

Four Discoveries from Studying Juvenile Yukon River Chinook Salmon

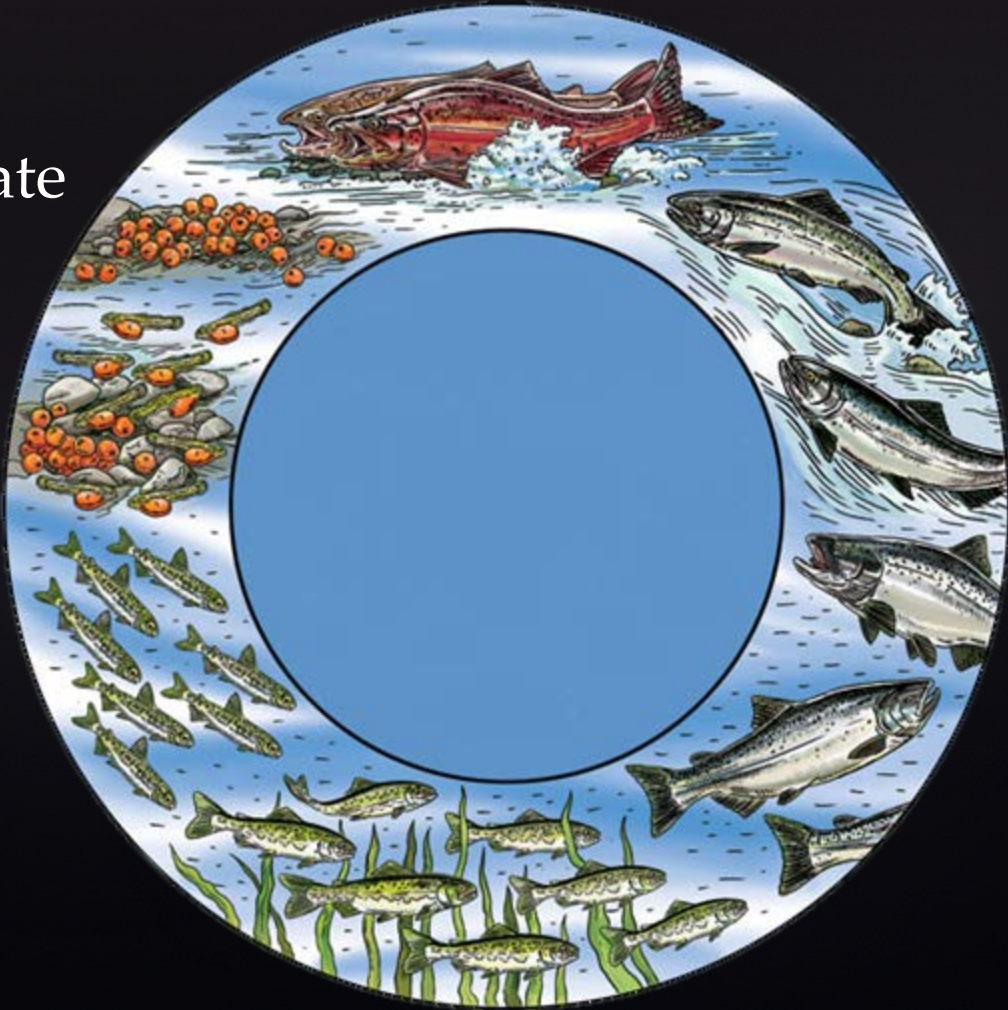
YRDFA Board Meeting February 13-14, 2018
Dr. Katie Howard, ADF&G Fisheries Scientist
Jim Murphy, NOAA-AFSC Fishery Research Biologist

