Status and Trend of Okanogan summer/fall Chinook

Chief Joseph Hatchery
2023 Annual Program Review

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KMQ 1: What is the current status and recent historical trend of the naturally-spawning population in terms of Viable Salmonid Population (VSP) parameters?

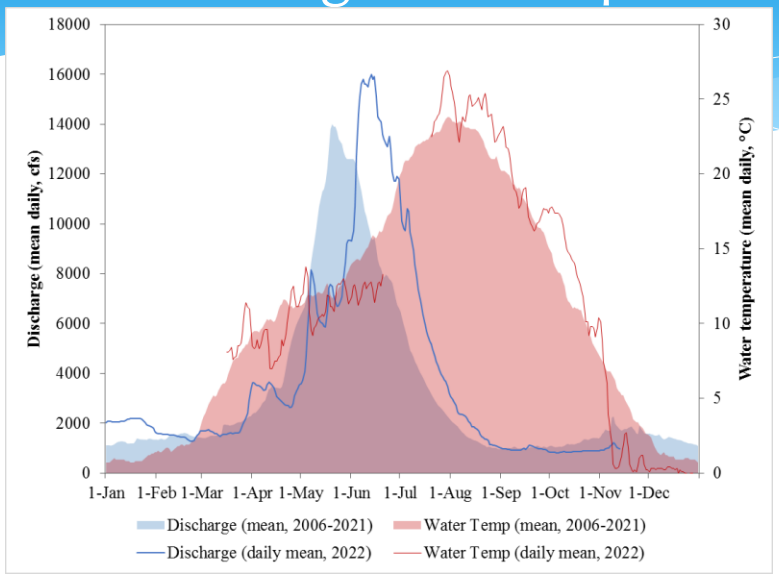
Viable Salmonid Population (VSP)

- Independent of other populations
  (distance, genetics, stray rates, size)

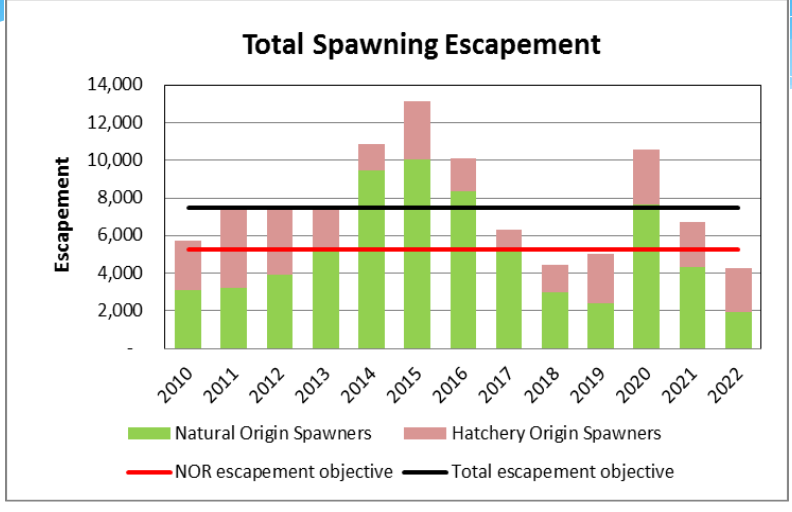
- Negligible risk of extinction
  (less than 5% over 100 yr timeframe)

