Northern Cook Inlet Chinook Salmon Marine Harvest Stock Composition Study

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Sport Fish

Background photo courtesy of B. Jones ADF&G

Synopsis

- Background- mixed stock fisheries in NCI
- Objectives
- Study design- stratification, genetic reporting groups, sampling, analysis
- Preliminary results
- Acknowledgements and questions

Purpose

- To estimate the stock-specific harvests of Chinook salmon from the Tyonek subsistence fishery and the Northern District commercial set gillnet fishery to improve understanding of stock dynamics in Northern Cook Inlet (NCI)

Photo courtesy http://www.adfg.alaska.gov/index.cfm?adfg=ByAreaSubsistenceCookInlet.fishingInfo

Background

- Mixed stock fisheries in NCI including large sport fisheries (eg. Deshka, Little Su) and several stocks of concern (eg. Alexander, Sheep, and Goose creeks)

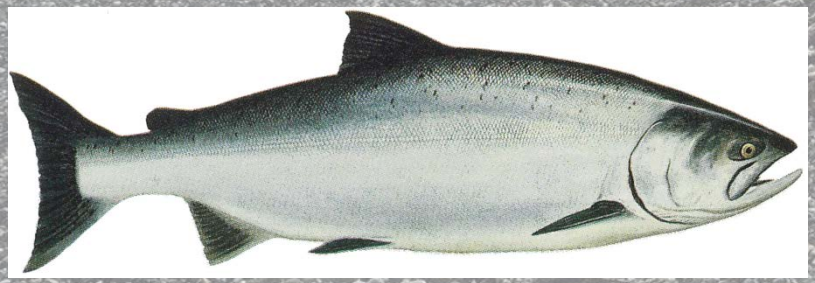
Photo courtesy www.circac.orgwp-contentuploadsCook-Inlet-satellite-image

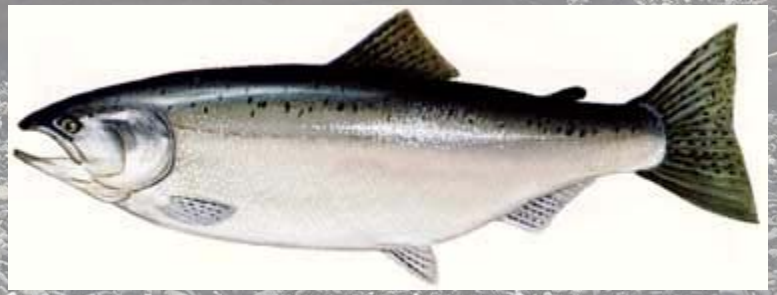
Study Objectives

1) Estimate the proportion of Chinook salmon harvested by the Tyonek subsistence fishery and the UCI Northern District set gillnet commercial fishery by reporting group.
2) Estimate the age composition of these Chinook salmon.

