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Division of Commercial Fisheries
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MEMORANDUM

TO: John Hilsinger, Director
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Charles Swanton, Director
Division of Sport Fish

DATE: September 30, 2010

THRU: Jeff Regnart, Regional Supervisor
Division of Commercial Fisheries, Region II

James Hasbrouck, Regional Supervisor
Division of Sport Fish, Region II

SUBJECT: Lower Cook Inlet
Escapement Goal Memo

FROM: Lowell Fair, Regional Research Coordinator
Division of Commercial Fisheries, Region II

Jack Erickson, Regional Research Coordinator
Division of Sport Fish, Region II

The purpose of this memo is to inform you of our progress reviewing and recommending escapement goals for Lower Cook Inlet. Escapement goals in Lower Cook Inlet have been set and evaluated at regular intervals since statehood. Because of this effort, many of the stocks have long-term historical databases. Lower Cook Inlet escapement goals were last reviewed, changes recommended, and subsequently implemented by the department (Otis and Szarzi 2007) during the 2007-2008 Alaska Board of Fisheries (board) cycle.

In February 2010, 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 the Lower Cook Inlet 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* (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. Based on the quality and quantity of available data, we determined the most appropriate methods to evaluate the escapement goal. Due to the thoroughness of the previous analyses by Otis (2001), Otis and Hasbrouck (2004), and Otis and Szarzi (2007), this review only re-analyzed goals with recent (2008-2010) data that could potentially result in a substantially different escapement goal from the last review, or those that should be eliminated or established. For Lower Cook Inlet stocks, the available data were most appropriate for SEG type goals.

Salmon escapements are primarily monitored by multiple aerial and/or foot surveys of stream reaches that can be monitored. The resulting escapement indices do not provide absolute abundance estimates suitable for estimating biological escapement goals. Consequently, escapement goals were evaluated for Lower Cook Inlet stocks using percentiles of observed escapement estimates or indices that also incorporated contrast in the escapement data (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, or eliminate the goal.

There were 44 existing escapement goals evaluated in Lower Cook Inlet (Table 1). The committee recommended changes to seven existing escapement goals in Lower Cook Inlet. Based on additional years of escapement and harvest data, we recommend changing the Anchor River Chinook salmon goal from a lower bound SEG of 5,000 to an SEG range of 3,800–10,000 fish. We recommend eliminating escapement goals for 4 inconsistently monitored pink salmon stocks in Resurrection Bay (Bear, Salmon, and Tonsina creeks, and Thumb and Humpy coves) having modest returns without targeted commercial fisheries. We also recommend changing the current SEG of 5,950–12,550 for Delight Creek sockeye salmon to a range of 7,550–17,650, and the current SEG range of 1,880–9,300 for Chenik Lake sockeye salmon to a range of 3,500–14,000. These 2 goals were originally derived primarily from aerial survey indices, but are now monitored by weir and/or video projects.

In summary, this comprehensive review of the 44 existing salmon escapement goals in Lower Cook Inlet resulted in 7 modifications. Three goals had a change in range and 4 goals were eliminated. An oral and written report (Otis et al. *In prep*) concerning escapement goals and specific recommendations for numerous stocks in Lower Cook Inlet will be presented to the board in November 2010. These reports will list all current and recommended escapement goals for Lower Cook Inlet, as well as detailed descriptions of the methods used to reach these recommendations.

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.

Otis, E. O. 2001. Report to the Alaska Board of Fisheries on sustainable escapement goals for chum, pink, and sockeye salmon in Lower Cook Inlet. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 2A01-21, Anchorage.

Otis, E. O., and J. J. Hasbrouck. 2004. Escapement goals for salmon stocks in Lower Cook Inlet, Alaska. Alaska Department of Fish and Game, Special Publication No. 04-14, Anchorage.

Otis, E. O., and N. J. Szarzi. 2007. A review of escapement goals for salmon stocks in Lower Cook Inlet, Alaska, 2007. Alaska Department of Fish and Game, Fishery Manuscript No. 07-04, Anchorage.

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Table 1.—Summary of current escapement goals and recommended escapement goals for salmon stocks in Lower Cook Inlet.

