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MEMO CONCERNING AN ATTEMPT TO DETERMINE THE ABSOLUTE ABUNDANCE OF THE SPAWNING POPULATION OF HERRING OF THE WEST COAST OF VANCOUVER ISLAND

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Memo Concerning an Attempt to Determine the Absolute Abundance of the Spawning Population of Herring on the West Coast of Vancouver Island.

by

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The farther the herring investigation proceeds in its task of attempting to determine the adequacy of the present quota system, the more apparent becomes the need for some absolute measure of abundance. Total abundance in a season consists of catch plus spawning population. The former is known; it may prove possible to estimate the latter by quantitatively sampling the egg deposition on the spawning grounds. So urgent is the need for this absolute measure of abundance that steps should be taken during the coming spawning season (1938) to determine the feasibility of the proposed methods.

Two plans of attack suggest themselves.

(1) An intensive study of the Barkley sound spawning grounds by the writer. For this a boat which would be available from February 15 to April 15 (approx.) is absolutely necessary. Of the available boats the "Knight" would be most suitable, but it is out of commission for west coast work. The "Ronavic" is second choice, but an assistant would be needed and there is the difficulty of getting the boat from Departure bay to Barkley sound. Third choice is a boat furnished through R.R. Payne. However, one boat is already needed for tagging work, and finances would not permit employing a second even if the boat were available. If the "Ronavic" were used the tagging boat might escort it to Barkley sound. Fourth choice is the "Egret Plume", if arrangements could be made. This has the disadvantage that there might be a lack of whole-hearted cooperation on the part of the crew, even though acting under orders from the Department of Fisheries.

If a boat were available, the writer would maintain a constant patrol of Barkley sound in an effort to personally investigate every individual spawning. A provisional sampling system would be used, subject to revision as found necessary. As many spawning grounds as possible would be beach-seined to secure samples of the spawning fish.

One objection to this programme is that it requires the writer's time when he should be assisting in tagging operations elsewhere on the east and west coasts.

(2) An extensive (but not intensive) study of the spawning grounds of the west coast from Cape Beall to Cape Cook. This would involve the cooperation of Inspectors Bledsoe, McLeod, Park and Mahoney, of Barkley, Clayoquot, Nootka and Kyuquot sounds respectively. An arbitrary sampling system would have to be worked out, e.g., two samples per acre of spawn. A certain amount of equipment would have to be supplied to each inspector, e.g., a sampler for spawn on eel-grass - metal cylinder of known area of cross section and a shovel arrangement; a sampler for spawn on rockweed; three or four dozen cloth bags for retaining samples, (similar to fur seal stomach bags); a container suitable for holding liquid preservative in which the bags could be placed and eventually shipped (formalin or acetic acid); labels and possibly large scale maps of each area for inserting the locations of the spawning grounds. The inspectors would be expected to patrol their areas in search of spawnings; to visit every spawning bed if possible; to take a number of samples where the egg deposition appeared to be average in intensity, The number of samples taken depending on the area of the grounds; to estimate, by pacing, the length and average width of the spawning ground, making allowance for patchy distribution, so that a fairly reliable estimate of the area of the spawning grounds would be available. The

writer would be on the west coast engaged in tagging operations and could see each inspector at least once during the spawning period to check on methods, difficulties, results, etc. Actually, the work involved for the fishery inspectors would not be very much in excess of that required to make their usual spawning surveys, if the latter were done in a conscientious way.

The main objection to this programme is that complete reliance must be placed on the integrity of the fishery inspector. For the results to be worth while, it is necessary that he actually sample a large percentage of the spawnings and have, additionally, roughly quantitative information on those missed. The reliability of the results will always be an uncertain factor.

If one or the other of these programmes or possibly a combination of the two is agreed upon, suitable preparation should be made before spawning time, in fact, immediately.

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