

Genetic Stock Composition of Chinook Salmon Harvested in Northern Cook Inlet Marine Commercial and Subsistence Fisheries, 2014–2016



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RC 4

Tab 9

Overview of presentation

Division of Sport Fish – Northern Cook Inlet sampling program

- Purpose of study
- Proposals informed by results
- Fishery description
- Collection locations
- Sampling methods
- Collection results



Overview of presentation

Division of Commercial Fisheries

– Gene Conservation Laboratory

- Methods
- Results
- Interpretation
- Future work





- Purpose: Determine stock composition of Chinook salmon marine harvests in NCI
 - Northern District commercial
 - Tyonek subsistence
- NCI Stocks of Concern
 - Chuitna, Theodore, and Lewis rivers, and Alexander, Willow, Goose, and Sheep creeks

Proposals that may be informed by results

Group 7:

- Northern District commercial salmon
- Susitna River sport fisheries



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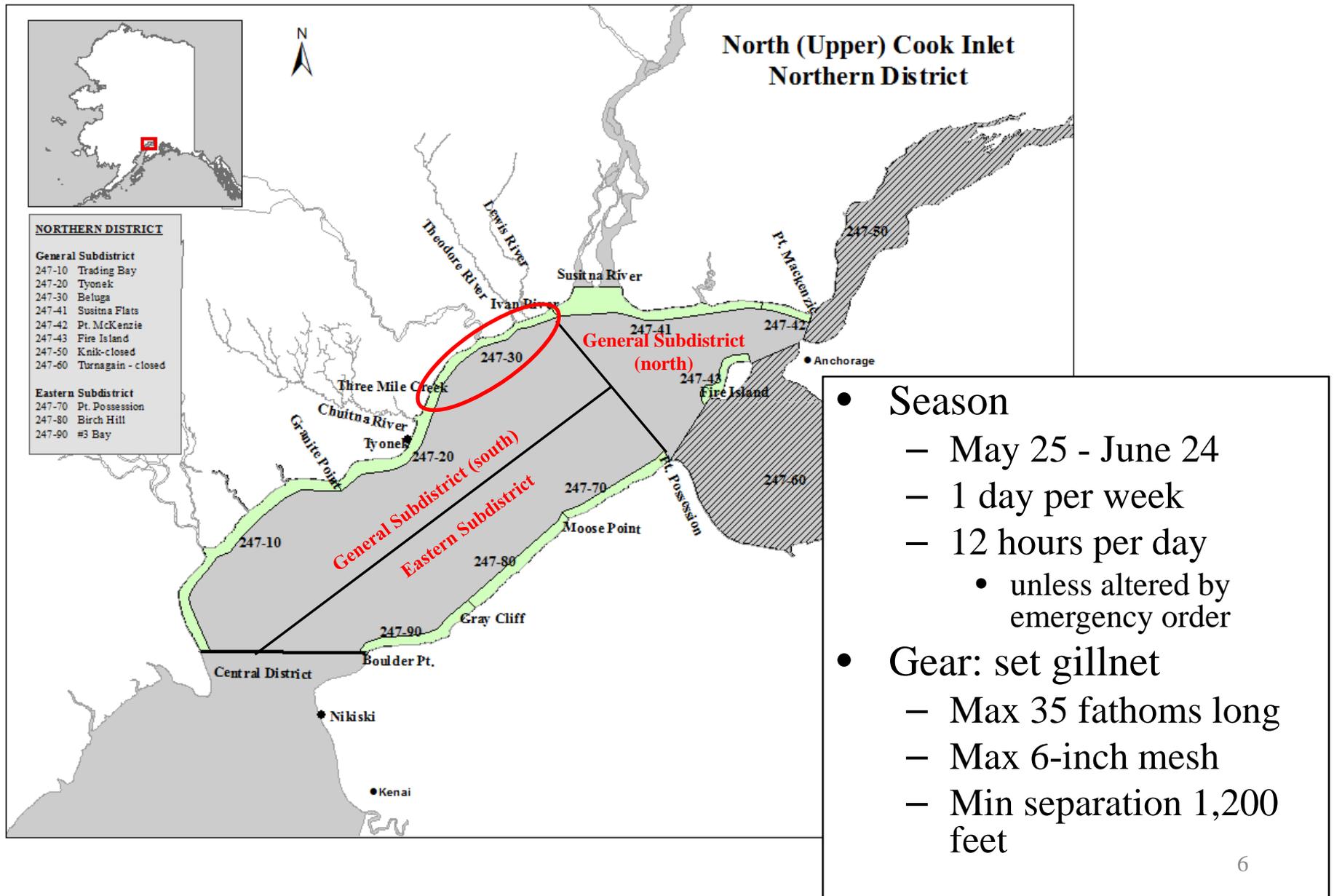
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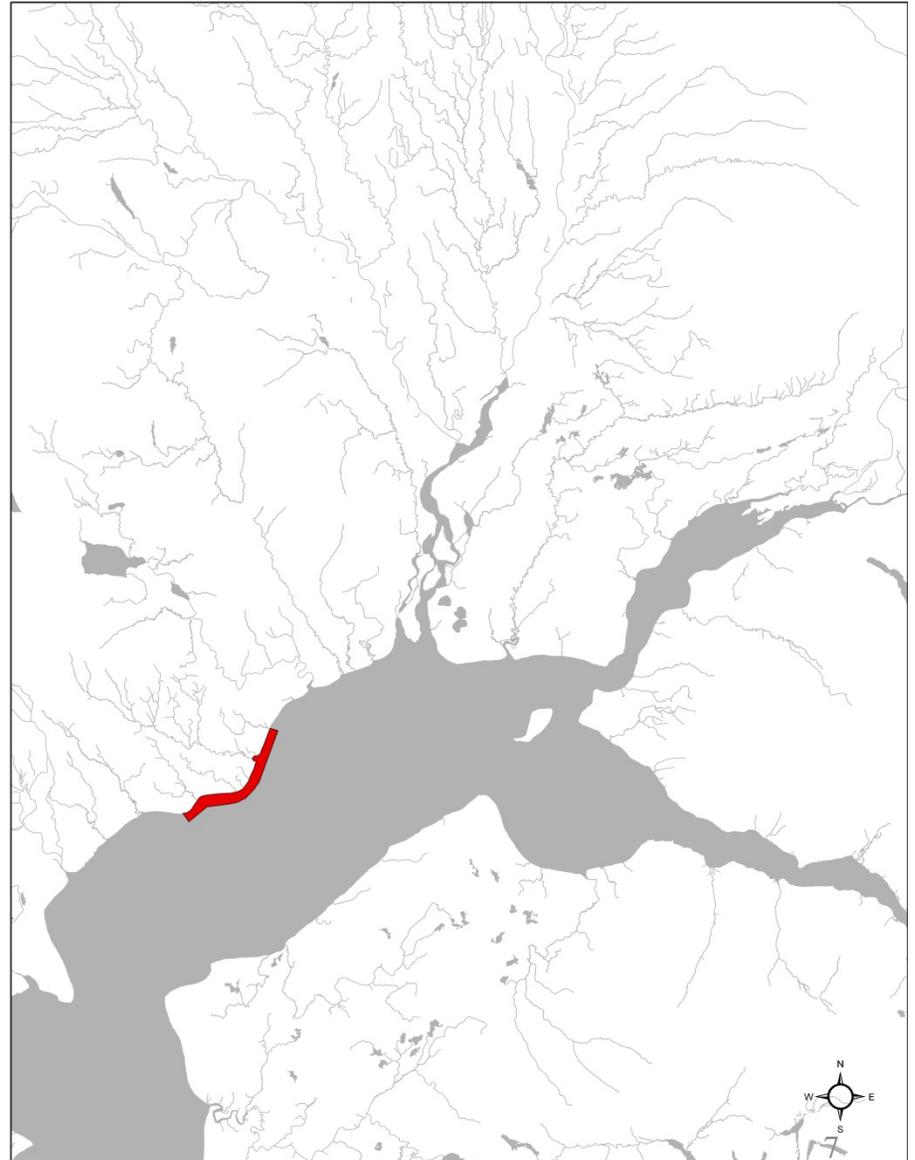
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Description of commercial fisheries



Description of subsistence fishery

- Early season
 - May 15 - June 15
 - 3 days per week
 - 16 hours per day
- Late season
 - June 16 - October 15
 - 1 day per week
 - 12 hours per day
- Gear: set gillnet
 - Max 10 fathoms long
 - Max 6-inch mesh
 - Max 45 meshes deep
 - Min separation 600 feet



Northern Cook Inlet Chinook salmon **commercial** harvest

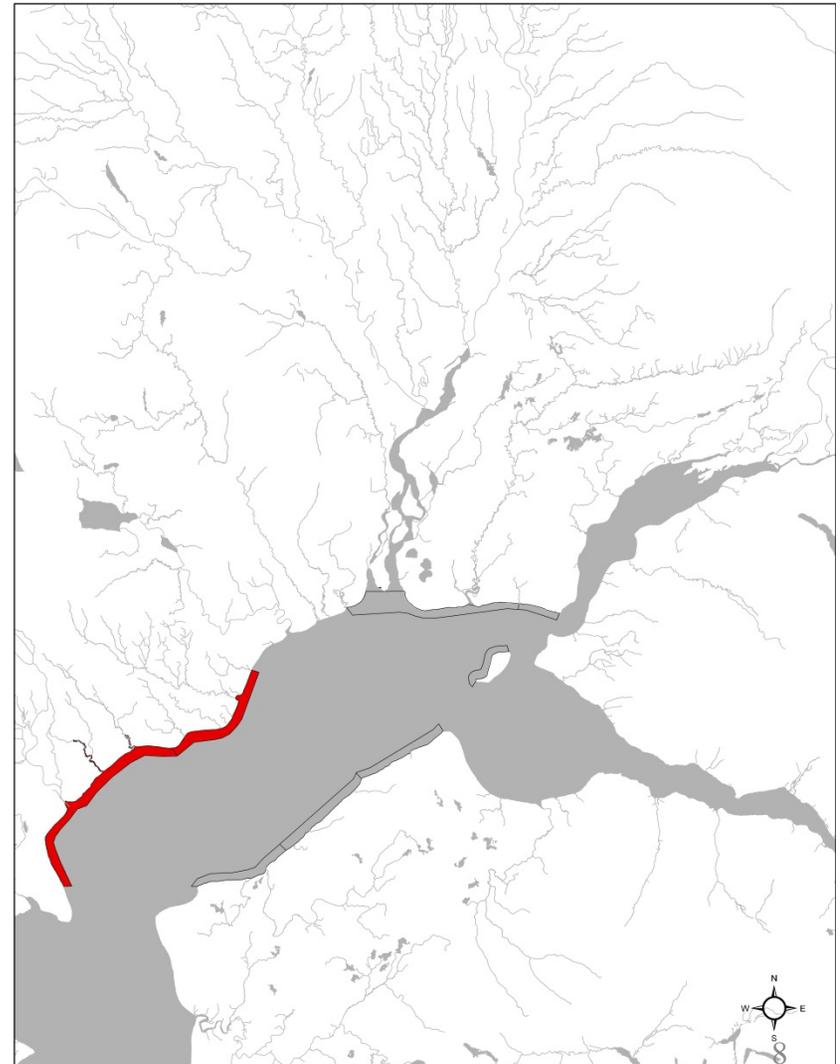
General Subdistrict (south)

Year	Harvest
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2014	814
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2015	750
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2016	1,150
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Northern Cook Inlet Chinook salmon **commercial** harvest