Secondary Objectives

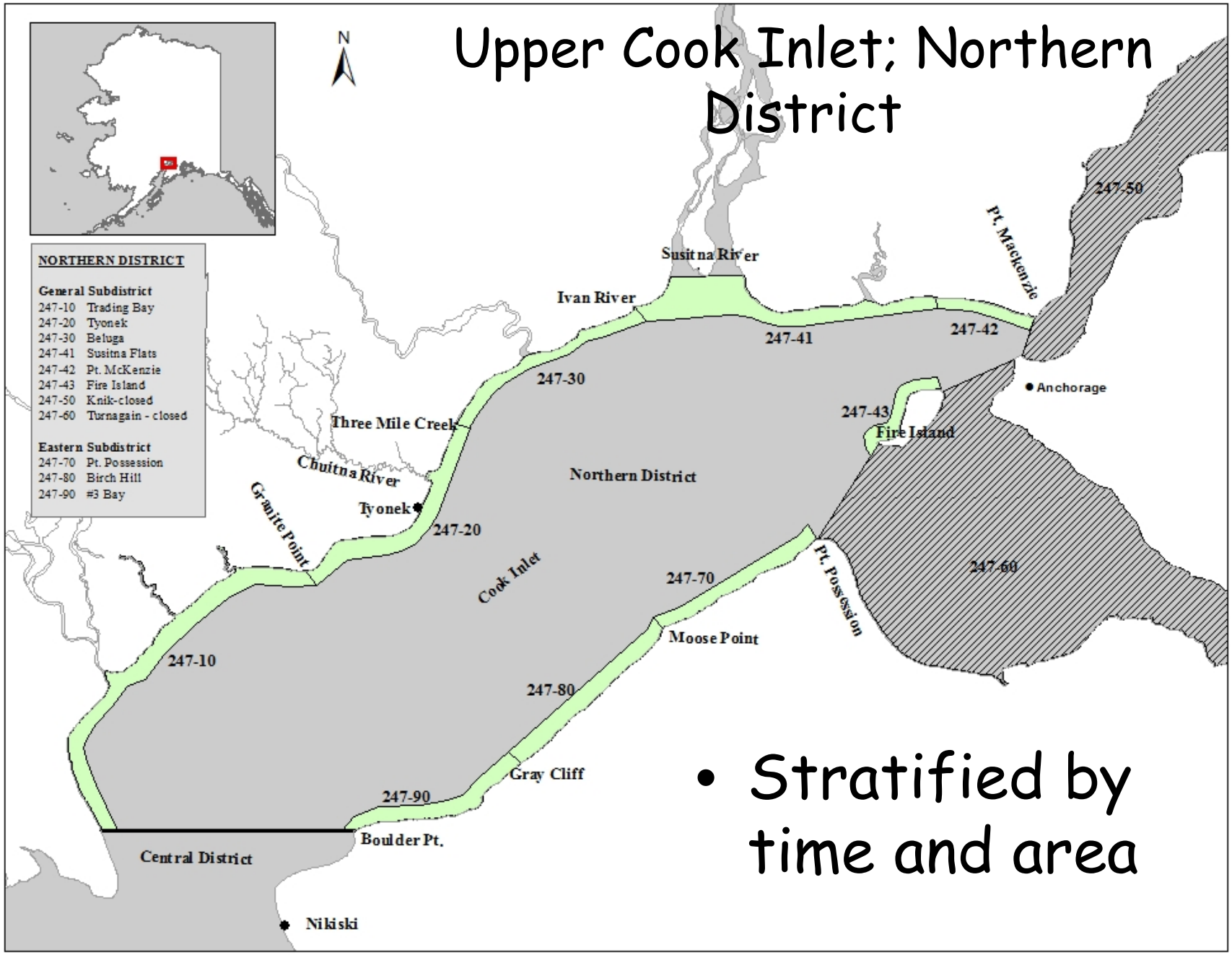
1) Sample 70% of the commercial harvest for tissue, coded-wire tags (CWTs), age, sex, and length.





