


Chinook Salmon Age, Sex, and Length Analysis from Selected Escapement Projects on the Yukon River

A detailed illustration of a Chinook salmon, shown in profile facing left. The fish has a greenish-brown back with dark spots, a white belly, and a pinkish-red hue on its side. Its mouth is slightly open, and its scales are finely detailed.

By


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**Office of Subsistence Management
Fisheries Information Services Division**

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Introduction



Objectives

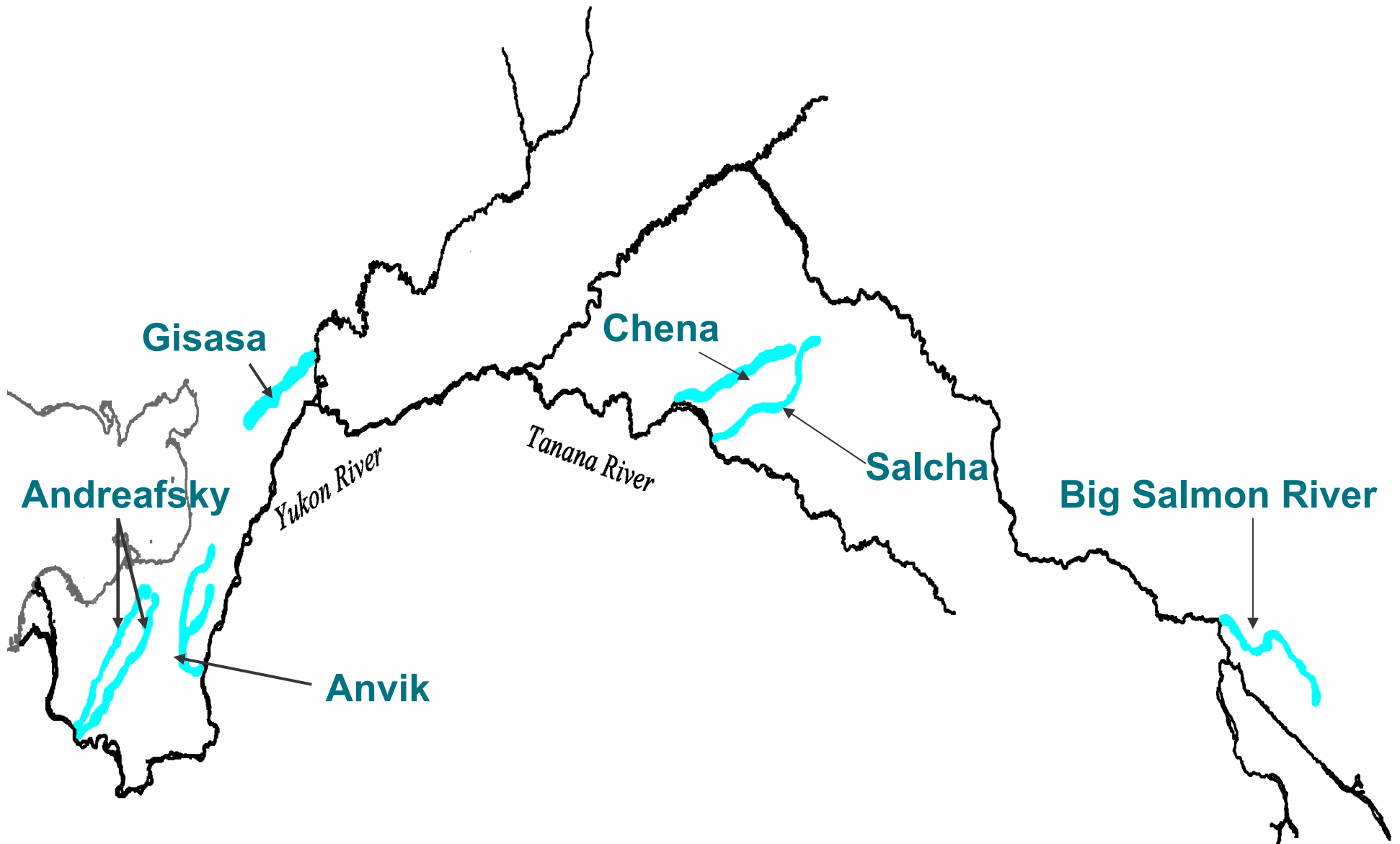
Seven escapement data sets were examined for changes in the following:

- 1. the proportion of female Chinook salmon,**
- 2. the proportion of large (≥ 900 mm) Chinook salmon,**
- 3. the proportion of 6- and 7-year-old Chinook salmon, and**
- 4. the length-at-age of 6- and 7-year-old Chinook salmon.**

