

# Progress Report on Genetic and Coded-Wire Tag Mixed Stock Analysis of Chinook Salmon Harvested in Cook Inlet Marine Sport Fishery, 2014–2016



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RC 3

Tab 7

# Chinook Salmon Research Initiative

- Alaska stocks depressed
- Information gaps identified
- 12 indicator stocks selected
  - Southeast Alaska to the Arctic
  - Diverse life histories and migratory patterns
  - Within Cook Inlet:
    - Kenai River
    - Susitna River

# Overview of presentation

## **Division of Sport Fish – Marine Sampling Program**

- Fishery Description
- Collection Locations
- Sampling Methods
- Collection Results



## **Division of Commercial Fisheries – Gene Conservation Laboratory**

- Methods
- Results
- Interpretation
- Future work



# Overview of presentation

## **Division of Sport Fish**

### **- Management**

General Regulations

Special Regulations

Grouping of Proposals 15 - 29



# Description of Fisheries

Lower Cook Inlet  
Management Area  
3 Summer Fisheries  
(April – September)

Central Cook Inlet  
Area  
Early (April – June)  
Late (July – Sept.)

Lower Cook Inlet Area  
Summer (April – Sept.)

• Deep Creek  
• Anchor Point  
• Bluff Point  
• Homer

Kachemak Bay

K e n a i P e n i n s u l a

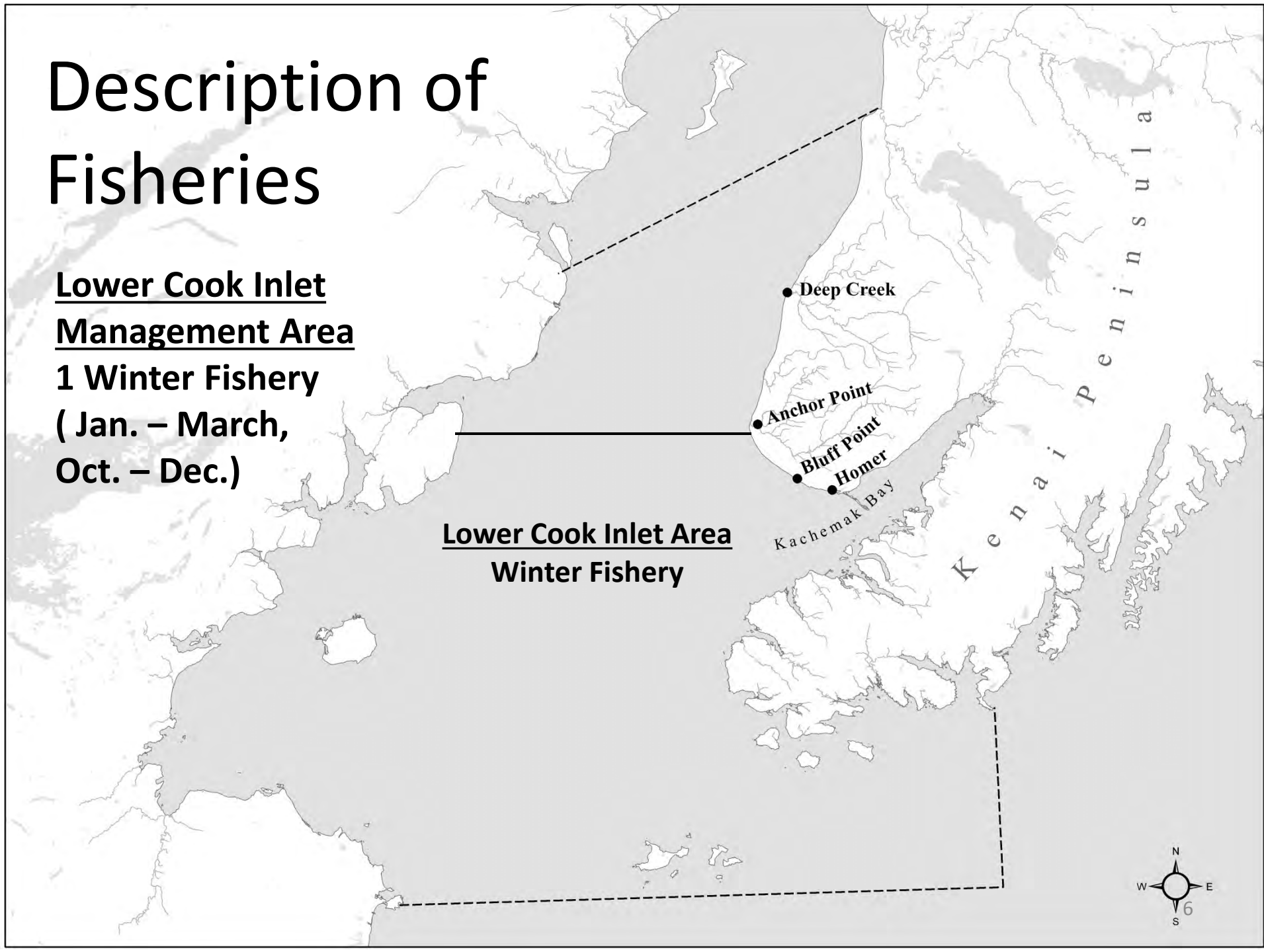


# Description of Fisheries

## Lower Cook Inlet Management Area

**1 Winter Fishery**  
**( Jan. – March,**  
**Oct. – Dec.)**

Lower Cook Inlet Area  
**Winter Fishery**





# Lower Cook Inlet Management Area Marine Sport Chinook Harvest (2014- 2015)

	Central Cook Inlet Area			Lower Cook Inlet Area		
	Early	Late	Total	Summer	Winter	Total
<b>2014</b>	1,554	985	<b>2,539</b>	6,119	3,173	<b>9,292</b>
<b>2015</b>	2,658	1,528	<b>4,186</b>	9,796	5,137	<b>14,933</b>
Average (14-15)	2,106	1,257	3,363	7,958	4,155	12,113

