

## Why have the Chignik sockeye runs been so poor?

Where to start.....there are many possible causes!

- 1.) Less than optimal early marine ocean rearing conditions – effects of climate change in the Gulf of AK. Less marine feed available for sockeye due to reduced nutrient upwelling.
- 2.) Predator concerns –Previously a high abundance of Pacific cod (PC) in nearshore areas of the CMA where early-marine rearing of Chignik sockeye smolt occurs. PC stocks have recently declined – which can well be considered favorable to early-marine survival of Chignik sockeye smolt.
- 3.) Effects of greater warming conditions in the Black Lake system—inducing higher than normal mortality on early- run fry rearing in BL. (Note: Chignik smolt studies indicate that both early run and late run sockeye out-migrate together; consequently it is most unlikely that differential marine survival occurs between the Chignik early run and late sockeye run; further, BL smolt are typically at or above the growth conditions of the Chignik late run.)
- 4.) Interception of Chignik sockeye in Area M most notably in the Shumagins due to less than adequate oversight & control in that fishery. The Dolgoi fishery is another thorn---- no conservation ties to Chignik although it is clearly recognized that the fishery harvests about 50% Chignik-bound sockeye salmon.

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**Importantly**, likely there is NOT a single vector causing the decline but a combination of all of the preceding.

**The bottom line is that Chignik stocks may very well continue to remain at or just above historic lows, and to improve production it will require strong conservation requirements in terms of ensuring high quality escapements to include a higher female composition in the escapements and less jacks tallied toward the escapement goals.**

**It is also paramount for the Chignik fishery to survive that more controls/safeguards be brought forward that includes limiting the interception of Chignik-bound sockeye salmon in interception fisheries outside of the CMA.**