Spawners



Spawners

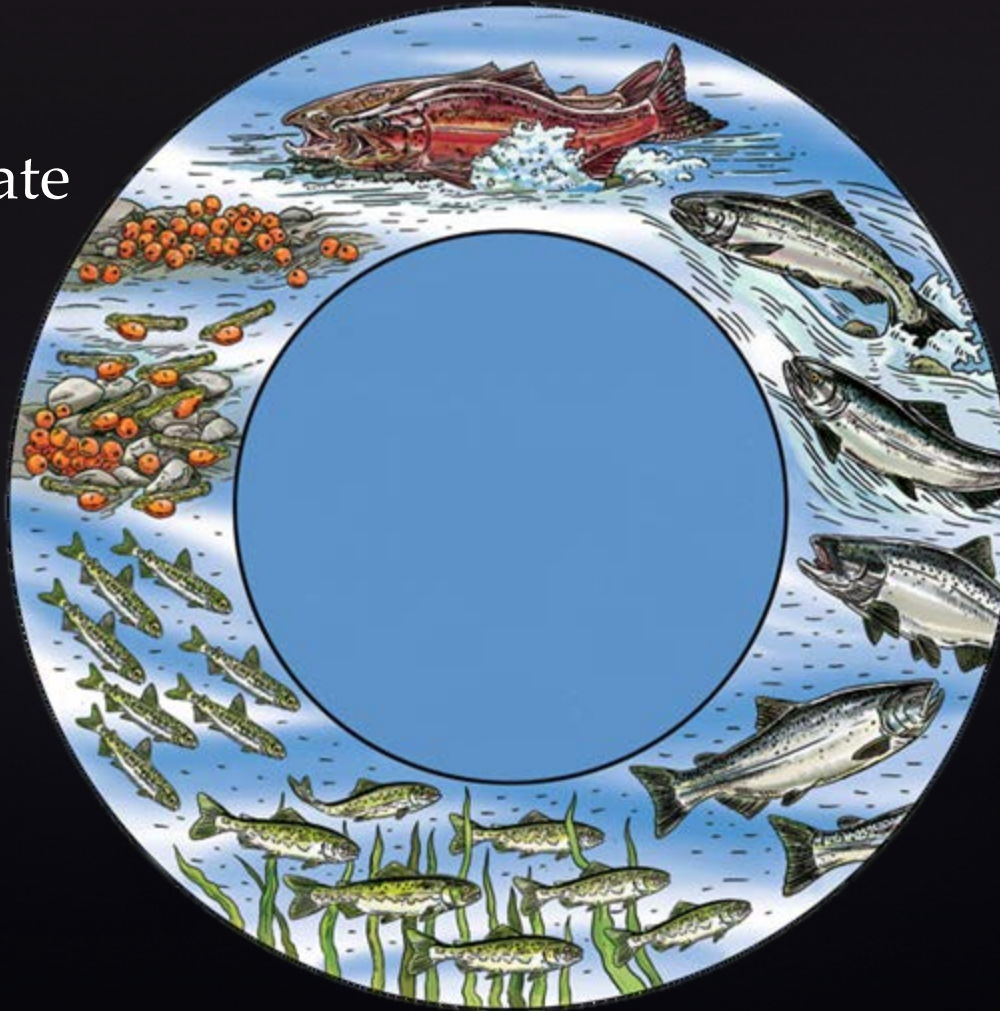
Eggs incubate
1 year



Spawners

Eggs incubate
1 year

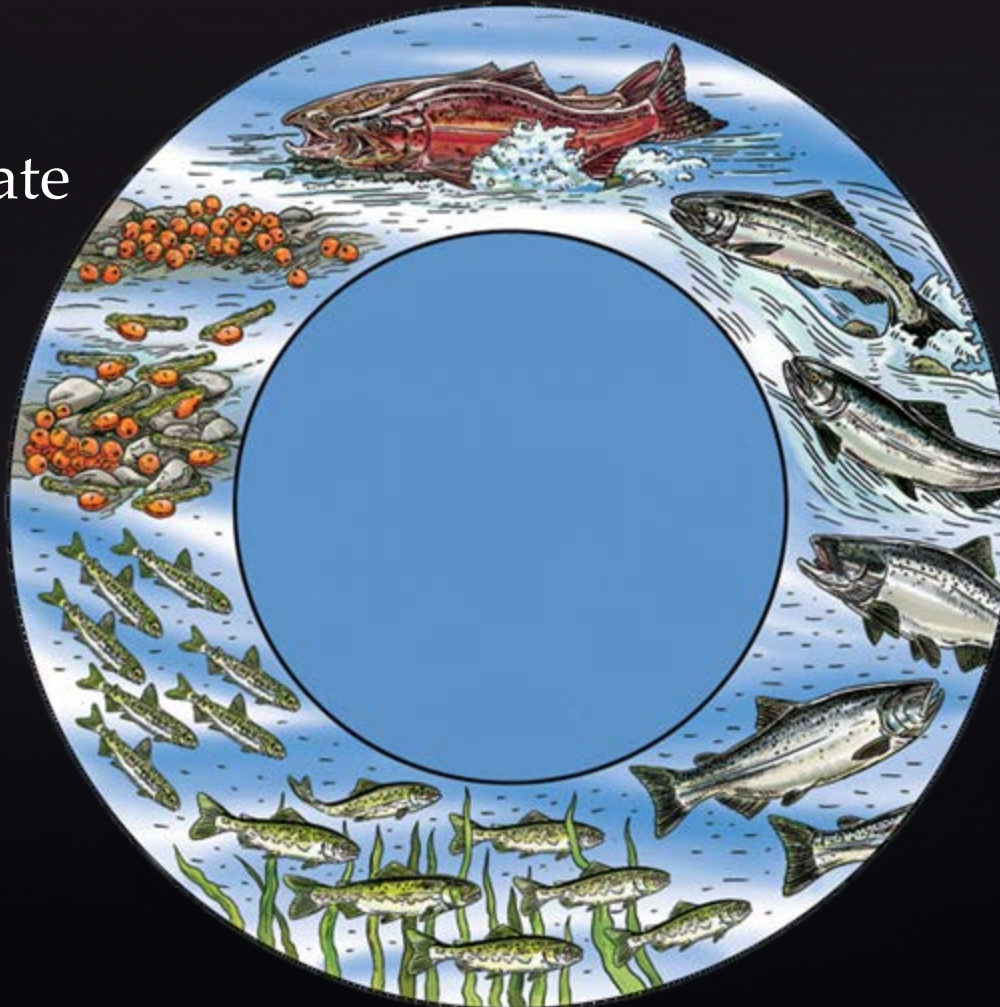
Fry rear in
river 1 year
(Sometimes 0 or 2
years)



Spawners

Eggs incubate
1 year

Fry rear in
river 1 year
(Sometimes 0 or 2
years)