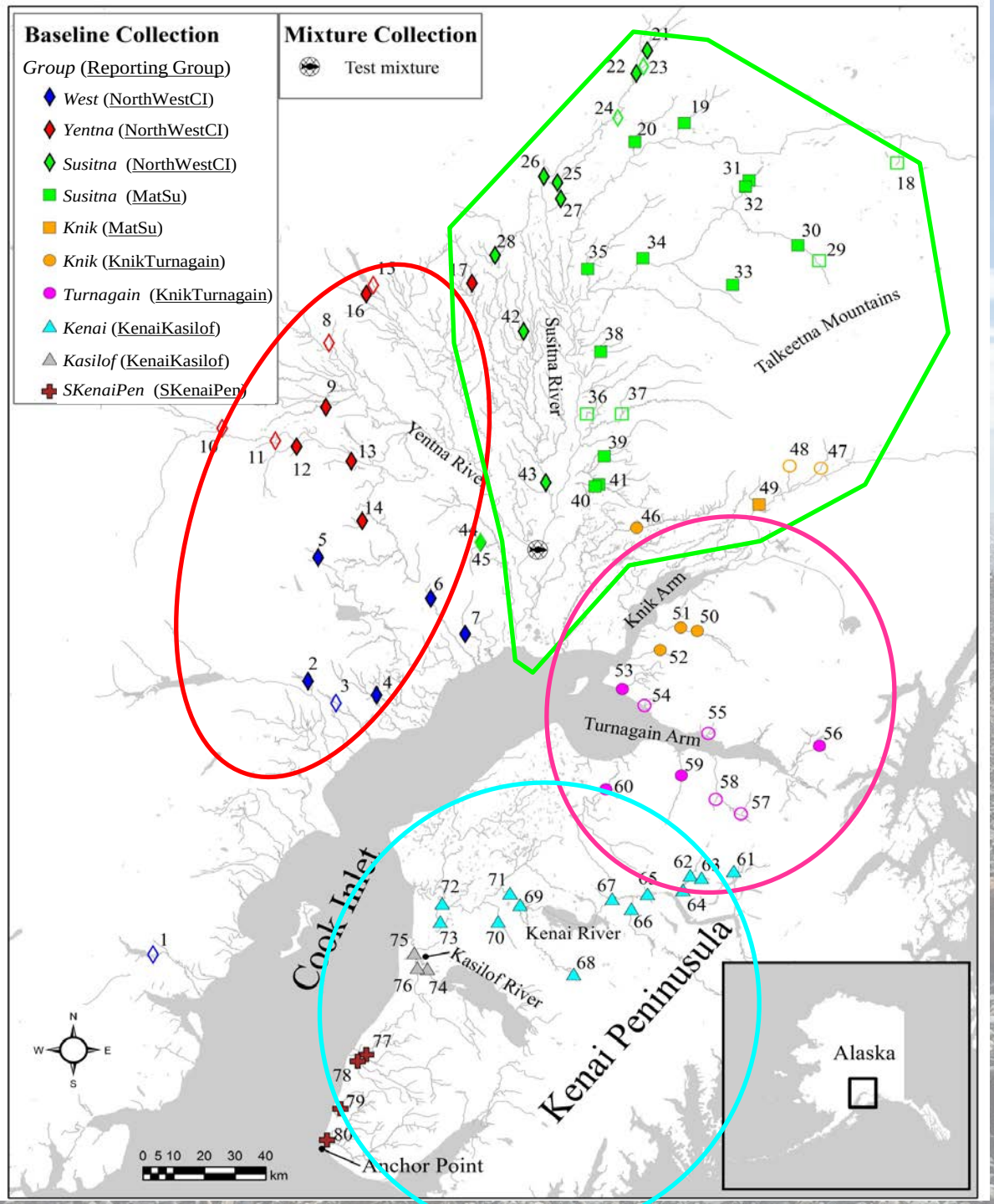
Images http://www.landbigfish.com/images/fish/LBF_Chinook_Salmon.jpg; http://www.psmfc.org/chinookedr/images/oceanphase_chinook.jpg

Upper Cook Inlet; Northern District



- Stratified by time and area

Genetic Baseline and Reporting Groups



- *UCI Northwest*
- *Susitna-Matanuska*
- *Knik-Turnagain*
- *Kenai Peninsula*

Fig 1. Barclay and Habicht 2015

Data Collection

- Sample size target of 70% of the Commercial Catch
- Maximum effort!

