THE STATE of ALASKA
GOVERNOR MICHAEL J. DUNLEAVY

Department of Fish and Game
DIVISIONS OF SPORT FISH AND COMMERCIAL FISHERIES
333 Raspberry Rd
Anchorage, Alaska 99518-1565
Main: 907.267.2105
Fax: 907.267.2442

MEMORANDUM

TO: Dave Rutz, Director, Division of Sport Fish

Sam Rabung, Director, Division of Commercial Fisheries

THRU: Thomas D. Vania, Regional Supervisor, Division of Sport Fish, Region II TV

Bert Lewis, Regional Supervisor, Division of Commercial Fisheries, Region II BL

FROM: Tim McKinley, Regional Research Coordinator, Division of Sport Fish, Region II TKM

Jack W. Erickson, Regional Research Coordinator, Division of Commercial Fisheries, Region II JWE

DATE: March 26, 2019

SUBJECT: Upper Cook Inlet Escapement Goal Memorandum

This memorandum summarizes the Alaska Department of Fish and Game (department) review of Upper Cook Inlet (UCI) escapement goals and associated recommendations for escapement goals. Escapement goals in this management area have been set and evaluated at regular intervals since statehood. All UCI escapement goals were last reviewed by the department (Erickson et al. 2017) during the 2016–2017 Alaska Board of Fisheries (board) cycle.

Between November 2018 and February 2019, an interdivisional salmon escapement goal review committee, including staff from the divisions of Commercial Fisheries and Sport Fish, met five times and reviewed existing salmon escapement goals in the UCI management area.

The department recognizes the importance of releasing escapement goal recommendations earlier in the year so the public may submit proposals relative to goal recommendations before the deadline of Wednesday April 10, 2019. Thus, department staff completed their review on an accelerated timeline, and developed recommendations for UCI salmon escapement goals (Table 1). It is important to note that any recommended changes will not take effect until the 2020 fishing season, as they are not officially

adopted until approved by the department after the 2019–2020 board regulatory cycle.

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 used:

> 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 . . .;"

Accordingly, the committee also determined the appropriate goal type (BEG or SEG) for each salmon stock with an existing goal. Based on the quality and quantity of available data, the committee determined the most appropriate methods to evaluate the escapement goals.

Escapement goals were evaluated (or created in the case of new goals) for UCI stocks using a variety of methods: 1) spawner-recruit analyses, 2) yield analyses, 3) available smolt and fry information, and (or) 4) the percentile approach (Clark et al. 2014). The committee developed escapement goals for each stock, compared them with the current goal if one exists, and agreed on a recommendation to keep the current goal, change the goal, eliminate the goal, or adopt a new goal if no prior goal existed. The methods used to evaluate the escapement goals and the rationale for making subsequent recommendations will be described in a published report (McKinley et al. *In prep*) available prior to the February 2020 Upper Cook Inlet Regulatory Meeting.

Susitna River king salmon

The review team recommends consolidating the majority of the current Susitna River king salmon escapement goals into four escapement goals representing sub-basins within the Susitna River drainage. The Susitna River drainage has historically been split into sub-basins, or units, for king salmon management. The Deshka River, assessed via weir, and the remaining three sub-basins and their included streams with current Single Aerial Survey (SAS) goals are as follows (Figure 1):

1) The Deshka River.
2) The Eastside Susitna River, which includes Willow, Little Willow, Sheep, Goose, and Montana creeks.
3) The Talkeetna River, which includes Clear and Prairie creeks.
4) The Yentna River, which includes the Talachulitna River, and Lake and Peters creeks.

Each sub-basin is unique in terms of geography, harvest, and accessibility, and therefore the regulatory structure varies between areas; streams within each sub-basin tend to share the same set of regulations. These sub-basin goals have an advantage over SAS goals in that they are based on modeled estimates of total escapement (vs. an index of escapement), derived using stock-recruit analyses (vs. the percentile approach, which is a proxy for stock-recruit analysis), and can account for years in which some surveys were not conducted. To develop these goals, historical (1979–2017) run size for each of the four sub-

