

STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

*Division of Commercial Fisheries
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MEMORANDUM

TO: Members
Alaska Board of Fisheries

DATE: September 25, 2009

FROM: John Hilsinger, Director
Division of Commercial Fisheries

SUBJECT: Bristol Bay Stock of
Concern
Recommendations

and

Charles O. Swanton, Director
Division of Sport Fish

The *Policy for the Management of Sustainable Salmon Fisheries* (SSFP; 5 AAC 39.222) directs the Alaska Department of Fish and Game (department) to provide the Alaska Board of Fisheries (board), at regular meetings, with reports on the status of salmon stocks and identify any salmon stocks that present a concern related to yield, management, or conservation. In the Bristol Bay Management Area, the Kvichak River sockeye salmon stock is currently a stock of management concern. This memorandum provides the department's assessment of this stock of concern and recommendation that Kvichak River sockeye salmon remain a stock of concern, but be reclassified from "management concern" to "yield concern."

Kvichak River Sockeye Salmon

Background

Prior to the decline beginning in 1997, the Kvichak River sockeye salmon stock was the largest contributor, on average, to the Bristol Bay salmon harvest. The Kvichak sockeye salmon stock has historically had a 5-year cycle with individual years categorized as: peak, pre-peak, and off-cycle years. Since 1955, the number of Kvichak River spawners has ranged from 227 thousand to 24 million sockeye salmon. The largest recorded total run (catch and escapement) was 48 million in 1965, a peak cycle year. The department has operated a counting tower on the Kvichak River to enumerate salmon escapements since 1960. Each spring from 1975 to 2003, the number of migrating smolt was estimated using hydroacoustics. As part of the smolt

program, age, length, and weight information was obtained from smolt sampled with fyke nets (Crawford 2003); this also began in 1975 and is ongoing.

The current sustainable escapement goal (SEG) for Kvichak River sockeye salmon is 2 million to 10 million for off-cycle years and 6 million to 10 million for pre-peak and peak years (Baker et al. 2006). Setting an escapement goal for the Kvichak River sockeye salmon run has proven difficult because of the perceived divergence in productivity between cycle (pre-peak and peak) years and off-cycle years, poor density dependence found in the spawner-return data, and a subsequent lack of fit for stock-recruitment models. To help achieve escapements within the goal range and provide harvest opportunity, a maximum exploitation rate of 50% was established for runs of 4 million to 20 million. For example, the management objective for an off-cycle year is 50% of the total inshore Kvichak River run, never to be less than 2 million or greater than 10 million. From 1996 through 2004, 7 of 9 years experienced escapements below the lower end of the escapement goal range (Figure 1). Since 2005 the lower end of the goal has been achieved each year.

Average commercial harvests have also declined in recent years from approximately 6.1 million (1966 to 1995) to approximately 1.7 million (1996 to 2009). Commercial fishing has been restricted for some seasons in the Naknek-Kvichak District since 1996. These actions forced the fishery into the Naknek River Special Harvest Area. In many recent years, as directed in 5 AAC 67.025 *Kvichak River Sockeye Salmon Management Plan*, sport fishing restrictions were routinely imposed when inseason escapements were projected to be less than 2 million fish. Restrictions have generally taken the form of bag limit reductions and area closures designed to minimize potential conflicts with subsistence users. Prior to implementation of the current management plan, the poor return in 2000 resulted in a closure of the sockeye salmon sport fishery in the entire Kvichak drainage.

Kvichak River sockeye salmon have been utilized for subsistence for centuries and, in more recent times, its importance has increased due to the system's inclusion of the villages of Levelock, Igiugig, Pedro Bay, Kokhanok, Iliamna/Newhalen, Nondalton, and Port Alsworth. The board determination of the amount reasonably necessary for subsistence uses is described in 5 AAC 01.336 as 157,000 to 172,171 salmon in the Bristol Bay Area, "including 55,000 to 65,000 Kvichak River sockeye salmon; this finding does not include salmon stocks in the Alagnak River." Annual subsistence harvest of Kvichak River sockeye salmon averaged 67,000 fish from 1988 to 1997 (Jones et al. 2009) with recent harvests (1998 to 2007) averaging 46,000 fish.

