

Summary of the 2020 U.S. Yukon Area Summer Season

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ADF&G – Yukon River Summer Season

Yukon River Panel

Tuesday, January 26;

Agenda Item 8



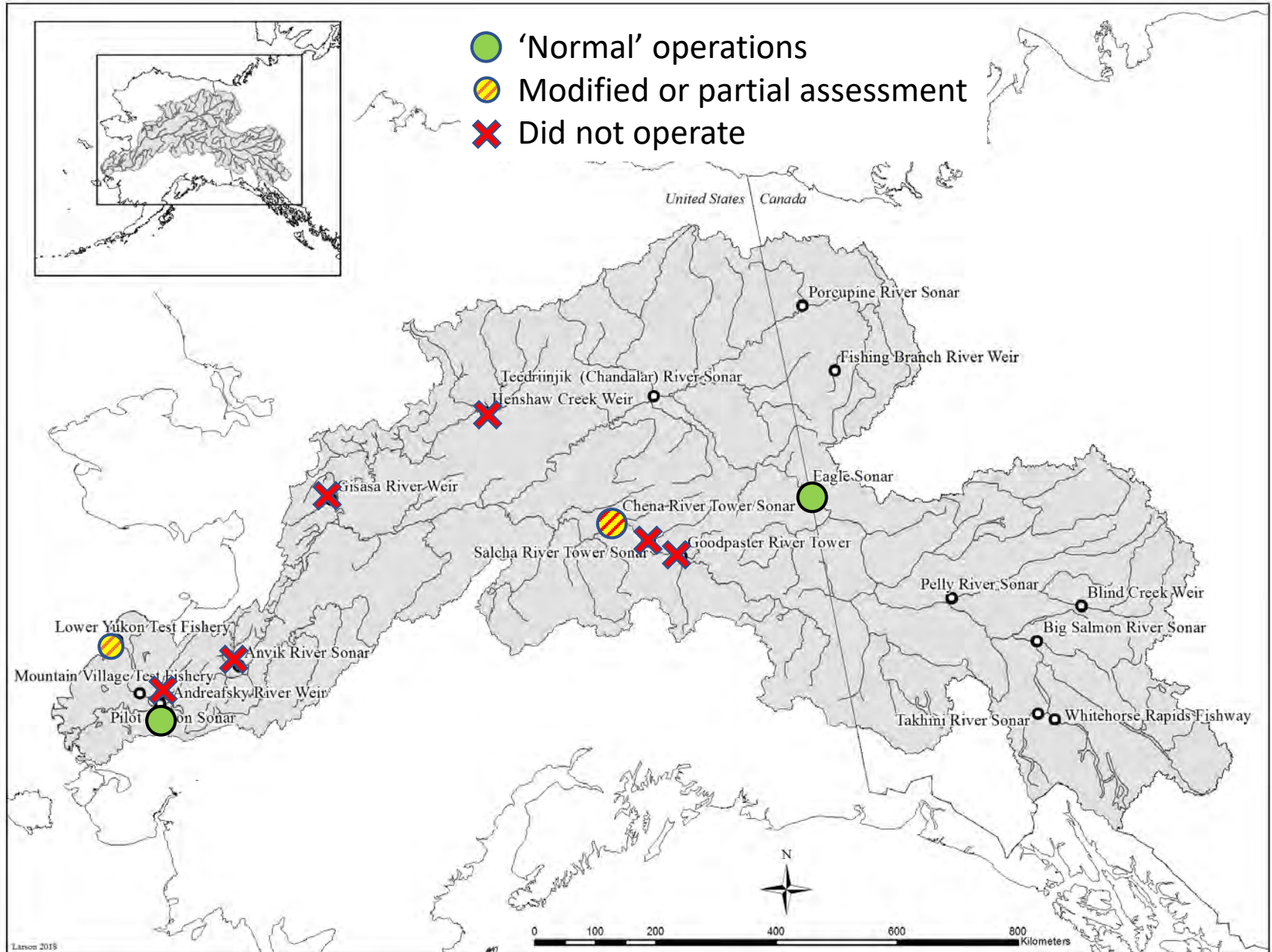
Preseason Outlooks

- 2020 outlooks slightly smaller than outlooks for 2019
- Canadian-origin Chinook salmon:
 - 59,000 – 90,000 fish
- Drainagewide Chinook salmon:
 - 144,000 – 220,000 fish
- With conservative management, sufficient to provide for escapement and some surplus for subsistence
- Summer chum salmon
 - 1.9 million fish
 - Up to 1.1 million commercial surplus
 - Sufficient to provide for escapement, subsistence and commercial harvest
 - Harvest opportunities balanced with overlapping Chinook salmon run

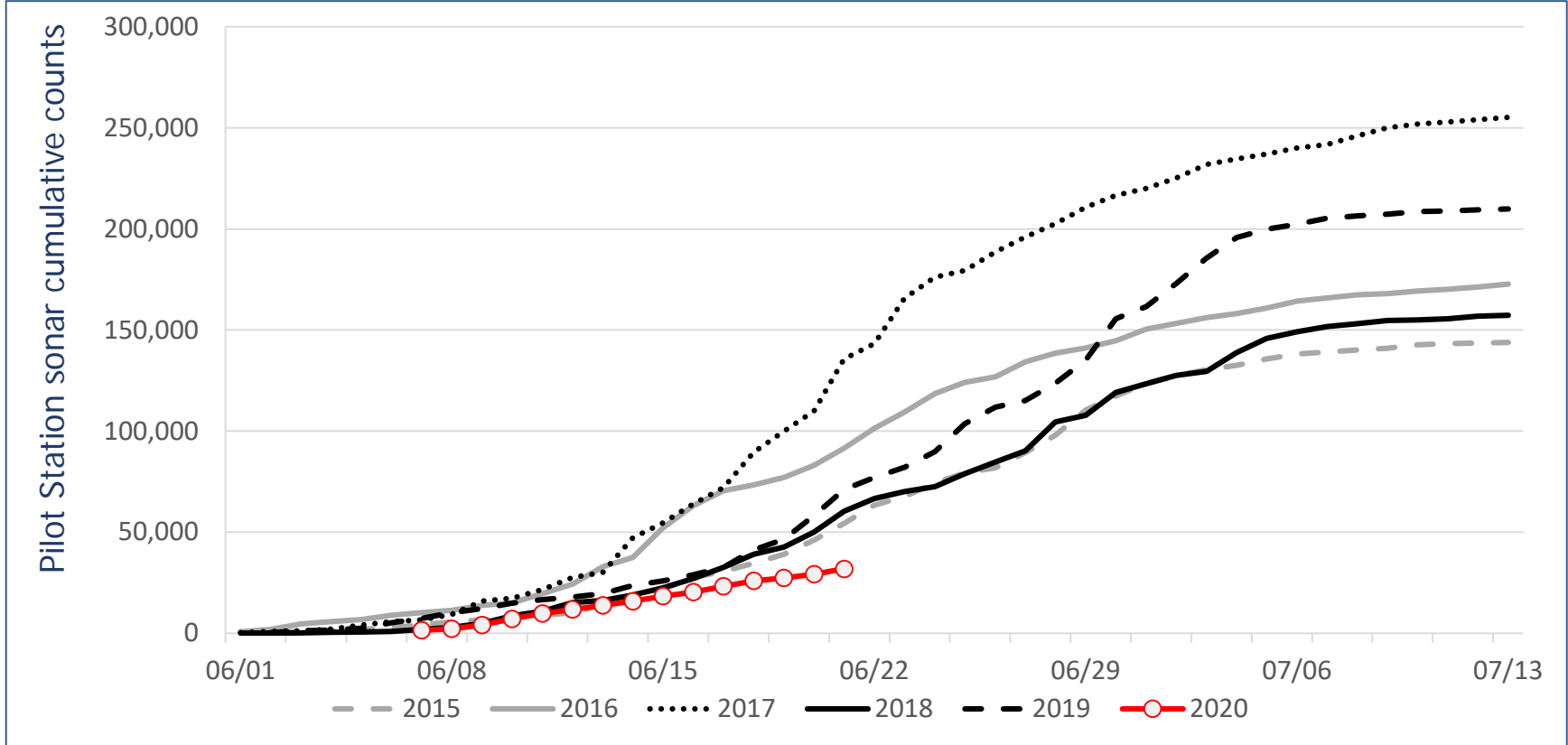
Panel Recommendations and Management Strategy