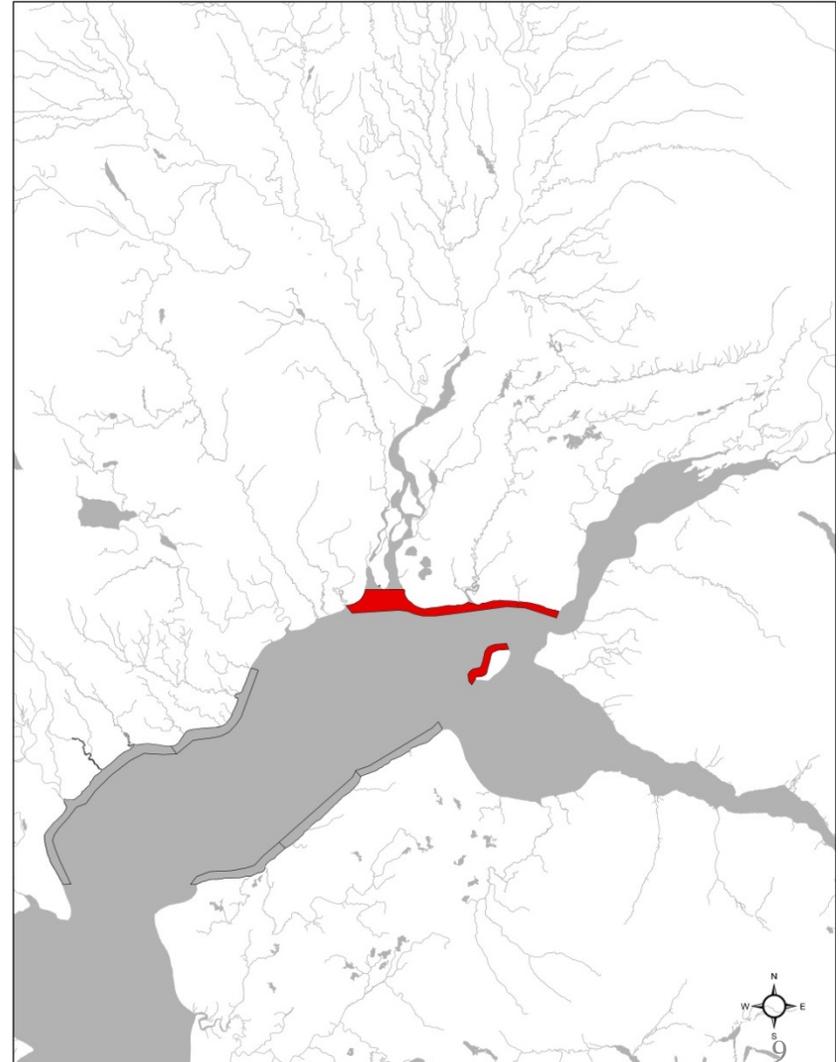
General Subdistrict (north)

Year	Harvest
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2014	398
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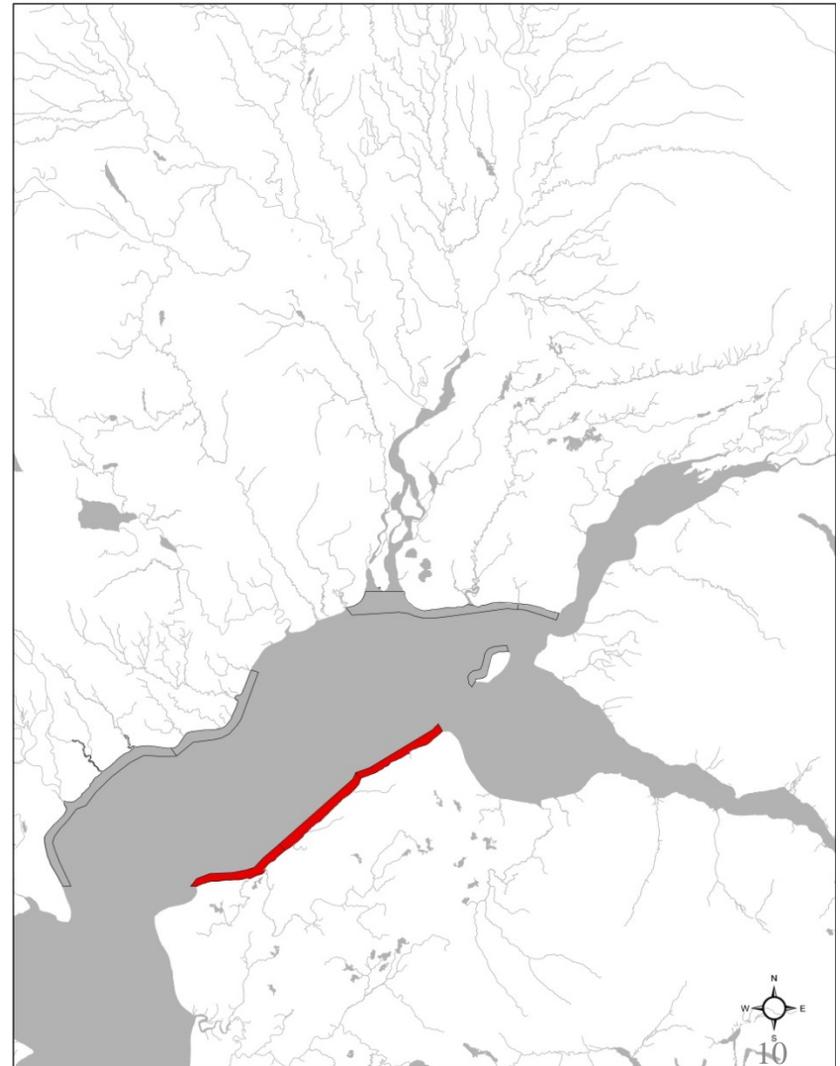
2015	674
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2016	464
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Northern Cook Inlet Chinook salmon **commercial** harvest

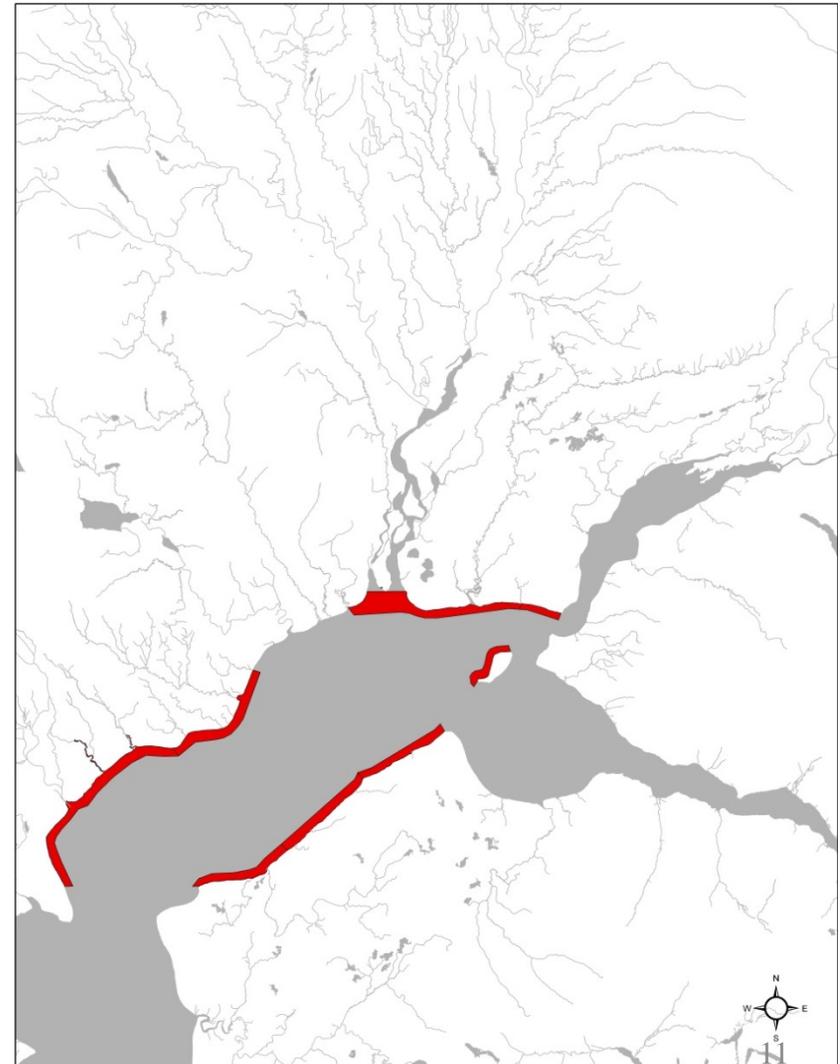
Eastern Subdistrict	
Year	Harvest
2014	326
2015	360
2016	523



