

REPORT OF WOODS HOLE YELLOWTAIL STUDIES

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The yellowtail fishery is of comparatively recent development in New England with active exploitation of fishable stocks beginning in the mid-1930's. The catch rose rapidly in the early years of the fishery, reaching a peak in 1942. Following this, it declined sharply to an intermediate level in the late 1940's, and finally dropped further in the 1950's to a low in 1954. Recent landings, 1957-1959, have shown a marked increase. Landings of 33 million pounds by United States otter trawlers in 1958 were worth slightly more than 3 million dollars to fishermen.

A biological study of the yellowtail, to investigate effective means of managing the species, is currently being carried on at Woods Hole. The study has been divided into phases which are designed to provide information for an understanding of the dynamics of the yellowtail population since such knowledge is required before management recommendations may be made. These phases are as follows:

1. A review of the history of the yellowtail fishery.
2. The identification of yellowtail stocks under commercial exploitation.
3. A study of relative abundance of yellowtail on the exploited grounds.
4. Determination of age and rate of growth of the exploited groups.

5. Studies of mortality rates.

6. Studies of the annual additions of yellowtail to the exploited groups.

These studies will provide information for estimating efficient levels of yellowtail harvest. It will then be necessary to examine the yellowtail fishery, especially with respect to the market and fishing gear used for catching the species, to determine how an efficient utilization of the yellowtail resource may best be achieved, such as through regulations on gear, size of fish landed, etc.

To date, the first three of the phases of the yellowtail program have been completed and work is under way on age, growth, and mortality studies. Marking experiments have shown that at least three relatively separate groups of yellowtail are fished off New England. These are: (1) The southern New England group, (2) the Georges Bank group, and (3) the Cape Cod group. Each yellowtail group is associated with a particular ground, although some intermingling of fish between grounds takes place. Age, growth, and mortality studies were undertaken for each group. Presently available information on growth indicates that there are slight growth differences between groups, with fish of the Cape Cod group growing most rapidly and those of the southern New England group most slowly. On all grounds, growth of females exceeds that of males.

To show the general growth pattern, a tentative growth table for yellowtail from the southern New England group, males and females combined, is given below.

<u>Age (years)</u>	<u>Length (inches)</u>	<u>Weight (ounces)</u>
1	5.1	0.5
2	11.2	7.5
3	14.0	16
4	15.2	22
5	16.1	27
6	16.9	30

The smallest commercial yellowtail now being landed are about one-half pound in weight, which represents fish at about their second birthday. It will be seen that the fish double in weight between their second and third birthdays. Since mortality estimates are not yet available, we are unable to determine the most efficient size at which to harvest yellowtail. However, if the natural mortality of 2-year-old fish is low, and it is probably safe to assume that it is, it will be seen from the above growth table that the yield of fish from a year class could be increased by postponing age at first capture to some time beyond their second birthday. Further work will determine the advisability of such a plan.