- Preseason management strategy developed consistent with Yukon River Panel recommendations for 2020
 - Endeavor to achieve escapement of Canadian-origin Chinook salmon within IMEG range (42,500 – 55,000 fish) and provide harvest shares in both countries
 - Limit use of gillnets to 6-inch or smaller mesh upstream of Tanana River
 - Consider impacts from extreme environmental conditions on management measures and harvest opportunities
- Forecasts and strategy discussed at preseason teleconference and mailed to households in the Outlook flier
- Season start (Ice out)
 - Open with 7.5-inch mesh
- Early season as fish started to enter the river (prior to first pulse):
 - Gillnets restricted to 6-inch mesh
 - Half regulatory schedule

2020 Assessment Projects in Alaska

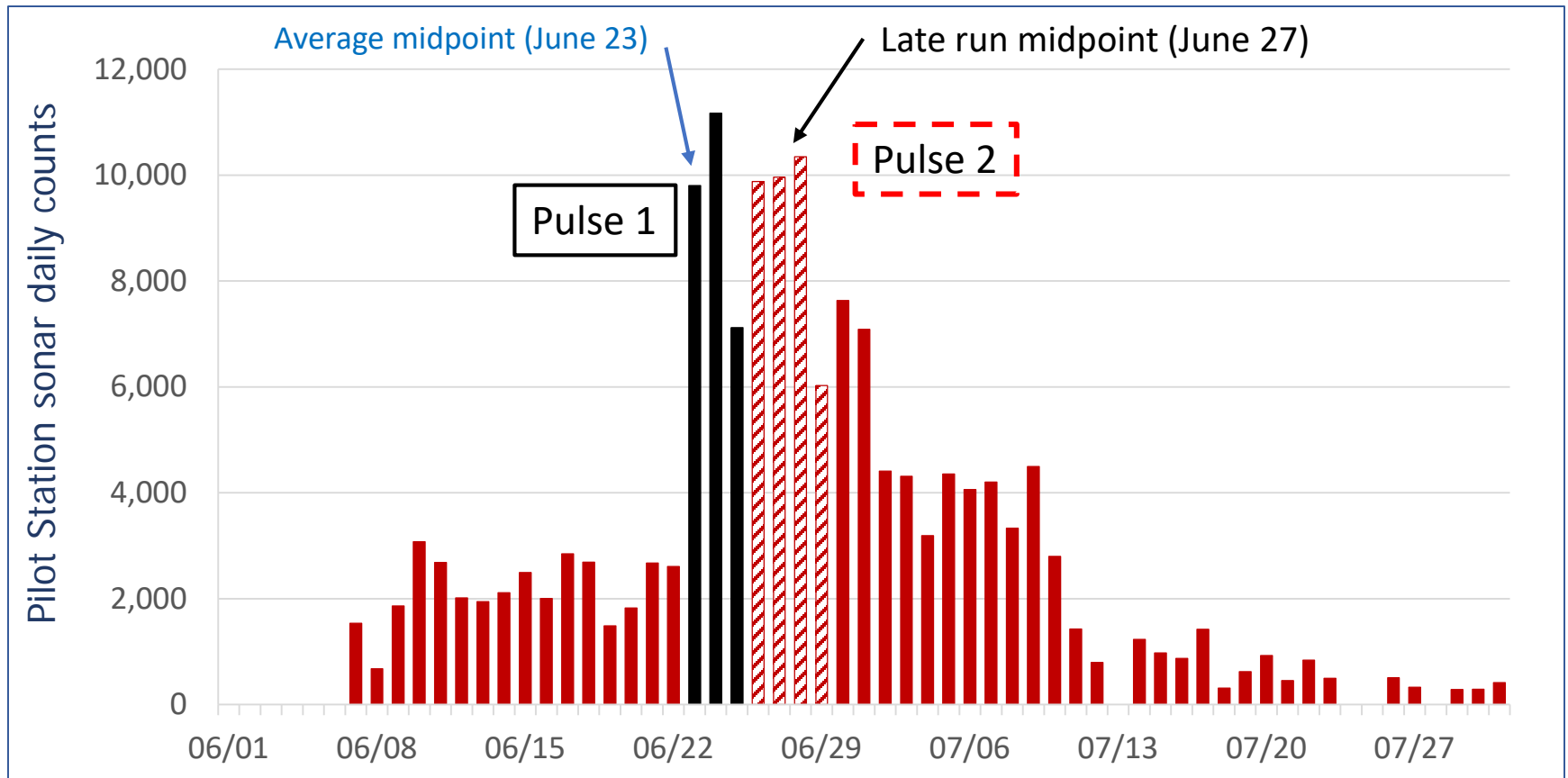


Assessment: Pilot Station sonar Chinook salmon - June 21



- Low abundance, late entry of Chinook salmon
- June 21: inseason projection showing a late or weak run with no harvestable surplus.
- Fishing with gillnets closed (including 4-inch)
- Fishing with selective gear in Lower Yukon River for summer chum salmon; all Chinook salmon released alive

Assessment: Chinook salmon pulses at Pilot Station sonar



- Late arrival of the first pulse meant fish arrived all at once
- Passage at the midpoint for a late run indicated the run was within the forecast range
- Projected that the run could meet escapement goals and support limited harvest
- Early July: returned to 1/2 schedule, 6-inch mesh