Northern Cook Inlet Chinook salmon **commercial** harvest

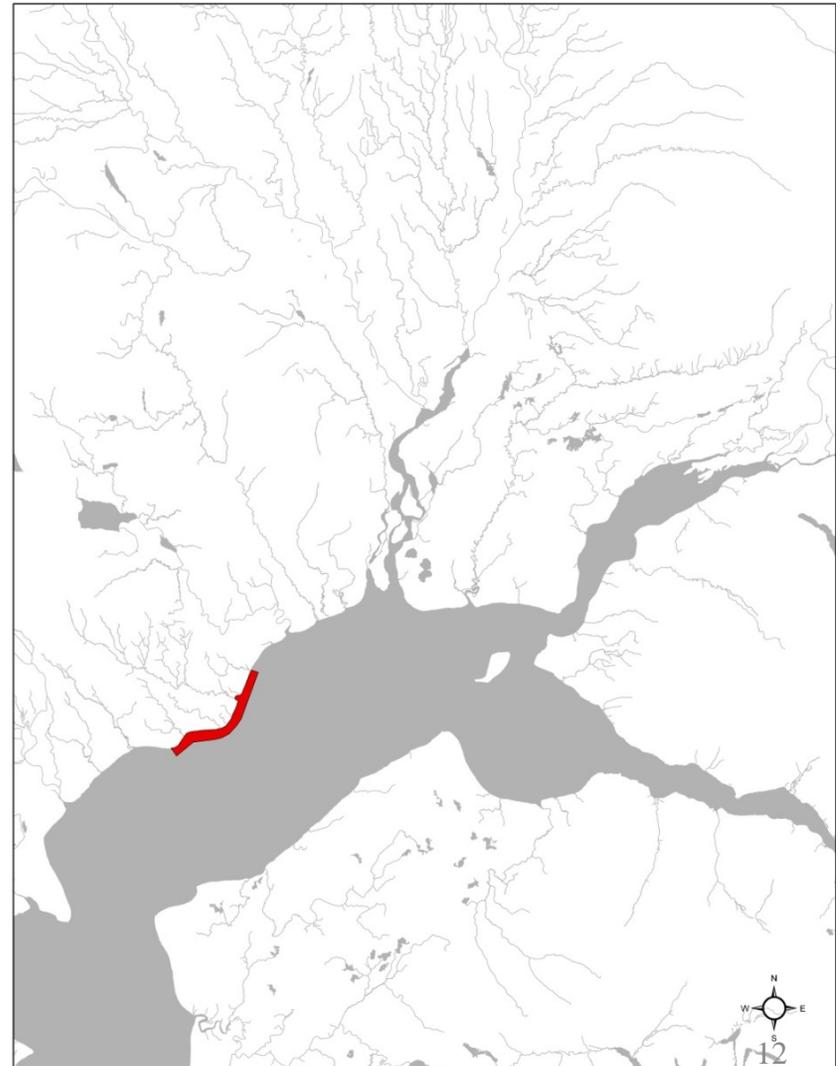
Northern District All

Year	Harvest
2014	1,538
2015	1,784
2016	2,137

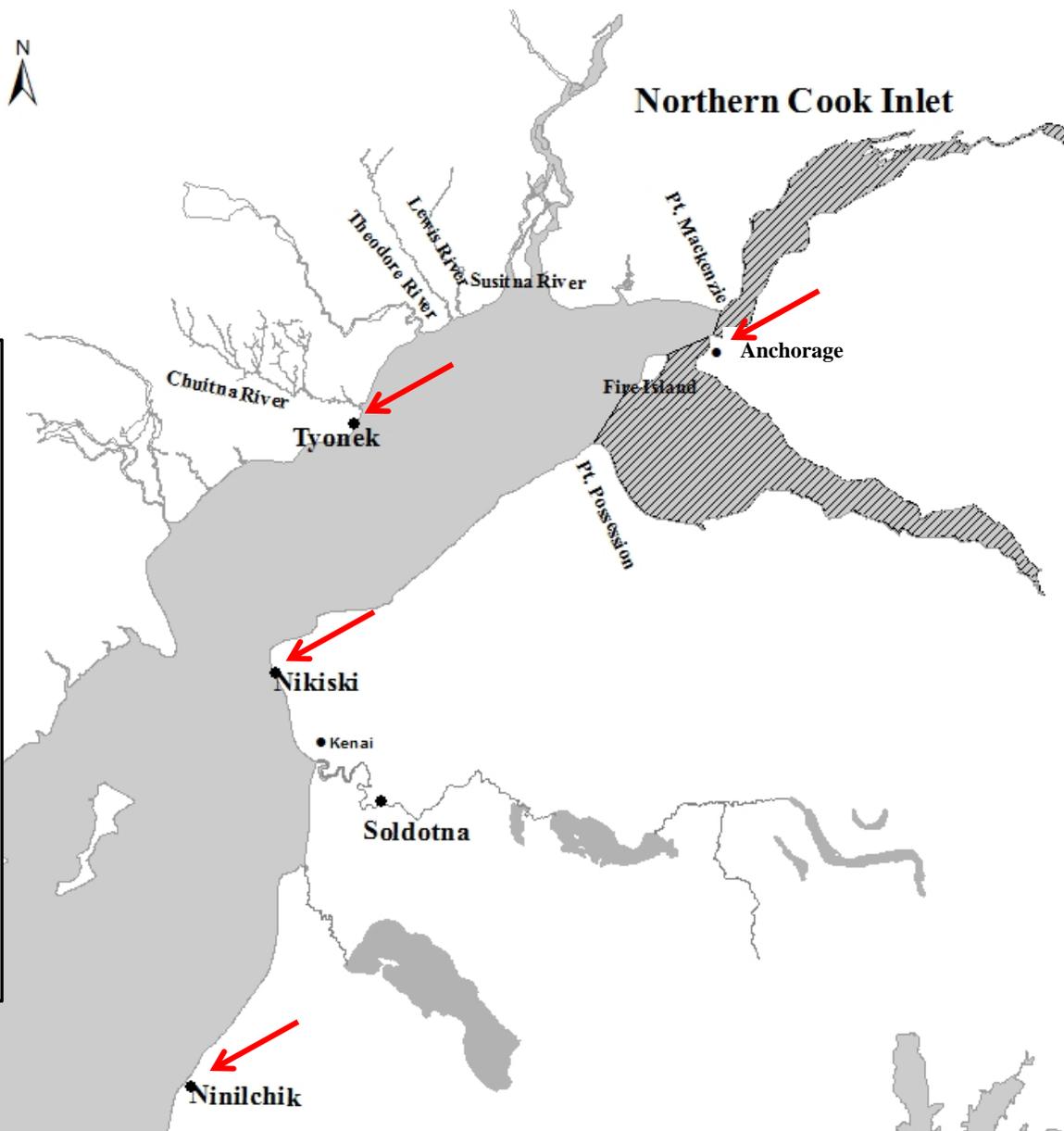


Tyonek Chinook salmon reported subsistence harvest

Subsistence	
Year	Harvest
2014	712
2015	929
2016	805



Collection locations



Anchorage

- Ship Creek launch
- 2 processors

Kenai Peninsula (Ninilchik to Nikiski)

- 2 buying stations
- 5 processors

Tyonek

- Setnet sites
- Residences

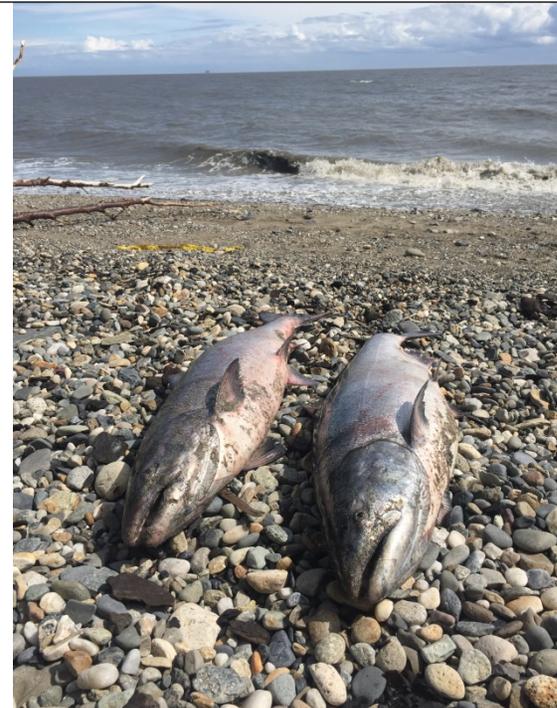
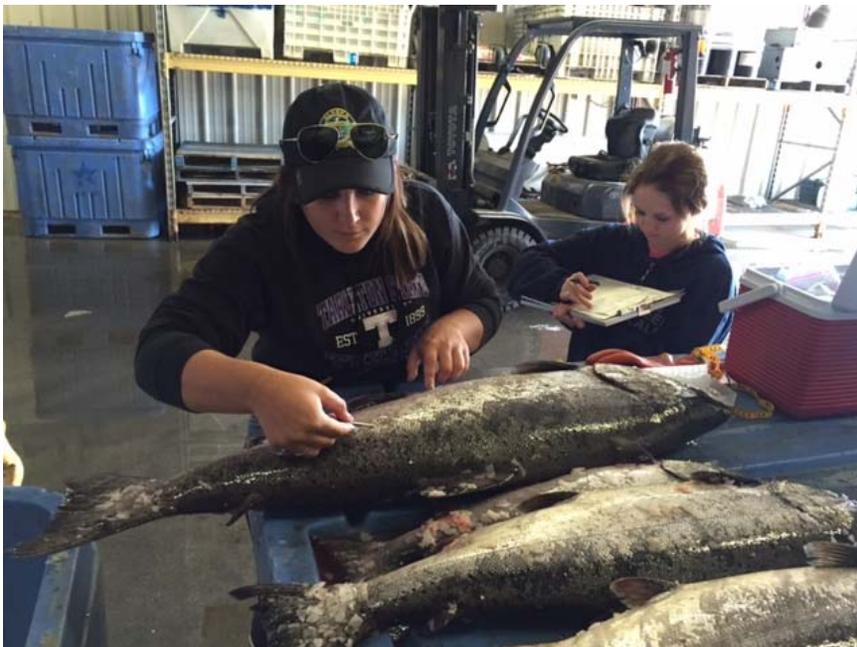
Genetic tissue collection



Collections summary

Commercial		
Year	Samples	% of Harvest
2014	747	49%
2015	1,169	66%
2016	1,458	68%

Subsistence		
Year	Samples	% of Harvest
2014	196	27%
2015	327	35%
2016	289	36%



Subsampling for genetic analysis

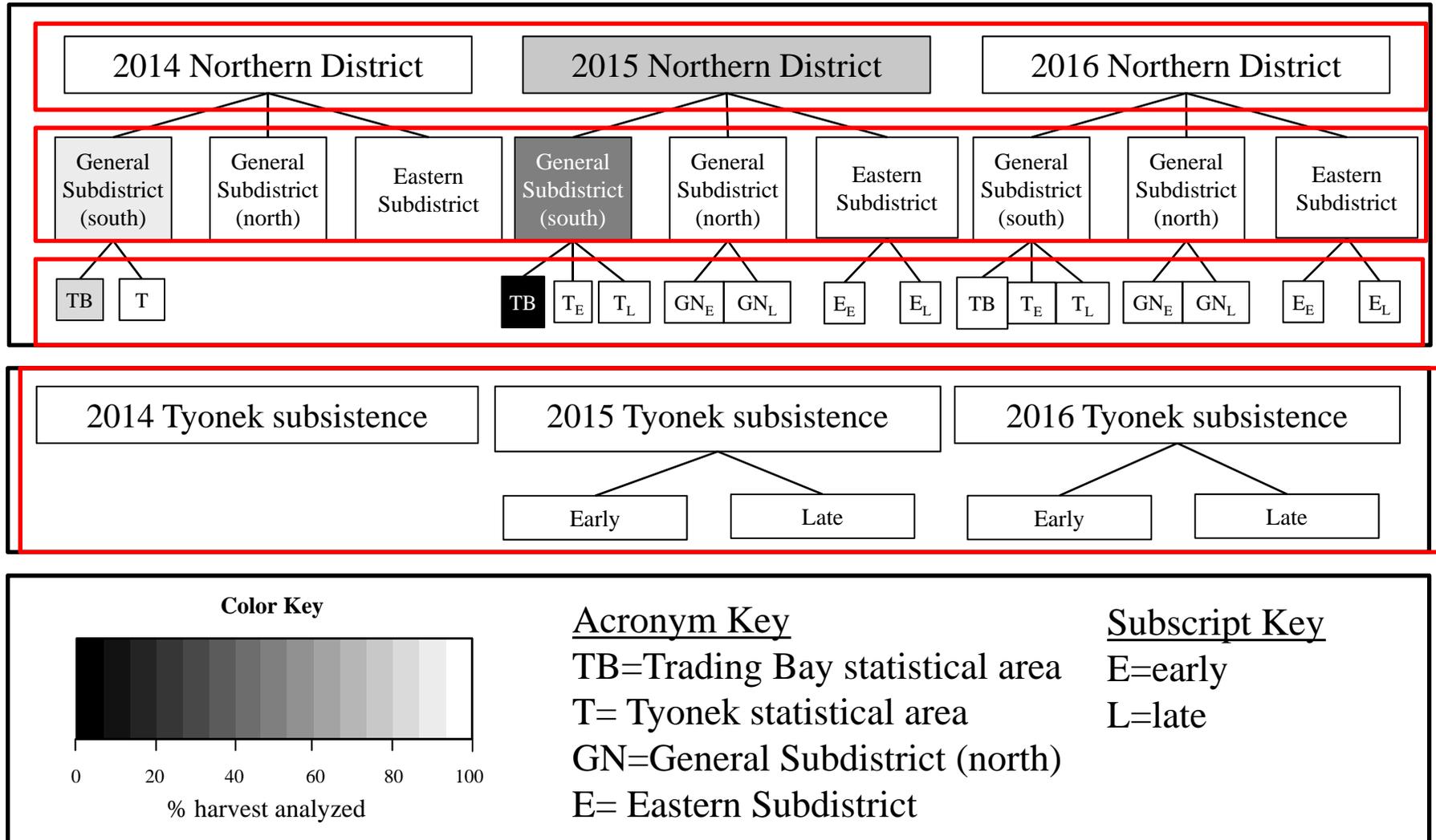


- In proportion to harvest
- Min = 100 per mixture
- 7 day rule

Mixture summary

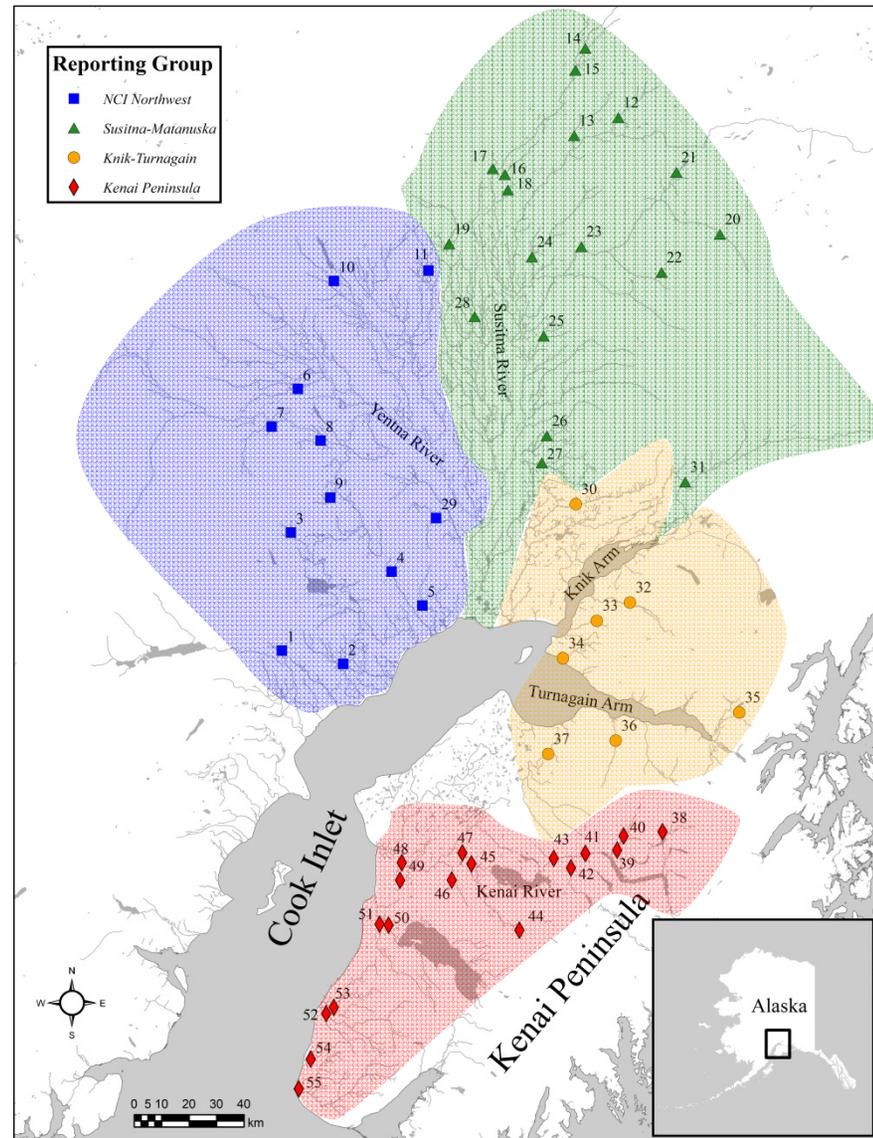
- **By area – commercial**
 - General Subdistrict (south)
 - General Subdistrict (north)
 - Eastern Subdistrict
- **By time – commercial**
 - May 29 – June 12 (early)
 - June 13 – June 30 (late)
- **By time – subsistence**
 - May 16 – May 31 (early)
 - June 1 – June 30 (late)