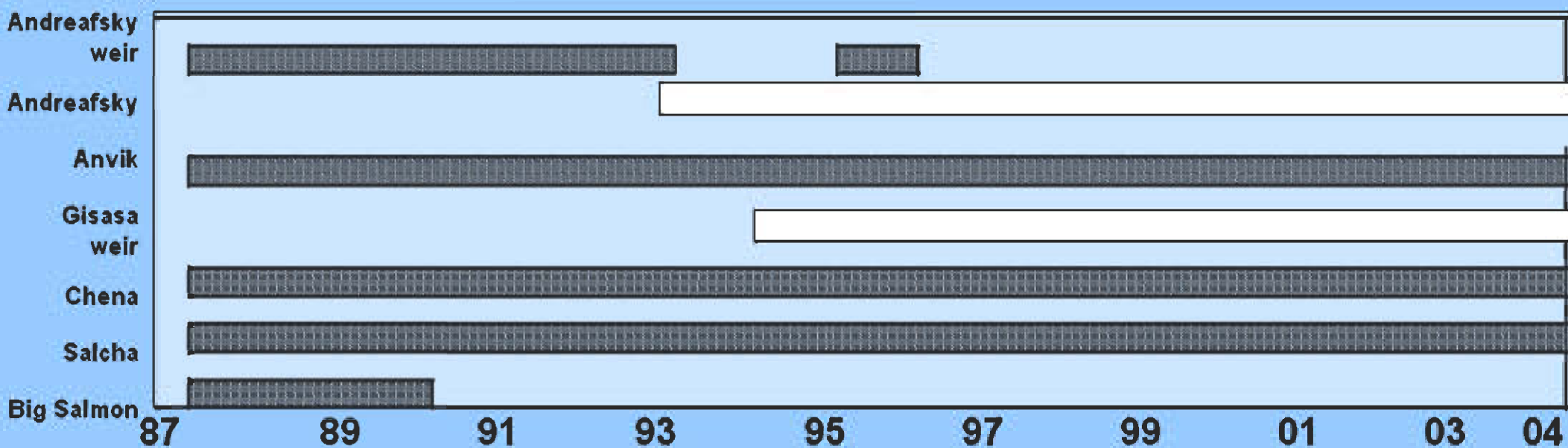
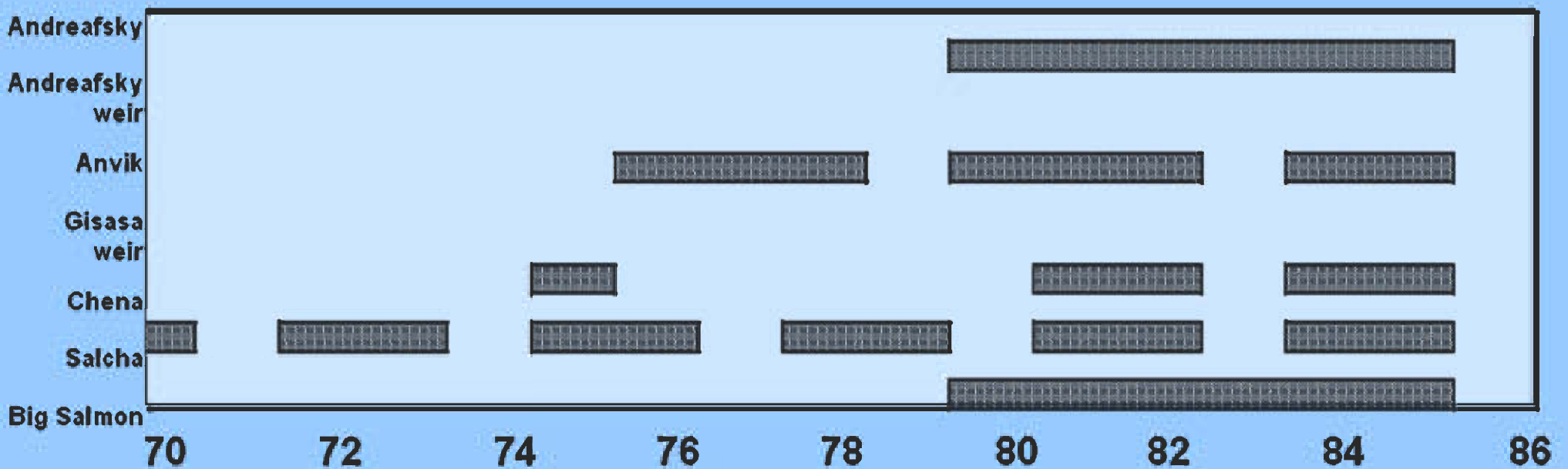


Methods

ASL Data collected from 6 Yukon River tributaries



Chinook salmon escapement data sets



Results



Objective 1



In 4 of the 7 escapement data sets the proportion of female Chinook salmon significantly changed over time.