Canadian-origin Chinook salmon Inseason Estimated allowable catch

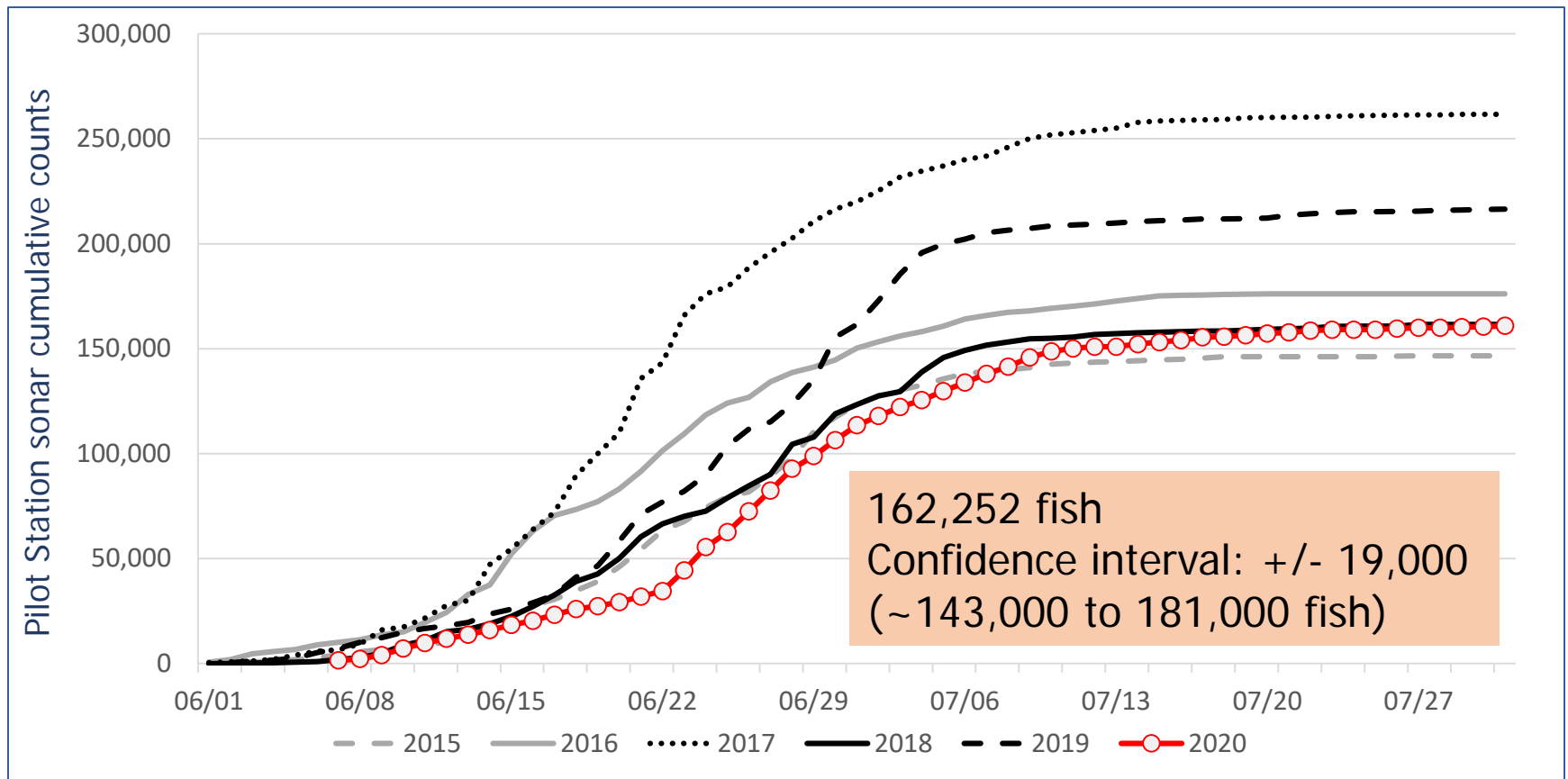
- Based on genetic proportions and midseason estimate at Pilot Station sonar: 77,000 Canadian-origin Chinook salmon

Escapement Goal (IMEG) 42,500 – 55,000	From	To
Total Allowable Catch	22,000	34,500
Canadian Allowable Catch (23% harvest share)	5,100	7,900
U.S. Allowable Catch (77% harvest share)	16,900	26,600

- 2017 US harvest Canadian-origin Chinook salmon: 21,400 fish
- 2018 US harvest Canadian-origin Chinook salmon: 19,100 fish
- 2019 US harvest Canadian-origin Chinook salmon: 27,800 fish
- **2020 allowable catch: Similar to recent 3-years**
- Inseason: projected harvest of 19,000 Canadian-origin Chinook salmon

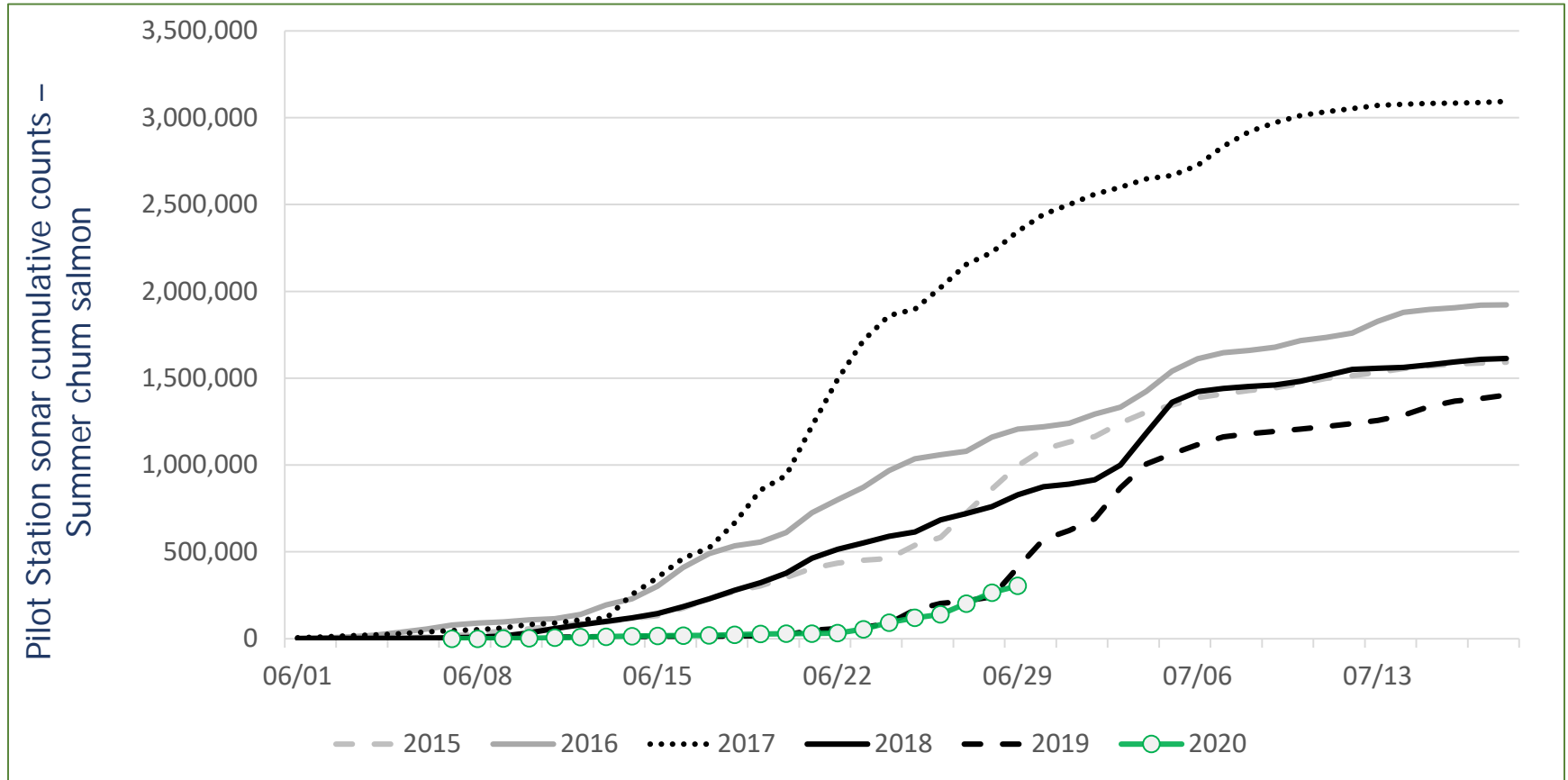
* Numbers rounded

Assessment: Pilot Station sonar Chinook salmon total (all stocks)



