

Submitted by the Alaska Department of Fish and Game
December 11, 2019

Results of 2019 Upper Cook Inlet pink salmon otolith sampling.

Putative origin (hatchery/wild) results are presented here from the two collections of pink salmon sampled over short periods of time in 2019 from upriver assessment sites in the Susitna and the Kenai rivers by department staff. All fish successfully examined were determined to be of putative wild origin (see table below). Origin was established by examining the otoliths for hatchery-applied thermal marks. There were four otoliths with strong daily rings, but the pattern matched nothing in the mark assignment database. And after further consideration, multiple readers decided they were wild marks.

Please consider the following contextual comments related to these samples when interpreting results or extrapolating beyond the collections.

- Extrapolating beyond the samples: Collections from both rivers were taken over a short period of time at the peak of the run and at upriver assessment sites with some pink salmon spawning occurring below the sampling sites, so some segments of the run are missing in both space and time. In other words, these samples represent only a small portion of time and space with regards to the components of the run. Extrapolating beyond those limited parameters is not appropriate. There is no reasonable way to use these samples to estimate the proportion of hatchery-origin spawners in either run.
- Assessing statistical power: From basic sampling theory, and if standard assumptions apply, a sample of 100 fish is almost assured to contain at least 1 fish from a stock that is present at 4.5% or more (see chart below; the top blue line is 99% certainty) and maybe a 90% chance of containing at least one fish from a stock present at about 2.2%. These collections included 86 and 96 fish, so detection power is slightly less than that. For these samples there are 2 stocks: Hatchery and Wild. Of course, detection would require that the hatchery-origin individual(s) in the sample were thermally marked.
- Accounting for all hatchery-origin fish: Although all pink salmon from this brood year released from Prince William Sound and from Cook Inlet hatcheries were thermally marked, only a portion of pink salmon released from Kodiak Island hatcheries were marked for this brood year. Unmarked hatchery fish cannot be distinguished from wild fish.

Year	Agency	Fishery Name	Species	Source	Stat Week	Stat Area	AStream / Watershed Code	Sample Date	Gear	Survey Site	#Rcvd	#Preps	Not Marked	Marked	%Marked
2019	ADFG		PINK	OTHER	30	24741	247-41-10200	7/22/2019	NOT REQUIRED	ANCHORAGE	99	86	86	0	0
2019	ADFG		PINK	OTHER	27	24430	244-30-10010	7/5/2019	NOT REQUIRED	SOLDOTNA	99	96	96	0	0
2019 ADFG OTHER PINK Total											198	182	182	0	0.00%

Sampling to Detect

Prob. of collecting single fish from a stock w/ low contribution