Photos courtesy of N. Logelin ADF&G

Sampling Locations

- Processors
- Small buying stations

favco®

Boat launches

Set net sites Tyonek

Photos courtesy of C Jalbert and B. Jones ADF&G

Fish sampled for scales, Sex, Length, genetics, CWTs

Photo courtesy of C Jalbert ADF&G

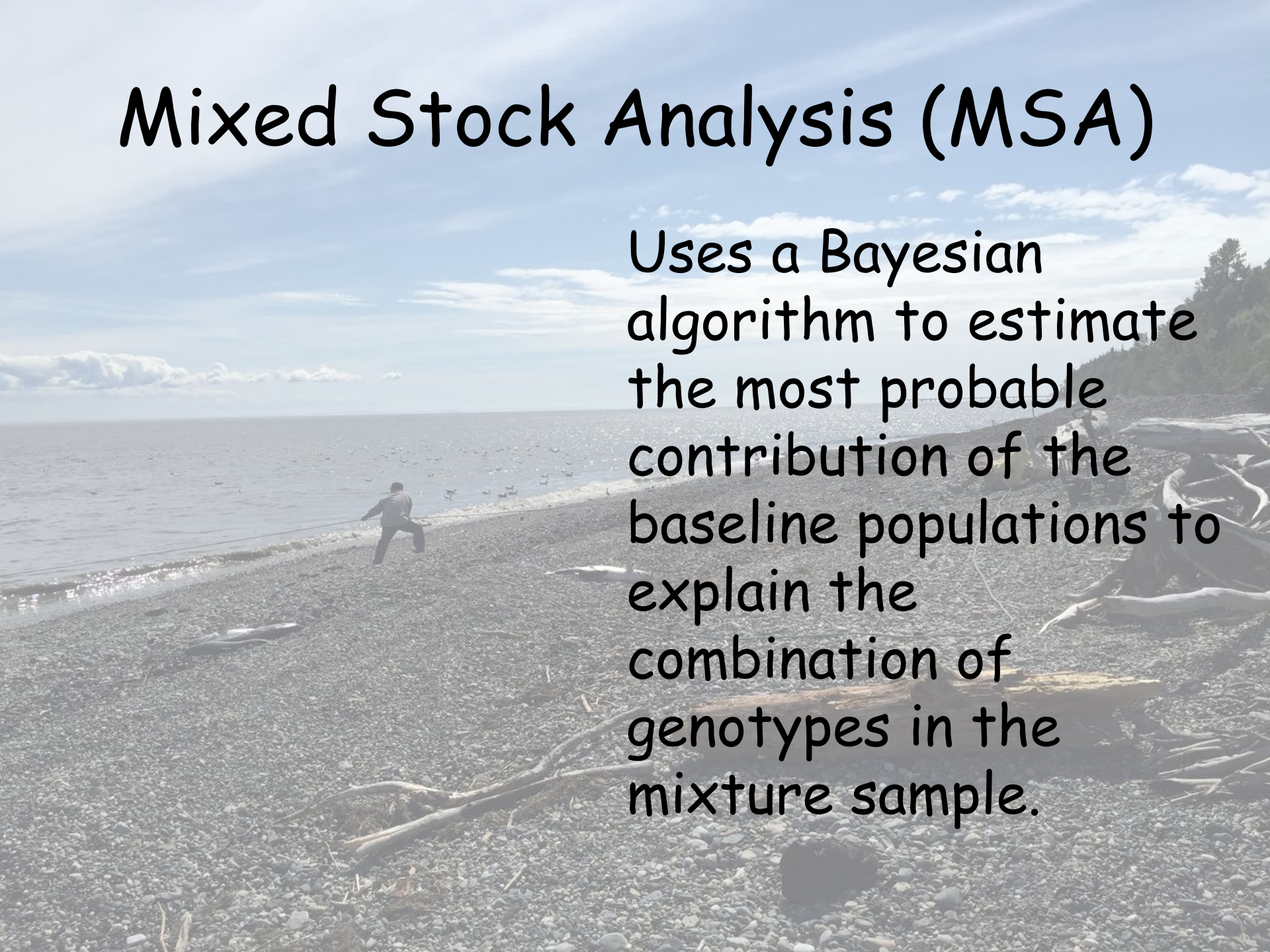
- Scales are pressed in Acetate
- Read with a 10x microfiche