Mixture summary continued

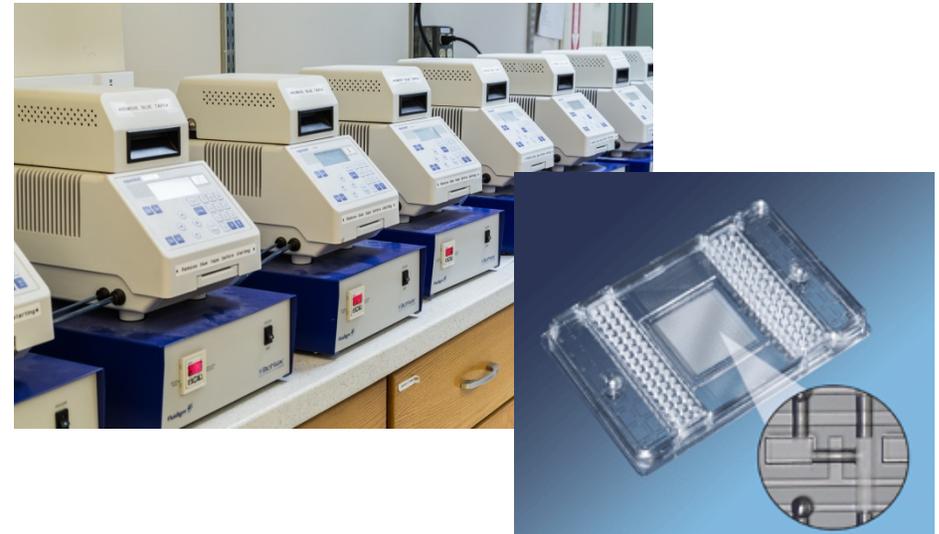


Genetic baseline

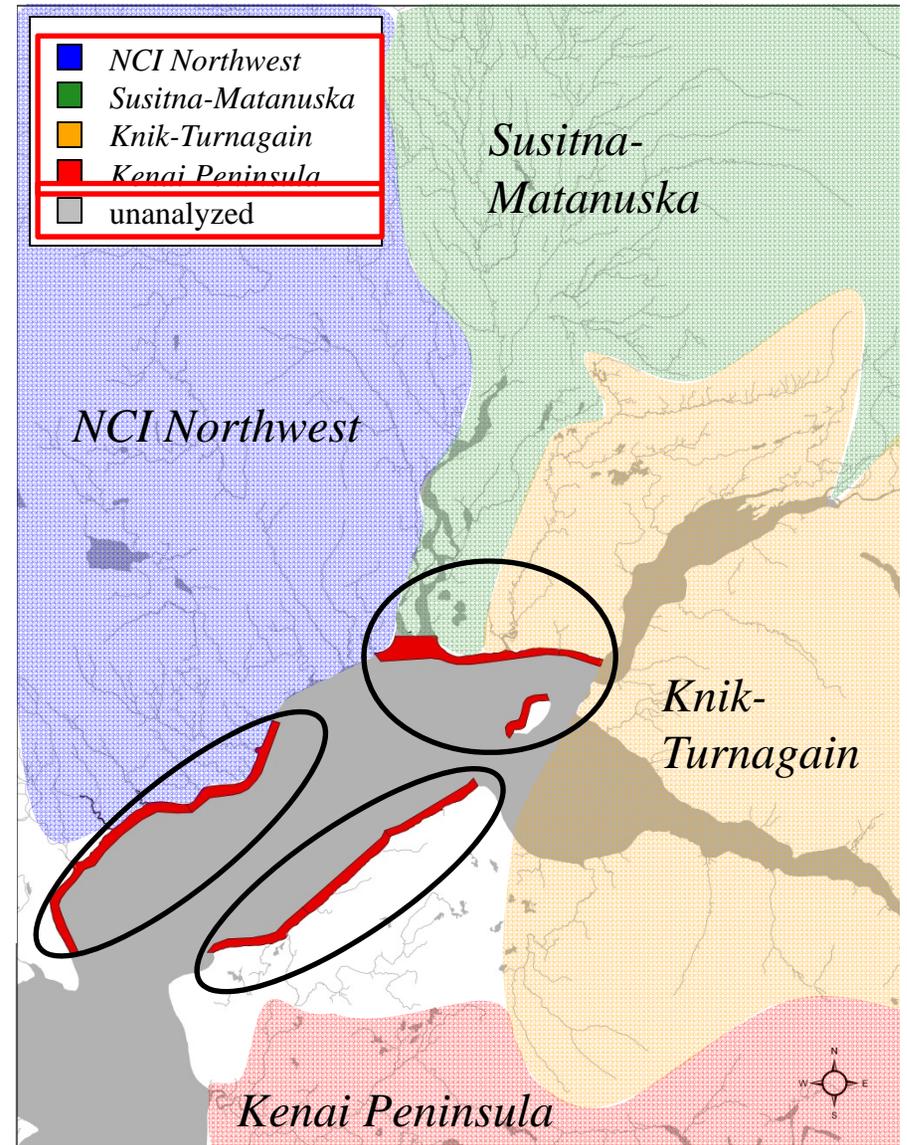
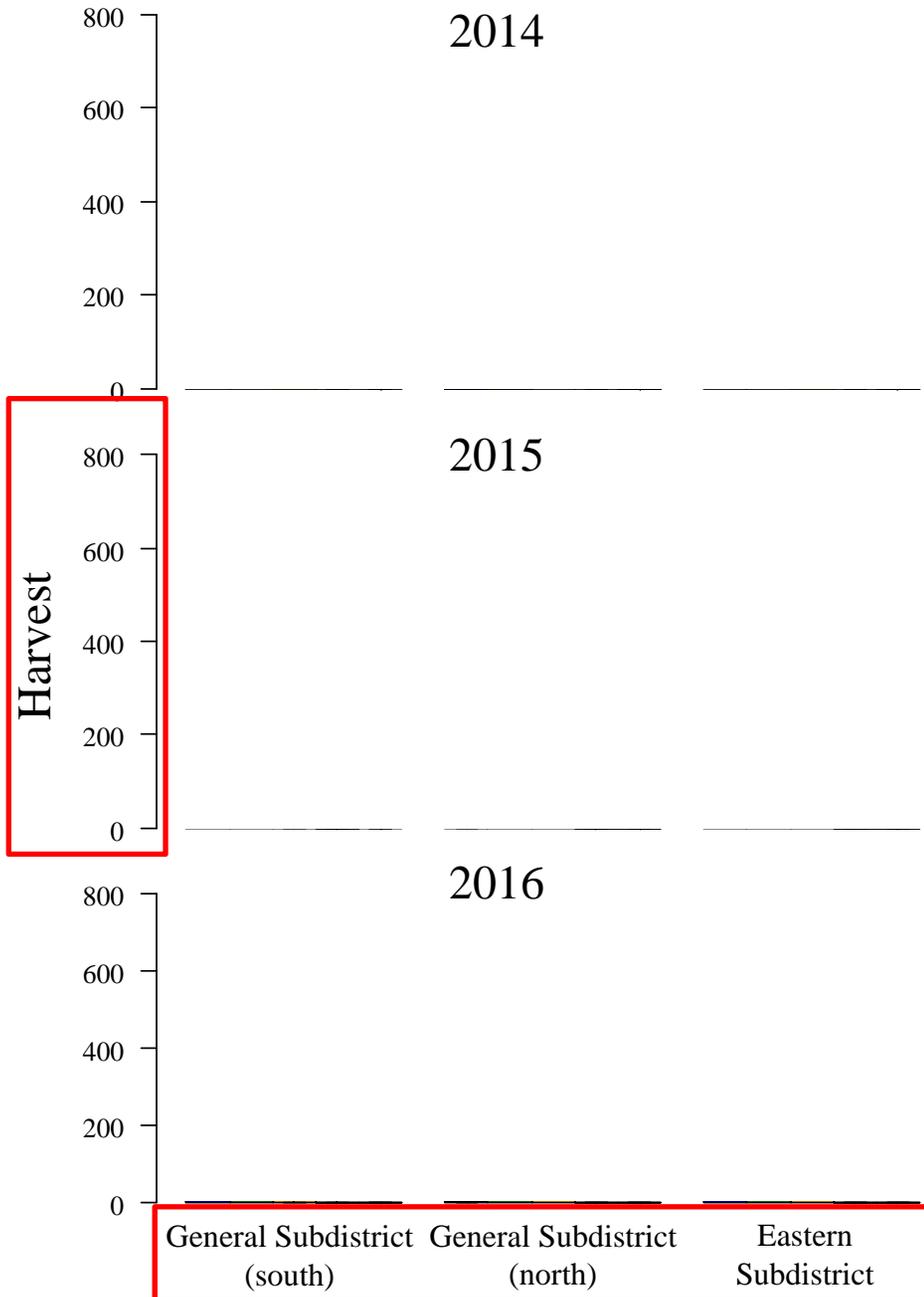
- 55 populations
- Reporting groups tested
 - Groups of populations that can be genetically distinguished
- 4 reporting groups identified
 - *NCI Northwest*
 - *Susitna-Matanuska*
 - *Knik-Turnagain*
 - *Kenai Peninsula*