basins was estimated using a model that incorporated data from aerial surveys, weirs, abundance estimates from mark-recapture projects, radio telemetry, and harvest. From these historical estimates of total annual run size and associated age composition, spawner-recruit relationships were modeled, and yield and recruitment profiles constructed to aid in selecting escapement goal ranges. Based on these analyses, the review committee recommends a BEG for Deshka River king salmon of 9,000–18,000; an SEG of 13,000–25,000 for Eastside Susitna River sub-basin king salmon; an SEG of 9,000–17,500 for Talkeetna River sub-basin king salmon; and an SEG of 13,000–22,000 for Yentna River sub-basin king salmon. Annual assessment of the Deshka River goal will be via weir counts; assessment of all other sub-basin goals will be from model output of escapement based on SAS of streams within each sub-basin. These goal changes have allocative implications in the Tyonek subsistence, Northern District setnet (NDSN), Upper Yentna River Subsistence salmon, and the inriver sport fisheries.

In consolidating the Susitna River drainage king salmon goals into four sub-basins, 10 of the tributary goals are recommended to be discontinued: Goose Creek, Little Willow Creek, Montana Creek, Sheep Creek, Willow Creek, Clear (Chunilna) Creek, Prairie Creek, Talachulitna River, Lake Creek, and Peters Creek. Some of these streams have had poor returns for multiple years and are in Stock-of-Concern status. These tributaries will continue to be monitored with a SAS as in the past as part of the assessment of the four sub-basin goals.

Alexander Creek king salmon

This stock was not included in the Susitna River drainage run reconstruction and escapement goal analysis because it is physically outside of the scope of the mark-recapture abundance project conducted in the Susitna River drainage in recent years. The current SAS SEG (2,100–6,000) for Alexander Creek was established in 2002. For this review, the committee updated the escapement time series through 2005 (prior to apparently large impacts from invasive northern pike predation) and applied the percentile approach (Clark et al. 2014) to the data set. The committee recommends the Alexander Creek king salmon SEG be updated to 1,900–3,700. The change in this goal has allocative implications in the Tyonek subsistence, NDSN, and the inriver sport fisheries.

Chulitna River king salmon

This stock was originally included in the run reconstruction/sub-basin goal work for king salmon stocks in the Susitna drainage. However, model output for the sub-basin inclusive of this stock, was not considered an improvement for escapement goal setting over a SAS. The current SAS SEG (1,800–5,100) for Chulitna River king salmon was established in 2002. For this review, the committee updated the escapement time series through 2018 and applied the percentile approach (Clark et al. 2014) to the data set. The committee recommends the SEG for Chulitna River king salmon be updated to 1,200–2,900. The change in this goal has allocative implications in the Tyonek subsistence, NDSN, and inriver sport fisheries.

Chuitna River king salmon

The current SAS SEG (1,200–2,900) for Chuitna River king salmon was established in 2002. For this review, the committee updated the escapement time series only through 2015; aerial counts in the last three years are very low and we have not seen returns from them yet; therefore, we do not have information on whether they produce sustained yields. The percentile approach (Clark et al. 2014) was applied to the data set, and the committee recommends the SEG for Chuitna River king salmon be

updated to 1,000–1,500. The change in this goal has allocative implications in the Tyonek subsistence, NDSN, and inriver sport fisheries.

Theodore River king salmon

The current SAS SEG (500–1,700) for Theodore River king salmon was established in 2002. For this review, the committee updated the escapement time series only through 2015; aerial counts in the last three years are very low and we have not seen returns from them yet; therefore, we do not have information on whether they produce sustained yields. The percentile approach (Clark et al. 2014) was applied to the data set, and the committee recommends the SEG for Theodore River king salmon be updated to 500–1,000. The change in this goal has allocative implications in the Tyonek subsistence, NDSN, and inriver sport fisheries.

Lewis River king salmon

The current SAS SEG (250–800) was established in 2002; in 2011, this stock was designated a Stock of Concern. At present, the Lewis River is forked and flowing east into wetlands by an undefined channel and south into Cook Inlet by way of the original channel. The connection with Cook Inlet is intermittent at best, and the river did not have a channel that flowed into Cook Inlet during aerial surveys conducted in the last four years (2015–2018). The eastern flow may be connecting with the Ivan River, at least during higher flows. The committee is considering discontinuing the escapement goal on the Lewis River, but will not make a final recommendation until after the 2019 season.