Photos courtesy of C Jalbert ADF&G

Laboratory Analysis

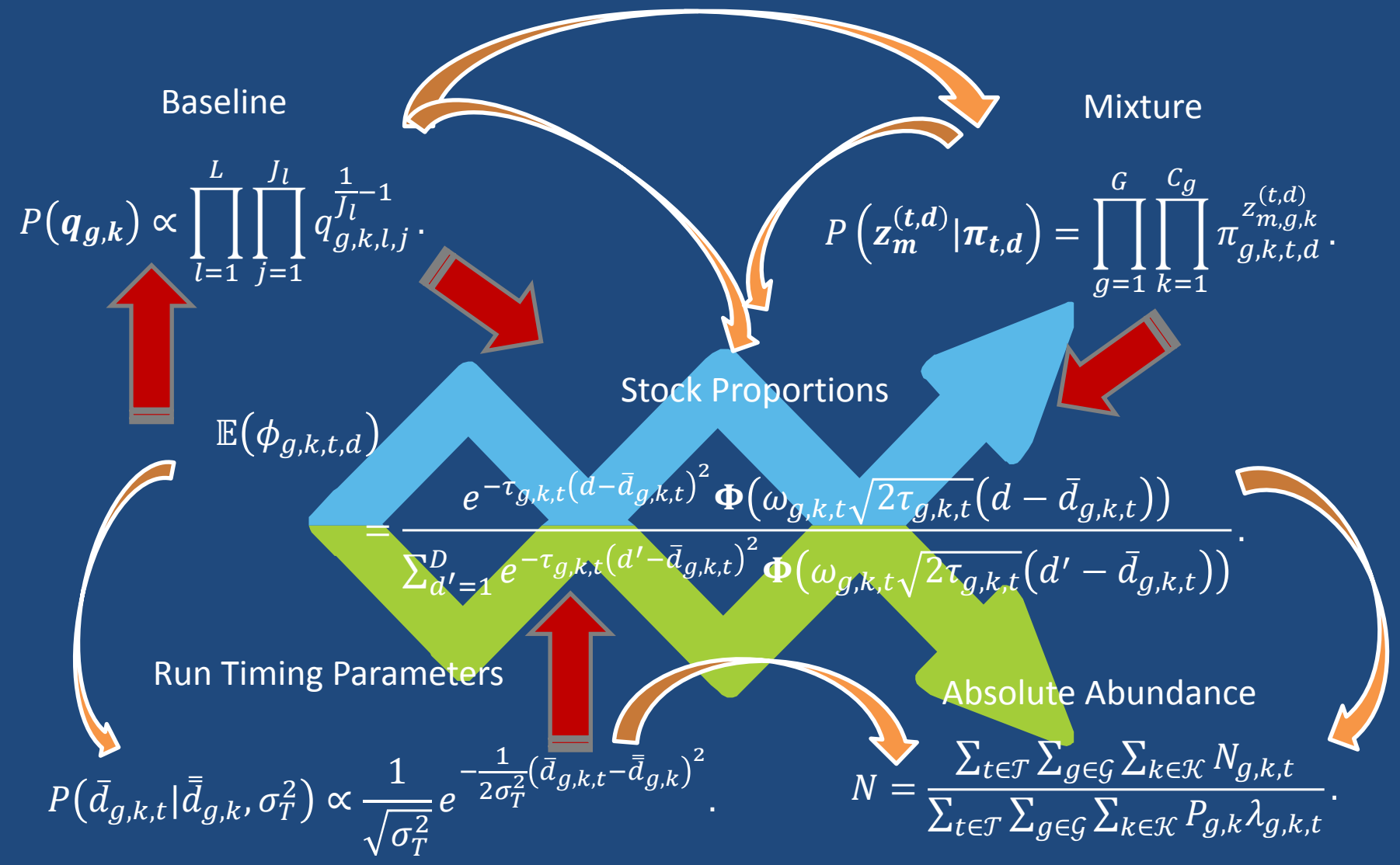
- Samples sent to GCL with paired ASL and harvest date and area data
- DNA extracted from tissue samples and genotyped for 48 SNP markers specific to Cook Inlet Chinook

Mixed Stock Analysis (MSA)



Uses a Bayesian algorithm to estimate the most probable contribution of the baseline populations to explain the combination of genotypes in the mixture sample.