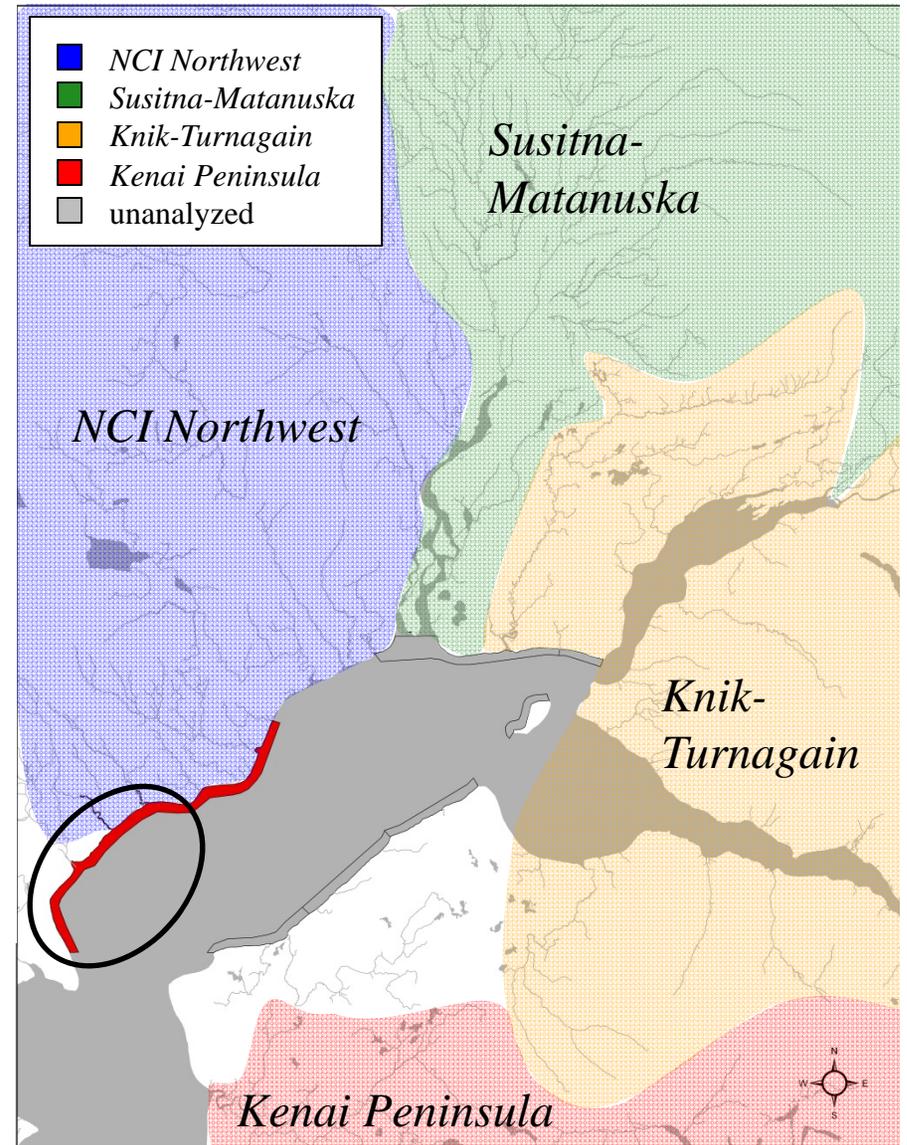
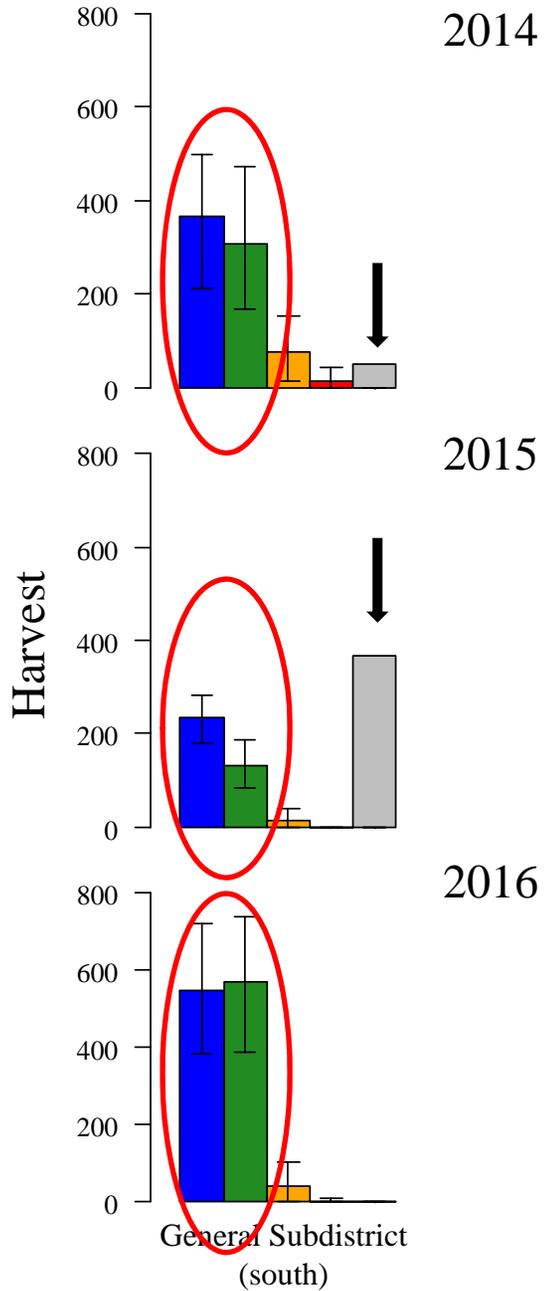
Harvest sample analysis