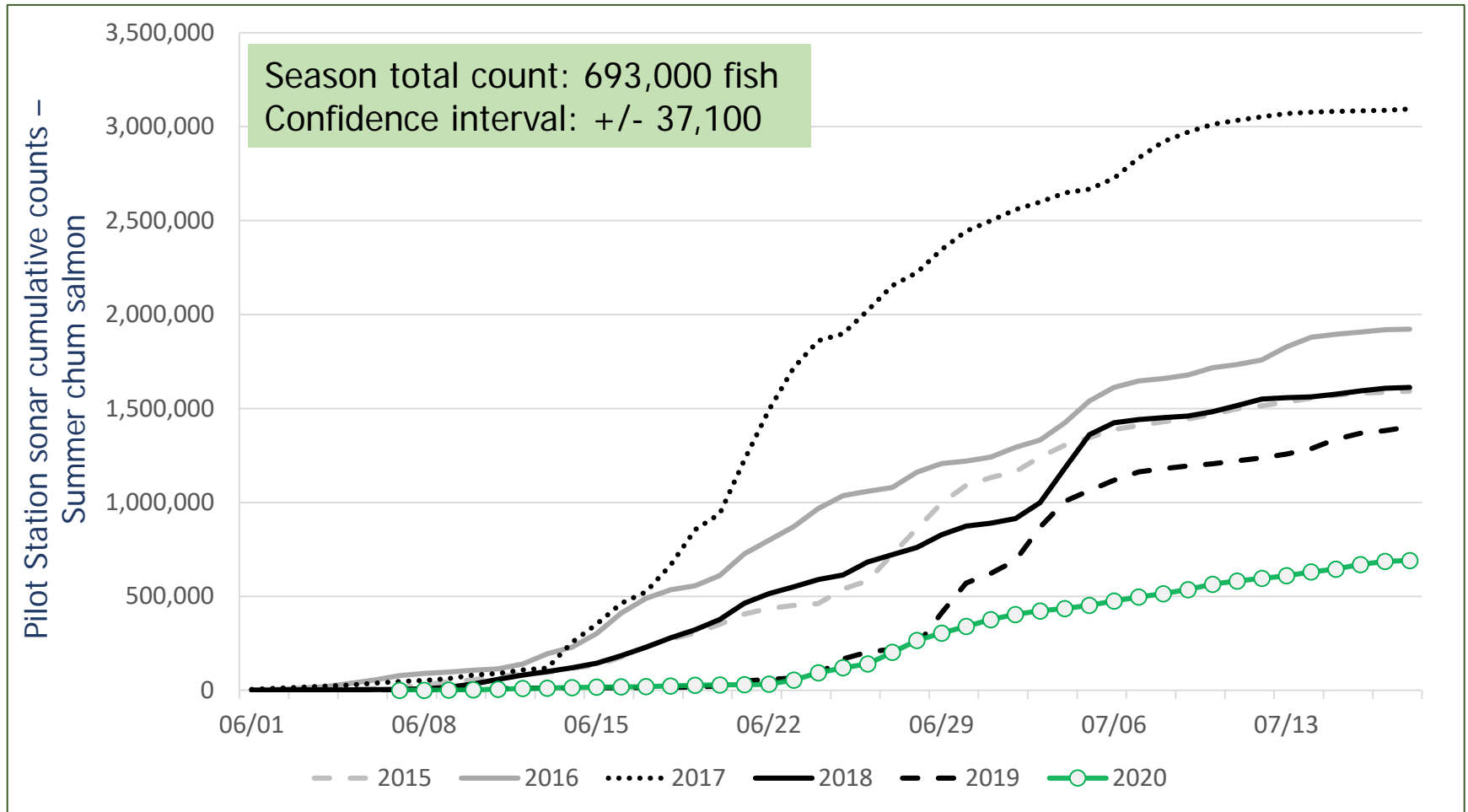
- Chinook salmon counts at Pilot Station sonar were within the range of the preseason forecast
- Some fishing opportunity as fish moved upriver
 - Restricted to 1/2 schedule, 6-inch mesh, some 7.5-inch openings
- Run was late, but ended up similar in size to 2018

Assessment: Pilot Station sonar summer chum salmon – June 29



- Very low abundance, late entry of summer chum salmon
- Similar entry pattern to 2019
- Low abundance of chum compared to Chinook salmon (typically 10x more chum than Chinook salmon present)

Assessment: Pilot Station sonar summer chum salmon (end of season)



- Cumulative passage of summer chum; lower than 2019
- Lower than recent 5-years
- Conservative estimate; does not include passage of late summer chum salmon that continued into the start of the fall season

Summer chum salmon Commercial Fisheries

- Start of the commercial fishery was delayed due to the late run
- Commercial fishing started with selective gear to reduce incidental harvest of Chinook salmon
- Only 6 openings announced in the Districts 1 and 2 of the Lower Yukon Area; last period cancelled by buyer due to low run abundance
- Total commercial harvest of 14,000 summer chum salmon
 - Well below recent 10-year average of 388,000 fish harvested in Lower Yukon Area
 - Significant economic loss to communities
- No sale of Chinook salmon allowed
 - 362 Chinook salmon incidentally harvested and retained
 - Significantly less than recent 10-year average of ~4,000 Chinook salmon incidentally harvested
- No other commercial periods in the rest of the Yukon Area

