COHO SHAKER PROBLEM & INCIDENTAL CATCH CONCEPT IN TROLL FISHERY

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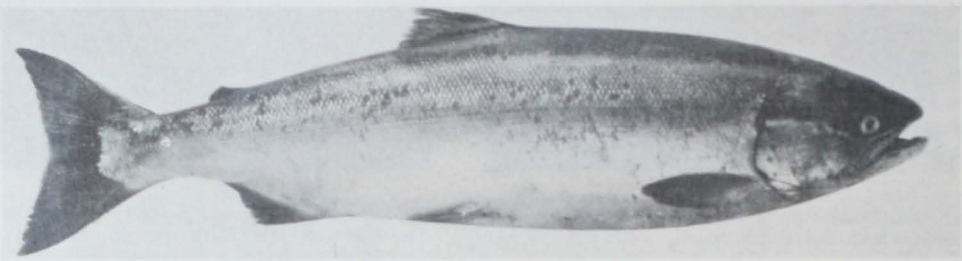
The term "shaker" is commonly applied to Pacific salmon (Oncorhynchus) taken in marine waters by commercial troll or sport hook-and-line gear but released due to closed seasons, minimum size limits, and market conditions. The problem stems from varying rates of mortality suffered by released salmon due to physical injury and the physiological trauma of being hooked. Without this loss, a significant percentage of these fish would become available to salmon fisheries when seasons opened, when they reached legal size, or when they migrated to areas and fisheries of differential regulations. Sublethal effects, such as slower growth and poorer condition, are also manifested.



Silver (or Coho) Salmon (Oncorhynchus kisutch)

Concern about the problem and sporadic studies date back to early stages of marine hook-and-line fisheries along the Pacific coast. Large-scale coordination by coastal salmon-management agencies began early in 1968 with emphasis on small chinook (O. tshawytscha) and coho (O. kisutch) in commercial troll fisheries. Canada and California led with initiation of logbook programs and gear-selectivity studies. These were due mainly to the impetus generated by recognition of serious problems with coho off the west coast of Vancouver Island and northern California.

Size of Problem

The magnitude of the problem was discussed in August 1968 at a Pacific Marine Fisheries Commission "Troll Salmon Workshop". Even with preliminary and admittedly incomplete data, the participants still agreed that the Pacific coast shaker salmon catch prior to June 15 might exceed 1,000,000 fish; up to 400,000 of these could be killed. Continuing research programs for British Columbia and California were bolstered by initiation of logbook programs and onboard observations in Oregon and Washington during 1970.

At 1970 meeting of Pacific Marine Fisheries Commission, past and present knowledge was presented in three parts: magnitude of catches, gear selectivity, and hooking mortality. A background paper documenting major regulatory statutes was presented at the 1969 Pacific Marine Fisheries Commission meeting.

These basic data convinced the Washington Department of Fisheries that sufficient evidence was available for immediate positive action on the coho shaker problem, at least on a trial basis. It sponsored "Trial Regulation of the Troll Fishery to Reduce the Catch of Coho Shakers", Resolution No. 17, adopted at the 1970 Commission meeting.

INCIDENTAL COHO CATCH PROPOSAL

Although the general ocean troll salmon season begins April 15, it is illegal to retain coho hooked until June 15 on all fishing grounds north of California. The management rationale is simply to protect a population in its final year of life--while a tremendous growth potential still exists. For California,

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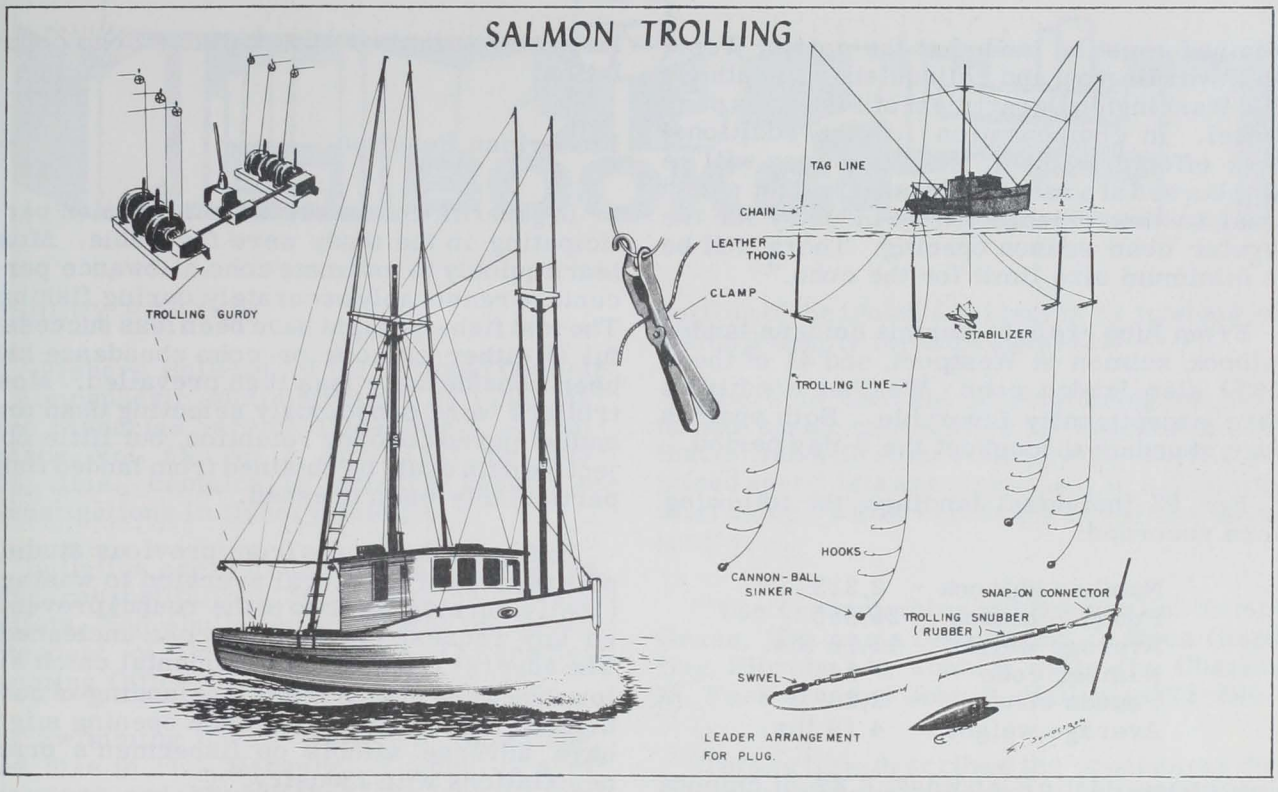