# Collection Locations

## Homer

- Small Boat Harbor

## Anchor Point

- Tractor Launch

## Deep Creek

- Tractor Launch



★ Deep Creek

★ Anchor Point

● Bluff Point

● Homer

★ Kachemak Bay





# Angler Interviews



- Location harvested
- Species targeted
- Numbers:
  - kept
  - released
  - cleaned at sea

- Port
- Number of anglers
- Time fishing
- Time returned



# Biological Data





# Genetic Tissue Collection



# Data Collection Summary

- Progress:
  - 2014-2015: Complete
  - 2016: Central Cook Inlet area Early Fishery only
- 87% of information from genetics; 13% from CWTs



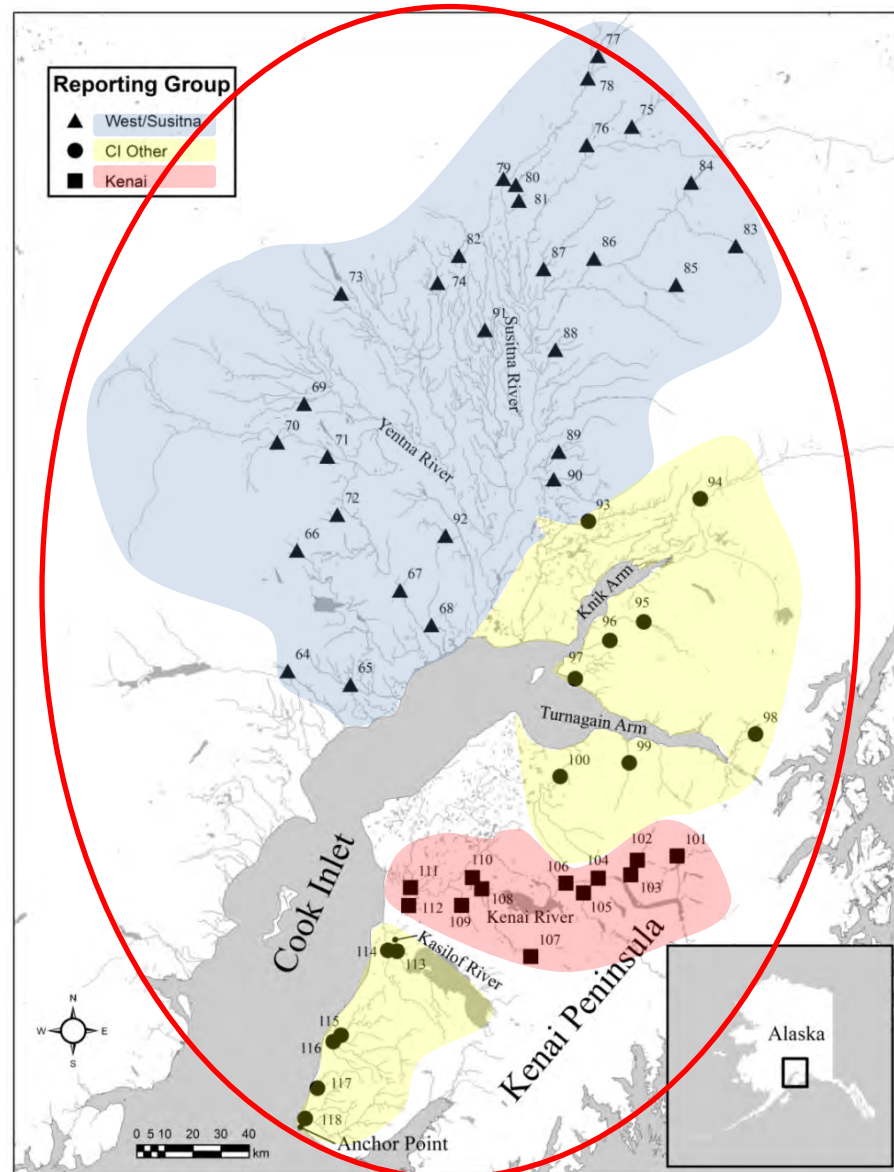
# Genetic Baseline

- Sampled populations
- All potential stocks represented
- Populations genetically characterized
- Used to estimate stock contributions
- Mixed-stock analysis