Little Susitna River king salmon aerial goal

There are two king salmon goals for this stock; one assessed via a floating weir and the other assessed via SAS. The current weir goal was established in 2017 and not updated during this board cycle. The SAS goal is used only if the Little Susitna River weir is inoperable for a sustained period and complete fish passage not assessed. The current SAS SEG (900–1,800) for Little Susitna River king salmon was established in 2002. For this review, the committee updated the escapement time series only through 2017; the aerial count in 2018 was not included because it was very low (530) and we have not seen returns from this escapement yet; therefore, we do not have information on whether it produces sustained yield. The percentile approach (Clark et al. 2014) was applied to the data set, and the committee recommends the Little Susitna River single aerial survey king salmon SEG be updated to 700–1,500. The change in this goal has allocative implications in the Tyonek subsistence, NDSN, and inriver sport fisheries.

Crooked Creek king salmon

Hatchery smolt produced from gametes taken from naturally-produced adults in Crooked Creek are stocked into Crooked Creek annually. The current weir SEG of 650–1,700 naturally-produced king salmon ocean age 2 and older was established in 2002. For this review, the committee updated the escapement time series using 2004–2018 weir data. Data prior to 2004 were excluded from this analysis because 100% of the hatchery-produced smolt were not marked by removing the adipose fin until smolt year 2000, hence the number of naturally-produced adults could not be counted with accuracy. The Clark et al. (2014) percentile approach was applied to the data set, and the committee recommends the Crooked Creek king salmon SEG be updated to 700–1,400 naturally-produced king salmon ocean age 2 and older. The change in this goal has allocative implications in the Kasilof River Personal Use setnet and the inriver sport fisheries.

Kenai River early- and late-run king salmon
Large fish (fish ≥75 cm mid-eye-to-fork of tail length) escapement goals (assessed via sonar) were adopted for the first time for both of these stocks two years ago (2017). With only 3 new years of return data for both stocks, it was concluded that updating the analyses for these stocks would not likely result in substantially different escapement goals; therefore, the committee recommends no changes at this time.

Deshka River coho salmon
A weir-based escapement goal (SEG; 10,200–24,100) was adopted for the first time for this stock two years ago, in 2017. With only 3 new years of return data, it was concluded that updating the analyses for this stock would not likely result in a substantially different escapement goal; therefore, the committee recommends no changes at this time.

Fish Creek coho salmon
The current weir-based SEG of 1,200–4,400 was established in 2011. The committee updated the escapement time series using weir data through 2018. The percentile approach (Clark et al. 2014) was applied to the data set, and the committee recommends the Fish Creek coho salmon SEG be updated to 1,200–6,000. The change in this goal has allocative implications in the Upper Cook Inlet driftnet (UCD), the Eastside setnet (ESSN), NDSN, and inriver sport fisheries.

Jim Creek coho salmon
The current SEG of 450–1,400 was established in 2014. Although a weir has been operated on Jim Creek for a few years, the current goal and goal assessment is based on a single foot survey of the McRoberts Creek tributary. The committee updated the escapement time series using foot survey data through 2018. The Clark et al. (2014) percentile approach was applied to the data set, and the committee recommends the Jim Creek coho salmon single foot survey SEG be updated to 250–700. The change in this goal has allocative implications in the UCD, ESSN, NDSN, and inriver sport fisheries.

Little Susitna River coho salmon
The current SEG of 10,100–17,700 was established in 2002. The committee updated the escapement time series using weir data (subtracting harvest above the weir) through 2018. The Clark et al. (2014) percentile approach was applied to the data set, and the committee recommends the Little Susitna River coho salmon SEG be updated to 9,200–17,700. The change in this goal has allocative implications in the UCD, ESSN, NDSN, and inriver sport fisheries.

Kasilof River sockeye salmon
The current sonar-based BEG (160,000–340,000) for Kasilof River sockeye salmon was established in 2011. For this review, the committee updated the escapement time series and incorporated production data through 2018. The committee then examined the fit of five stock-recruit models to data from brood years 1968 to 2012 (i.e., all available spawner-return data). The best fitting model was a Ricker Autoregressive with 1-year lag that estimates 90% of maximum sustained yield (MSY) at escapements between 140,000 and 320,000 fish. The committee recommends the BEG range for Kasilof River sockeye salmon be updated to 140,000–320,000. The change in this goal has allocative implications in the UCD, ESSN, Kasilof River Personal Use setnet and dip net, and inriver sport fisheries.