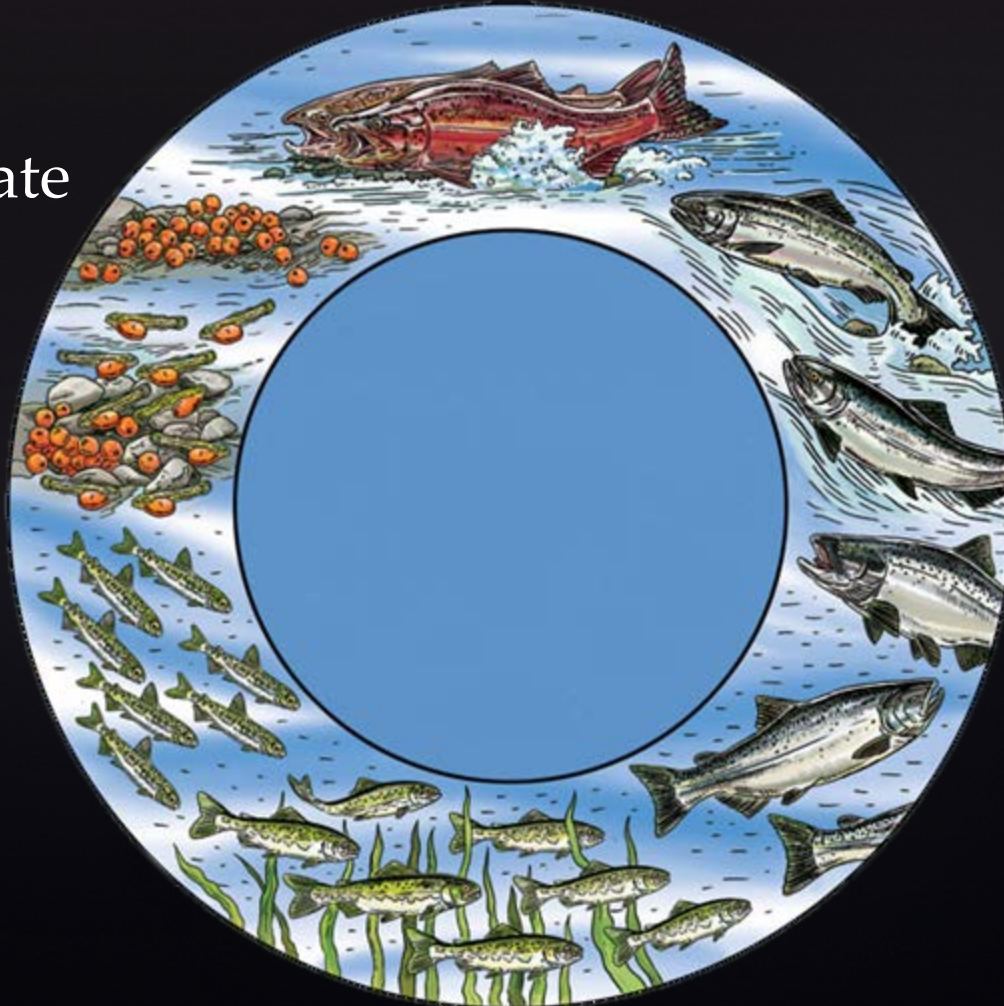


Juveniles
(First year in ocean)

Spawners

Eggs incubate
1 year

Fry rear in
river 1 year
(Sometimes 0 or 2
years)



Immatures
(0-4 year)

Juveniles
(First year in ocean)

Spawners

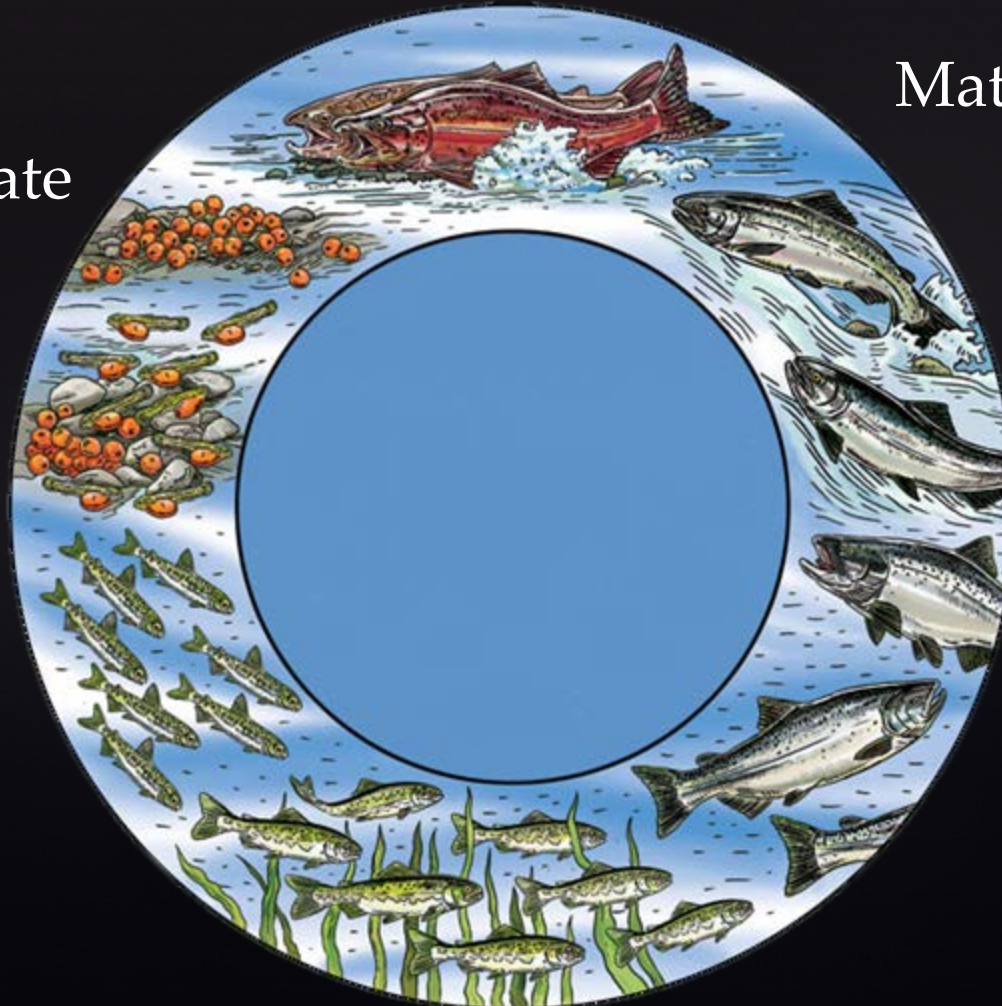
Mature & return to
Yukon

Eggs incubate
1 year

Fry rear in
river 1 year
(Sometimes 0 or 2
years)

Immatures
(0-4 year)

Juveniles
(First year in ocean)