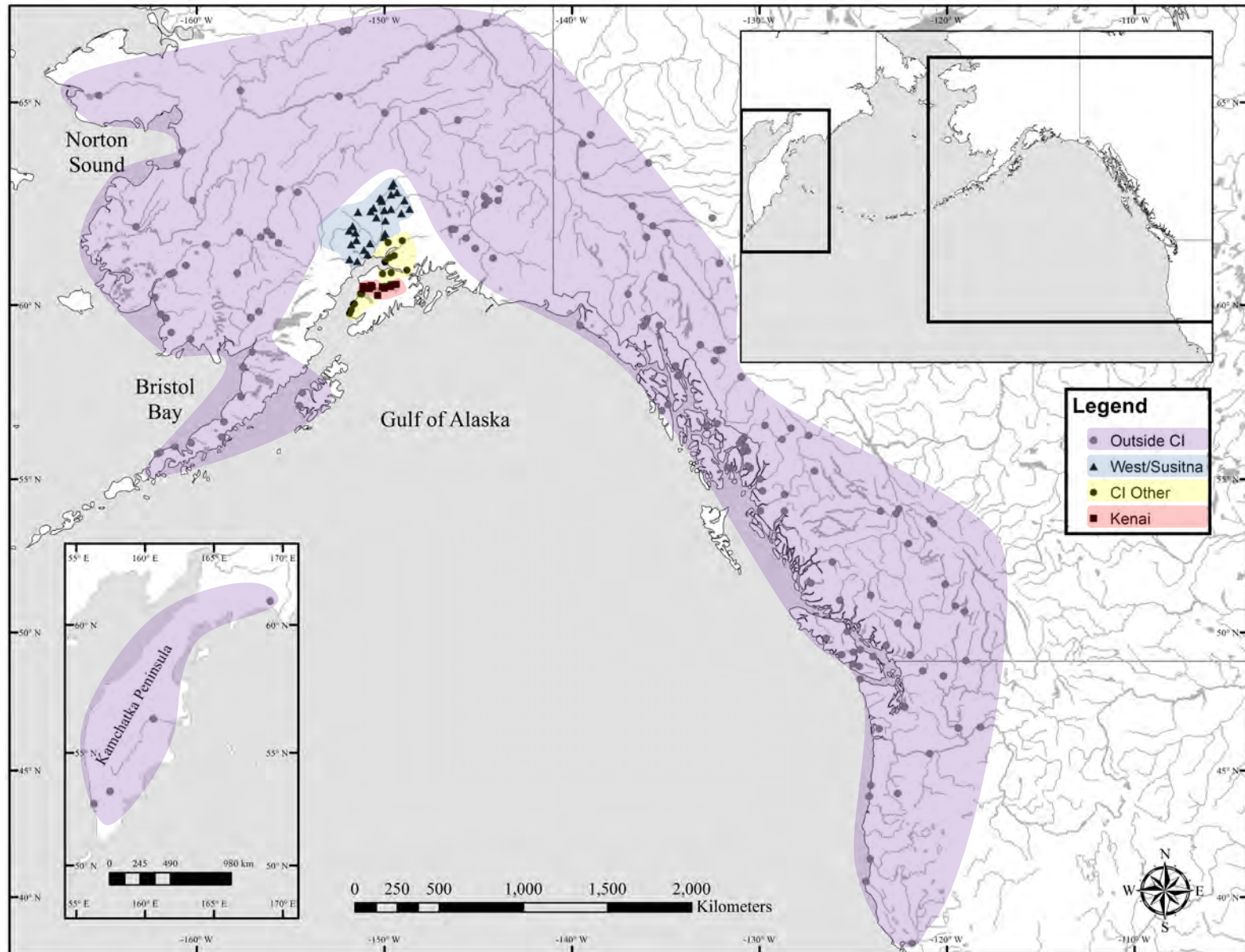


# Genetic Baseline

- 211 populations
- Reporting groups tested
  - Groups of populations that can be genetically distinguished
- 4 reporting groups identified
  - *West/Susitna*
  - *Kenai*
  - *CI Other*
  - *Outside CI*