Kenai River sockeye salmon

The current sonar-based SEG (700,000–1,200,000) for Kenai River sockeye salmon was established in 2011 based on the Ricker Brood Year Interaction No Main Effects model combined with a yield risk analysis. This review updated the escapement time series and incorporated production data through 2018. The committee then examined the fit of 6 stock-recruit models to the data from brood years 1968 to 2012: traditional Ricker, Ricker Autoregressive, Ricker Brood Year Interaction Main Effects, Beverton-Holt, Deriso-Schnute, and Ricker Brood Year Interaction No Main Effects. Results from these models indicated revision of the current escapement goal may improve chances of maximizing yield.

Based on statistical model selection criteria, none of these models clearly fit the stock-recruit data better than any of the other models considered. As suggested in Clark et al. (2007), the Ricker Brood Year Interaction No Main Effects model is inappropriate for revising the escapement goal; this is because both the model structure and taking the square root of the product of two successive escapements are flawed and because this model predicts maximum yield would occur only when very high escapements in one year (little fishing opportunity) are followed by very low escapements in the following year in an alternating pattern, a poor management strategy not in the best interests to the economy of Alaska. Beverton-Holt and Deriso-Schnute models are not generally used in Alaska to analyze salmon stock production, and parameter estimates of Ricker Autoregressive and Ricker Brood Year Interaction Main Effects models included zero, indicating those models would likely not be appropriate to provide an accurate estimate of maximum sustained yield. The remaining model was the traditional Ricker model, which is generally used in salmon escapement goal analysis.

The traditional Ricker model with data from brood years 1968 through 2012 resulted in an estimate of the spawning escapement that produces maximum sustained yield (S_{MSY}) of 1,290,000 sockeye salmon and escapement bounds that produce 90% of maximum sustained yield (MSY) of 830,000 and 1,822,000 fish. However, as noted in Clark et al. (2007), assessment methodology used for spawner abundance and run size estimates are most consistent starting in 1979, and so 1968–1978 estimates may be inaccurate. Using data from brood years 1979–2012 resulted in an estimated S_{MSY} of 1,206,000 fish and escapement bounds that produce 90% MSY were 774,000 and 1,716,000 fish. These results are consistent with those reported previously (Clark et al. 2007, Erickson et al. 2017, Cunningham 2018).

Because the time series of data does not contain large escapements where stocks failed to replace themselves, there is insufficient information in the data to understand the potential for overcompensation. Without this information, the traditional Ricker model provides the best estimates of MSY and S_{MSY} but the estimates remain potentially sensitive to additional (large escapement) data. However, these new results indicate the current Kenai River sockeye salmon SEG is probably too low to maximize yields. Results from the Ricker model and Markov yield table indicate escapements of 750,000 to 1,300,000 sockeye salmon produce sustained yields similar to those of the current goal and are more likely to include spawner abundances that contain S_{MSY}. Therefore, the committee recommends the Kenai River sockeye salmon SEG be updated to 750,000–1,300,000. This escapement goal range is precautionary regarding recognized limitations in available stock productivity information and avoids potential risks of adversely impacting available yield. The change in this goal has allocative implications in the UCD, ESSN, Kenai River Personal Use dip net, and inriver sport fisheries.

Fish Creek sockeye salmon
The current weir-based SEG (15,000–45,000) for Fish Creek was established in 2017. For this review, the committee updated the escapement time series through 2018 and concluded that updating the analysis for this stock would not likely result in a substantially different escapement goal; therefore, the committee recommends no change at this time.

Chelatna, Judd, and Larson lakes sockeye salmon
The current weir-based SEGs for these three stocks were established in 2017. The current SEGs are Chelatna Lake 20,000–45,000; Judd Lake 15,000–40,000; and Larson Lake 15,000–35,000. The committee reviewed the updated escapement time series for each stock and concluded that updating the analyses for these stocks would not likely result in substantially different escapement goals; therefore, the committee recommends no changes at this time.

Early-run Russian River sockeye salmon
The current weir-based SEG (22,000–42,000) was adopted in 2011 using 34 years of data. Updating the stock-recruit analysis with the 7 recent brood returns changed parameter estimates very little, and the committee recommended no change to the current goal.