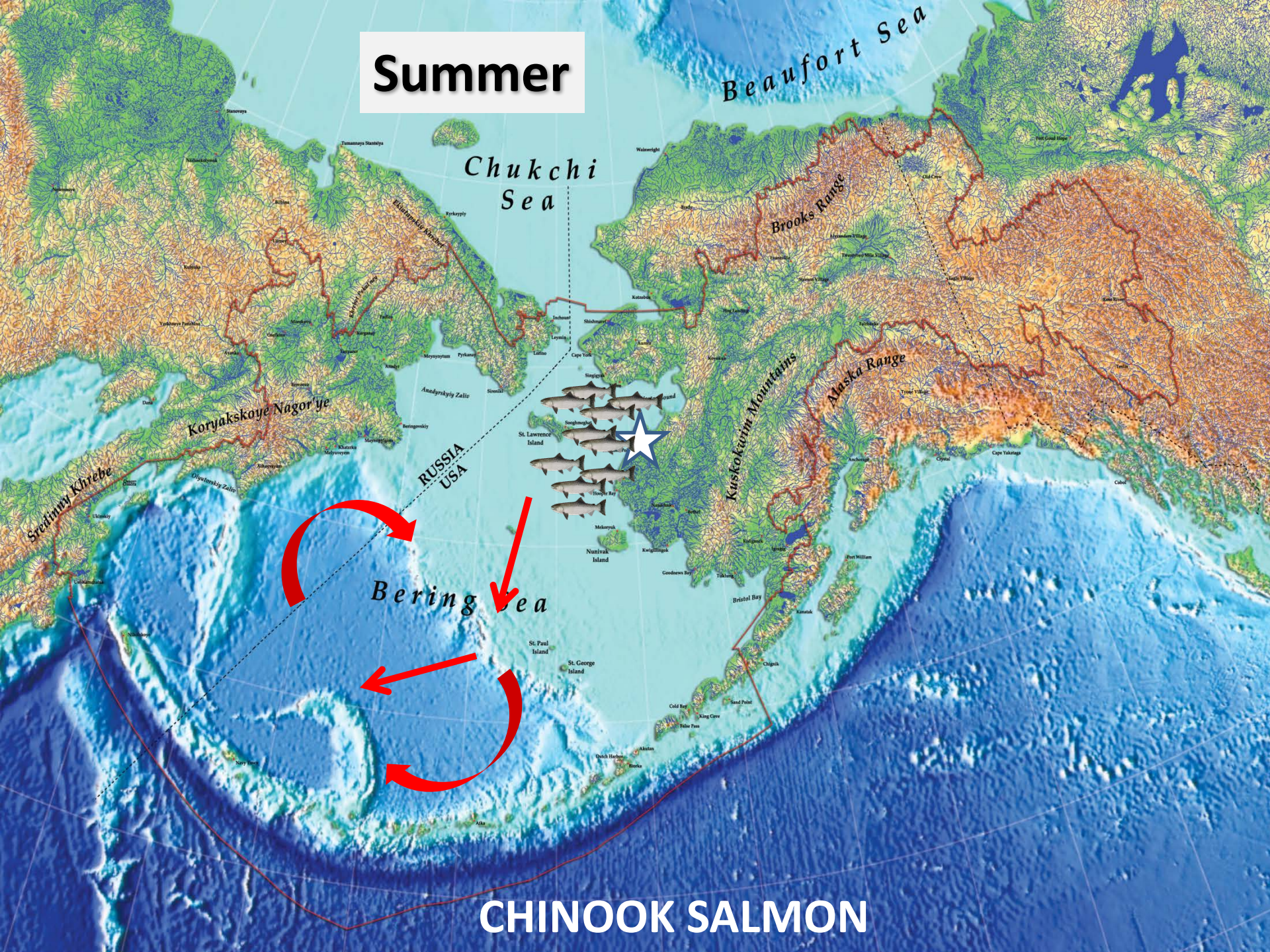


First Summer at Sea



CHINOOK SALMON

Summer



CHINOOK SALMON



Juvenile Salmon Survey

Northern Bering Sea
Focus on Chinook

- 2 year olds
- Survived first summer in ocean
- Caught before migrate into Bering Sea basin/shelf where spend rest of marine life



