

STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

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MEMORANDUM

TO: Jeff Regnart, Director 
Division of Commercial Fisheries

DATE: September 20, 2011

Charles Swanton, Director 
Division of Sport Fish

THRU: Tracy Lingnau, Regional Supervisor
Division of Commercial Fisheries, Region II

SUBJECT: Prince William Sound
Management Area
Escapement Goal and
Stock of Concern
Recommendation Memo

Don Roach, Regional Supervisor
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Escapement Goal Recommendations to the Directors of the Divisions of Sport Fish and Commercial Fisheries

The purpose of this memo is to inform you of our progress reviewing and recommending escapement goals for the Prince William Sound Management Area (PWSMA), which includes Bering River, Copper River, and Prince William Sound. Escapement goals for this area have been set and evaluated at regular intervals since statehood. Because of this effort, many of the stocks have long-term historical databases. PWSMA escapement goals were last reviewed, changes recommended, and subsequently implemented by the department (Fair et al. 2008) during the 2008–2009 Alaska Board of Fisheries (board) cycle.

In March 2011, an interdivisional salmon escapement goal review committee, including staff from the divisions of Commercial Fisheries and Sport Fish, was formed to review existing salmon escapement goals in PWSMA. The review was based on the *Policy for the Management of Sustainable Salmon Fisheries* (5 AAC 39.222) and the *Policy for Statewide Salmon Escapement Goals* (5 AAC 39.223). Two important terms are:

5 AAC 39.222 (f)(3) “*Biological Escapement Goal* (BEG): the escapement that provides the greatest potential for maximum sustained yield (MSY);” and

5 AAC 39.222 (f)(36) “*Sustainable Escapement Goal* (SEG): a level of escapement, indicated by an index or an escapement estimate, that is known to provide for sustained yield over a 5 to 10 year period, used in situations where a BEG cannot be estimated or managed for.”

The committee determined the appropriate goal type (BEG or SEG) for each salmon stock with an existing goal and other monitored, exploited stocks without an existing goal. Using available data, we determined the most appropriate methods to evaluate the escapement goal. Due to the comprehensive previous analyses in Bue et al. (2002), Evenson et al. (2008), and Fair et al. (2008), this review only reanalyzed goals with recent (2008–2010) data that might result in a substantially different escapement goal from the last review, or those that should be eliminated or established. For most PWSMA stocks (except Eshamy Lake sockeye salmon), the available data were most appropriate for SEG-type goals.

The department estimated most system escapements through multiple aerial and/or foot surveys of stream reaches that can be monitored. However, one PWSMA stock’s escapement was measured using sonar, one used mark–recapture techniques, and two used weirs. The committee evaluated escapement goals with various methods: (1) stock-recruitment analyses, (2) yield analyses, and (3) escapement variability information (Bue and Hasbrouck *Unpublished*). Following these analyses, the committee estimated escapement goals for each stock, compared these estimates with the current goal, and agreed on a recommendation to keep the current goal, change the goal, eliminate the goal, or to establish other goals.

There were 15 existing escapement goals evaluated in PWSMA (Table 1). The committee recommends, to the directors of the divisions of Sport Fish and Commercial Fisheries, changes to five existing escapement goals in PWSMA:

- Change the Coghill Lake sockeye salmon SEG range of 20,000 to 40,000 to an SEG range of 20,000 to 60,000. This is based on the integration of escapement, yield, recruitment, and limnological data.
- Change the Bering River sockeye salmon SEG from a range of 20,000 to 35,000 to an SEG range of 15,000 to 33,000 based on corrections to the historical escapement data and additional years of data.
- Change the Upper Copper River sockeye salmon SEG from a range of 300,000 to 500,000 to an SEG range of 360,000 to 750,000. This change is recommended as a result of shortening the historical escapement data set (dropped 1978) because of concerns about data quality, converting Bendix sonar estimates to comparable DIDSON (dual-frequency identification sonar) estimates, and incorporating recent escapement information.

- Change pink salmon soundwide SEGs for even- and odd-year stocks to district-specific SEGs, currently defined as management targets in Bue et al. (2002). This conversion is necessary because we actively manage pink salmon in PWSMA by district and not on a soundwide basis.

In summary, this comprehensive review of the 15 existing salmon escapement goals in PWSMA resulted in five modifications. Three goals had a change in range and two were modified from soundwide goals to district goals. An oral and written report (Fair et al. *In prep*) concerning escapement goals and specific recommendations for numerous stocks in PWSMA will be presented to the board in December 2011. These reports will list all current and recommended escapement goals for PWSMA, as well as detailed descriptions of the methods used to reach these recommendations.