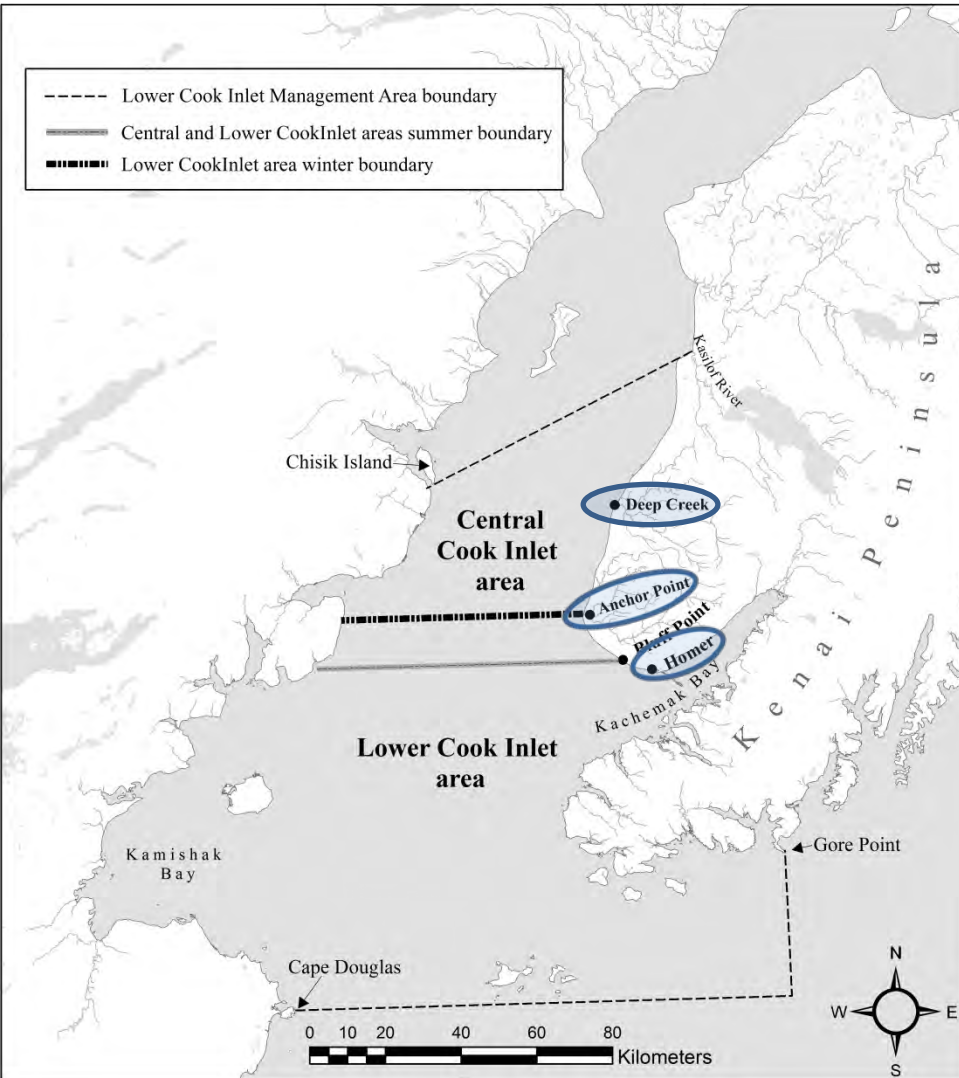


# Genetic Baseline





# Harvest Sample Analysis

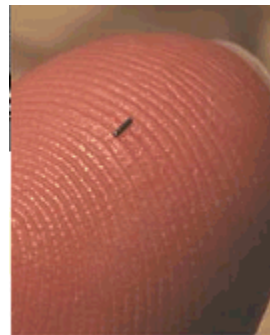
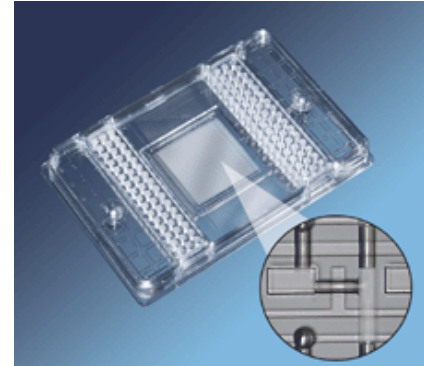