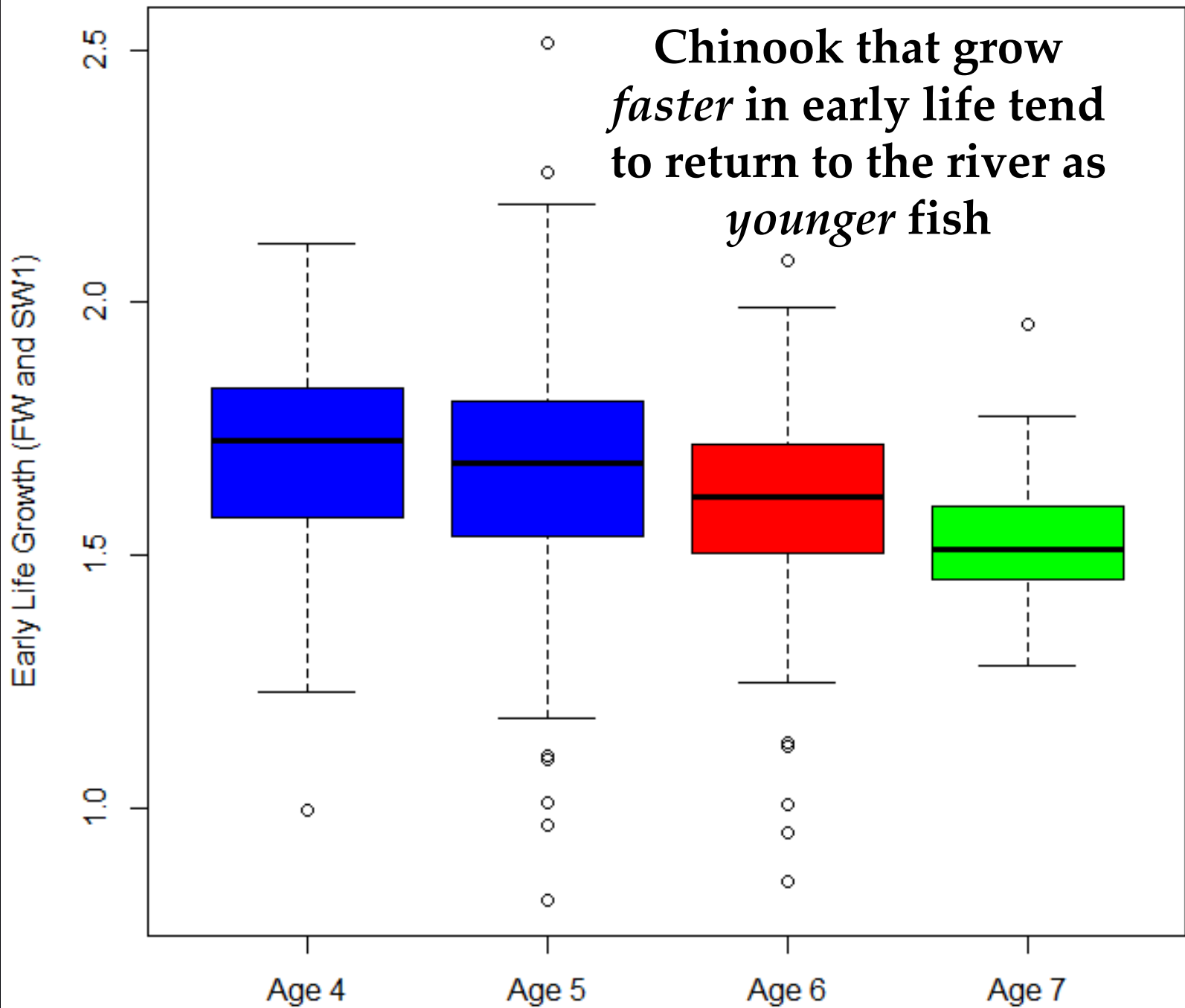


1. Most of what determines good or bad productivity occurs early in life - before the fish's first winter at sea

First Year in Ocean is a Critical Time

2. Early life growth may be important to how old fish are when they return to the river as adults





Spawner Abundance



Juvenile Abundance
(Little kids)

3. More 2 year old juveniles in the ocean = more adults return to the river in the future

First Year in Ocean is a Critical Time

Spawner Abundance



Juvenile Abundance
(Little kids)

4. Can use juvenile Chinook abundance to predict adult run size up to 3 years in the future

First Year in Ocean is a Critical Time

Survival Rates of
Yukon Chinook
from Juvenile to
Adult

How Many
Juvenile Chinook
from Yukon
River (Genetics)