- Abundance, Productivity, Spatial Structure, Diversity

Water discharge and temperature



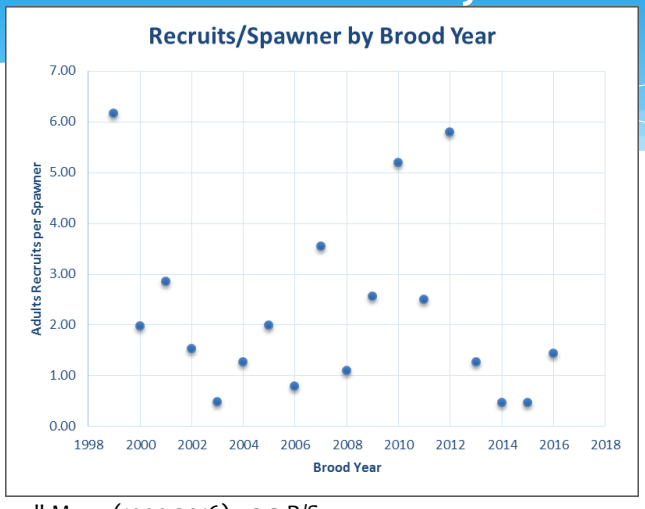
Abundance



5 yr mean
6,624

4,523

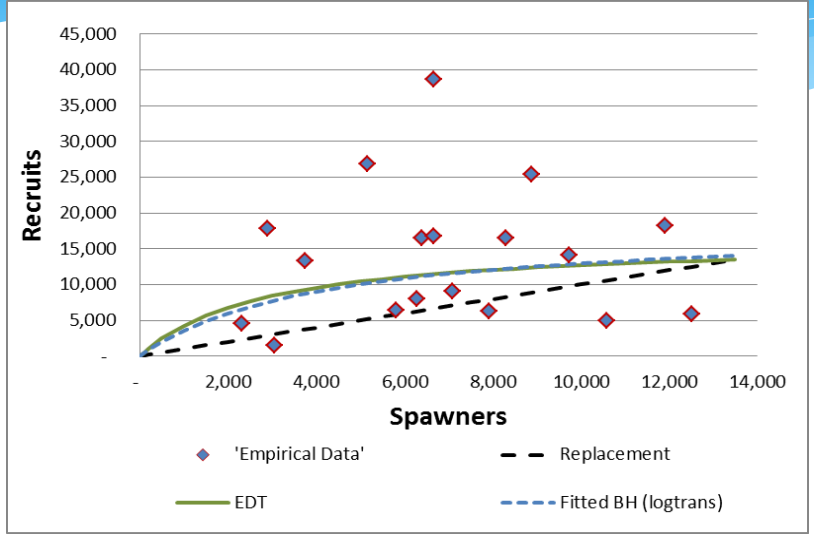
Productivity



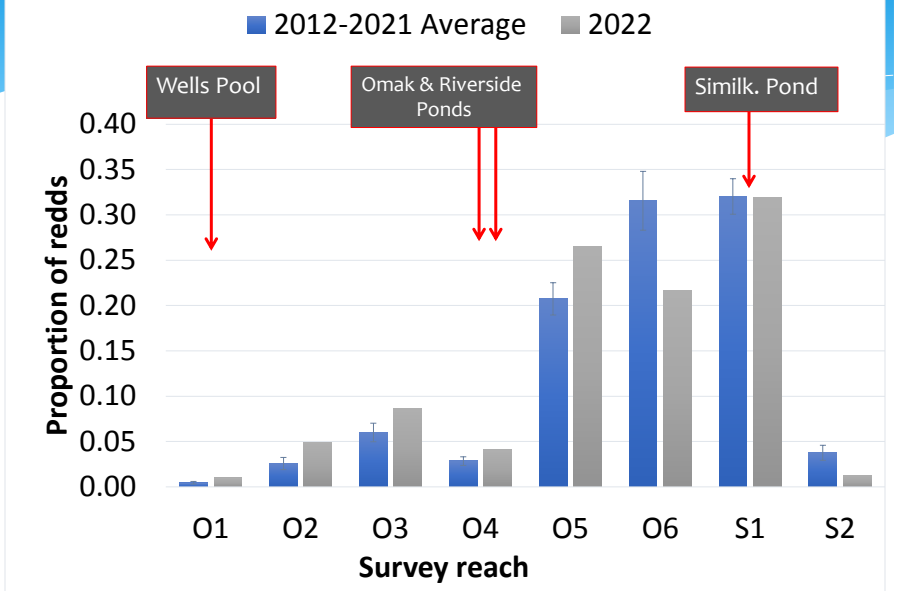
Overall Mean (1999-2016) = 2.3 R/S
10 Yr Mean (2007-2016) = 2.4 R/S
4 of 18 years < 1 R/S

Intrinsic Productivity

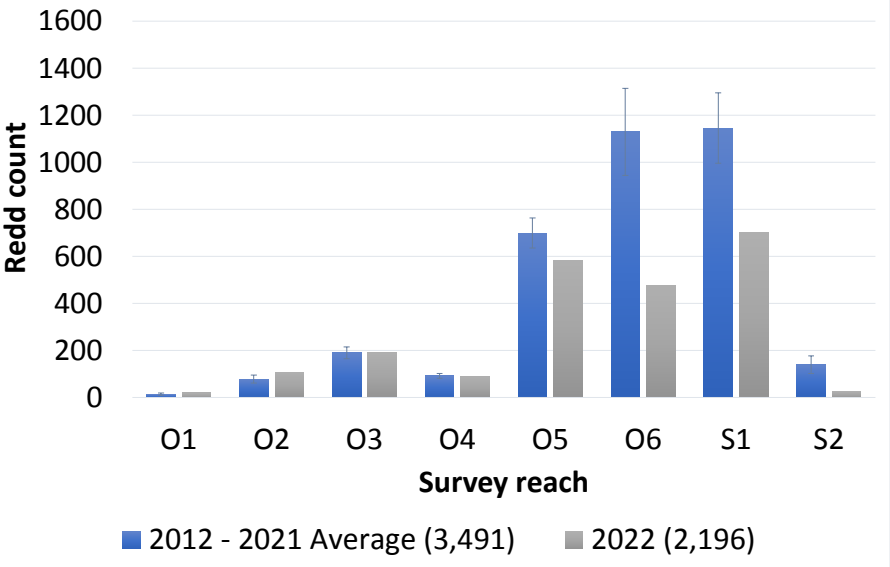
(Beverton-Holt modeled = 4.5) BY1999-2016