	Current Escapement Goal			Recommended Escapement Goal		
System	Goal	Type	Year Adopted	Range	Escapement Data[a]	Action
Chinook Salmon						
Anchor River	5,000	SEG	2008	3,800–10,000	Weir/Sonar	Change
Deep Creek	350-800	SEG	1993	350-800	SAS	No Change
Ninilchik River	550–1,300	SEG	2008	550–1,300	Weir	No Change
Chum Salmon						
Port Graham R.	1,450-4,800	SEG	2002	1,450-4,800	MFS	No Change
Dogfish Lagoon	3,350-9,150	SEG	2002	3,350-9,150	MFS	No Change
Rocky River	1,200-5,400	SEG	2002	1,200-5,400	MFS	No Change
Port Dick Creek	1,900-4,450	SEG	2002	1,900-4,450	MAS/MFS	No Change
Island Creek	6,400-15,600	SEG	2002	6,400-15,600	MAS/MFS	No Change
Big Kamishak R.	9,350-24,000	SEG	2002	9,350-24,000	MAS	No Change
Little Kamishak River	6,550-23,800	SEG	2002	6,550-23,800	MAS	No Change
McNeil River	24,000-48,000	SEG	2008	24,000-48,000	MAS	No Change
Bruin River	6,000-10,250	SEG	2002	6,000-10,250	MAS	No Change
Ursus Cove	6,050-9,850	SEG	2002	6,050-9,850	MAS	No Change
Cottonwood Cr.	5,750-12,000	SEG	2002	5,750-12,000	MAS	No Change
Iniskin Bay	7,850-13,700	SEG	2002	7,850-13,700	MAS	No Change
Pink Salmon						
Humpy Creek	21,650-85,550	SEG	2002	21,650-85,550	MFS	No Change
China Poot Creek	2,900-8,200	SEG	2002	2,900-8,200	MFS	No Change
Tutka Creek	6,500-17,000	SEG	2002	6,500-17,000	MFS	No Change
Barabara Creek	1,900-8,950	SEG	2002	1,900-8,950	MFS	No Change
Seldovia Creek	19,050-38,950	SEG	2002	19,050-38,950	MFS	No Change
Port Graham R.	7,700-19,850	SEG	2002	7,700-19,850	MFS	No Change
Port Chatham	7,800-21,000	SEG	2002	7,800-21,000	MFS	No Change
Windy Cr. Right	3,350-10,950	SEG	2002	3,350-10,950	MFS	No Change
Windy Cr. Left	3,650-29,950	SEG	2002	3,650-29,950	MFS	No Change
Rocky River	9,350-54,250	SEG	2002	9,350-54,250	MFS	No Change
Port Dick Creek	18,550-58,300	SEG	2002	18,550-58,300	MAS/MFS	No Change
Island Creek	7,200-28,300	SEG	2002	7,200-28,300	MAS/MFS	No Change
S. Nuka Island Creek	2,700-14,250	SEG	2002	2,700-14,250	MAS/MFS	No Change
Desire Lake Cr.	1,900-20,200	SEG	2002	1,900-20,200	MAS	No Change
Bear & Salmon creeks	5,000-23,500	SEG	2005			Eliminate
Thumb Cove	2,350-8,850	SEG	2002			Eliminate

Continued …

Table 1. —Continued.

System	Current Escapement Goal			Recommended Escapement Goal		
	Goal	Type	Year Adopted	Range	Escapement Data[a]	Action
Pink Salmon						
Humpy Cove	900-3,200	SEG	2002			Eliminate
Tonsina Creek	500-5,850	SEG	2002			Eliminate
Bruin River	18,650-155,750	SEG	2002	18,650-155,750	MAS	No Change
Sunday Creek	4,850-28,850	SEG	2002	4,850-28,850	MAS	No Change
Brown's Peak Creek	2,450-18,800	SEG	2002	2,450-18,800	MAS	No Change
Sockeye Salmon						
English Bay	6,000-13,500	SEG	2002	6,000-13,500	PAS/Weir	No Change
Delight Lake	5,950-12,550	SEG	2002	7,550-17,650	PAS/Weir	Range Change
Desire Lake	8,800-15,200	SEG	2002	8,800-15,200	PAS/Weir	No Change
Bear Lake	700-8,300	SEG	2002	700-8,300	Weir	No Change
Aialik Lake	3,700-8,000	SEG	2002	3,700-8,000	PAS	No Change
Mikfik Lake	6,300-12,150	SEG	2002	6,300-12,150	PAS	No Change
Chenik Lake	1,880-9,300	SEG	2002	3,500-14,000	PAS/Video	Range Change
Amakdedori Cr.	1,250-2,600	SEG	2002	1,250-2,600	PAS	No Change

[a] SAS = Single Aerial Survey, MAS = Multiple Aerial Survey, PAS = Peak Aerial Survey, MFS = Multiple Foot Survey.

cc: Members, Alaska Board of Fisheries