Regulatory History

Permits are required to harvest salmon for subsistence purposes in the Kvichak River drainage. Since 1990, under state regulations, all Alaska state residents have been eligible to participate in subsistence salmon fishing in all Bristol Bay drainages. Gillnets up to 25 fathoms are the only recognized legal subsistence gear.

The commercial fishery occurs from June 1 to September 30 and is opened by emergency order. There are three management plans addressing commercial fishing within the Naknek-Kvichak District.

The first is referred to as the *Commercial Set and Drift Gillnet Sockeye Salmon Fisheries Management and Allocation Plan* (5AAC 06.355; ADF&G 2001). This is an umbrella plan for Bristol Bay that specifies the allocation of sockeye salmon between commercial set and drift gillnet fisheries within the district and establishes management measures to achieve the allocation. Part of this plan (5AAC 06.364 (e); ADF&G, 2001) attempts to provide adequate Kvichak River sockeye salmon spawning escapement by managing, to the extent practicable, a fishery in the Naknek Section with limited set and drift gillnet gear fishing during ebb tides.

The second plan is referred to as the *Naknek River Sockeye Salmon Special Harvest Area Management Plan* (5AAC 06.360; ADF&G 2001). This plan states that on or after June 27, if Kvichak River cumulative escapement is one or more days behind the historical schedule for meeting the goal, the following actions are taken:

- 1) The Naknek-Kvichak District will be closed; and to reduce the potential for interception of Kvichak River sockeye salmon in other districts,
- 2) Fishing in the Egegik District may be restricted to the Egegik River Special Harvest Area; Fishing in the Ugashik District will occur within a restricted area prior to June 29; and
- 3) If Naknek River spawning escapement is projected to be greater than 800 thousand sockeye salmon, the Naknek River Special Harvest Area can open, and the upper spawning escapement goal for the Naknek River will be raised from 1.4 million to 2.0 million sockeye salmon.

The third plan is referred to as the *Naknek-Kvichak District Commercial Set and Drift Gillnet Sockeye Salmon Fisheries Management and Allocation Plan* (5AAC 06.364; ADF&G 2001). The purpose of this plan is to establish the allocation of sockeye salmon between the commercial set and drift gillnet fisheries within the Naknek-Kvichak District and to establish management measures for the department to achieve the allocation.

Changes to the Bristol Bay fishery management plans have enabled the department to reduce fishing exploitation on Kvichak fish in the face of very weak runs. For example, in 2002 and 2003, the exploitation rate of Kvichak stocks was less than 2%.

Stock of Concern Recommendation

The Kvichak River sockeye salmon stock was found to be a stock of yield concern during the January 2001 Bristol Bay board meeting. A stock of yield concern is defined (5 AAC 39.222) as “a concern arising from a chronic inability, despite the use of specific management measures, to maintain expected yields, or harvestable surpluses, above a stock's escapement needs”. In response to the stock of yield concern designation, the board modified 5AAC 06.357 *Ugashik River Sockeye Salmon Special Harvest Area Management Plan*, 5AAC 06.359 *Egegik River Sockeye Salmon Special Harvest Area Management Plan*, 5AAC 06.360 *Naknek River Sockeye Salmon Special harvest Area Management Plan*, and 5AAC 67.025 *Kvichak River Drainage Sockeye Salmon Management Plan* to provide additional protection for Kvichak River sockeye salmon. The Bristol Bay fisheries were managed in accordance with these plans with no directed commercial fishing and a much reduced sport fishery for Kvichak River sockeye salmon.

During the December 2003 Bristol Bay board meeting, several regulation changes were adopted concerning the Naknek-Kvichak District. The Kvichak sockeye salmon stock was elevated from a stock of yield concern to a stock of management concern due to the recent chronic inability to meet escapement goals. A stock of management concern is defined (5 AAC 39.222) as “a concern arising from a chronic inability, despite use of specific management measures, to maintain escapements for a salmon stock within the bounds of the SEG, BEG, OEG, or other specified management objectives for a fishery.”

With this 2003 action came the stipulation that if the Kvichak River run is forecasted to be less than 30% above the minimum biological escapement goal (BEG), fishing will begin in the Special Harvest Areas of Naknek, Egegik, and Ugashik Rivers (5 AAC 06.360 (h)).