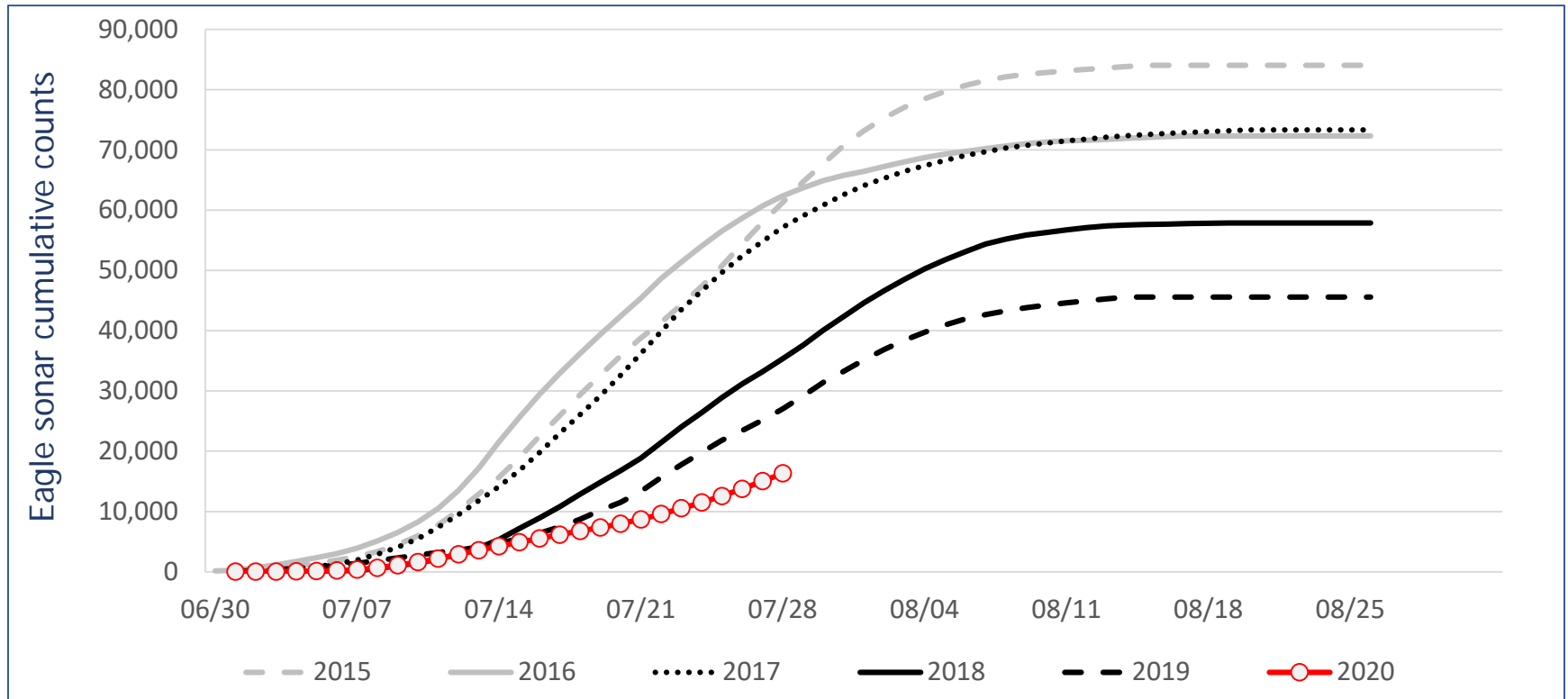
Management tools and timing

At the start of the season, management focuses on the Lower Yukon Test Fishery and Pilot Station sonar projects as the drainagewide run enters the river and moves through the Lower Yukon Area

- The late arrival of the first pulse of the Chinook salmon run at the LYTF and Pilot Station sonar projects triggered closures throughout the river for all gillnets, including 4-inch mesh
- Chinook salmon pulses arrived one after the other, and fishing was reopened, but still restricted to half regulatory schedule and 6-inch mesh

In late July management focuses on the Canadian-origin run as it passes beyond the Lower Yukon Area districts. We use passage and projections information from the Eagle sonar project for management of the Canadian-origin run as it nears the border.

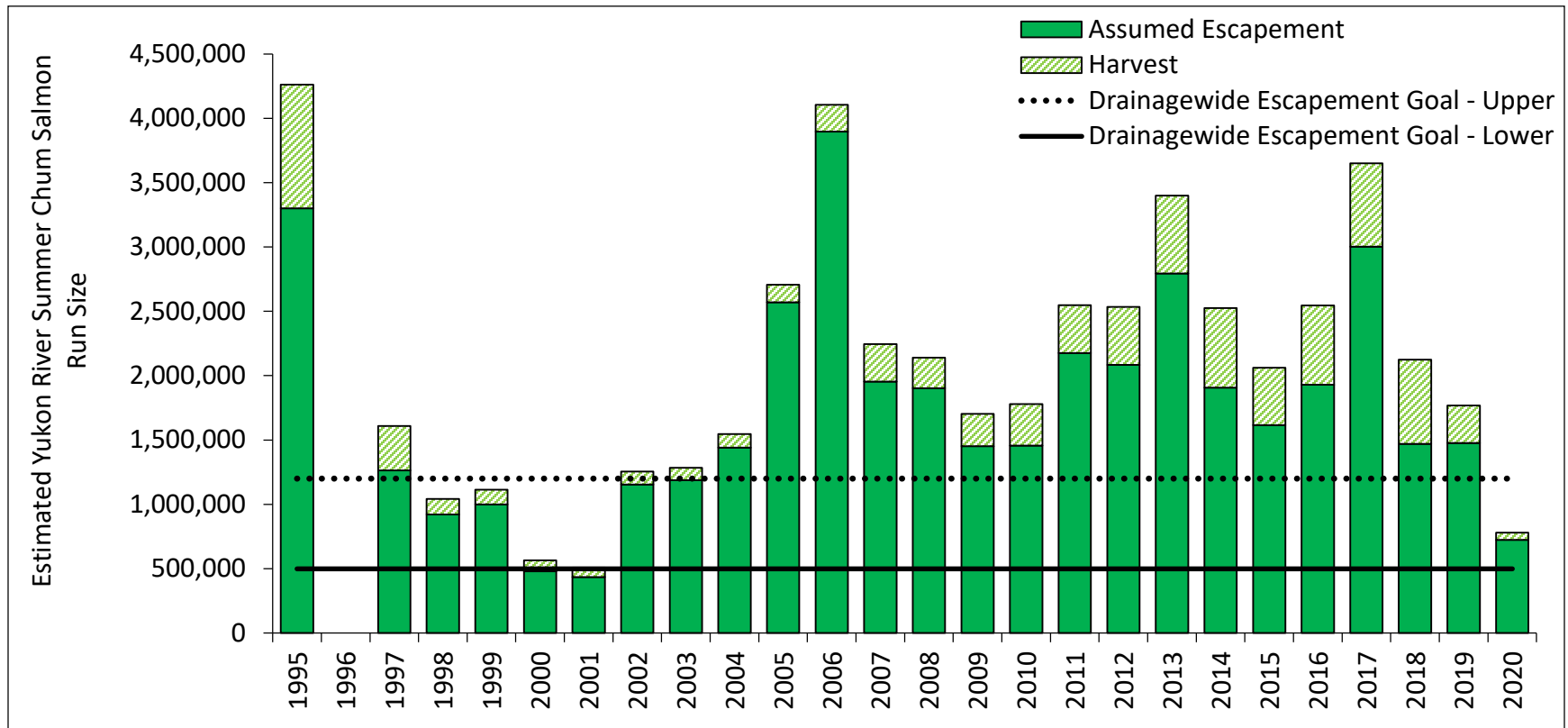
Assessment: Chinook salmon Eagle sonar July 28



- Chinook salmon run 98% complete at Pilot Station sonar
 - Estimated 77,000 Canadian-origin Chinook salmon
- Eagle sonar on July 28: cumulative count of 16,000 fish
 - Midpoint of the run for late years
 - Projected to not meet border passage goal
 - Closed District 5, including 4-inch mesh

Post Season Run Assessment

Summer chum salmon drainagewide run size



- 2020 drainagewide run size 760,000 fish. Below recent 10-year average of 2.5 million fish
- Bars; harvest, counts, East Fork Andreafsky counts
- Run size in 2020 is slightly larger than shown:
 - East Fork Andreafsky aerial survey counts used in 2020 estimate (no weir data)
 - Some summer chum salmon continued to enter river after transition to fall season

2020 Summer chum salmon Escapement

Project	Current Goal	Median	2020 Estimate
Drainagewide	500,000–1,200,000	1,786,311	703,000
East Fork Andreafsky River Aerial	-	12,349	10,628
Anvik River Aerial	-	35,641	8,461
Gisasa River Aerial	-	7,457	754
Henshaw Creek Aerial	-	-	2,270
Chena River Tower	-	6,594	155 *

* Incomplete count

- Drainagewide total within escapement goal range
- Escapement goals normally assessed by East Fork Andreafsky weir and Anvik River sonar, but projects did not operate due to COVID-19