No Change

- Andreafsky River Carcass Survey
- Andreafsky River Weir
- Gisasa River Weir

Decreased

- Anvik River Carcass Survey
- Chena River Carcass Survey
- Big Salmon River Carcass Survey

Increased

- Salcha River Carcass Survey

Objective 2



In 4 of the 7 escapement data sets the proportion of large Chinook salmon (≥ 900 mm) significantly decreased over time.

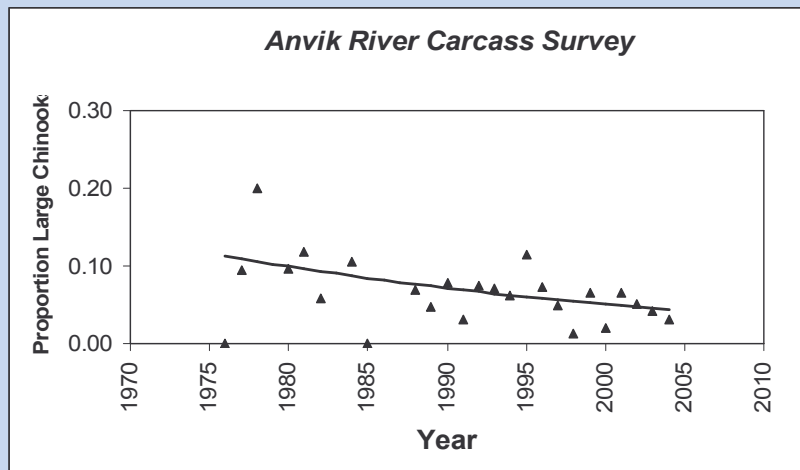
No Change

- Andreafsky River Carcass Survey
- Andreafsky River Weir
- Gisasa River Weir

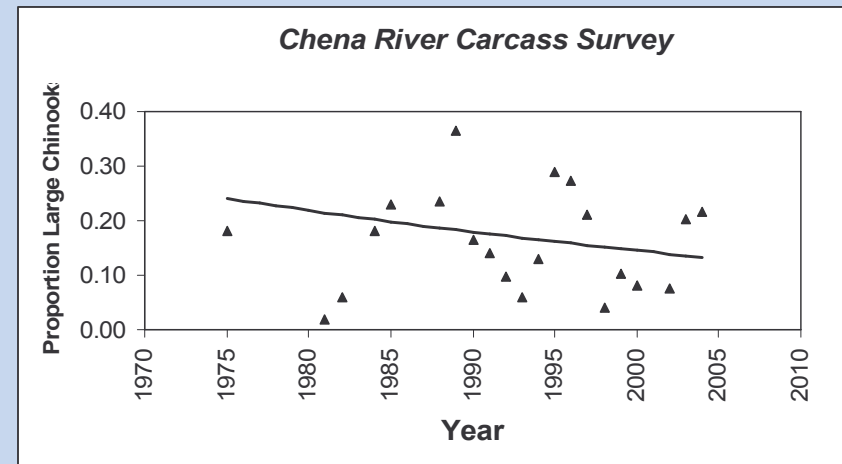
Decreased

- Anvik River Carcass Survey
- Chena River Carcass Survey
- Salcha River Carcass Survey
- Big Salmon River Carcass Survey

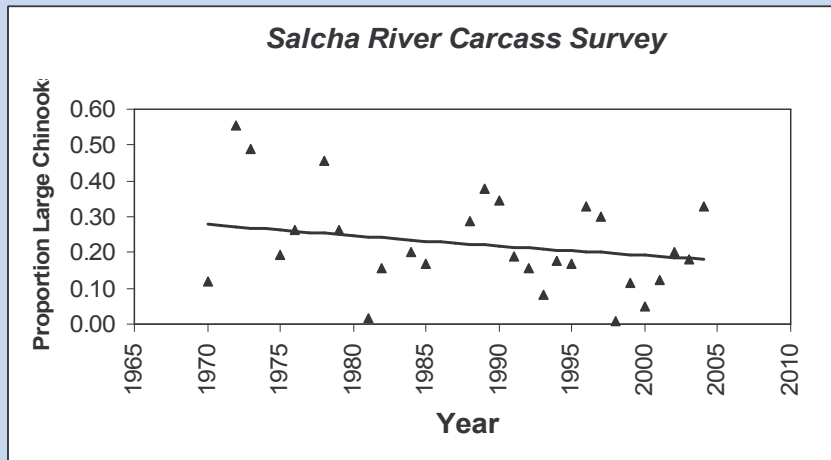
Rivers showing a decreasing trend in the proportion of large (≥ 900 mm) Chinook salmon over time.