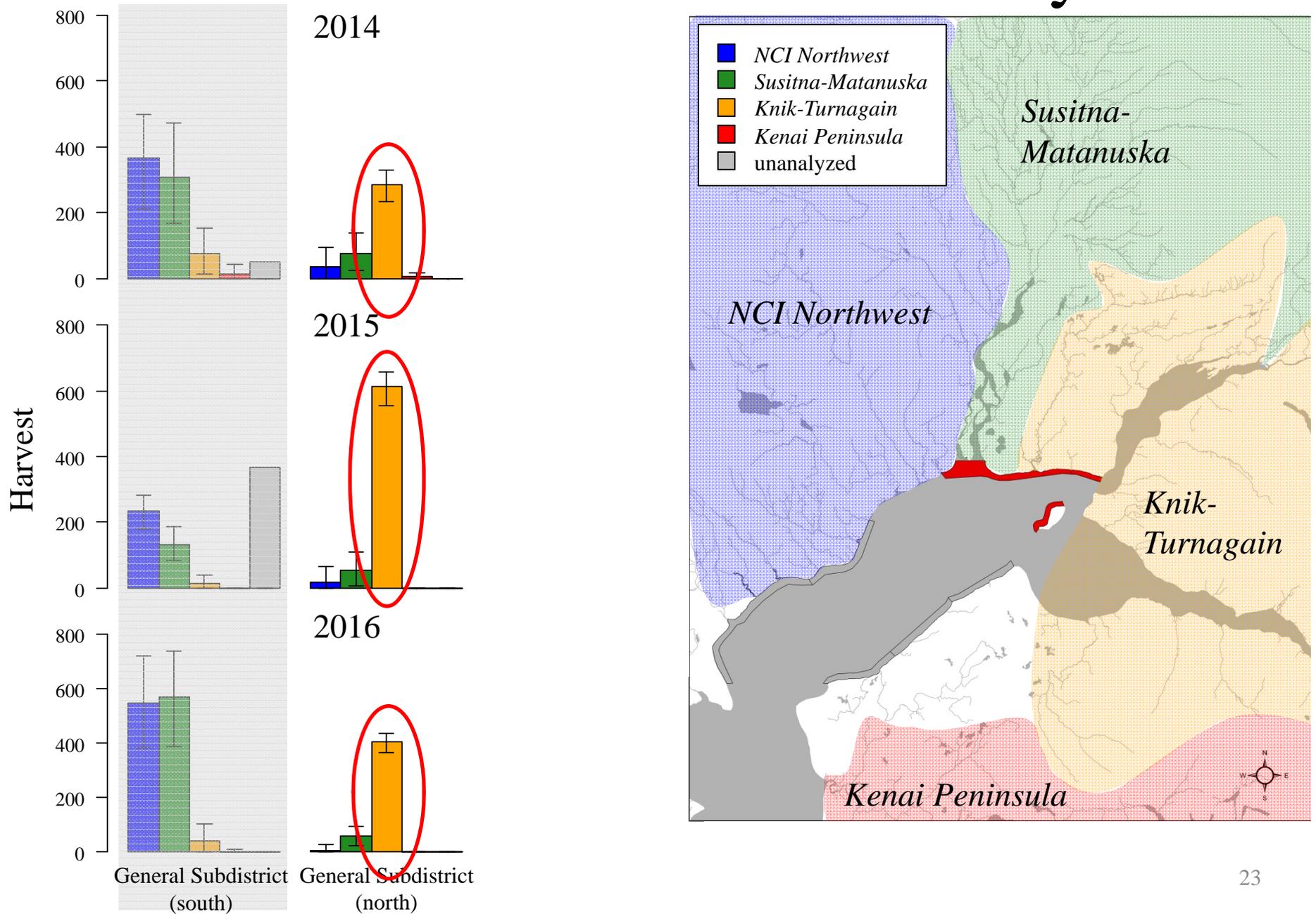
Northern District commercial by area



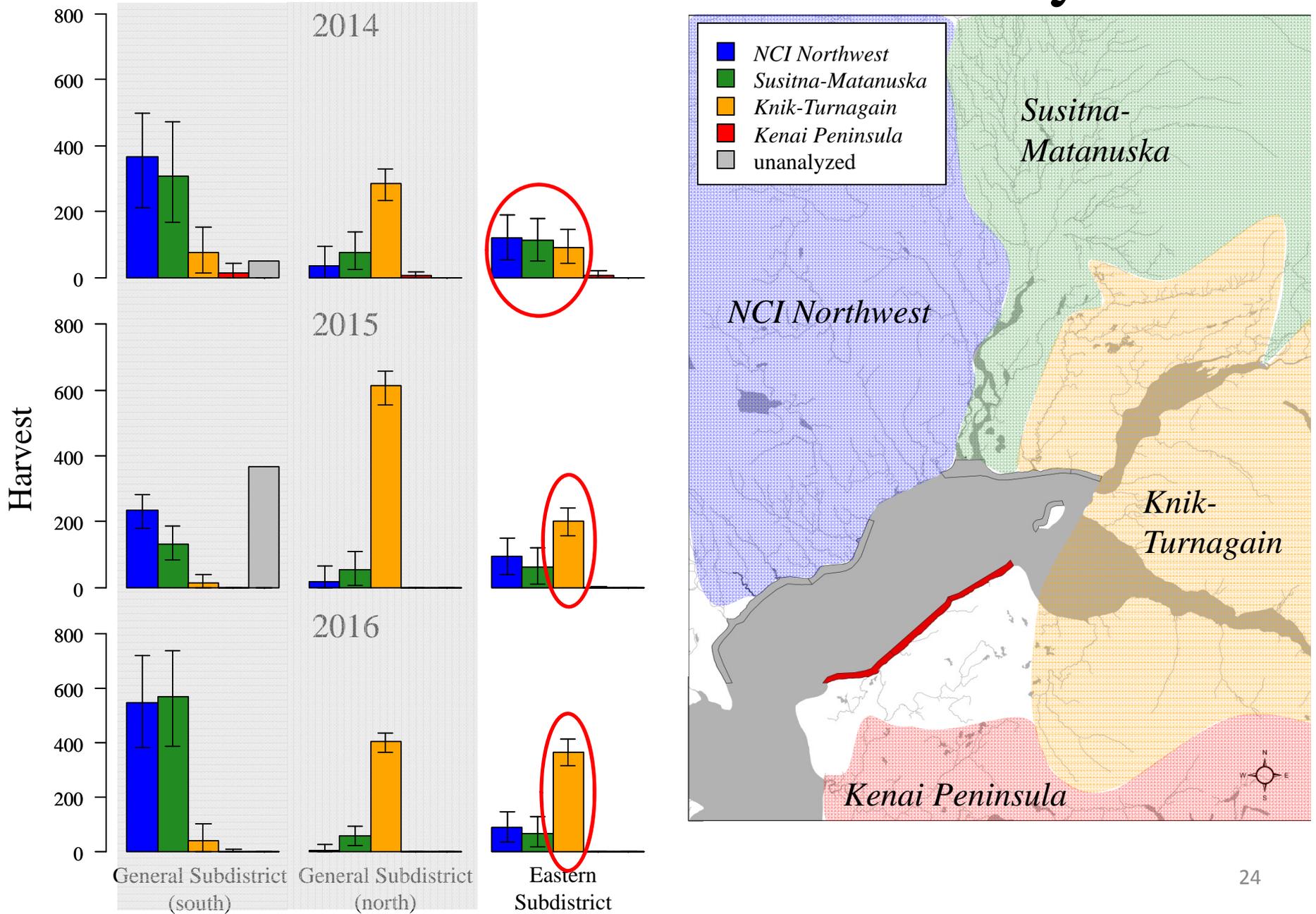
Northern District commercial by area



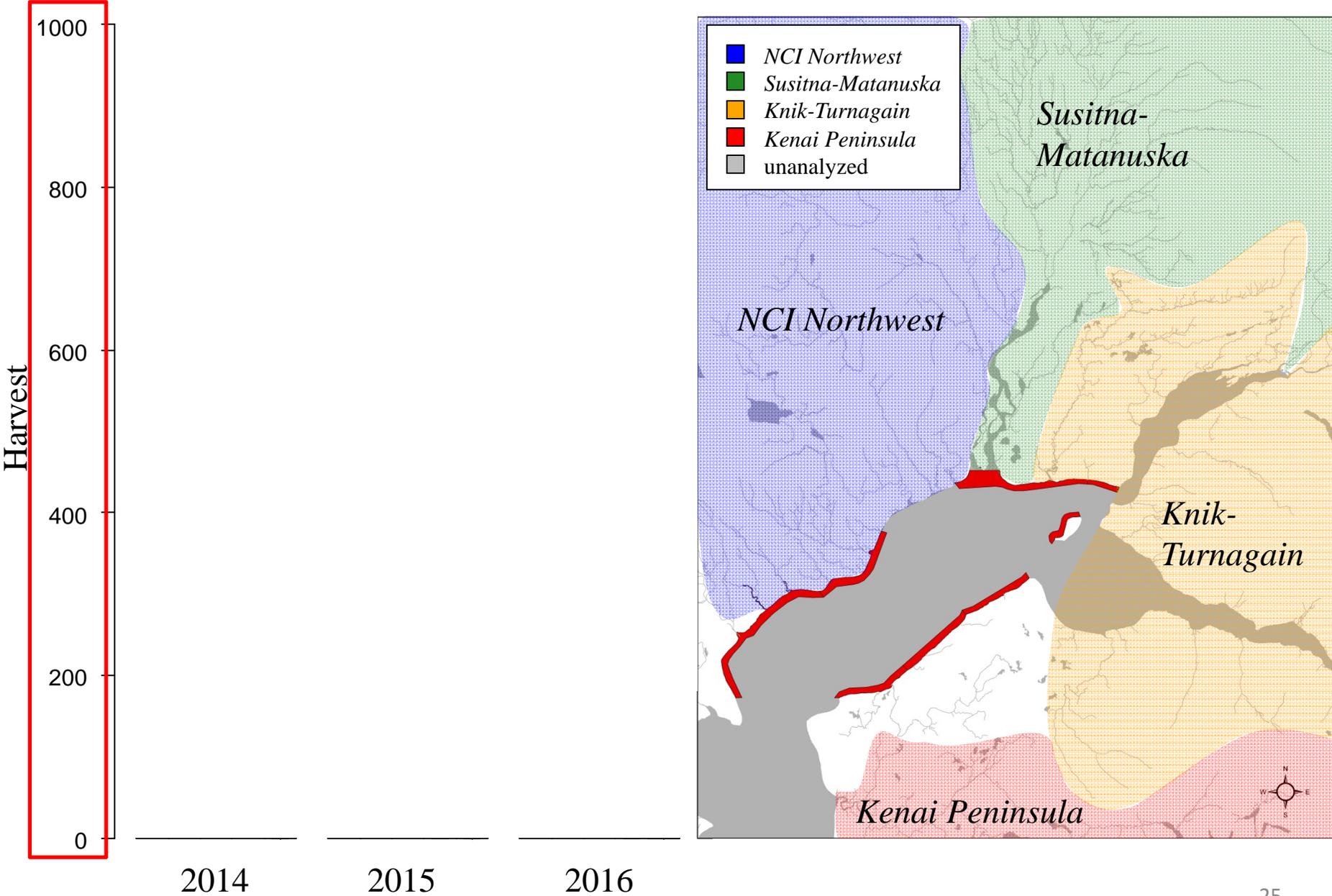
Northern District commercial by area



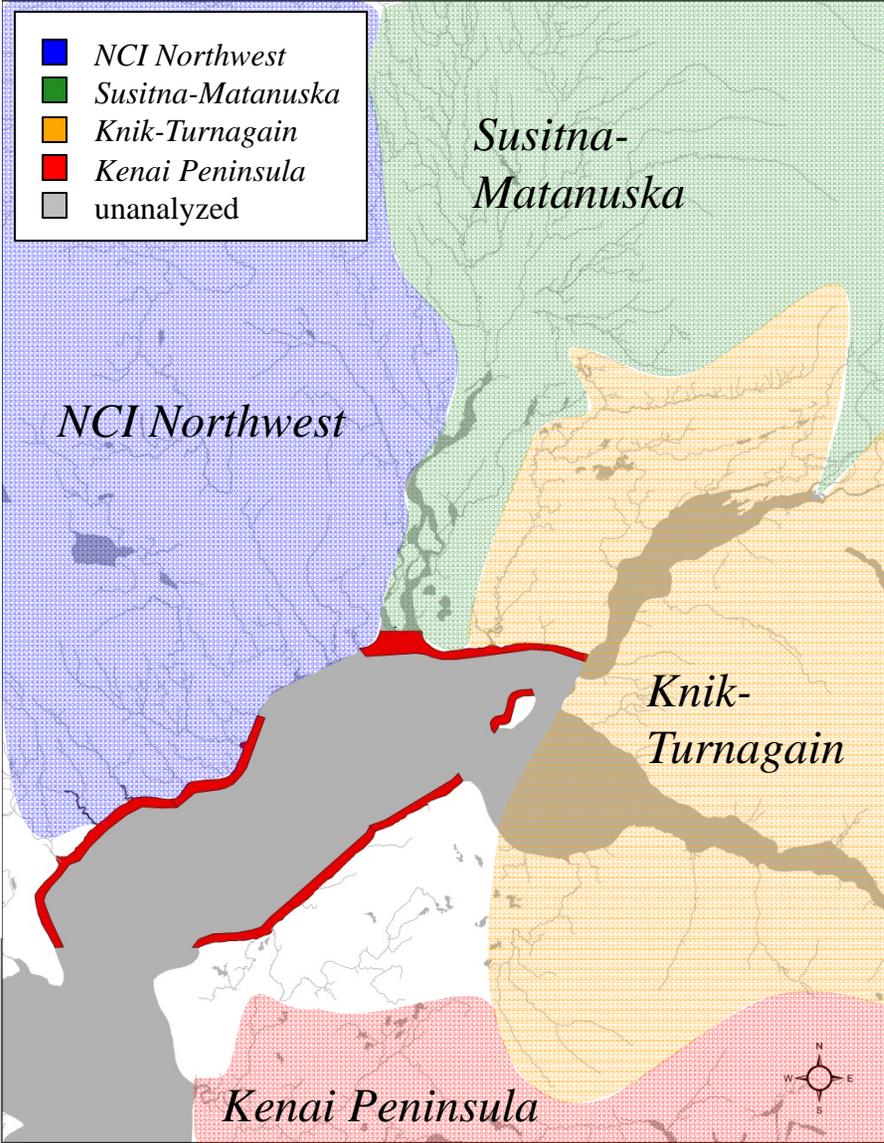
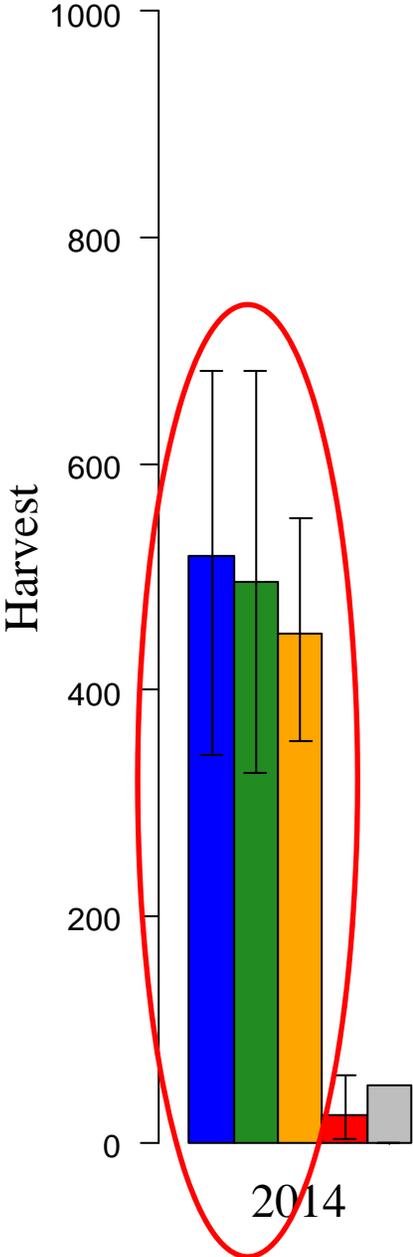
Northern District commercial by area



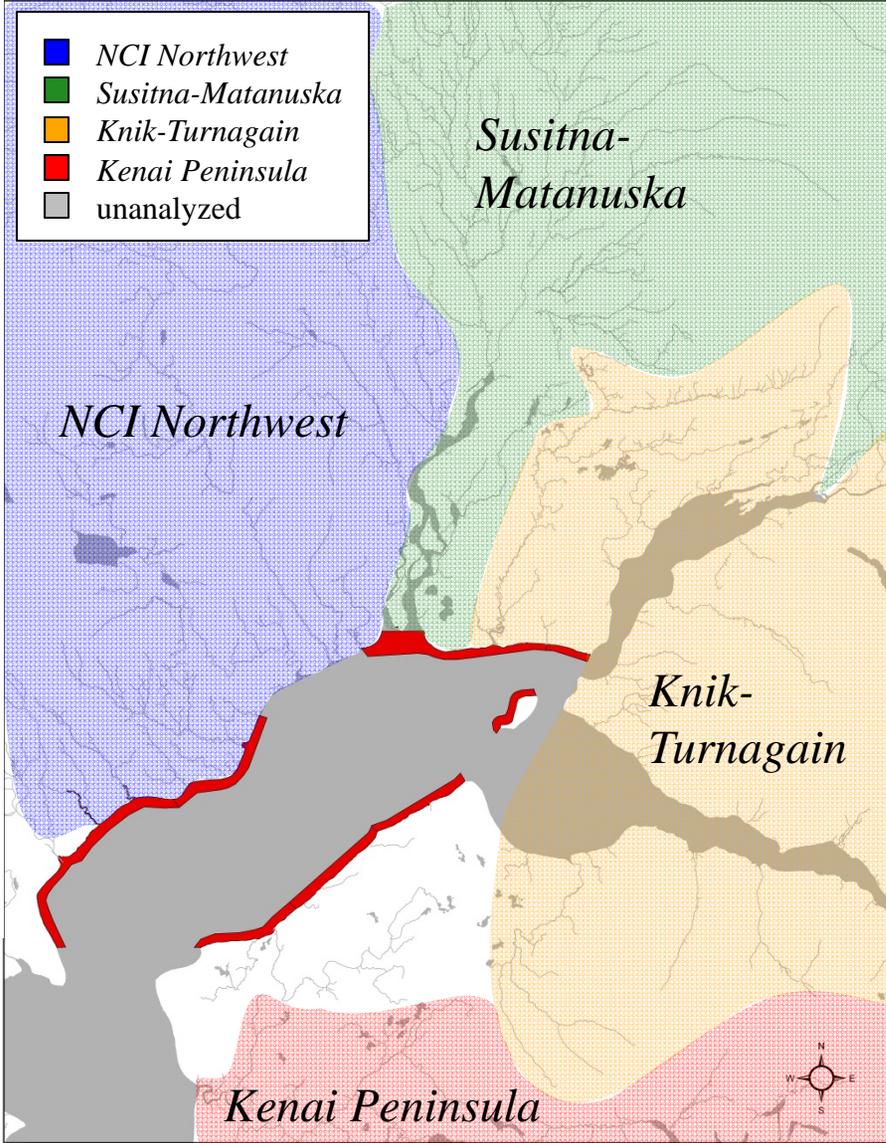
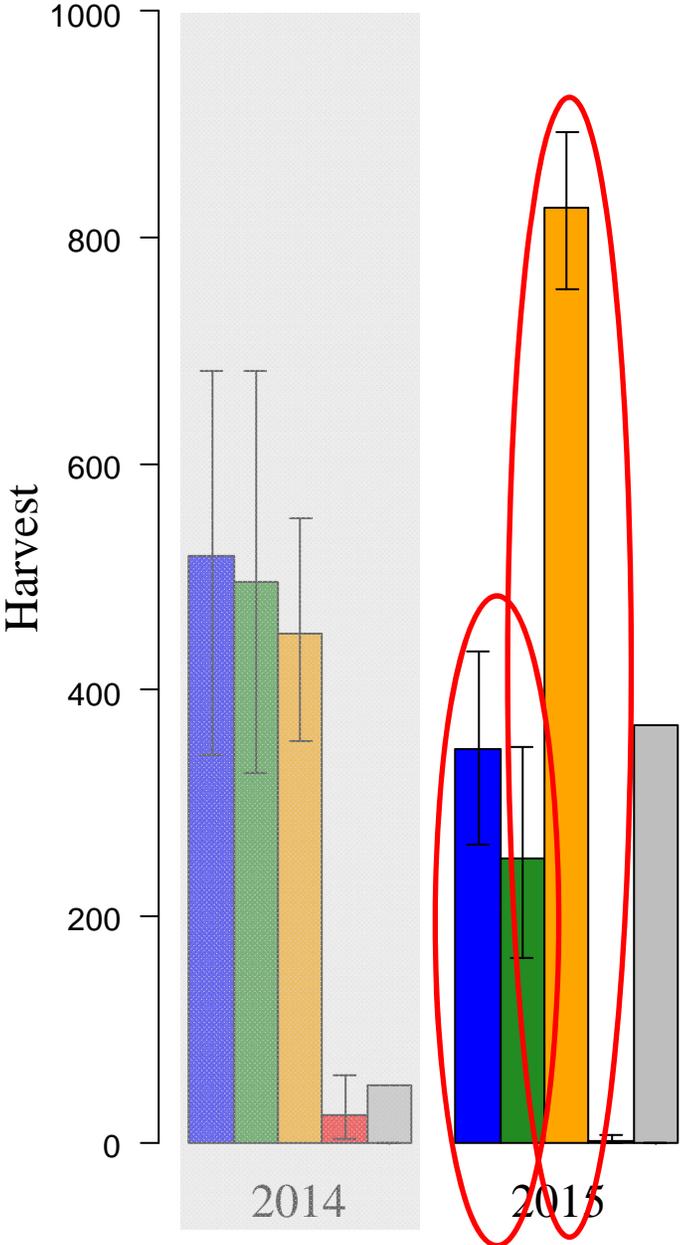
Overall Northern District commercial