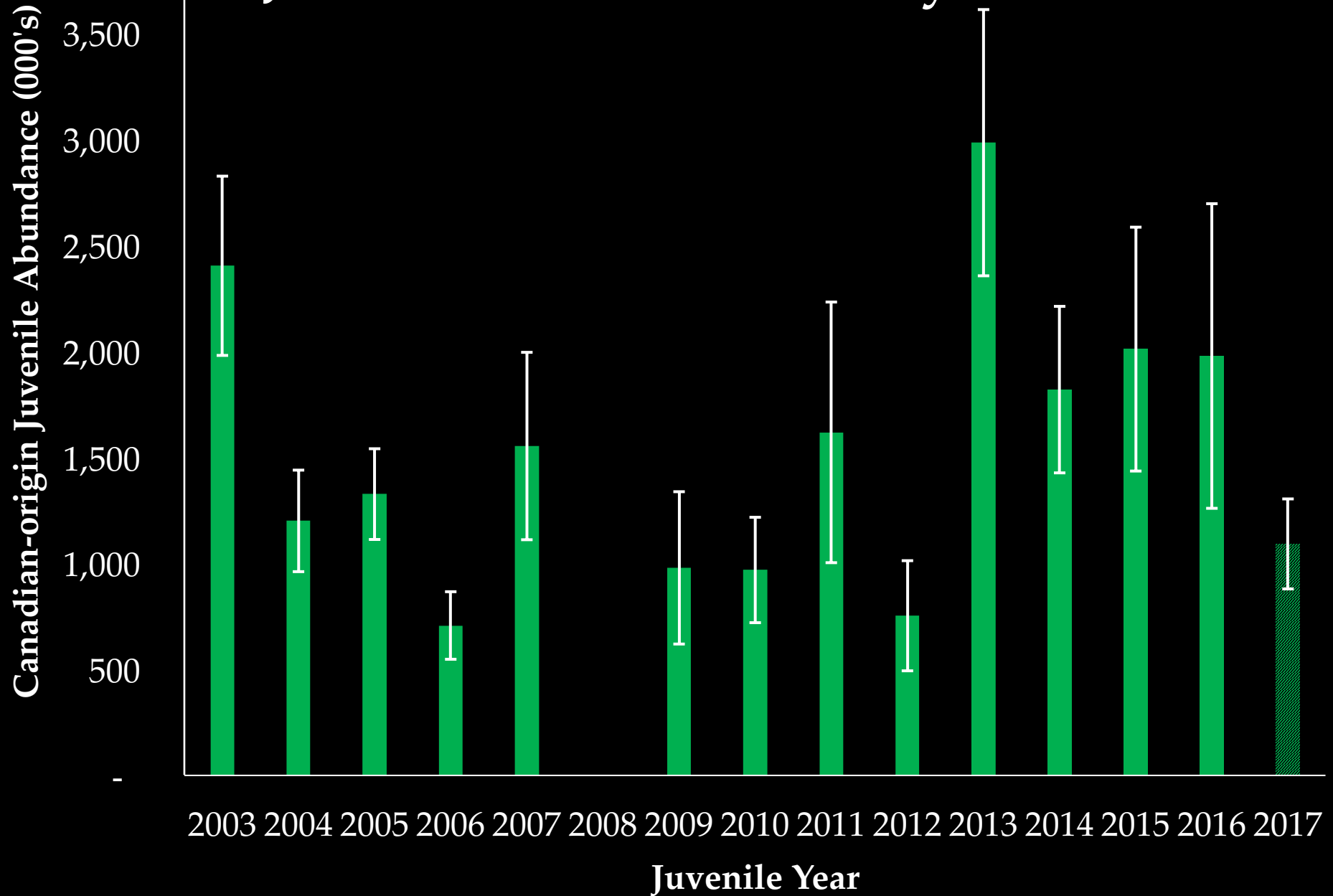
Ages Yukon
Chinook Mature

Numbers of
Juvenile Chinook

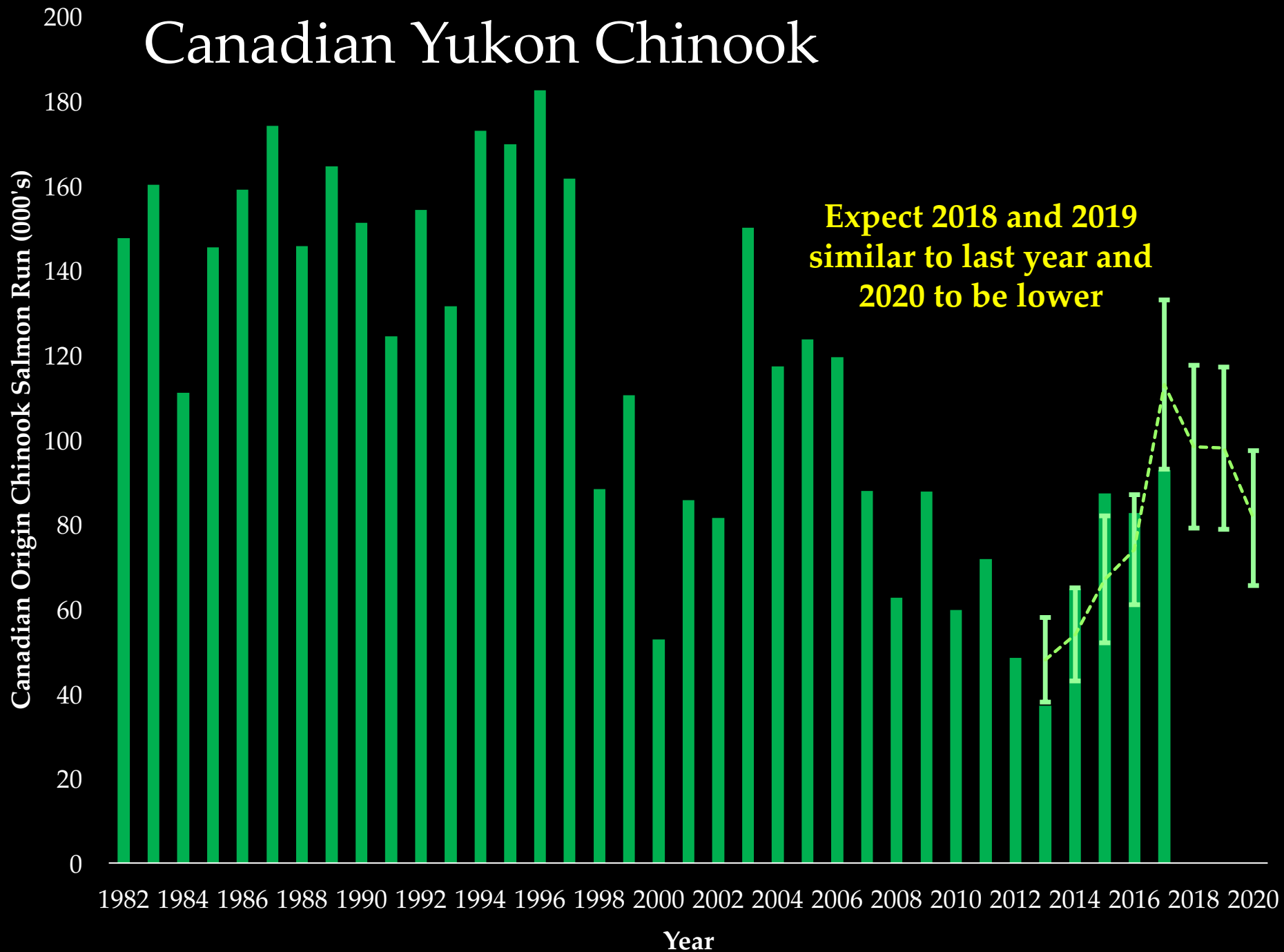


Run Size
Forecasts Next 3