Recent years have shown an improvement in the number of Kvichak River sockeye salmon returning to spawn. The return-per-spawner has steadily increased from less than 0.5 to 5.0 over the past 5 brood years, while over the same time period escapements have exceeded the lower end of the escapement goal. It should be noted, however, that in 2005 and 2009, which would have traditionally been classified as pre-peak/peak years based on the 5-year cycle, prior to the season the escapement goal was changed from 6 to 10 million (pre-peak/peak goal) to 2 to 10 million (off-cycle goal). In short, this occurred because in recent years, the ability to define a pre-peak or peak run was made increasingly difficult as the runs declined. A pre-peak/peak goal was originally established because it was believed that production differed from that of off-cycle years and therefore, it was advantageous to separate them. However, a new look at the production of pre-peak/peak versus off-cycle years shows similarity such that we cannot conclude they are different (Baker et al *In prep*). In conjunction with an increase in return-per-spawner for the past 5 years, total runs have increased from an average of 3.0 million to 4.8 million for the periods 2000-2004 and 2005-2009. For these reasons we recommend that Kvichak River sockeye salmon be reclassified from a stock of management concern to a stock of yield concern.

Literature Cited

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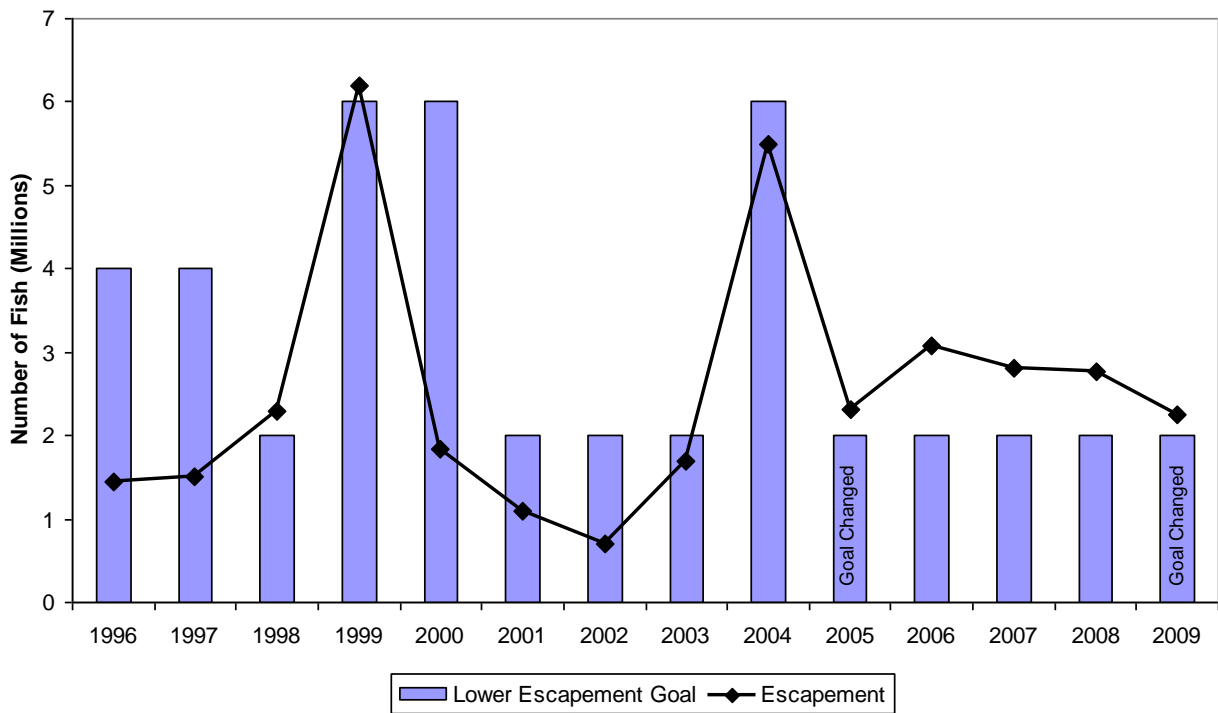


Figure 1. Kvichak River sockeye salmon lower escapement goals and number of spawners, 1996-2009.