Late-run Russian River sockeye salmon
The current weir-based SEG (30,000–110,000) for late-run Russian River sockeye salmon was established in 2005. The committee updated the escapement time series using weir data through 2018. From run reconstruction work in 2006–2008 on this stock, it is known that the harvest rate averages greater than 0.60, so the 25th–75th percentile was applied to the data set (Clark et al. 2014), and the committee recommends the Russian River sockeye salmon SEG be updated to 44,000–85,000. The change in this goal has no allocative implications in UCI fisheries.

In summary, the escapement goal committee reviewed 36 salmon escapement goals for the UCI management area. Recommendations are as follows: update the Deshka River king salmon BEG goal; establish aerial survey-based, model output-assessed goals (all SEGs) for three additional sub-basins of the Susitna River drainage for king salmon; update the SEG range for six king salmon stocks (Alexander Creek, Chulitna River, Chuitna River, Theodore River, Little Susitna River aerial, and Crooked Creek); update the SEG range for three coho salmon stocks (Fish Creek, Jim Creek, and Little Susitna River); and update the range for three sockeye salmon stocks (BEG for Kasilof River, SEGs for Kenai River and late-run Russian River). In addition, the discontinuation of 10 king salmon goals are recommended (Goose Creek, Little Willow Creek, Montana Creek, Sheep Creek, Willow Creek, Clear [Chunilna] Creek, Prairie Creek, Talachulitna River, Lake Creek, and Peters Creek). The escapement goal for Lewis River king salmon may be discontinued when stock-of-concern recommendations are finalized after the 2019 field season.

Separate peer-reviewed reports detailing the analyses for the Susitna River king salmon sub-basin and the Kenai River sockeye salmon escapement goals are expected to be published prior to the February 2020 Upper Cook Inlet Regulatory Meeting. A report containing details of the other escapement goal analyses will undergo external peer-review also and is expected to be published prior to the February 2020 Upper Cook Inlet Regulatory meeting. A brief oral report will be given to the board at the October

2019 Work Session. A more detailed oral report concerning escapement goals will be presented to the board in February 2020. 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.

Salmon stock of concern recommendations will be finalized after the 2019 salmon season to include the most recent year's escapements. These recommendations will be formalized in a memo and presented at the board Work Session in October 2019.

References Cited

Clark, J. H., D. M. Eggers, and J. A. Edmundson. 2007. Escapement goal review for Kenai River late-run sockeye salmon: Report to the Alaska Board of Fisheries, January 2005. Alaska Department of Fish and Game, Special Publication No. 07-12, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/sp07-12.pdf

Clark, R. A., D. M. Eggers, A. R. Munro, S. J. Fleischman, B. G. Bue, and J. J. Hasbrouck. 2014. An evaluation of the percentile approach for establishing Sustainable Escapement Goals in lieu of stock productivity information. Alaska Department of Fish and Game, Fishery Manuscript No. 14-06, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/FMS14-06.pdf

Cunningham, C. J. 2018. Exploration of overcompensation and spawning abundance producing maximum sustainable yield for Upper Cook Inlet sockeye salmon stocks. In NPFMC. 2018. Discussion Paper: Revisions to the Fishery Management Plan for the salmon fisheries in the EEZ off Alaska. November 6, 2018. Anchorage, AK 99501.

Erickson, J. W., T. M. Willette, and T. McKinley. 2017. Review of salmon escapement goals in Upper Cook Inlet, Alaska, 2016. Alaska Department of Fish and Game, Fishery Manuscript No. 17-03, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/FMS17-03.pdf

McKinley, T. R., J. W. Erickson, N. Decovich, and R. Begich. *In prep*. Review of salmon escapement goals in Upper Cook Inlet, Alaska, 2019. Alaska Department of Fish and Game, Fishery Manuscript Series, Anchorage.