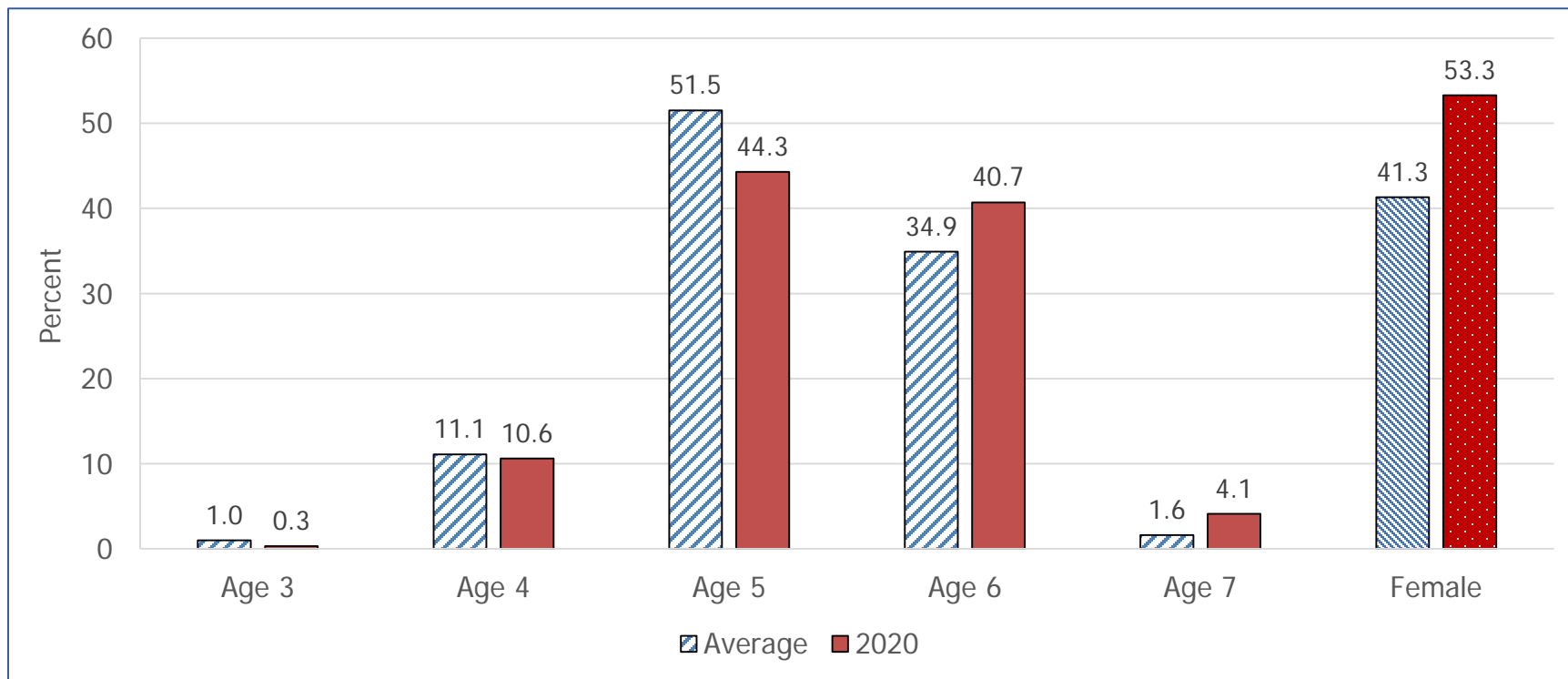
2020 Chinook salmon Escapement

Project	Current Goal	Average	2020 Estimate
Eagle Sonar	42,500–55,000	56,892	33,550
East Fork Andreafsky Aerial	-	1,317	335
Gisasa River Aerial	-	711	419
Henshaw Creek Aerial	-	-	99
Chena River Tower	2,800–5,700	6,149	306 *
Salcha River Tower	3,300–6,500	8,440	-
Anvik River Aerial	1,100–1,700	1,225	675
West Fork Andreafsky Aerial	640–1600	1,101	508
Nulato River Aerial	940–1,900	1,287	862

* Incomplete count; only 17 days

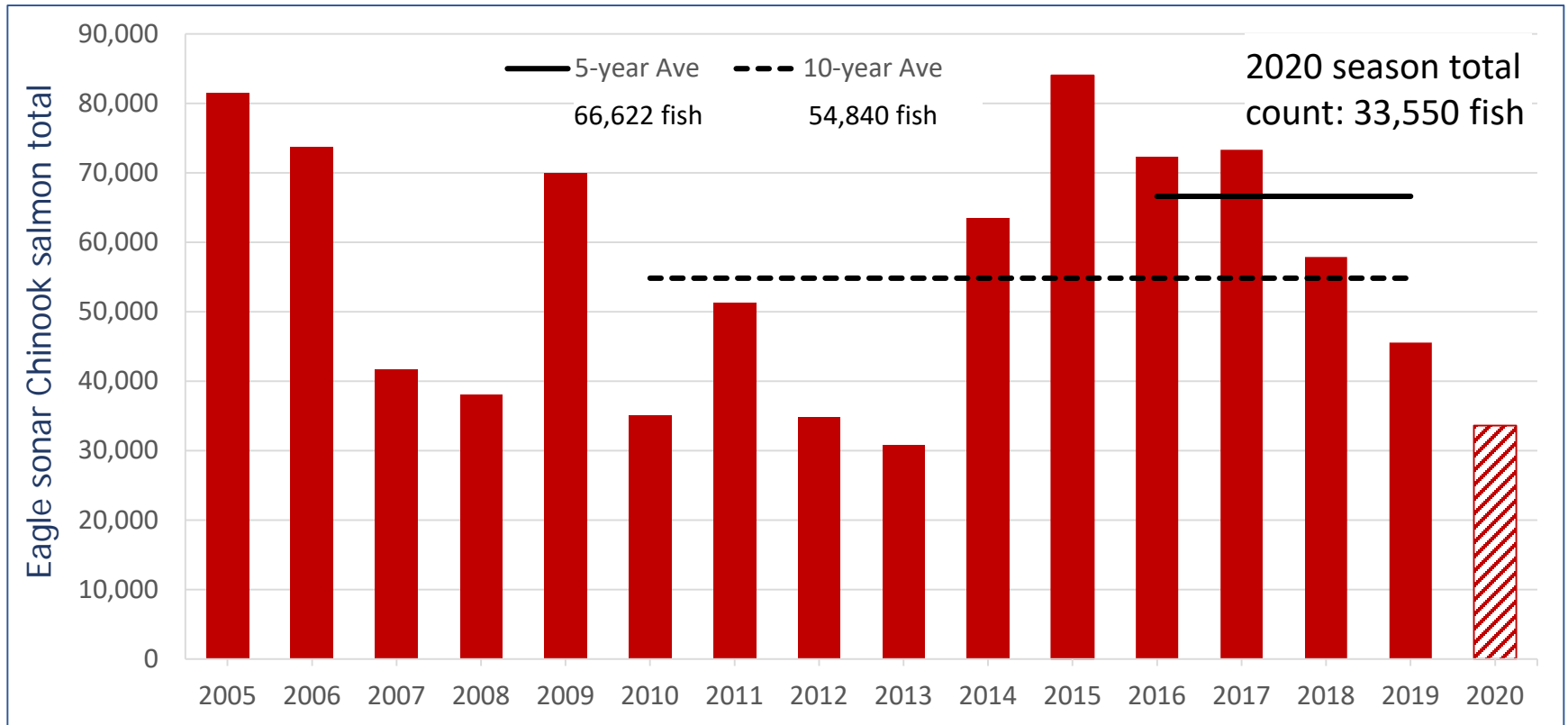
- All spawning escapement estimates were below goals
- East Fork Andreafsky, Gisasa, and Henshaw normally assessed by weirs
 - Projects did not operate due to COVID-19