Years

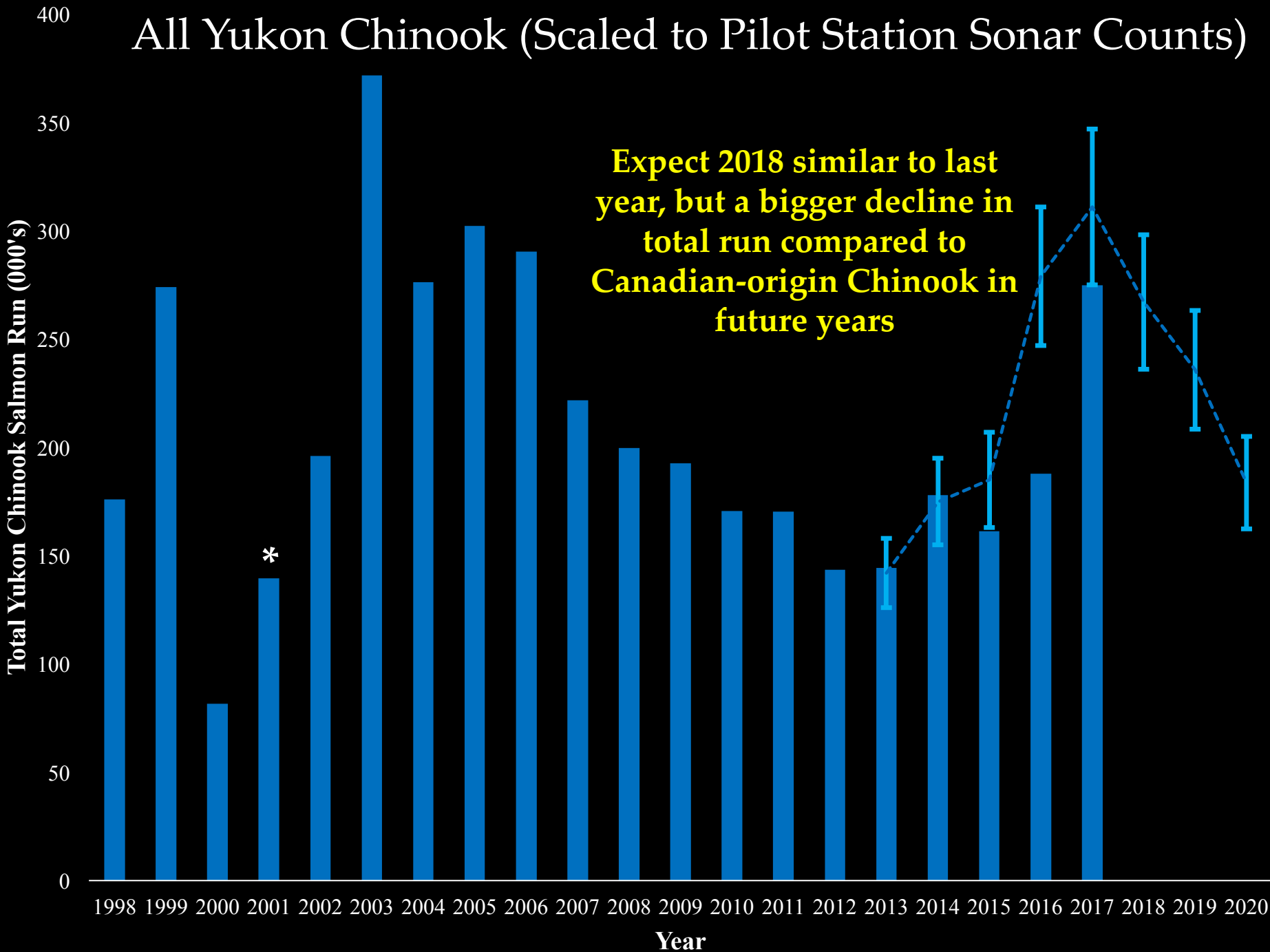
Juvenile Abundance By Year



Canadian Yukon Chinook



All Yukon Chinook (Scaled to Pilot Station Sonar Counts)