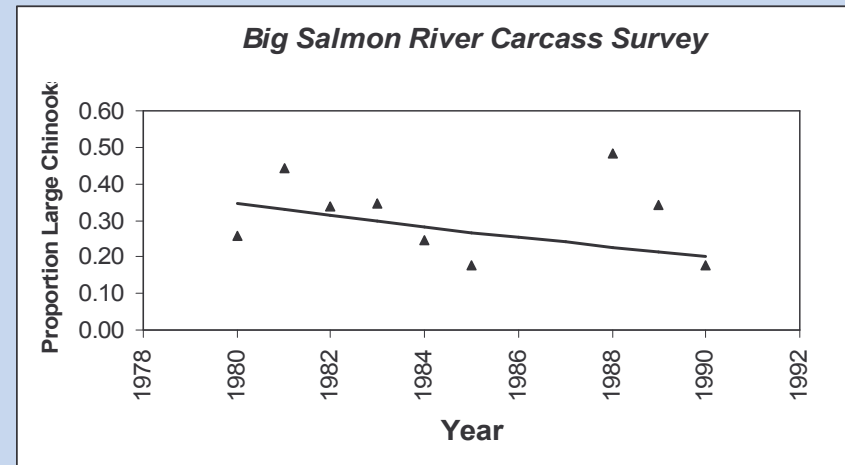
The proportion of large Chinook salmon sampled decreased 4% per year.



The proportion of large Chinook salmon sampled decreased 2% per year.



The proportion of large Chinook salmon sampled decreased 2% per year.



The proportion of large Chinook salmon sampled decreased 7% per year.

Objective 3



In **3** of the **7** escapement data sets the proportion of 6-year-old Chinook salmon significantly changed over time.

No Change

- Andreafsky River Carcass Survey
- Andreafsky River Weir
- Gisasa River Weir
- Chena River Carcass Survey

Decreased

- Anvik River Carcass Survey
- Big Salmon River Carcass Survey

Increased

- Salcha River Carcass Survey

Objective 3



In **2** of the **7** escapement data sets the proportion of 7-year-old Chinook salmon significantly changed over time.

No Change

- Andreafsky River Carcass Survey
- Andreafsky River Weir
- Anvik River Carcass Survey
- Gisasa River Weir
- Salcha River Carcass Survey

Decreased

- Chena River Carcass Survey

Increased

- Big Salmon River Carcass Survey

Objective 4



10 of the **27** escapement data sets showed significant changes in the length-at-age for 6- and 7-year-old male and female Chinook Salmon.

	No Change	Decrease	Increase
Andreafsky River Carcass Survey	6-year male 7-year male / 7-year female	6-year female	
Andreafsky River Weir	6-year male / 6-year female 7-year female		
Anvik River Carcass Survey	6-year male 7-year female / 7-year male	6-year female	
Gisasa River Weir	6-year male / 6-year female 7-year male / 7-year female		
Chena River Carcass Survey	6-year male 7-year male / 7-year female		6-year female
Salcha River Carcass Survey	6-year female	6-year female 7-year male / 7-year female	
Big Salmon River Carcass Survey		6-year male / 6-year female 7-year male / 7-year female	

*Andreafsky River Weir 7-year-old males were not examined due to a small sample size.

Conclusions



1. Has the proportion of female Chinook salmon declined over time in the Yukon River drainage?

No, results showed no discernible river wide trend in the proportion of females in the spawning escapements.

2. Has the proportion of large (≥ 900 mm) spawning Chinook salmon declined over time in the Yukon River drainage?

Yes, results showed a decrease in the proportion of large Chinook salmon in the Anvik, Chena, Salcha, and Big Salmon Rivers.

3. Have the proportions of 6- and 7-year-old spawning Chinook salmon declined over time in the Yukon River drainage ?

No, results showed no discernible river wide trend in the proportion of 6-year-old and 7-year-old Chinook salmon in the spawning escapements.

4. Has the length-at-age of 6- and 7-year-old-male and female Chinook salmon declined over time in the Yukon River drainage ?

It is hard to conclude that the length-at-age of older spawning Chinook salmon has consistently declined river wide, because fewer than half of the results showed a significant decline.

Scope of Analysis

- While ASL data analyzed are thought to represent Chinook salmon populations from several spawning areas, these data do not represent the total run.
- Without pre-fishery data on ASL composition of Yukon Chinook salmon it is not possible to determine if any of the trends found were due to selectivity of the gill-net fishery.
- Changing environmental conditions could have caused these trends or confounded our ability to discern selectivity effects of the fishery.



Recommendations

Recommendations

- Reinststate collection of spawning escapement data from main Yukon River spawning tributaries located in Canada.
- Continue long term monitoring of age, sex, and length composition for Chinook salmon.
- Document the age, sex and length of Chinook salmon caught in the subsistence harvests and the gear-type fished.



Thank You