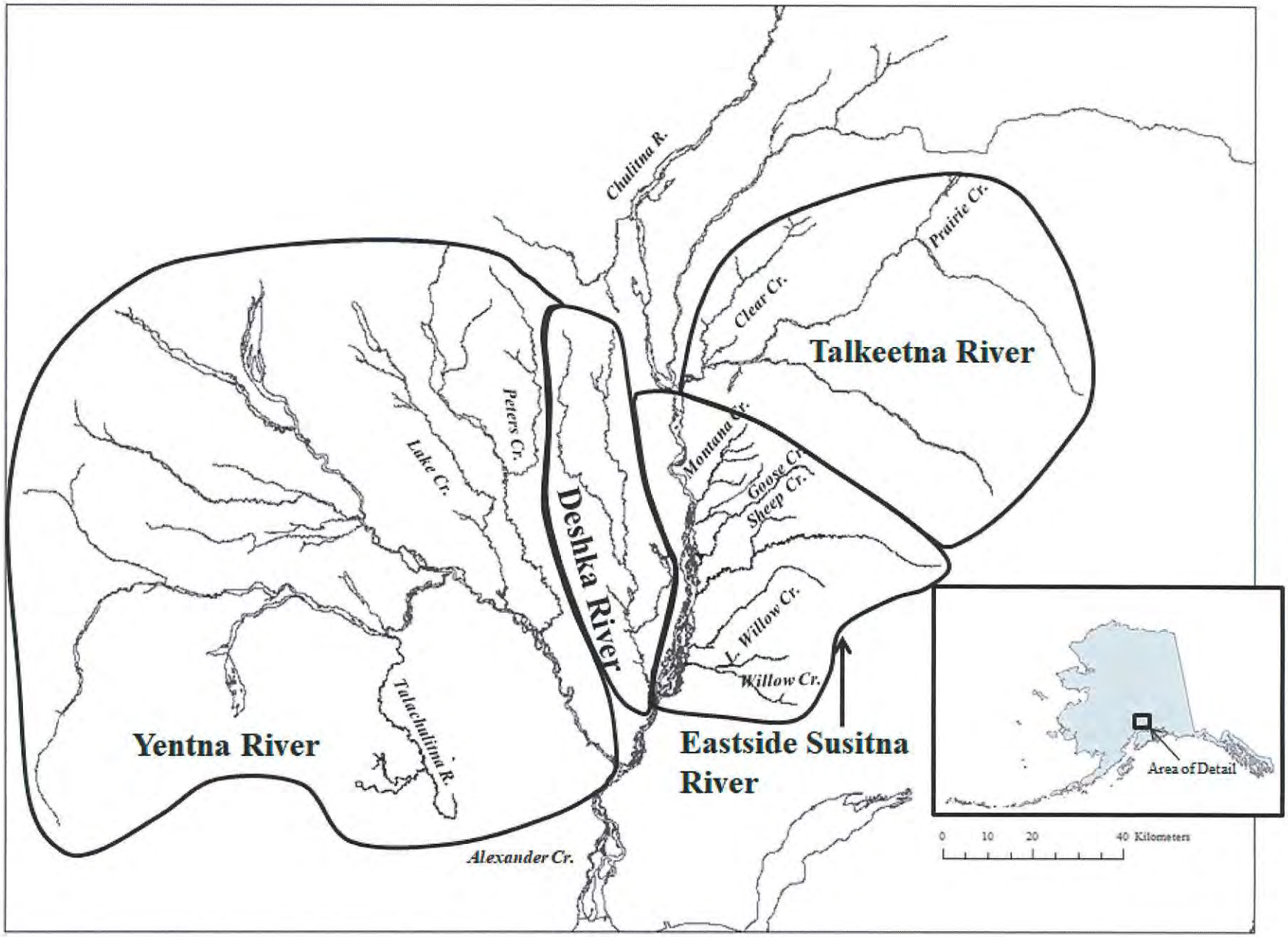

Figure 1.–Map of Susitna River king salmon escapement goal sub-basins. Streams that currently have single aerial survey goals are labeled.

Table 1.–Summary of current and recommended escapement goals for salmon stocks in Upper Cook Inlet, 2020.