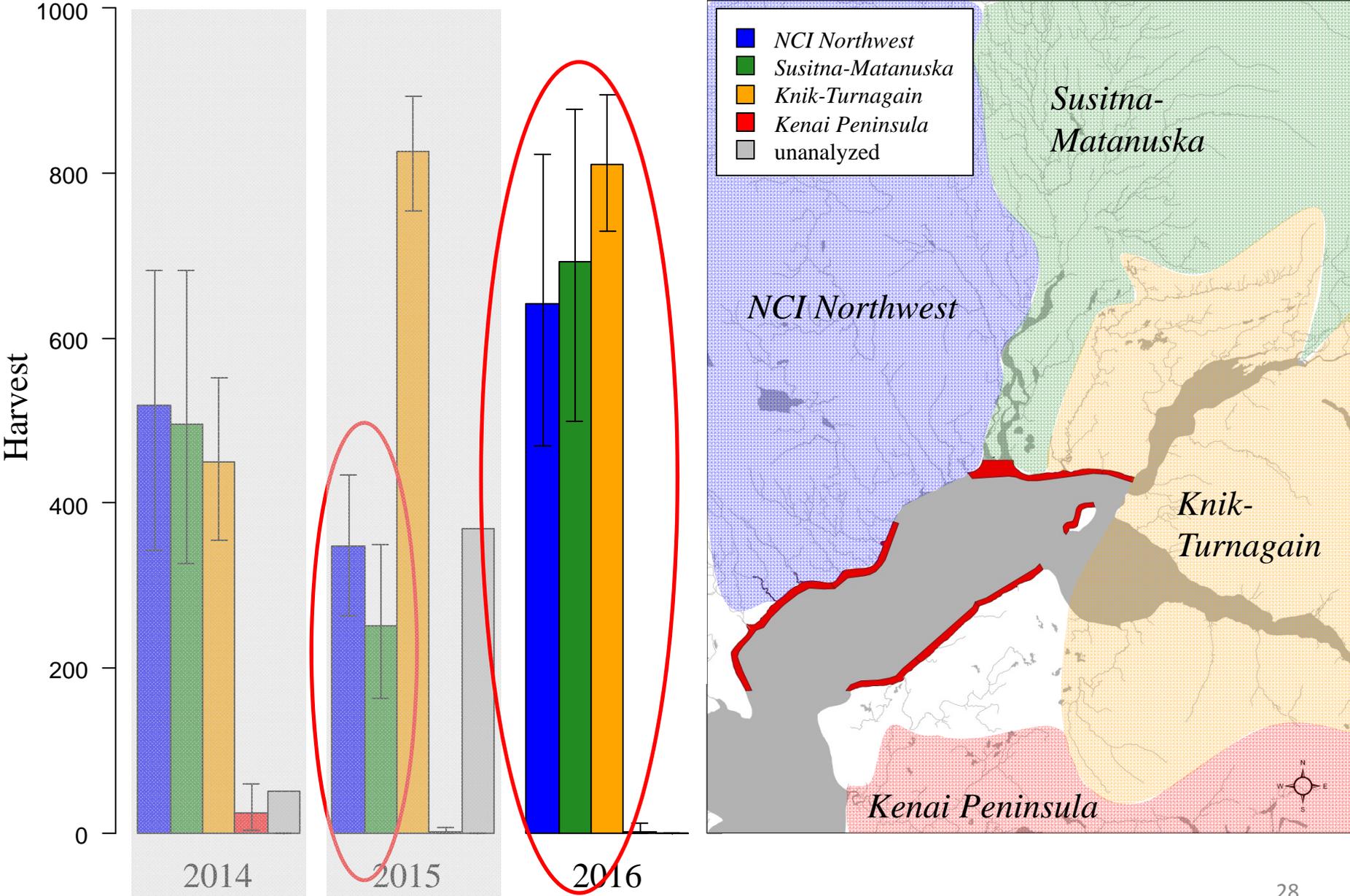
Overall Northern District commercial



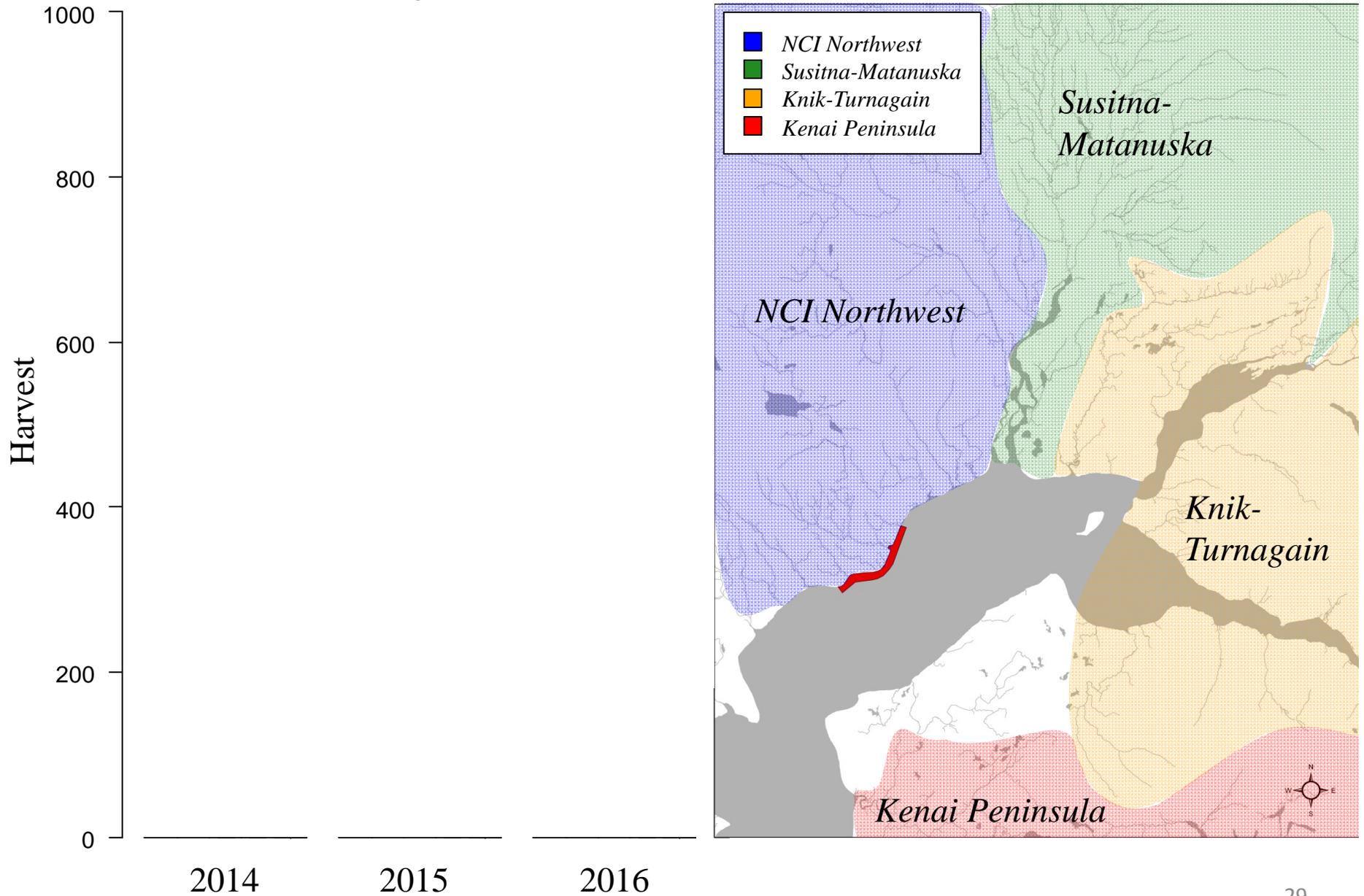
Overall Northern District commercial



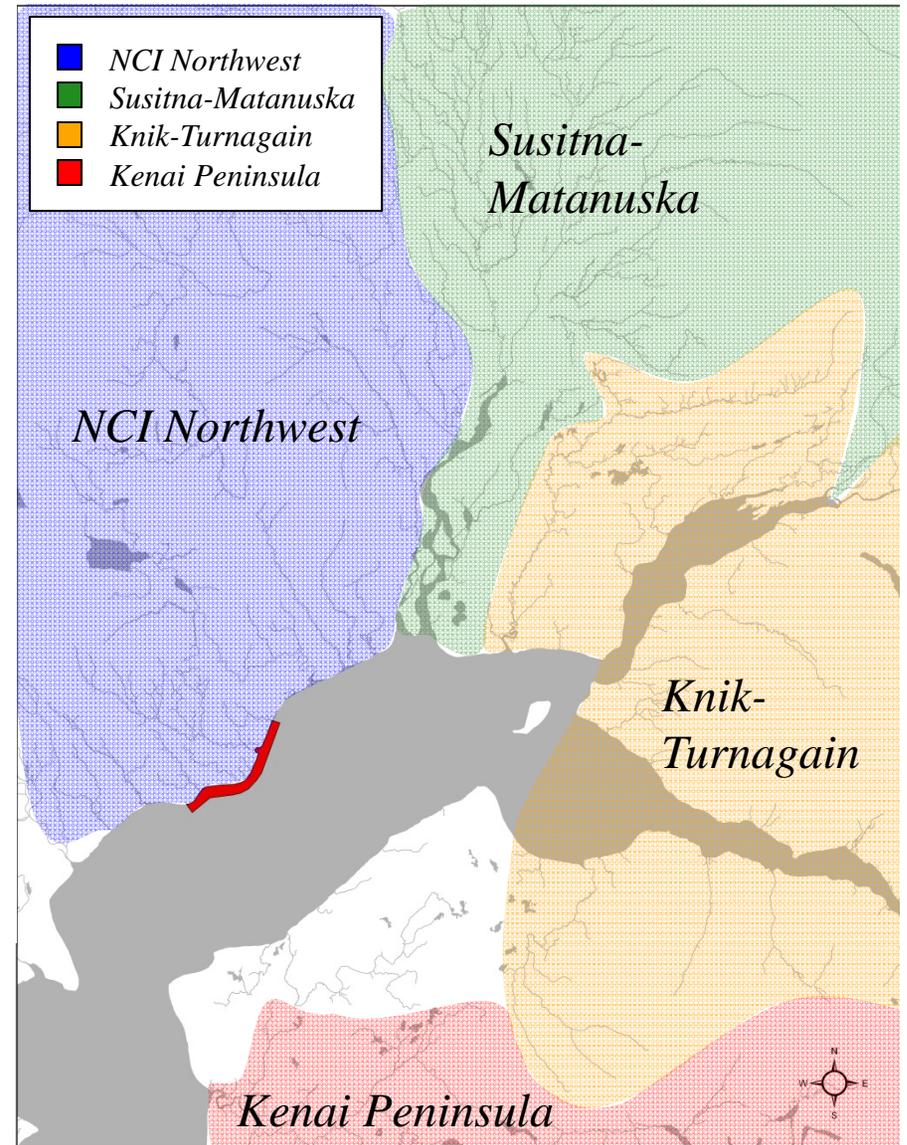
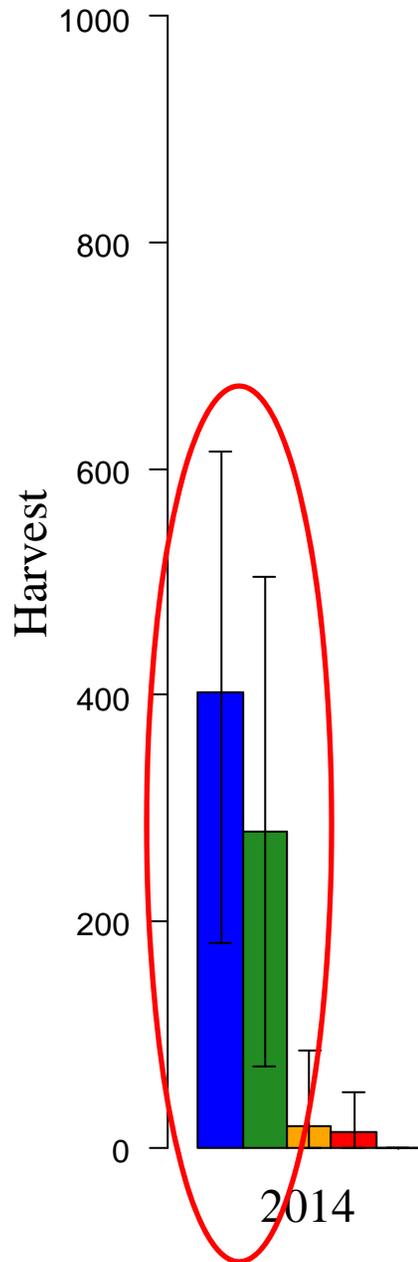
Overall Northern District commercial



