CATCH AND RELEASE (C&R) OF CHINOOK SALMON

AN EVALUATION OF
C&R AS A MANAGERS TOOL
VS
C&R AS A MANAGEMENT PHILOSOPHY

PROPOSED
FOR CONSIDERATION BY
THE ALASKA BOARD OF FISHERIES

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Abstract

The use of catch and release (c&r) on Kenai River chinook salmon has been used by anglers to selectively harvest these large anadromous fish since the mid 1970s. In the late 1980s the Alaska Board of Fisheries (Board) directed the Alaska Department of Fish and Game (Department) to investigate the mortality impact(s) of c&r on salmon stocks. Since then the single incidence mortality data from those investigations has been used as a tool to manage for compliance with escapement goals. However, in February of 2001 the Board undertook to expand from using c&r as a management tool to using c&r as a management philosophy. For this comment consider:

1) A tool to be any one of several different mechanisms or approaches used to monitor or control mortality available to fishery managers.
2) A philosophy to be the concept of describing or limiting which tools, mechanisms or approaches a manager has available for managing mortality.

History

A search for data referring to c&r of chinook salmon (Oncorhynchus tshawytscha) reveals little if any research that has been conducted. In a 1985 report it was noted by Hammarstrom et al. that "the result of this type of management on such large anadromous fish had not been attempted in Alaska."[1]

It was reported later in this same document the result of the department's attempt to quantify the mortality of chinook salmon that were hook and line caught and released with a radio tag inserted into the fish's esophagus. This attempt was unsuccessful because of technical issues but the report did indicate "the apparent survival of 76% means only that some select healthy fish can survive the stresses of hook and release fishing."[2]

C&R Investigations and Mortality Management as a Tool

The use of c&r again caught the attention of the Department and the Board in the late 1980s: "From 1986 through 1989, an estimated 38,268 chinook salmon (30% 0f the catch) were released by anglers. In the early-run component of the 1988 fishing season approximately 86% of the total chinook salmon return to the river was caught. The released component of that catch (5,500 fish) represented 67% of the estimated escapement. The ultimate fate of these fish hooked and released fish was unknown."[3] This concern resulted in a multiyear investigation which findings determined that: "The average mortality for the combined experiments was 7.6%.[4]

The information provided by these investigations was used to rationalize the total anticipated mortality from angling activity. The c&r mortality was combined with the harvest to determine the total mortality, and that number used to determine the spawning escapements, imperative for use by managers to comply with escapement goal policies (and manage emergency closures, bag limit restrictions, etc.). Tools used by managers.

Changes in Management Philosophy

In February 2002 the Board reacting to Department recommendations and pressure from some segments of the public undertook to completely change the meaning of and application of c&r to the fishery's management. Historically the practical use of the c&r mortality (tool) in the calculation of escapement was applied as a single incident per individual fish (7.6% of the fish exposed to c&r failed to spawn). Now with the proposed change the whole of the fishery mortality would by design be managed around and attributed to anticipated mortality from exposure(s) to c&r angling effort.

The inherent problem with a c&r management philosophy is there will be individuals exposed to more than a single incident. How could it be otherwise if there already is data indicating 86% exposure to being caught? If catch and release as a philosophy is adopted and used to manage fisheries like the early run Kenai River chinook salmon how many times can each individual fish be expected to be exposed to being caught and released? And what are the results of multiple exposures? Two times? Three times? MORE?

Implications of Greater Mortality

The Department's c&r investigations reveal some implications about multiple exposures: "All of the chinook salmon used in this study were hooked and released at least once, and 48 of these fish (the sport harvested component) were hooked at least twice. Anglers reported additional hook-and-release events for 18 fish during the 3 years of study; thus, at least 15% of the fish in this study were hooked multiple times. Of fish that were released more than once, the proportion that spawned was half of the overall rate, while the proportion of drop outs was three times higher."[5]

There is a dangerous tendency by managers toward application of data collected from investigating other fisheries. Investigations of c&r on resident fisheries such as trout, bass, and others cannot be assumed to translate directly to anadromous fishes such as salmon. Salmon are on their spawning run returning to their natal habitats. They suspend eating activities and are suspected of not healing from injuries in the same way that they do when in saltwater environments.

Reckoning with Multiple Exposures

Using c&r as a management philosophy for salmon is just not defensible considering the lack of data that exists to evaluate the success of such management. When these fish are as vulnerable to being caught as evidenced by 86% early-run exposure rate the potential for multiple exposures is great. Reasonable estimation of mortality associated with multiple exposures to the c&r experience does not exist. And, without this knowledge managers cannot be assured that escapement goals can or will be met.

Conclusion and Recommendation

Catch and release as a management philosophy cannot be justified until a lot more is known about the effects of multiple exposures to salmon.

It is recommended that:

1) if the Board should decide to direct the Department to investigate the impacts of multiple exposures to the catch and release experience of chinook salmon and,
2) should the Board decide to direct the Department to further investigate the run timing and spawning grounds of early-run and late-run Kenai River chinook salmon,
3) that the two efforts should be combined.

[1] Annual Performance Report for Kenai Peninsula Chinook and Coho Salmon Studies, Hammarstrom et al. AFS-50-1, Pg. 66.

[2] Annual Performance Report for Kenai Peninsula Chinook and Coho Salmon Studies, Hammarstrom et al. AFS-50-1, Pg. 144.

[3] Hook and Release Mortality of Chinook Salmon in the Kenai River Recreational Fishery, Bendock et al., FDS No.90-16, Pg. 2.

[4] Mortality and Movement Behavior of Hooked-and-Released Chinook Salmon in the Kenai River Recreational Fisher, 1989-1991. Bendock et al. FM No 92-2. Pg. 41.

[5] Mortality and Movement Behavior of Hooked-and-Released Chinook Salmon in the Kenai River Recreational Fisher, 1989-1991. Bendock et al. FM No 92-2. Pg. 48.