- Selected harvest samples

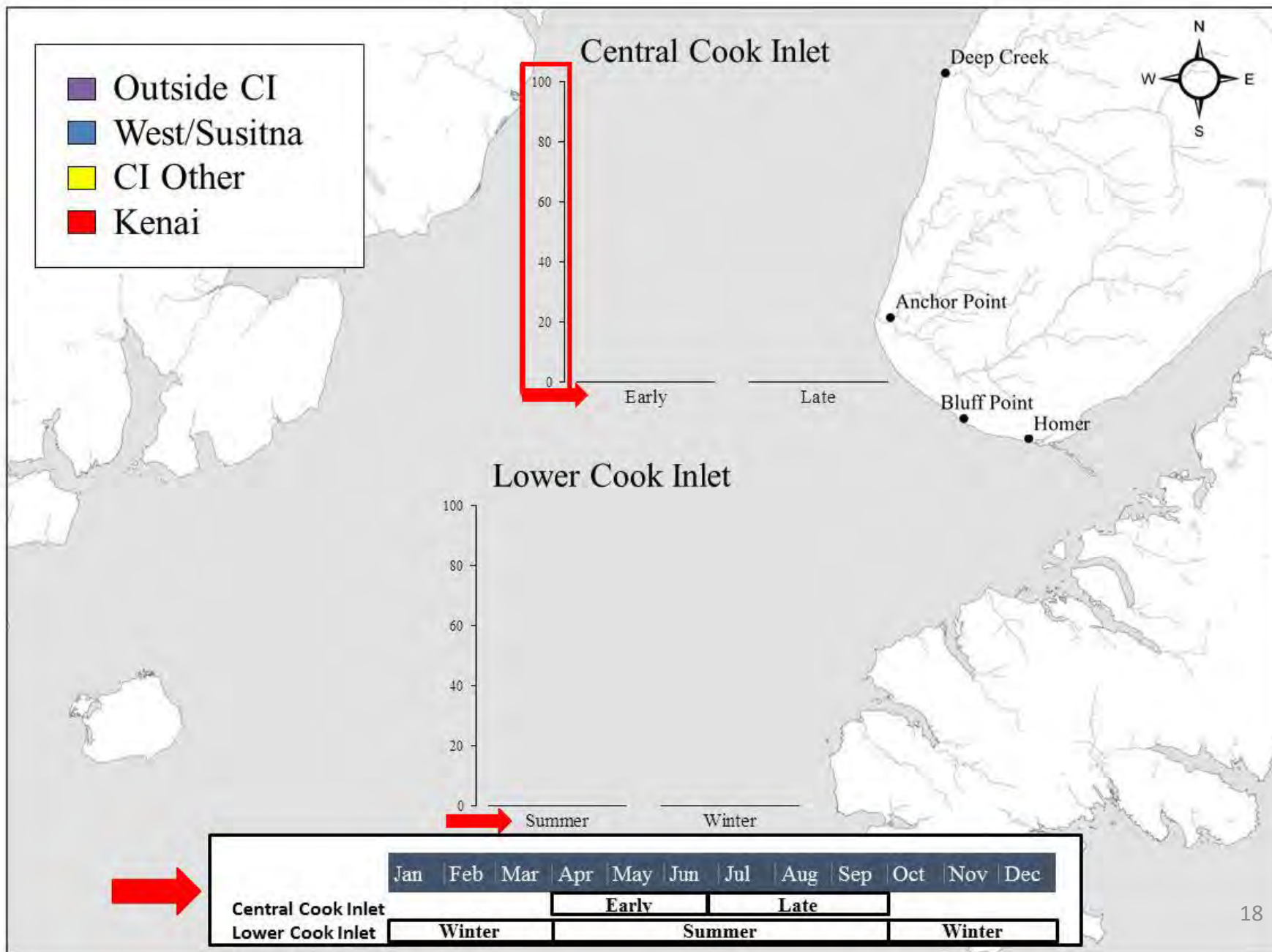


# Harvest Sample Analysis

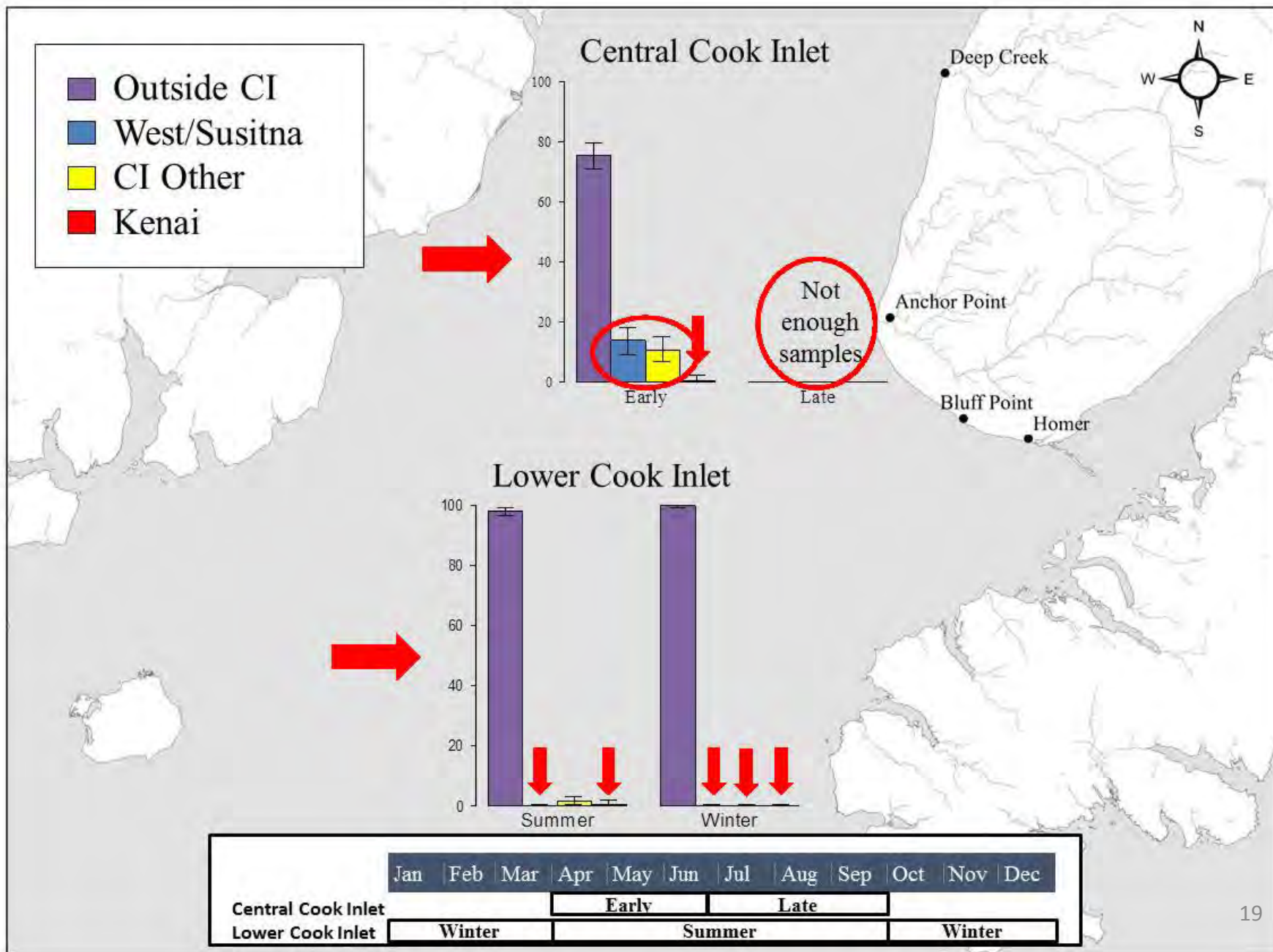
- Analyzed genetic samples
- Integrated CWT information



