

**02-01-16  
OVERVIEW:  
SALMON  
GENETICS  
BY JEFF  
GUYON,  
NOAA**

<TARGET><BILL></BILL><SUBJECT>02-01-16 OVERVIEW SALMON  
GENETICS BY JEFF GUYON,  
NOAA</SUBJECT><COMM>HRES29</COMM></TARGET>

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# Genetic Stock Composition Analysis of Salmon Incidentally Caught in Alaska Federal Groundfish Trawl Fisheries

**Jeff Guyon, PhD**

Genetics Program

NMFS, Alaska Fisheries Science Center

Auke Bay Laboratories

Juneau, AK

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February 1, 2016



Wildes et al., Fishery Bulletin, 2011



Figure 4

Underwater photo of *Sebastes melanostictus* (blackspotted rockfish) taken south of Kodiak Island, Alaska, ca. 56°N, 153°N, July 2005. Photo by D. Hanselman.

Orr and Hawkins, Fishery Bulletin, 2008

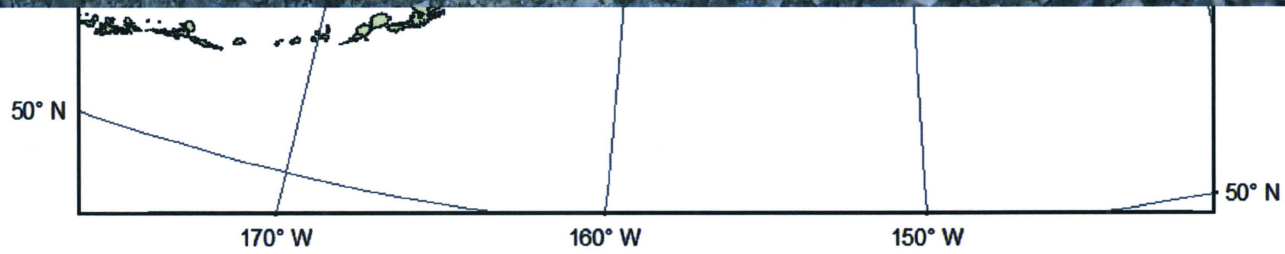
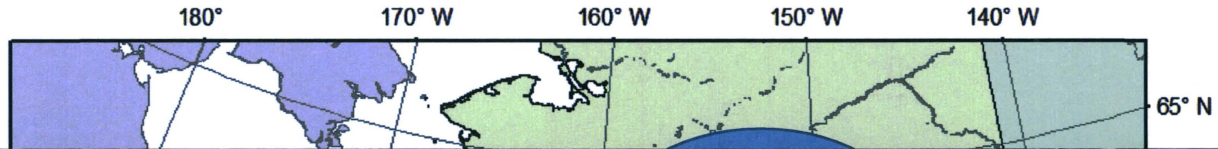


Figure 6

Fresh specimens of *Ammodytes* of the North Pacific region: (A) *A. hexapterus*, Arctic sand lance, UW 151476, 120.0 mm in standard length (SL), Norton Sound, Alaska (photograph by J. W. Orr); (B) *A. personatus*, Pacific sand lance, neotype, UW 152354, 124.0 mm SL, female, Washington, Strait of Juan de Fuca, Miller Peninsula, 25 April 2013, A. Kagley (photograph by J. W. Orr); (C) *A. japonicus*, western sand lance, FAKU 130765, 104.8 mm SL, Sea of Japan, Kyoto Prefecture, off Maizuru (photograph by Y. Kai); and (D) *Ammodytes heian* new species, peaceful sand lance, paratype, FAKU 131795, 165.9 mm SL, Fukushima Prefecture (photograph by Y. Kai).