Detailed quantitative methods



Slide courtesy of K. Shedd ADF&G

Timeline

- November 2015 Scales aged, ASL composition estimates completed
- June 2016 Complete third season of field collections
- July 2016 DNA extractions from 2014-2016 genotyped by GCL
- August 2016 MSA completed
- September 2016 Harvest estimates completed by temporal, geographic strata and reporting group
- October – November 2016 Draft report

Preliminary Results

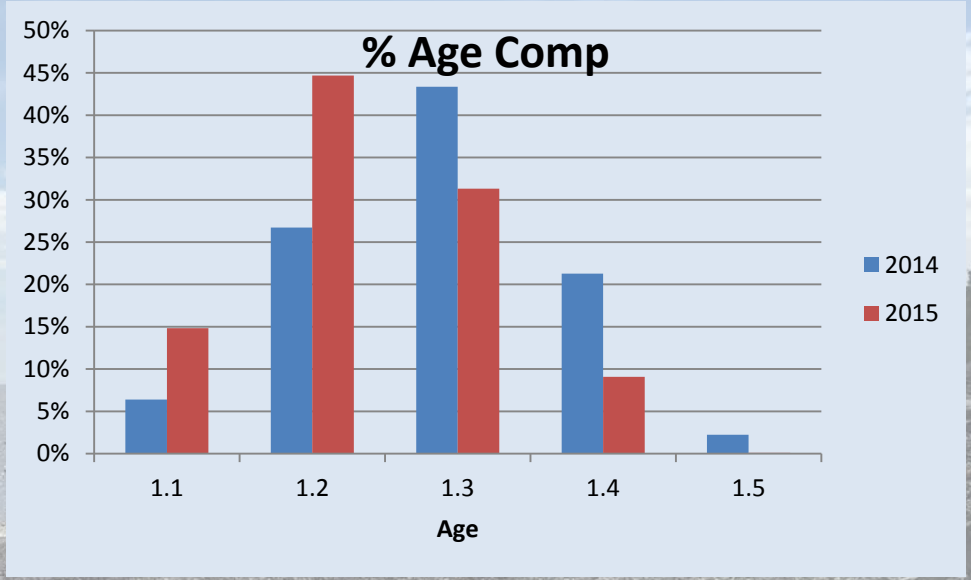
- 2014 – Sampled 55% of directed Northern District Commercial harvest and 29% of Subsistence harvest.
- 2015 – Sampled 91% of directed Northern District Commercial harvest and 46% of estimated Subsistence harvest.