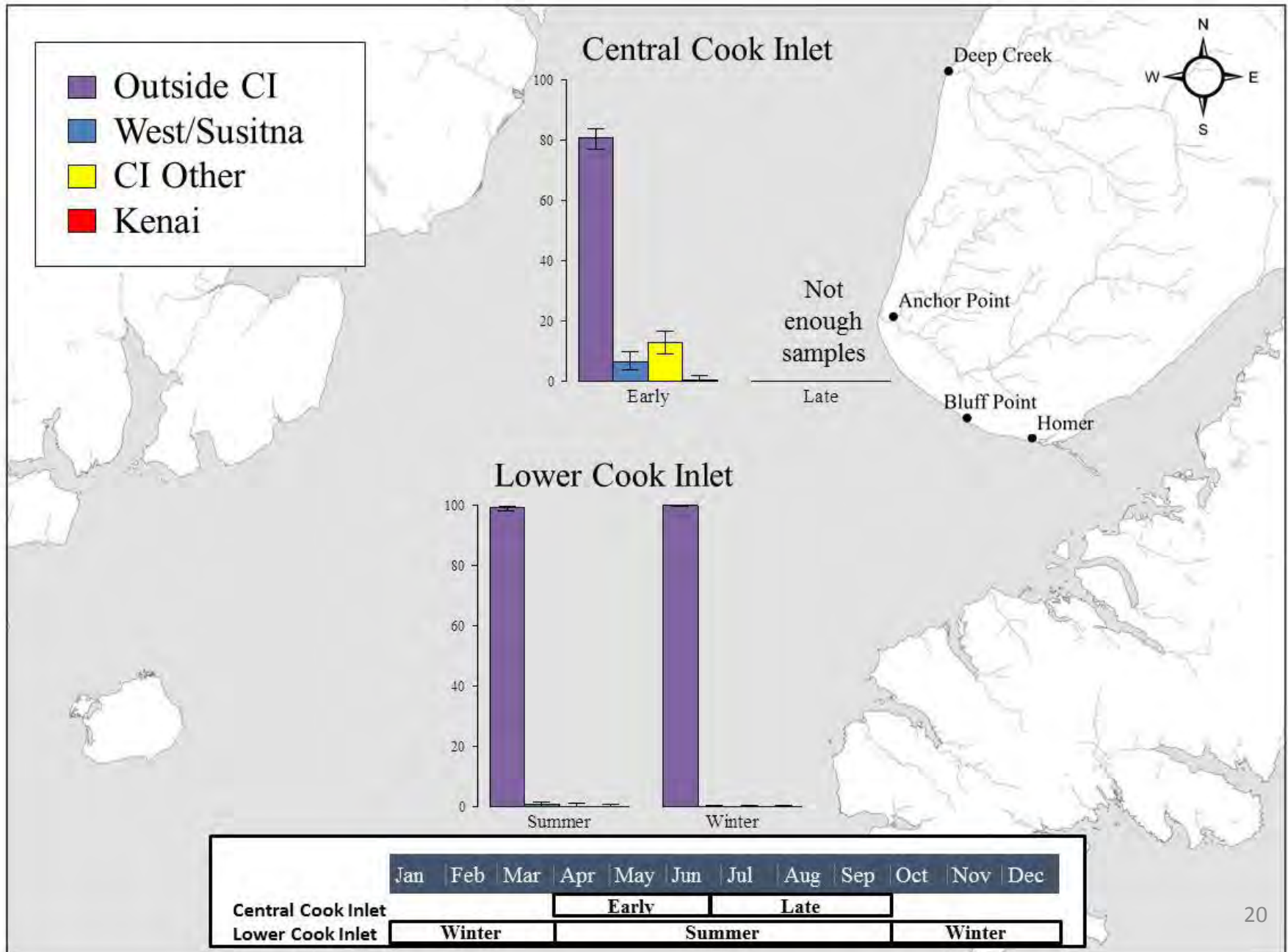
# Results



# 2014 Results

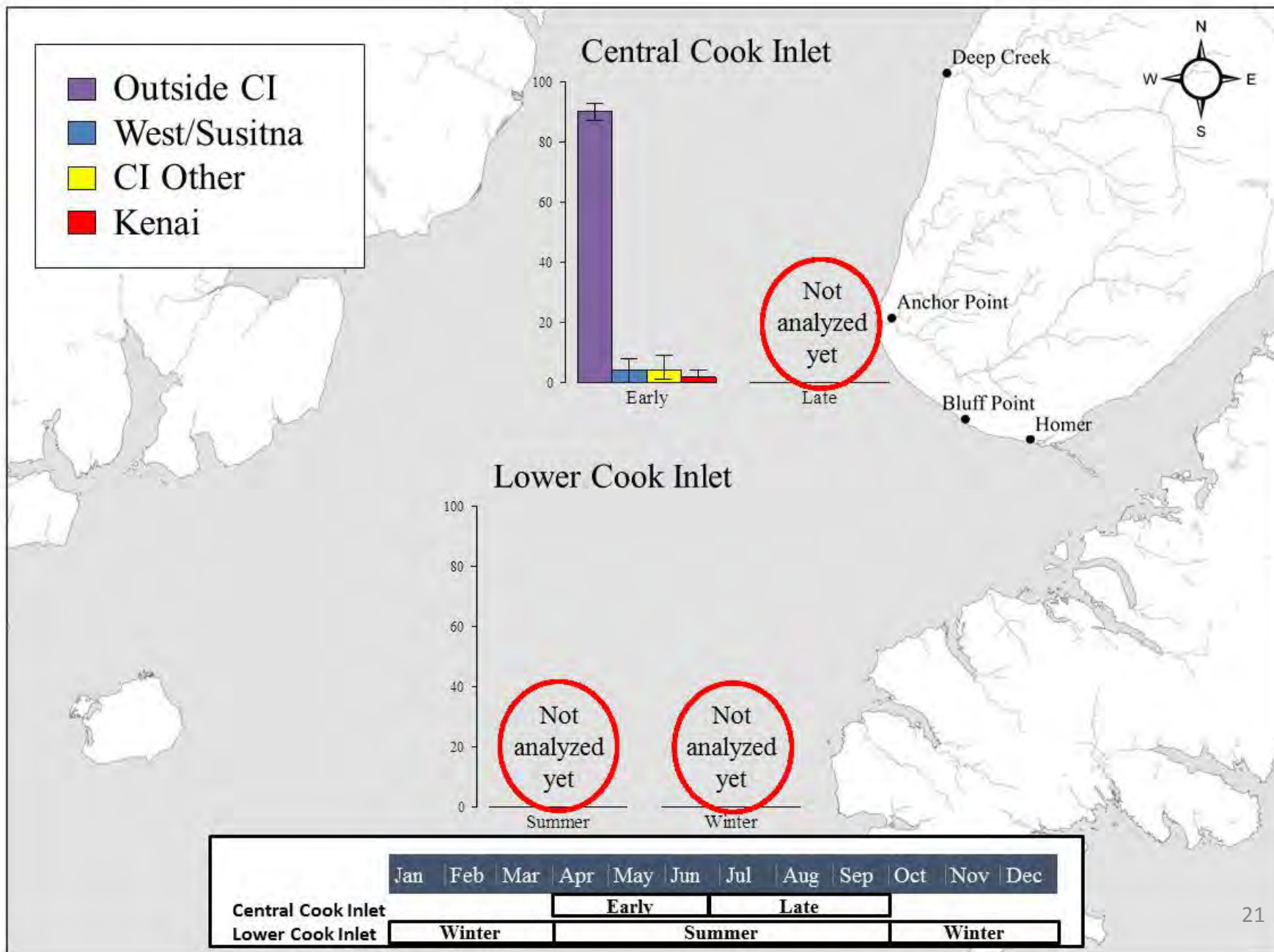


# 2015 Results





# 2016 Results



# Results Summary

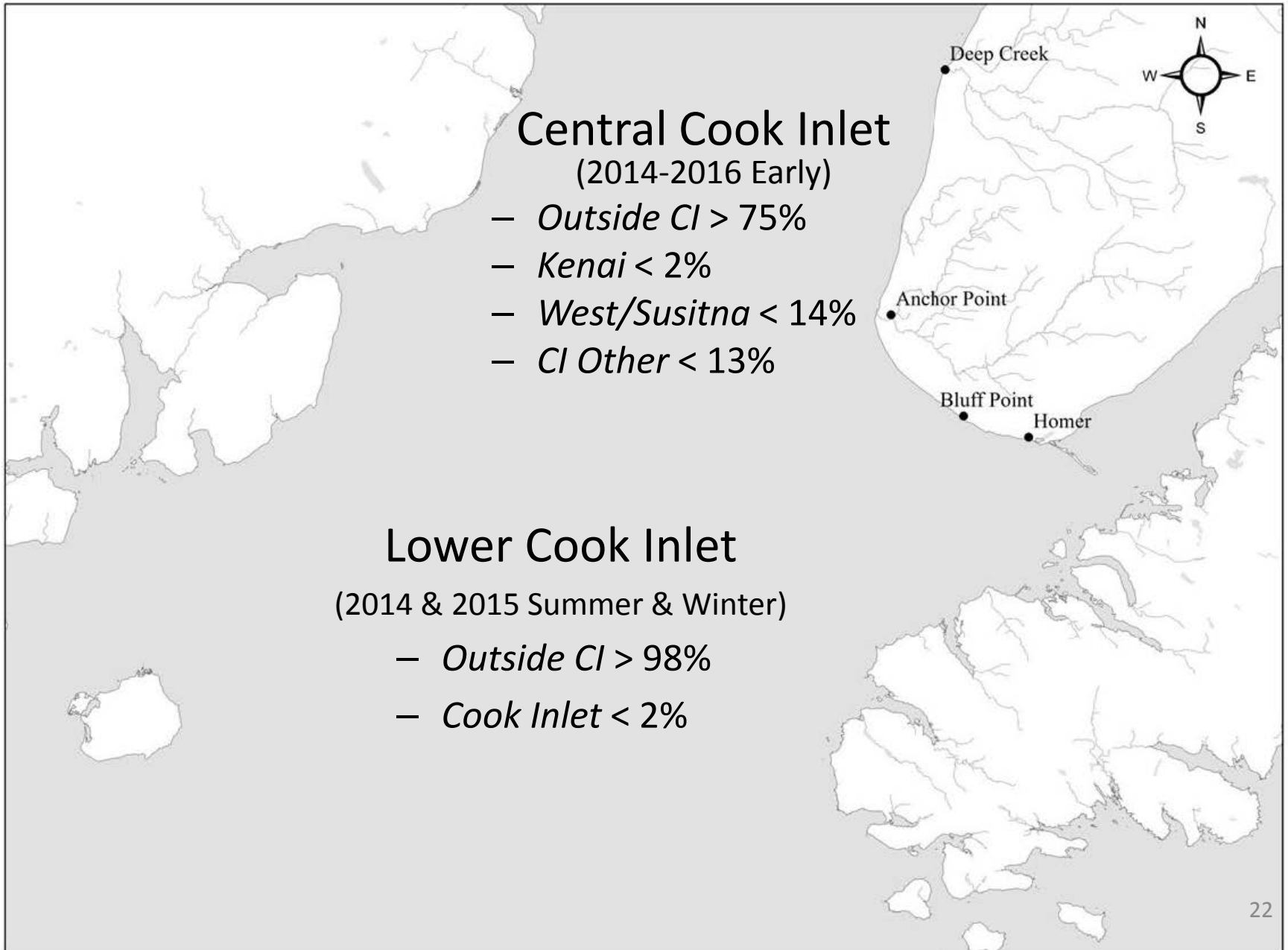
## Central Cook Inlet (2014-2016 Early)

- *Outside CI* > 75%
- *Kenai* < 2%
- *West/Susitna* < 14%
- *CI Other* < 13%

## Lower Cook Inlet

(2014 & 2015 Summer & Winter)

- *Outside CI* > 98%
- *Cook Inlet* < 2%



# Interpreting Results

- First information of genetic stock composition of the harvest
- Inferences outside the study years
  - Production regime
  - Ocean conditions
  - Prosecution of fisheries
- Harvest  $\neq$  Presence
  - Fishing vulnerability may vary by stock
  - Fishing distribution is not random

