

Morgan

Coastal Movements of Petrale Sole  
as Determined from Tag Recoveries.

Introduction

Several tagging experiments have been conducted on petrale sole since 1945 by the various agencies concerned with the management of this species. Nearly all of the experiments have been designed to determine the distribution of selected stocks of petrale. In many of the experiments only small numbers of tagged fish were released and few recoveries were made. For this report 5 experiments have been chosen because they have dealt with fairly large numbers of releases or recoveries or both. We wish to thank our colleagues in British Columbia, Washington, and California for contributing information for this report, and the fishing industry for the return of tags.

The results are briefly summarized in Figure 1. Numbers of recoveries by area have been deliberately eliminated to avoid misinterpretation. The distribution arrows indicate only the maximum range of recoveries. The numbers of fish which move this far may be very small.

Experiment 1. Esteban Deep Tagging

This experiment was conducted jointly by Washington and Canada and has been described in detail by Alberson and Chatwin in the Journal of the Fisheries Research Board of Canada in 1957. The tagging was done in April 1954 and March 1955 in the Esteban Deep. A total of 2,116 tagged fish was released and 145 have been recovered. A number have been recovered in the Esteban Deep, but most of the tagged fish recovered away from the deep-water tagging area were directly inshore and north as far as southern Hecate Strait. A few recoveries were made to the south, but none were recovered south of Cape Flattery.