System	Current Escapement Goal			Recommended Escapement Goal changes beginning with 2020 season			
	Goal	Type	Year adopted	Range or lower bound	Type	Data	Action
King Salmon							
Susitna River							
Deshka River	13,000–28,000	SEG	2011	**9,000–18,000**	BEG	weir	Update
Eastside Susitna River sub-basin				**13,000–25,000**	SEG	multiple aerial surveys[a]	New
Goose Creek	250–650	SEG	2002				discontinue[b]
Little Willow Creek	450–1,800	SEG	2002				discontinue[b]
Montana Creek	1,100–3,100	SEG	2002				discontinue[b]
Sheep Creek	600–1,200	SEG	2002				discontinue[b]
Willow Creek	1,600–2,800	SEG	2002				discontinue[b]
Talkeetna River sub-basin				**9,000–17,500**	SEG	multiple aerial surveys[a]	New
Clear (Chunilna) Creek	950–3,400	SEG	2002				discontinue[b]
Prairie Creek	3,100–9,200	SEG	2002				discontinue[b]
Yentna River sub-basin				**13,000–22,000**	SEG	multiple aerial surveys[a]	New
Talachulitna River	2,200–5,000	SEG	2002				discontinue[b]
Lake Creek	2,500–7,100	SEG	2002				discontinue[b]
Peters Creek	1,000–2,600	SEG	2002				discontinue[b]
Alexander Creek	2,100–6,000	SEG	2002	**1,900–3,700**	SEG	single aerial survey	Update
Chulitna River	1,800–5,100	SEG	2002	**1,200–2,900**	SEG	single aerial survey	Update
West Cook Inlet and Knik Arm							
Lewis River	250–800	SEG	2002			single aerial survey	may discontinue[c]
Chuitna River	1,200–2,900	SEG	2002	**1,000–1,500**	SEG	single aerial survey	Update
Theodore River	500–1,700	SEG	2002	**500–1,000**	SEG	single aerial survey	Update
Little Susitna River	2,300–3,900	SEG	2017			weir	No Change

-continued-

Table 1.–Page 2 of 3.

System	Current Escapement Goal			Recommended Escapement Goal changes beginning with 2020 season			
	Goal	Type	Year adopted	Range or lower bound	Type	Data	Action
West Cook Inlet and Knik Arm							
Little Susitna River aerial	900–1,800	SEG	2002	**700–1,500**	SEG	single aerial survey	Update
Anchorage							
Campbell	380	LB SEG	2011			single foot survey	No Change
Northern Kenai Peninsula							
Crooked Creek	650–1,700	SEG	2002	**700–1,400**	SEG	weir	Update
Kenai River - Early Run (large fish)	2,800–5,600[d]	SEG	2017			sonar	No Change
	3,900–6,600	OEG	2017				
Kenai River - Late Run (large fish)	13,500–27,000[d]	SEG	2017			sonar	No Change
Chum Salmon							
Clearwater Creek	3,500–8,000	SEG	2017			peak aerial survey	No Change
Coho Salmon							
Susitna River							
Deshka River	10,200–24,100	SEG	2017			weir	No Change
Knik Arm							
Fish Creek (Knik)	1,200–4,400	SEG	2011	**1,200–6,000**	SEG	weir	Update
Jim Creek	450–1,400	SEG	2014	**250–700**	SEG	single foot survey	Update
Little Susitna River	10,100–17,700	SEG	2002	**9,200–17,700**[e]	SEG	weir	Update

-continued-

Table 1.–Page 3 of 3.

System	Current Escapement Goal			Recommended Escapement Goal beginning with 2020 season			
	Goal	Type	Year adopted	Range or lower bound	Type	Data	Action
Sockeye Salmon							
Susitna River							
Chelatna Lake	20,000–45,000	SEG	2017			weir	No Change
Judd Lake	15,000–40,000	SEG	2017			weir	No Change
Larson Lake	15,000–35,000	SEG	2017			weir	No Change
Cook Inlet and Knik Arm							
Fish Creek	15,000–45,000	SEG	2017			weir	No Change
Packers Creek	15,000–30,000	SEG	2008			weir	No Change
Northern Kenai Peninsula							
Kasilof River	160,000–340,000	BEG	2011	**140,000–320,000**		sonar	Update
	160,000–390,000	OEG	2011				
Kenai River	700,000–1,200,000	SEG	2011	**750,000–1,300,000**		sonar	Update
Russian River-Early Run	22,000–42,000	BEG	2011				No Change
Russian River-Late Run	30,000–110,000	SEG	2005	**44,000–85,000**		weir	Update

[a] Single aerial surveys of individual tributaries are combined with other historical data to estimate annual run size for three sub-basins of the Susitna River drainage.

[b] Although the tributary goal is discontinued, the tributary will still be flown and counted.

[c] To be decided in the fall of 2019

[d] Fish 75 cm mid-eye-to-fork of tail length or longer

[e] Based on escapement (weir count - harvest above weir).