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TO: Jeff Regnart, Director
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DATE: September 25, 2013

THRU: Tracy Lingnau, Regional Supervisor
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SUBJECT: Upper Cook Inlet Escapement Goal Memo

FROM: Lowell Fair, Regional Research Coordinator
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The purpose of this memo is to inform you of our progress in reviewing and recommending escapement goals for Upper Cook Inlet (UCI). Escapement goals in this management area have been set and evaluated at regular intervals since statehood. This effort has resulted in many of the stocks having long-term historical databases. With the exception of Kenai River king salmon, UCI escapement goals were last reviewed by the Alaska Department of Fish and Game (department) (Fair et al. 2010) during the 2010–2011 Alaska Board of Fisheries (board) cycle.

In March 2013, an interdivisional salmon escapement goal review committee, including staff from the divisions of Commercial Fisheries and Sport Fish, reviewed existing salmon escapement goals in the UCI management area. 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" or "(BEG)" means the escapement that provides the greatest potential for maximum sustained yield . . .;" and

> 5 AAC 39.222(f)(36) "sustainable escapement goal" or "(SEG)" means 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 considered other monitored, exploited stocks without an existing goal. Based on the quality and quantity of available data, the committee determined the most appropriate methods to evaluate the escapement goals. Due to the thoroughness of previous analyses by Bue and Hasbrouck (*Unpublished*), Clark et al. (2007), Hasbrouck and Edmundson (2007), and Fair et al. (2007, 2010), this review re-analyzed only those goals with recent (2010–2013) data that could potentially result in a substantially different escapement goal from the last review, or those that should be eliminated or established.

Escapement goals were evaluated for UCI stocks using a variety of methods: (1) spawner-recruit analyses; (2) yield analyses; (3) smolt/fry information; and/or (4) the percentile approach. Methods used to evaluate the escapement goals and the rationale for making subsequent recommendations will be described in a published report (Fair et al. *In prep*) available prior to the January/February 2014 UCI board meeting. Following the review, the committee estimated escapement goals for each stock, compared those estimates with the current goal, and agreed on a recommendation to keep the current goal, change the goal, or eliminate the goal.

There were 35 escapement goals evaluated in UCI (Table 1). The committee recommends that all but two escapement goals remain status quo. The committee recommends changing the Jim Creek coho salmon SEG of 450–700 to an SEG of 450–1,400. This change is the result of incorporating escapement information acquired after the original goal was established (2001). During 2001–2009, we experienced larger returns from large parent escapements which provided sustained yield. The committee recommends dropping the Crescent River sockeye salmon BEG of 30,000–70,000 because it is no longer assessed.

Kenai River early- and late-run king salmon goals were revised out-of-cycle in spring of 2013 due to a change in assessment methodology; with new information for only one season and the assessment program still in transition, these two goals did not merit additional review. The committee was asked to consider development of an escapement goal for Deshka River coho salmon. The committee reviewed available escapement data from the Deshka River weir and drainagewide abundance data from recent mark-recapture studies, and concluded that optimally, a Susitna drainagewide goal would best suit management needs. The committee recommends an escapement goal not be developed for Deshka River coho for the following reasons: 1) coho salmon run timing is difficult to assess accurately during periods of high flow, and 2) variable run timing based largely on stream flow limit the ability of the weir to provide inseason information to manage the sport fishery. Continuing coho salmon studies in the Susitna drainage will allow us to better evaluate whether the Deshka River coho run strength is representative of run strength in the entire Susitna drainage and whether a drainagewide escapement goal can be developed.

During this review we updated and evaluated the Kasilof and Kenai river sockeye salmon goals. Incorporating recent production data (2011–2013) had little impact on escapements that produce maximum yields of the Kasilof River sockeye salmon, so the committee recommended no change to the current goal of 160,000–340,000. Similarly for Kenai River sockeye salmon, recent production data indicates that escapements that produce maximum yields continue to support the current goal of 700,000–1,200,000. The expected yield from the current goal range is very similar to a slightly higher goal using recent production data. In summary, the escapement goal committee reviewed 35 salmon escapement goals for the UCI management area with recommendations to change the range of one goal, Jim Creek coho salmon.

An oral and written report concerning escapement goals with specific recommendations will be presented to the board in January/February 2014. These reports will list all current and recommended escapement goals for UCI, as well as a detailed description of the methods used to reach recommendations. Subsequent to the board meeting, a follow-up memo will be prepared to finalize escapement goals.