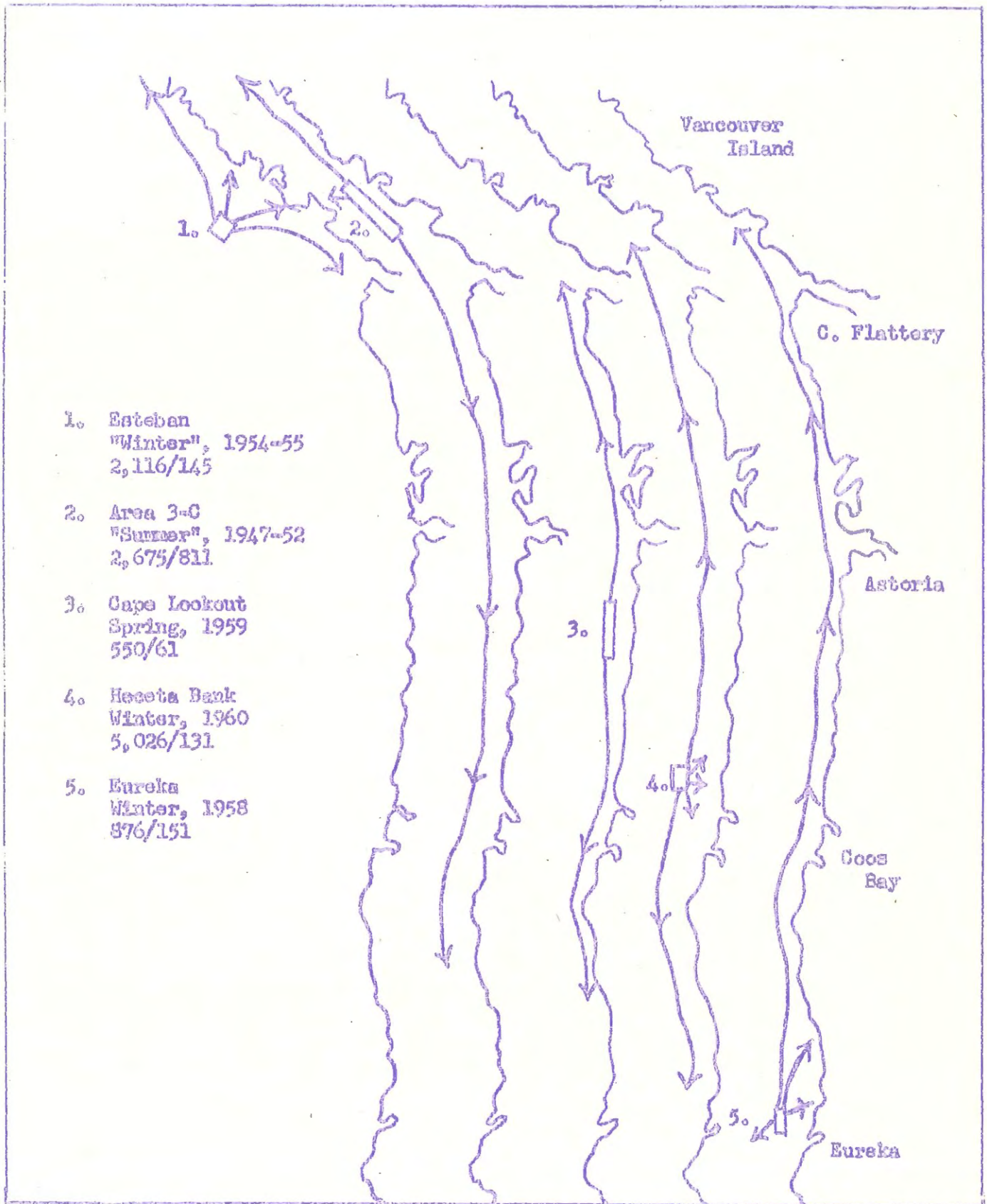


Figure 1. Coastwide Migration of Petrale Sole, by Experiment.

### Experiment 2. PMFC Area 3C

The tagging in PMFC Area 3C by Canada includes several experiments since 1947 in which petrale sole were tagged on inshore grounds primarily during the spring and summer. A total of 2,675 tagged petrale has been released and 811 recovered. Most of the recoveries have been made in the tagging area, but some have been made as far north as Southern Hecate Strait and as far south as Crescent City, California. The most significant recoveries were those to the south, which supports the view that relatively few of the fish in Area 3C entered Esteban Deep. Their spawning ground appears to be farther to the south. Proportionately higher recaptures were made in Esteban Deep from taggings conducted in areas to the north, particularly Hecate Straits. This established a relationship between this summer inshore fishery and the winter deep-water fishery.

### Experiment 3. Cape Lookout - Cascade Head

This experiment was incidental to English sole tagging by the Oregon Fish Commission and U. S. Bureau of Commercial Fisheries in April 1959 on inshore grounds during Cruise No. 42 of the John N. Cobb. Only 550 tagged petrale sole were released, but 61 recoveries have been made in the subsequent 18 months. A fairly wide distribution along the coast is indicated with recoveries north to Cape Flattery and south to ~~Trinidad Head~~ *Crescent City*. This range was established within 6 months after the fish were tagged.

### Experiment 4. Heceta Bank

This experiment was carried out in February and March, 1960, by the Oregon Fish Commission. The Astoria trawler Betty was chartered, and 5,026 petrale sole were tagged. The experiment was in two phases because of bad weather. More than 3,100 tags were released from February 26-March 2 in in 170-200 fathoms. During the period March 16-18, slightly more than 1,900 were released in approximately the same area but inshore in 90-100

fathoms. Through October, 135 have been recovered, the majority of which have been made inshore from the tagging area. Tagged petrale have been recovered from southern Vancouver Island to the north and Trinidad Head, California, to the south. Some fish moved at a rate of more than 3 miles per day. A definite inshore movement has been noted particularly for the fish released in 90-100 fathoms in March, paralleling the pattern shown for the Esteban Deep tagging.

#### Experiment 5. Eureka

In December 1958, personnel of the Marine Resources Operations of the California Department of Fish and Game released 876 tagged petrale sole primarily on inshore grounds off Eureka. To date 115 of these have been recovered. It is very interesting to note that none of these fish were recovered from inshore grounds south of the tagging area, although a few were recovered in deep water southwest of the tagging area. Northward movement extended to Barkley Sound in PMFC Area 3C.

#### Summary and Conclusions

The petrale sole tagged in the Esteban Deep and in deep water near Heceta Bank clearly demonstrate an inshore movement after spawning. Conversely, the petrale tagged in PMFC Area 3C (Vancouver Island) and off Eureka show a movement from inshore grounds to deep water in the winter. The Esteban Deep petrale sole did not move southward very far, nor did those tagged in inshore waters off Eureka. Tagged fish moved appreciable distances north and south in the other experiments.

There is some exchange of petrale between Trinidad Head and southern Vancouver Island. The limited movement of petrale south from Esteban Deep indicates that these fish are not involved in substantial numbers in an exchange south of Cape Flattery.

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