a 25-inch total length minimum is enforced for coho throughout the troll season; however, this falls at varying points in population's normal size distribution curve, depending on time of year and variations in growth rates. Differential protection to smaller fish of the same age-maturity class is the illogical result.

One key recommendation of PMFC Resolution No. 17 was a pre-June 15 incidental catch allowance for coho salmon poundage. This concept was based on the hypothesis that a coho's chances for survival could be determined reasonably well by visual observation as trolling gear brings them in. For example, recovery rates for three "condition categories" of live coho tagged during 1968 in outer Juan de Fuca Strait were:

Condition category	Number tagged	Number recovered	Percent recovered
"Good"	332	95	28.6
"Fair"	208	41	19.7
"Poor"	84	10	11.9

In the same study, 40 coho, or 6% of total catch, were completely expired when brought onboard. The intent, then, was to allow retention, and later sale, of coho brought onboard dead or badly injured--but to create no additional fishing effort (in terms of terminal gear, speed, depth, and/or area changes) specifically for this species.

TEST FISHERY

The incidental-catch concept received mixed blessings in nonsalmonid fisheries. It generated considerable speculation among Pacific coast management agencies. So a special test fishery was planned from June 1 to 5, 1971, off Grays Harbor. This is the center of Washington's spring-season trolling effort for chinook salmon.

Following a public information program, special permits were issued to 70 licensed troll vessels 16 to 50 feet long. These included members from tripboat, dayboat, kelper, and com-sport components and were representative of the total Grays Harbor fleet. The special permits stated: ". . . to retain coho salmon which are brought onboard dead or in a badly injured condition during his normal fishing effort for chinook salmon in the period June 1 through 5, 1971. Total poundage of these coho in a dressed condition shall not, however, exceed ten percent of the legal dressed chinook salmon poundage in possession of the fisherman. Further, all such coho

retained must be landed at the port of Westport, Washington, and relinquished to authorized Washington Department of Fisheries personnel. In compensation for the additional work effort required, the fisherman will be reimbursed at a rate per dressed weight pound equal to that established by industry for the regular coho season opening. There will be no minimum size limit for the coho."

From June 1 to 5, 51 permit holders landed chinook salmon at Westport, and 41 of these (80%) also landed coho. Weather conditions were exceptionally favorable. Both species were abundant throughout the 5-day period.

For 93 individual landings, the following were recorded:

Number chinook	- 2,313
Pounds chinook	- 25,855
Average weight	- 11.18 lbs.
Number coho	- 541
Pounds coho	- 2,268
Average weight	- 4.19 lbs.

Coho appeared in 67 landings, 8.8% of chinook catch on basis of weight, and 23.4% on basis of numbers. Ice boats, in 16 deliveries, accounted for 72.8% of chinook poundage, and 69.1% of coho poundage; day fishermen contributed the remainder in 77 individual landings. A few fishermen exceeded the 10% limit on coho deliberately or accidentally because they misunderstood terms of special permit. Subtracting these from total indicates that overall coho poundage level of 6% of chinook poundage would be realistic for predicting outcome of such a fishery on a regular basis.

In spite of a period for continued growth, a sample of troll coho taken off Grays Harbor after the regular season opening on June 15 averaged only 3.80 lbs. dressed. It appeared that terminal gear fished for chinook during the test fishery was more selective toward larger individuals of the available coho population.

Fisherman Reaction

In general, comments from fishermen participating in the study were favorable. Most learn quickly to estimate coho allowance percentage reasonably accurately during fishing. The test fishery might have been less successful if either chinook or coho abundance had been considerably less than prevailed. Most trollers were consciously selecting dead and badly injured coho for retention, but little objective data could be obtained from landed fish, particularly when dressed.

Unfavorable results from previous studies plus the troller's natural aversion to wastage ("belly burning" of coho in the round) prevented any request for landing coho uncleaned. The adverse comments on incidental catch allowance were mainly fears that landing of coho before regular June 15 season opening might have adverse affects on fishermen's price negotiations with industry.

RECOMMENDATIONS

To alleviate one specific component of Pacific coastal shaker salmon problem (preseason coho wastage), it is recommended that regulations be changed to allow a 10% coho allowance prior to June 15 on 1-year trial basis. During this full-scale test, detailed evaluation should be conducted, particularly through onboard observations of fishing operations.

ACKNOWLEDGMENTS

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