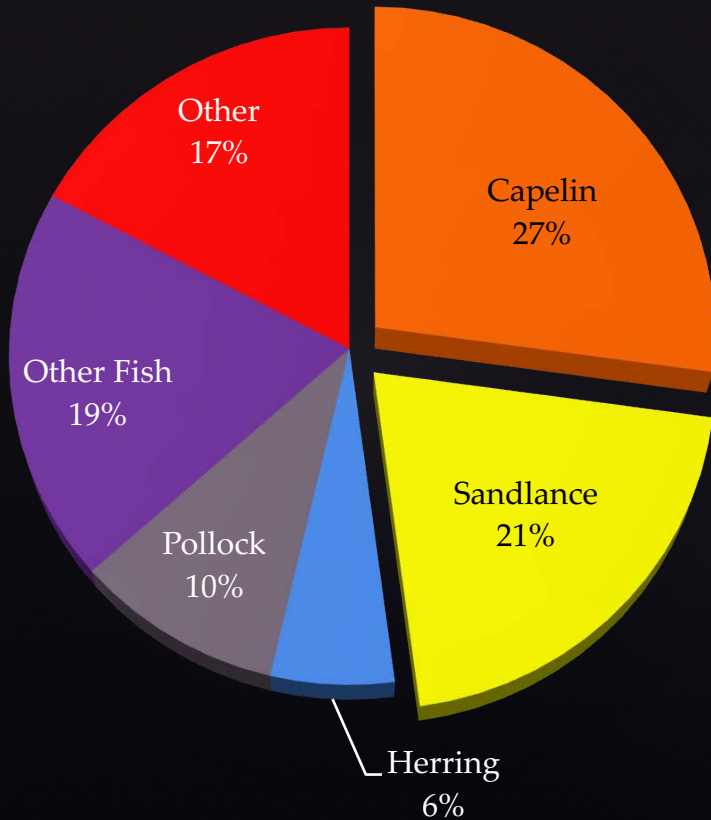




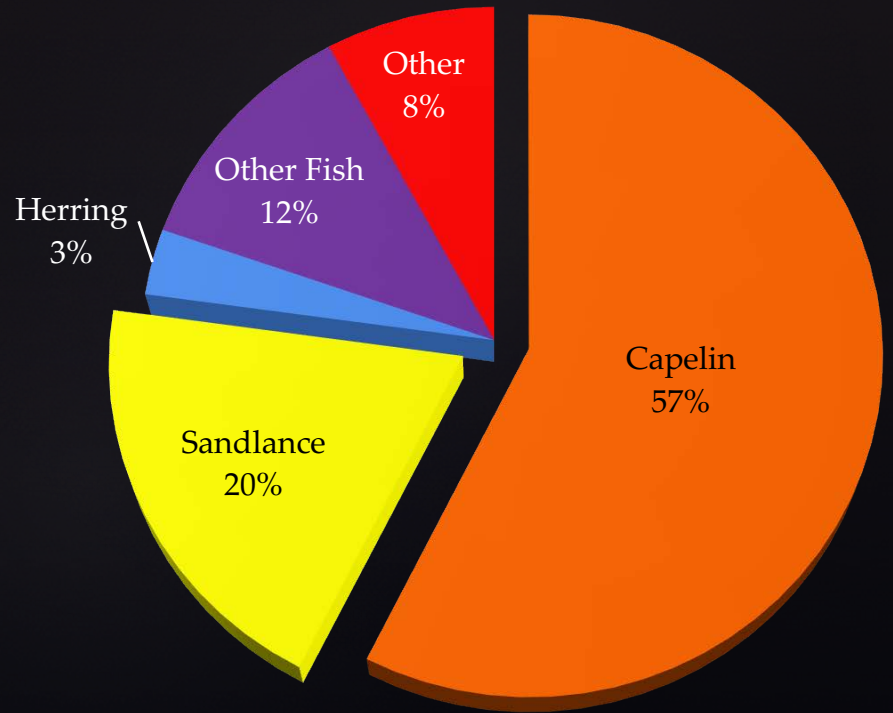
Thank you

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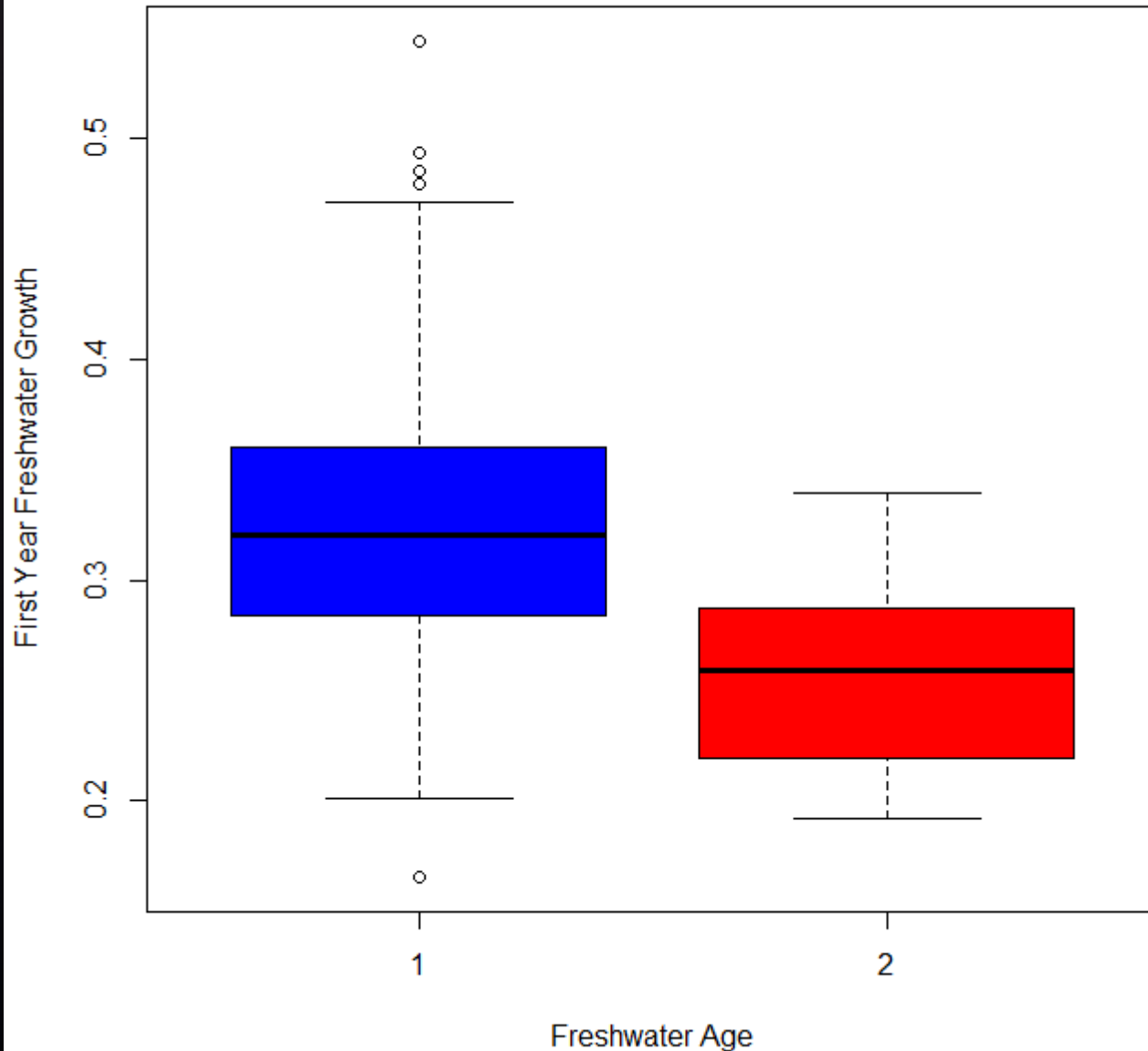
**Warm Water Temperature
(2004-07)**



**Cold Water Temperature
(2009-11)**



Food



- Chinook that grow very *slowly* in freshwater tend to stay an extra year before leaving the river
- Presence of FW2 fish has to do with freshwater conditions (likely temperature)