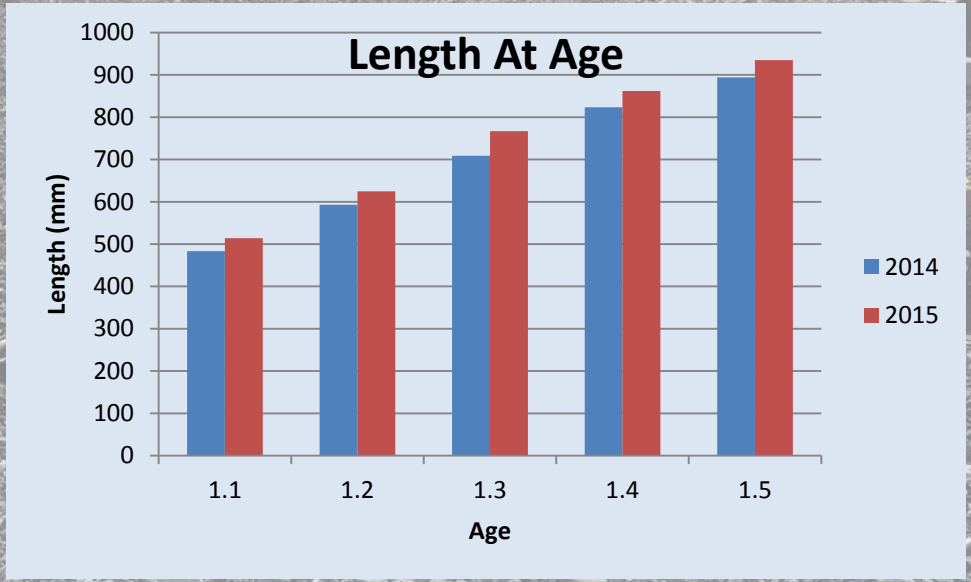
Photos courtesy of B. Jones ADF&G

Age and Sex Compositions

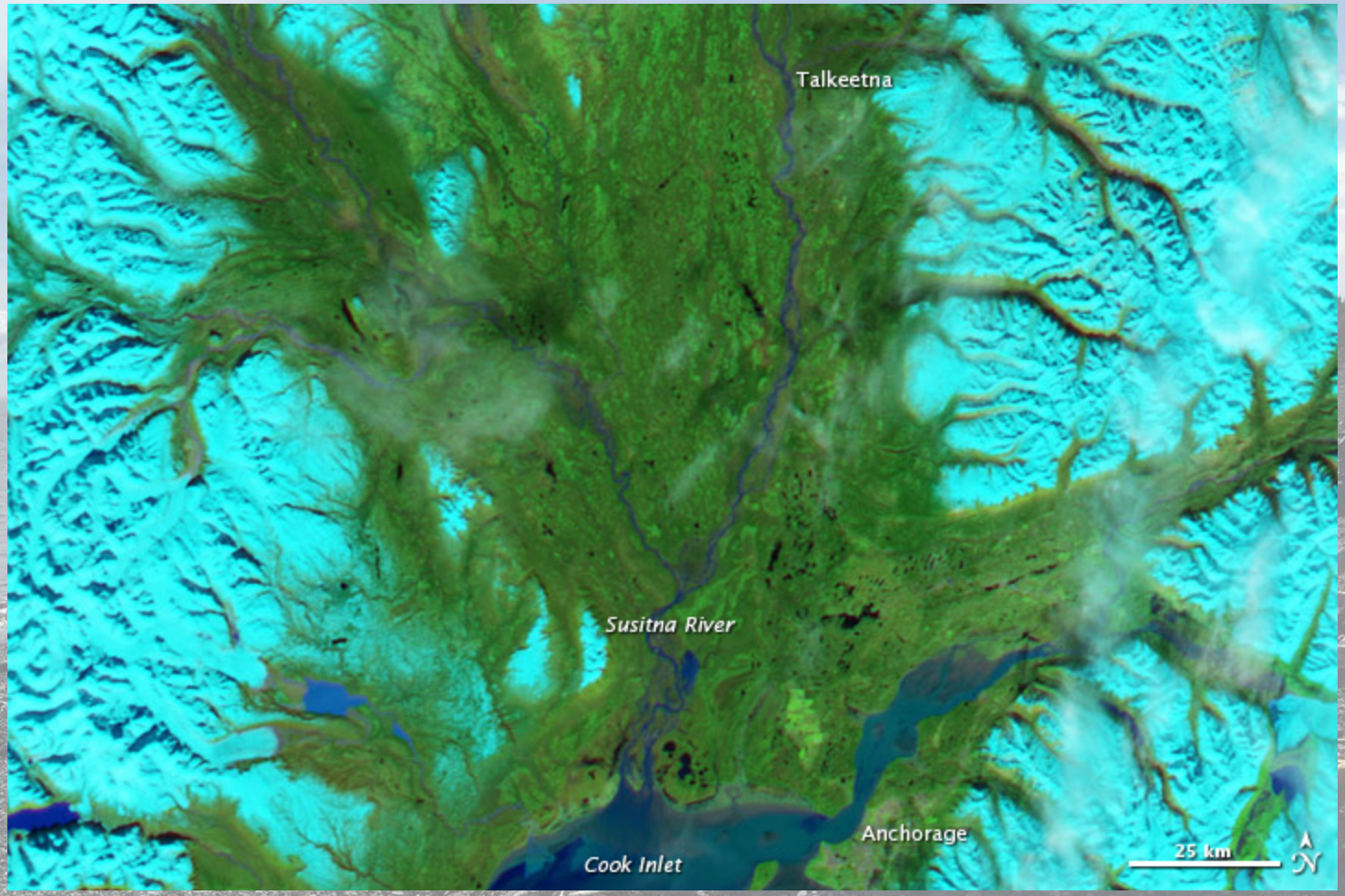
2014
48 % Female all ages

2015
40% Female all ages





Big Picture



- Comprehensive run estimate for Susitna and Yenta rivers
- Brood tables, Biological Escapement Goals, and Forecasts

http://earthobservatory.nasa.gov/IOTD/view.php?id=79321

Acknowledgements

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- Copper River, Favco, Pacific Star, Snug Harbor, Tanners, Peninsula seafood processors
- Alaska Sustainable Salmon Fund

- Questions