

## FISHERIES RESEARCH BOARD OF CANADA

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## PROSPECTS FOR THE PILCHARD FISHERY

A commercial fishery for pilchards no longer exists in British Columbia. However, hope of its restoration persists, and the processing plants and the fishing fleets are still available to exploit the resource effectively if it becomes available again. This circular is prepared to supply those interested in the pilchard fishery of British Columbia with the biological observations which have a bearing on the prospects for pilchards again becoming available along the west coast of Vancouver Island.

The essential biological facts affecting the supply of pilchards to our waters remain the same.

(1) Pilchards generally spawn in the southern part of their range - off the coasts of southern California and Mexico - and the young remain in nursery grounds along those coasts. In the summers pilchards make northward migrations. In the fall they return south again. Each summer as the fish get older the northward migration is longer so that some of the oldest and largest fish get as far as the Vancouver Island coast. This migration was found not to be a mass movement of all individuals. For practical purposes, however, it is best to consider that British Columbia and the northwest states share their pilchards with California. (The reverse is not true as not all of the large fish or any of the small ones from California enter into the full migration).

(2) The pilchard population experiences very great differences in success of reproduction from year to year. Some years produce many recruits for the fishery, others relatively very few. The success in producing young is relatively independent of the amount of spawn or the number of spawners. We are not sure, but success in reproduction seems to depend upon weather or oceanographic conditions.

(3) Pilchards have a relatively long life in the fishery. They are first taken at one or two years of age in California. They enter the fishery at about four years in British Columbia. They are still encountered in some numbers to the age of eight years and occasionally individuals are taken which are more than twelve.

(4) There are exceptions to most generalizations. One, which is of importance in the present instance as it greatly affected the commercial fishery, was provided by the brood of pilchards produced in 1939. They were very numerous and were spawned farther north than usual. Perhaps for this reason they entered the British Columbia fishery a year or two younger than usual. However, with the passage of the seasons they conformed more and more closely to the accepted pattern.

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Consideration of this commercial life history of the pilchard as given above suggests that British Columbia cannot expect to have a good fishery until the pilchard population produces a series of large enough broods (1) to supply a very successful fishery in California, and (2) to survive in substantial numbers several years of the intense California fishery until old enough to make the full migration into British Columbia waters. The experience of the California sardine fishery should provide a key for forecasting the success of the pilchard fishery in British Columbia.

The methods available to scientific workers in fisheries do not allow accurate estimates of the actual size of any year brood. Good estimates relative to other year broods are possible but to estimate the actual abundance the success of the fishery has to be taken into account. The relative abundance of the broods produced in 1946 and 1947 was good, and they apparently were responsible for the upswing in the California fishery in 1949-50. The 1948 year-class was relatively very weak. There is no reason to think that the 1949 year-class is relatively better than average. In view of the poor overall production of pilchards by the fishery in recent seasons it must be concluded that the relatively very weak and no-better-than-average year broods are really extremely weak in actual numbers and that the broods of 1946 and 1947 which were relatively good may not in actual abundance have been exceptionally strong.

In view of these observations there is no reason for optimism for a British Columbia commercial pilchard run in 1951 and 1952.

Some of the statements above are generalizations based on specific age analyses carried out by the U. S. Fish and Wildlife Service and the California Division of Marine Fisheries.

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