conducted to determine the process of the loss of fishing power of drifting nets which was caused by the net forming a mass and by the attached organisms such as shell fish covering the mesh. In mid-April, 12 research gillnets for observation of attached organisms were cast in the survey area and one net which had formed a mass was retrieved each month after June.

5) Oceanographic Observations

Because it is considered that the volume of the attached organisms (shell fish, etc.) and the time necessary for the decomposition of the entangled organisms vary by air temperature, water temperature, and waves, weather, wind direction, wind force, atmospheric pressure, air temperature and water temperature were recorded every four hours. In addition, these observations were also conducted when the experimental nets were retrieved.

3. Results of Survey

1) Observation on the Entangled Organisms

The quantitative observation of the organisms entangled as recorded by the underwater camera and the results of observations on the process of decomposition and dropout will be reported at the next Annual Meeting, because the recorded video tapes have not arrived yet.
2) **Relationship Between the Direction of the Experimental Drifting Net and the Sea Weather**

According to Table 1 which showed a relationship between the drifting direction of one tan net and the current and wind directions, no relationship with the current direction was observed, and it was determined to be almost coincident with the wind direction.

3) The basic experiments in order to obtain the elapsed time until the fishing powers of lost net were lost are under way.

4) The process in the middle of observation on the attached organisms is shown using the pictures at the end of this document.

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Table 1 and Fig. 1 are in English in the Japanese document.