Chinook salmon Age & Sex Composition Pilot Station Sonar



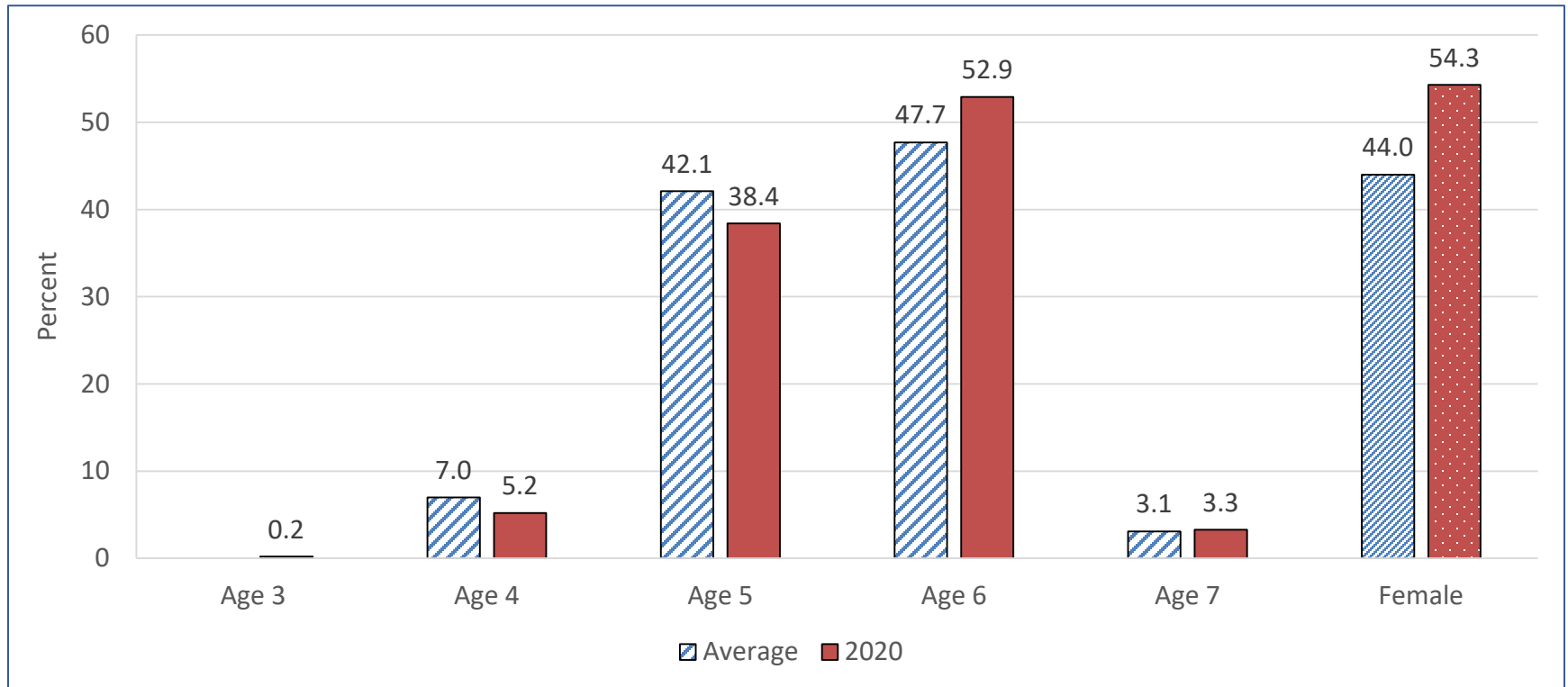
- More 6- and 7-year-olds than average (2010-2019)
- More females than average
- Good number of females

Chinook salmon passage at Eagle Sonar



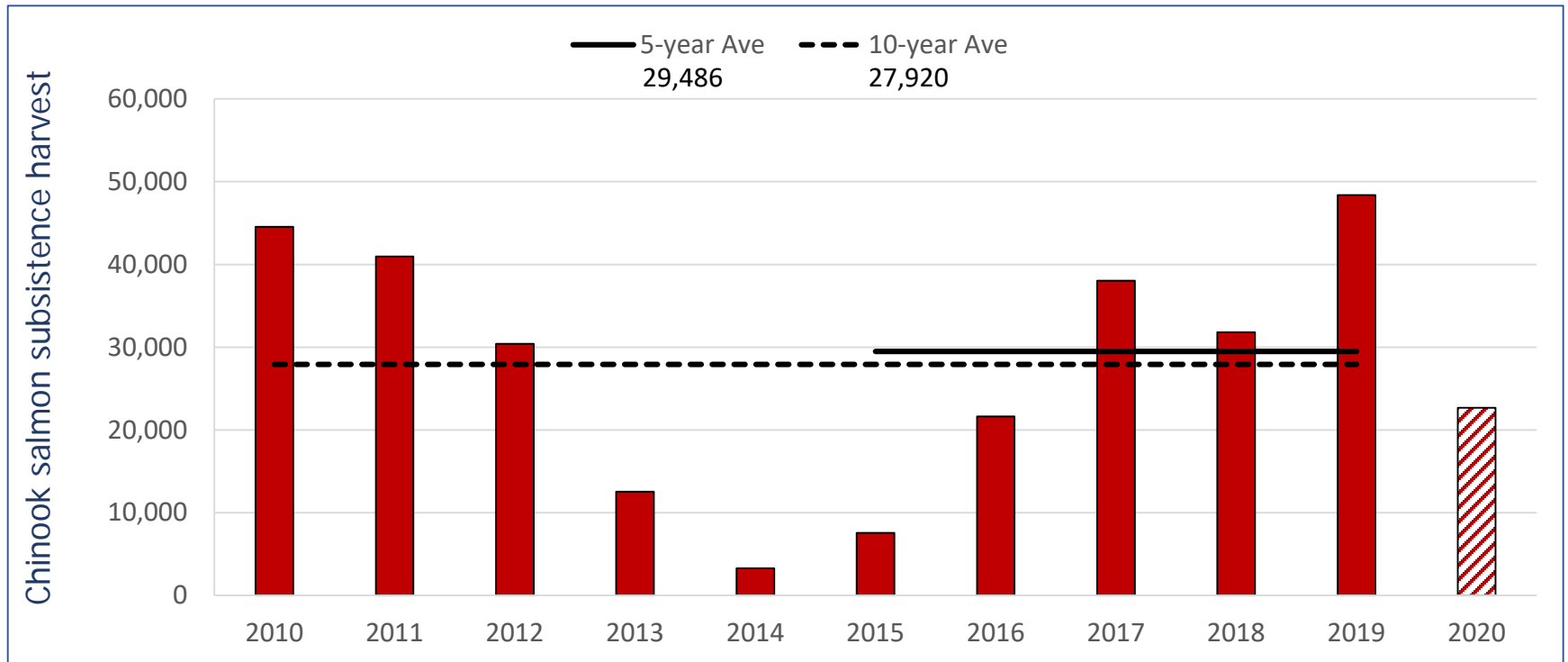
- Season total count: 33,550 fish
- Below recent 5- and 10-year averages

Chinook salmon Age & Sex Composition Eagle Sonar



- More 6-year-olds than average (2010-2019)
- More females than average
- Quality of escapement looked good
- Similar % female between Pilot and Eagle sonar projects

PRELIMINARY Chinook salmon subsistence Harvest (all stocks)



- 2020 U.S. total harvest of all stocks was 22,688 Chinook salmon
 - Does not include Personal Use from Y-6
- Harvest in 2020 was below recent 5- and 10- year averages
- Harvest varied through out the drainage, some areas did better or worse than others
 - Environmental conditions
 - Restricted fishing opportunities

Genetic Proportions of Alaskan Chinook salmon Harvest

District	Harvest (drainagewide)	% Canadian-origin	Canadian-origin harvest
Coastal	1,588	45%	715
Y-1	3,680	45 - 55%	1,690
Y-2	4,473	40 - 48%	1,830
Y-3	686	46%	318
Y-4	3,409	36-59%	1,560
Y-5	8,039	69-100%	6,058
Y-6	565	0	0
<i>Koyukuk River</i>	340	0	0
Yukon Area Total	~22,800	56%	~12,200 (95% CI ± 3,300)