Stock of Concern Status

The *Policy for the Management of Sustainable Salmon Fisheries* (5 AAC 39.222) directs the department to report to the board on the status of salmon stocks and identify any stocks that present a concern related to yield, management, or conservation during regular board meetings. None of the PWSMA stocks have failed to achieve the lower range of the goal for three consecutive years since the previous board cycle (Munro and Volk 2011). Without a chronic inability to achieve their escapement goals, we recommend that no stocks of concern be established.

Literature Cited

- Bue, B. G., and J. J. Hasbrouck. *Unpublished*. Escapement goal review of salmon stocks of Upper Cook Inlet. Report to the Alaska Board of Fisheries November 2001 (and February 2002). Alaska Department of Fish and Game, Division of Sport Fish, Anchorage.
- Bue, B. G., J. J. Hasbrouck, and M. J. Evenson. 2002. Escapement goal review of Copper River and Bering Rivers, and Prince William Sound Pacific salmon stocks. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 2A02-35, Anchorage.
- Evenson, M. J., J. J. Hasbrouck, S. D. Moffitt, and L. Fair. 2008. Escapement goal review for Copper River Bering River, and Prince William Sound salmon stocks. Alaska Department of Fish and Game, Fishery Manuscript No.08-01, Anchorage.
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- Munro, A. R., and E. C. Volk. 2011. Summary of Pacific salmon escapement goals in Alaska with a review of escapements from 2002 to 2010. Alaska Department of Fish and Game, Fishery Manuscript Series No. 11-06, Anchorage.

Table 1. –Summary of current escapement goals and recommended escapement goals for salmon stocks in Prince William Sound Management Area.

System	Current Escapement Goal			Recommended Escapement Goal		
	Goal	Type	Year Adopted	Range	Escapement Data	Action
King Salmon						
Copper River	> 24,000	SEG	2002	> 24,000	Mark-Recapture	No Change
Coho Salmon						
Bering River	13,000 – 33,000	SEG	2002	13,000 – 33,000	Aerial Survey	No Change
Copper River Delta	32,000 – 67,000	SEG	2002	32,000 – 67,000	Aerial Survey	No Change
Sockeye Salmon						
Eshamy Lake	13,000 – 28,000	BEG	2002	13,000 – 28,000	Weir	No Change
Coghill Lake	20,000 – 40,000	SEG	2005	20,000 – 60,000	Weir	Change in Range
Bering River	20,000 – 35,000	SEG	2002	15,000 – 33,000	Aerial Survey	Change in Range
Copper River Delta	55,000 – 130,000	SEG	2002	55,000 – 130,000	Aerial Survey	No Change
Upper Copper River	300,000 – 500,000	SEG	2002	360,000 – 750,000	Sonar	Change in Range
Pink Salmon						
Even-Year Broodline (All Districts Combined)						
	1,250,000 – 2,750,000	SEG	2002	discontinued	Aerial Survey	Change to District Goals ^a
Odd-Year Broodline (All Districts Combined)						
	1,250,000 – 2,750,000	SEG	2002	discontinued	Aerial Survey	Change to District Goals ^b
Chum Salmon (by District)						
Coghill	> 8,000	SEG	2005	> 8,000	Aerial Survey	No Change
Eastern	> 50,000	SEG	2005	> 50,000	Aerial Survey	No Change
Northern/Unakwik	> 20,000	SEG	2005	> 20,000	Aerial Survey	No Change
Northwestern	> 5,000	SEG	2005	> 5,000	Aerial Survey	No Change
Southeastern	> 8,000	SEG	2005	> 8,000	Aerial Survey	No Change

^a Recommended district SEGs for even years: Eastern – 250,000 to 580,000; Northern – 140,000 to 210,000; Coghill – 60,000 to 150,000; Northwestern – 70,000 to 140,000; Eshamy – 3,000 to 11,000; Southwestern – 70,000 to 160,000; Montague – 50,000 to 140,000; Southeastern – 150,000 to 310,000.

^b Recommended district SEGs for odd years: Eastern – 310,000 to 640,000; Northern – 90,000 to 180,000; Coghill – 60,000 to 250,000; Northwestern – 50,000 to 110,000; Eshamy – 4,000 to 11,000; Southwestern – 70,000 to 190,000; Montague – 140,000 to 280,000; Southeastern – 270,000 to 620,000.