# Future Work

- Analyses
  - Remainder of 2016
  - Estimate stock-specific harvest
  - Pacific States Marine Fishery Commission (PSMFC) project (2017)
- Reporting
  - This project: Fall 2017
  - PSMFC project: Fall 2018



# Data Sets:

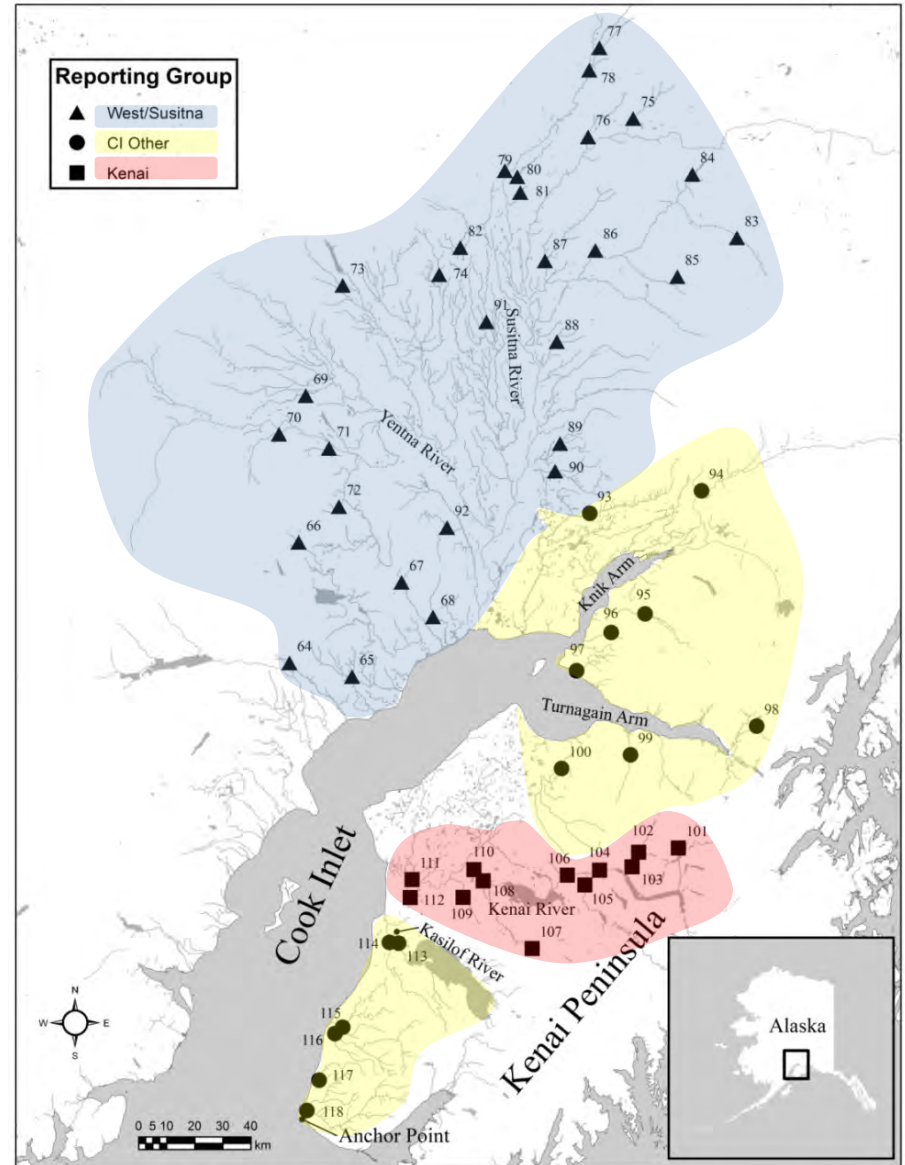
- Harvest
- Inriver Run Timing
- Maturity Assessment
- CWTs
- Genetics

## Regulations: Summer Fisheries

- Protect Cook Inlet stocks during spawning migrations
- Increase opportunity on enhanced kings
- Maintain opportunity on feeder kings

## Winter Fisheries

- Liberalize harvest opportunity when mature kings are absent



# Lower Cook Inlet Marine Fishery

## General Regulations

Annual Limit = 5 kings  $\geq 20''$

Recording Requirement

Bag/Possession 2 kings of any size

### April 1 – Sept. 30:

- 1 bag/possession of any size
- Annual limit applies

### Oct. 1 – March 31:

- 2 bag/possession of any size
- NO annual limit

1 king salmon

Early-Run Plan (April 1 – June 30)

Anchor Point Light

Bluff Point

2 king salmon

Winter King Plan (Oct. 1 – March 31)  
No Annual Limit



# Proposals 15 – 29 (Regulation Changes)

Proposal No.	Early-Run Plan	Winter Plan	Annual Limit	Harvest Recording	Bag and Possession
15		X	X		X
16	X				
17	X				
18	X				
19		X	X		X
20	X	X	X		X
21	X		X		
22				X	
23				X	
24	X		X		
25		X			
26		X			
27		X			
28		X			X
29	X				

# Proposals 15 – 29 (Regulation Effect)

Proposal No.	Align Run Timing	Reduce Opportunity	Increase Opportunity	Reduce Complexity	Increase Complexity
15	X		X	X	
16	X			X	
17				X	
18	X	X			
19	X		X		
20	X		X		X
21			X		X
22					X
23					X
24			X		X
25			X		X
26			X		X
27				X	
28		X			
29			X		X



# Acknowledgements

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# Questions?