- Long term averages were used to assigned % origin
- Only District Y-1 and LYTF were sampled in 2020

Assessment: Chinook salmon Eagle sonar – end of season

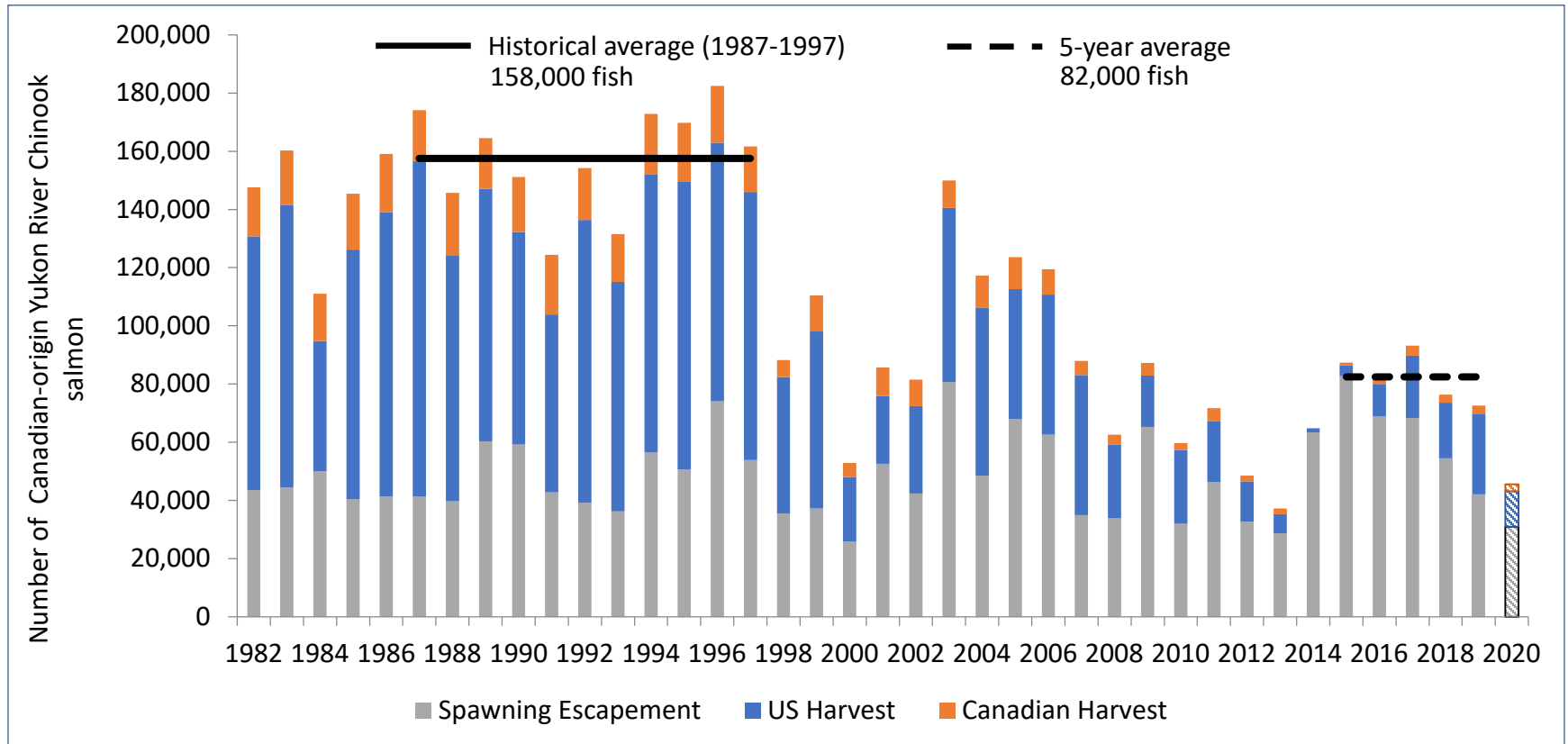
Eagle Sonar – Harvest between Eagle Sonar and Border = Border Passage

- Eagle sonar total season count:
 - 33,550 Chinook salmon
 - Confidence interval: 33,190 – 33,910 (+/- 360 fish)
- Harvest between sonar and border
 - 220 Chinook salmon
- Border passage: 33,330 fish
- Does not meet IMEG of 42,500 - 55,000 fish

Total Canadian-origin Chinook Salmon Run

AK harvest (CDN origin) + CDN harvest + escapement = Total CDN run

12,171 + 2,363 + 30,967 = 45,501



- Total Canadian-origin run size of 45,501 Chinook salmon

Canadian-origin run difference between Pilot Station and Eagle

Canadian-origin Chinook salmon inseason estimate at Pilot Station	Low CI * (-13,000) 64,000	Point Estimate 77,000	High CI * (+13,000) 90,000
Estimated harvest (Canadian-origin)	8,900	12,200	15,500
Fish expected at the border	55,100	64,800	74,500
Eagle sonar count Chinook salmon	Low CI * (-360) 33,190	Point Estimate 33,550	High CI * (+360) 33,910
Difference	Low 21,910	Difference 31,250	High 40,590

* CI: Confidence Interval

- Despite expecting 64,800 Canadian-origin Chinook salmon to make it upriver, we only saw 33,550 fish at Eagle sonar
- There was a difference of over 30,000 fish between our inseason estimate and the Eagle sonar count of the Canadian-origin run

Assessment and local knowledge

- Sonar counts are the best they can be, but have error associated with estimates
 - Apportionment methods have been refined continuously at the projects
 - Pilot Station sonar has over and underestimated the run in the past, with no consistent bias either way to be corrected for
 - No indications of technical issues or problems with test fishing in 2020
- Fishermen reports confirmed low abundance; usual spawning areas empty and difficult fishing conditions
 - Fishermen accounts of difficult fishing conditions help confirm that harvest estimates are reasonable
- Fishermen also reported environmental conditions that could impact mortality and spawning success
 - High water
 - Ichthyophonus
- ADF&G is working with partners on future plans to explore potential mortality causes and increase sampling and temperature monitoring

Research to address inriver management uncertainty

Agency staff are collaborating on future investigations:

- Discrepancy between inseason estimates of Canadian-origin run size (at Pilot Station sonar) versus post season estimates of run sizes
- Potential factors that could cause en-route mortality of salmon from: Ichthyophonous, environmental factors, and handling effects (e.g. net drop out)
- Current data and past studies to prioritize and propose any necessary research in these areas that can improve our assessment and management
- Coordinating with experts on these topics from ADF&G, NOAA, Tribes, DFO, JTC etc. to make collaborative, well-reviewed products such as a published paper, presentations, or project proposals



Research to address inriver management uncertainty

Some potential research planned for upcoming seasons includes:

- Expanded Ichthyophonous sampling
- USFWS assist YRITFC with feasibility study design for a midriver sonar
- Pre-spawning mortality study on the East Fork Andreafsky River
- Expanded water temperature monitoring in the Yukon River Area and in the Koyukuk River drainage



Acknowledgements:

Communities of Alakanuk, Emmonak,
St. Mary's, Pilot Station, and Eagle
Tanana Chiefs Conference
U.S. Fish & Wildlife Service
Yukon Delta Fisheries Development Association
Yukon River Drainage Fisheries Association
Yukon River Intertribal Fish Commission

Questions?

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