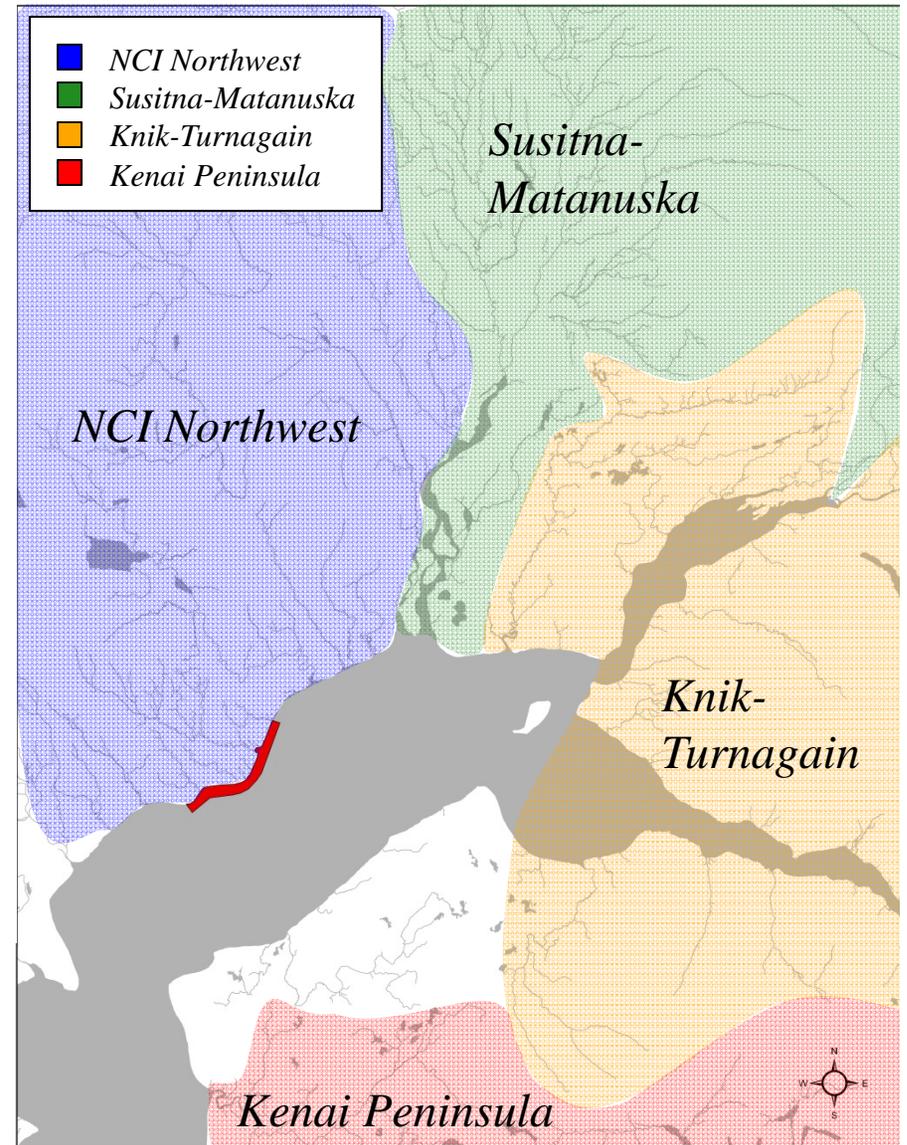
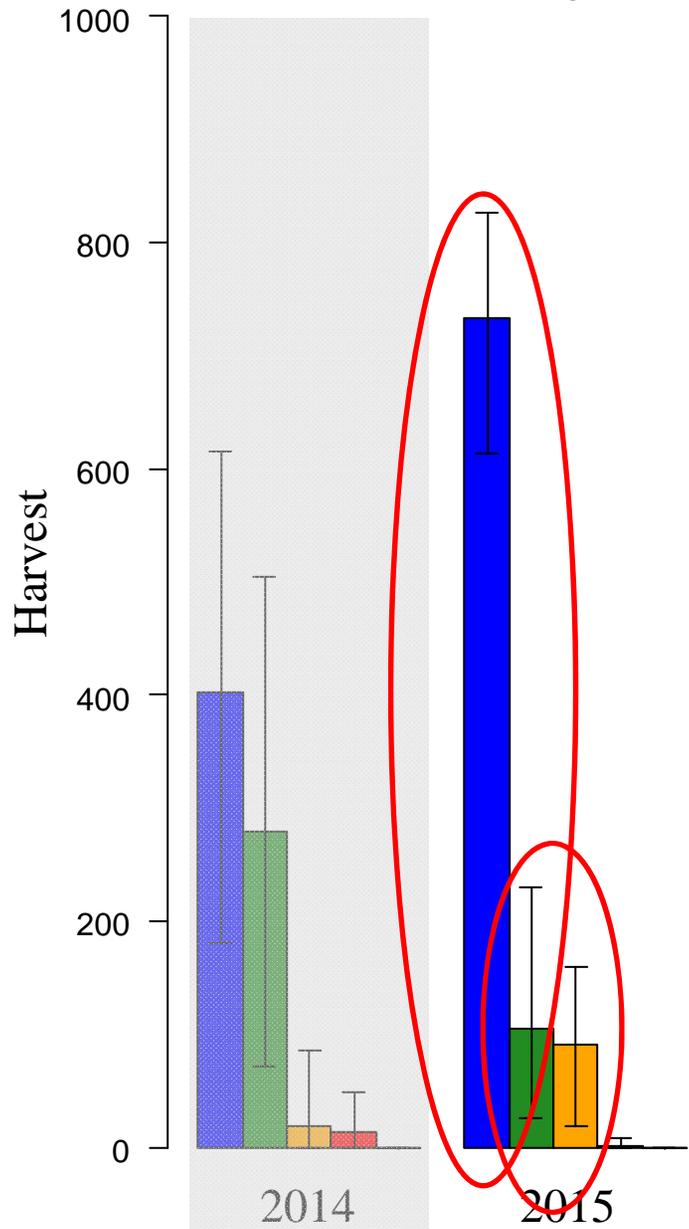
Tyonek subsistence



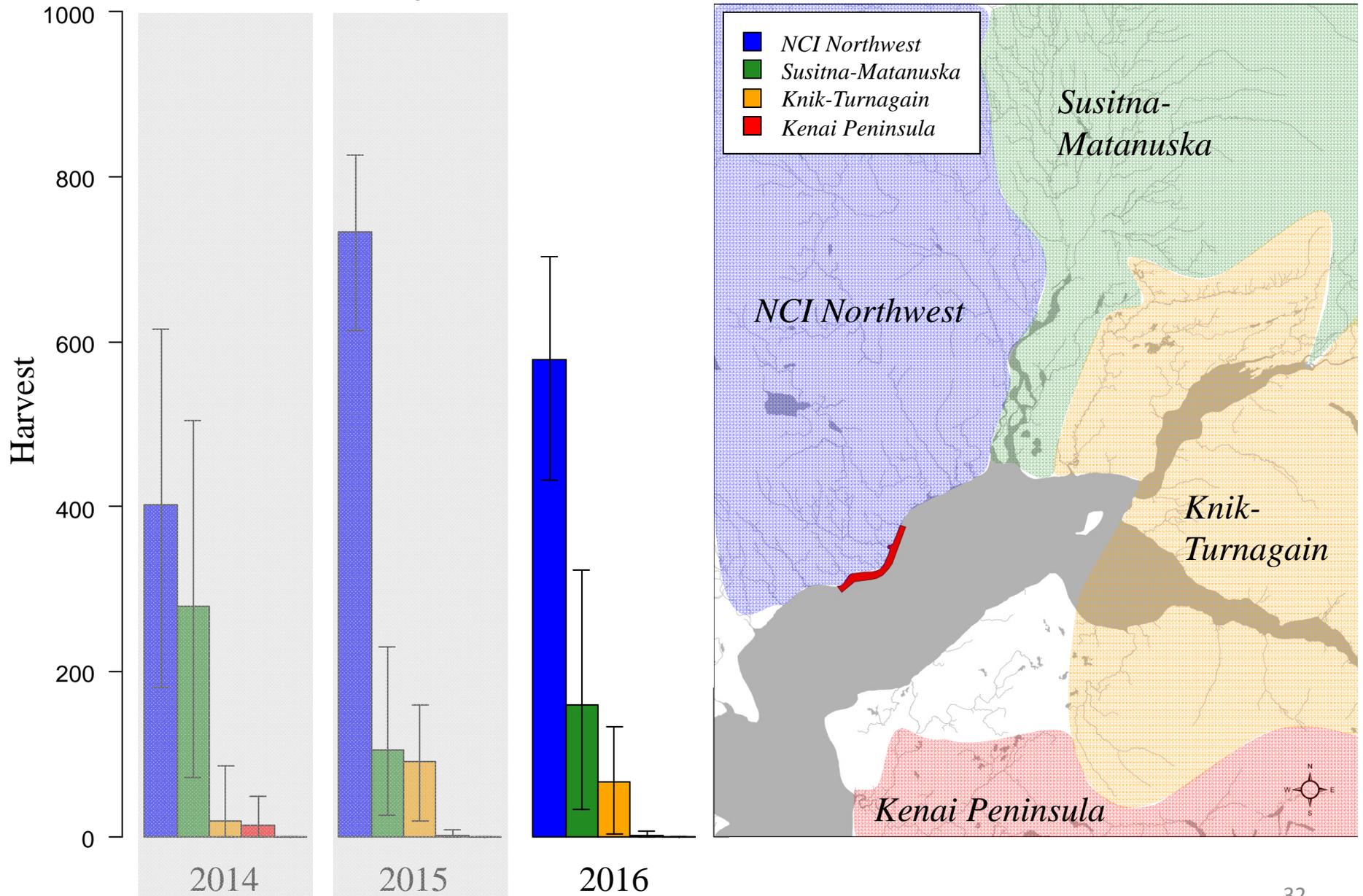
Tyonek subsistence



Tyonek subsistence



Tyonek subsistence



Interpreting results

- First information of genetic stock composition of the harvest
- Inferences outside the study years
 - Stock abundance
 - Ocean conditions
 - Prosecution of fisheries

Future work

- Analyses
 - Extension: add more genetic markers
 - Pacific States Marine Fishery Commission (PSMFC) project (2017)
- Reporting
 - AKSSF project:
 - Original project: June 2017
 - Extended project: January 2018
 - PSMFC project: June 2018

Acknowledgements

- Field sampling
 - Department staff
 - Commercial fishermen
 - Subsistence fishers
- Genetic analysis
 - Gene Conservation Lab staff
- Funding
 - AKSSF



Questions?