Literature Cited

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Table 1.–Summary of current escapement goals and recommended escapement goals for salmon stocks in Upper Cook Inlet, 2013.

System	Current Escapement Goal			Recommended Escapement Goal			
			Year	Escapement			
	Goal	Type	Adopted	Range/Lower Bound	Type	Data[a]	Action
King Salmon							
Alexander Creek	2,100–6,000	SEG	2002	2,100–6,000	SEG	SAS	No Change
Campbell Creek	380	SEG	2011	380	SEG	SFS	No Change
Chuitna River	1,200–2,900	SEG	2002	1,200–2,900	SEG	SAS	No Change
Chulitna River	1,800–5,100	SEG	2002	1,800–5,100	SEG	SAS	No Change
Clear (Chunilna) Creek	950–3,400	SEG	2002	950–3,400	SEG	SAS	No Change
Crooked Creek	650–1,700	SEG	2002	650–1,700	SEG	Weir	No Change
Deshka River	13,000–28,000	SEG	2011	13,000–28,000	SEG	Weir	No Change
Goose Creek	250–650	SEG	2002	250–650	SEG	SAS	No Change
Kenai River - Early Run	3,800–8,500	SEG	2013	3,800–8,500	SEG	Sonar	No Change
Kenai River - Late Run	15,000–30,000	SEG	2013	15,000–30,000	SEG	Sonar	No Change
Lake Creek	2,500–7,100	SEG	2002	2,500–7,100	SEG	SAS	No Change
Lewis River	250–800	SEG	2002	250–800	SEG	SAS	No Change
Little Susitna River	900–1,800	SEG	2002	900–1,800	SEG	SAS	No Change
Little Willow Creek	450–1,800	SEG	2002	450–1,800	SEG	SAS	No Change
Montana Creek	1,100–3,100	SEG	2002	1,100–3,100	SEG	SAS	No Change
Peters Creek	1,000–2,600	SEG	2002	1,000–2,600	SEG	SAS	No Change

Prairie Creek	3,100–9,200	SEG	2002	3,100–9,200	SEG	SAS	No Change
Sheep Creek	600–1,200	SEG	2002	600–1,200	SEG	SAS	No Change
Talachulitna River	2,200–5,000	SEG	2002	2,200–5,000	SEG	SAS	No Change
Theodore River	500–1,700	SEG	2002	500–1,700	SEG	SAS	No Change
Willow Creek	1,600–2,800	SEG	2002	1,600–2,800	SEG	SAS	No Change
Chum Salmon							
Clearwater Creek	3,800–8,400	SEG	2002	3,800–8,400	SEG	PAS	No Change
Coho Salmon							
Fish Creek (Knik)	1,200–4,400	SEG	2011	1,200–4,400	SEG	Weir	No Change
Jim Creek	450–700	SEG	2002	450–1,400	SEG	SFS	Change in Range
Little Susitna River	10,100–17,700	SEG	2002	10,100–17,700	SEG	Weir	No Change
Sockeye Salmon							
Chelatna Lake	20,000–65,000	SEG	2009	20,000–65,000	SEG	Weir	No Change
Crescent River	30,000–70,000	BEG	1999	30,000–70,000	BEG	Sonar	Drop
Fish Creek (Knik)	20,000–70,000	SEG	2002	20,000–70,000	SEG	Weir	No Change
Judd Lake	25,000–55,000	SEG	2009	25,000–55,000	SEG	Weir	No Change
Kasilof River	160,000–360,000	BEG	2011	160,000–340,000	BEG	Sonar	No Change
Kenai River	700,000–1,200,000	SEG	2011	700,000–1,200,000	SEG	Sonar	No Change
Larson Lake	15,000–50,000	SEG	2009	15,000–50,000	SEG	Weir	No Change

Packers Creek	15,000–30,000	SEG	2008	15,000–30,000	SEG	Weir	No Change
Russian River - Early Run	22,000–42,000	SEG	2011	22,000–42,000	BEG	Weir	No Change
Russian River - Late Run	30,000–110,000	SEG	2002	30,000–110,000	SEG	Weir	No Change

[a] PAS = Peak Aerial Survey, SAS = Single Aerial Survey, and SFS = Single Foot Survey.