Spatial Structure



Spatial Structure



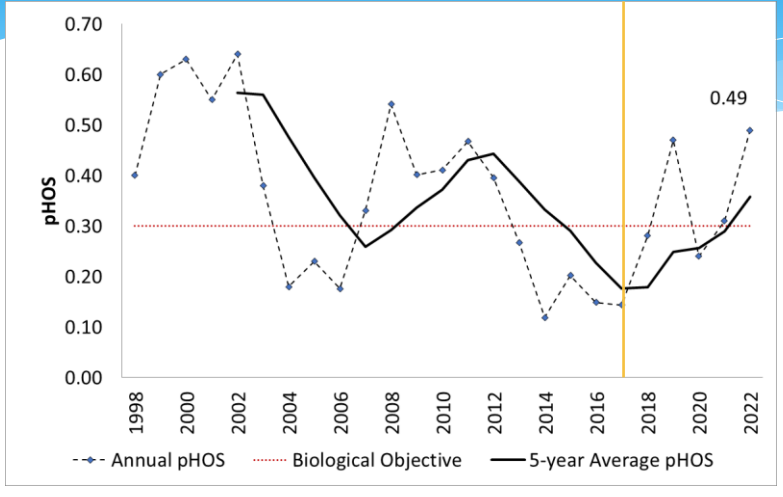
Diversity

Phenotypic (morphology and life history traits)

- Adult run timing
- Spawn timing
- Age structure
- Morphometrics (length, fecundity, others)
- Juvenile rearing strategies
  - Natural yearlings?
  - Transient rearing
  - True subyearling migrants

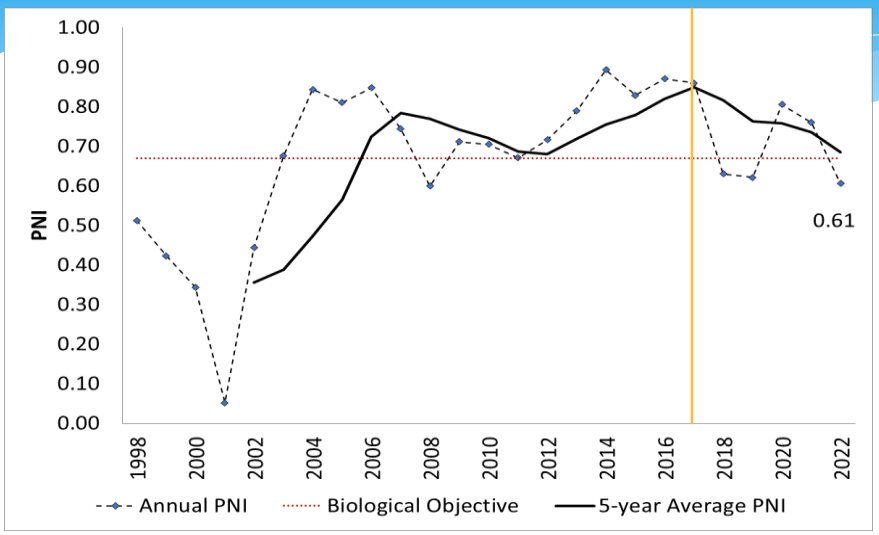
Diversity

Risk factors (spawner composition; pHOS)



Diversity

- Risk factors (spawner composition; PNI)



Conclusions

- Abundance: below the objective for total escapement and natural origin spawners and trending down
- Productivity: a bit lower than our EDT assumptions
- Spatial Structure: see a redistribution of upper basin between S1 and O6 but not unusual, increase in the lower reaches (O2 and O3)
- Diversity: Last year we saw pHOS levels just above the objective and we see this again in 2022 but much higher. PNI is still trending down and now below the objective (5-year avg. trending down again)