Orr et al., Fishery Bulletin, 2015

0 162.5 325 650 Miles



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**NMFS-AFSC-292**

<http://www.afsc.noaa.gov/Publications/AFSC-TM/NOAA-TM-AFSC-292.pdf>

# **Genetic Stock Composition Analysis of Chum Salmon Bycatch from the 2013 Bering Sea Walleye Pollock Trawl Fishery**

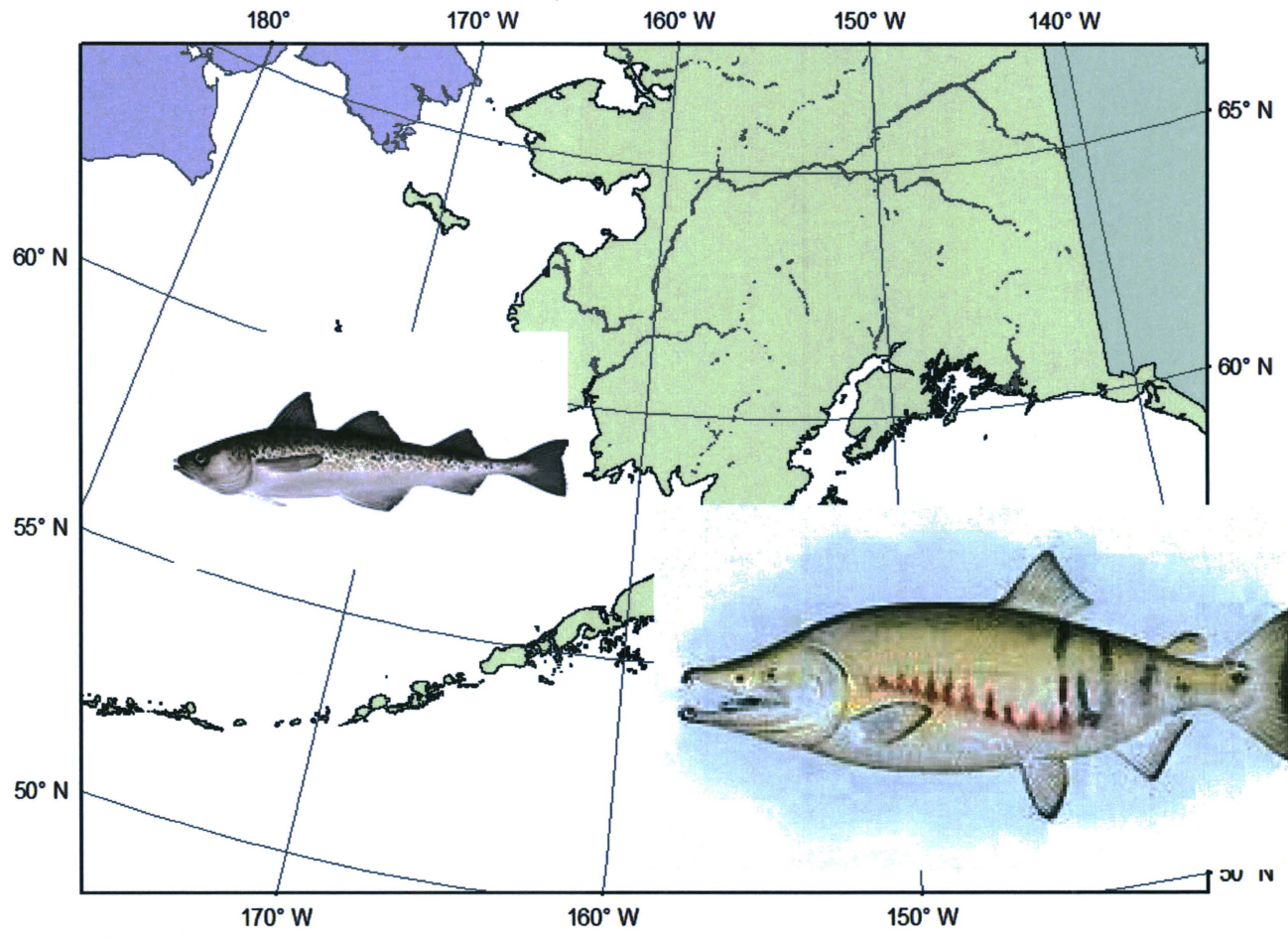
**J. A. Whittle, S. C. Vulstek, C. M. Kondzela,  
and J. R. Guyon**

Genetics Program  
Auke Bay Laboratories  
Juneau, AK

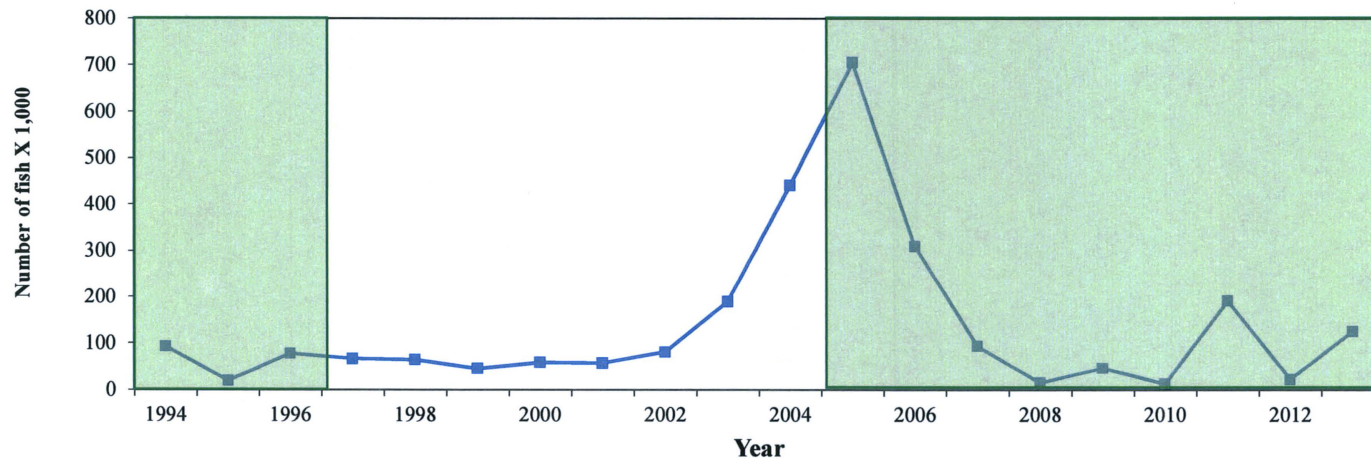
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0 162.5 325 650 Miles



# Chum Salmon Bering Sea Bycatch



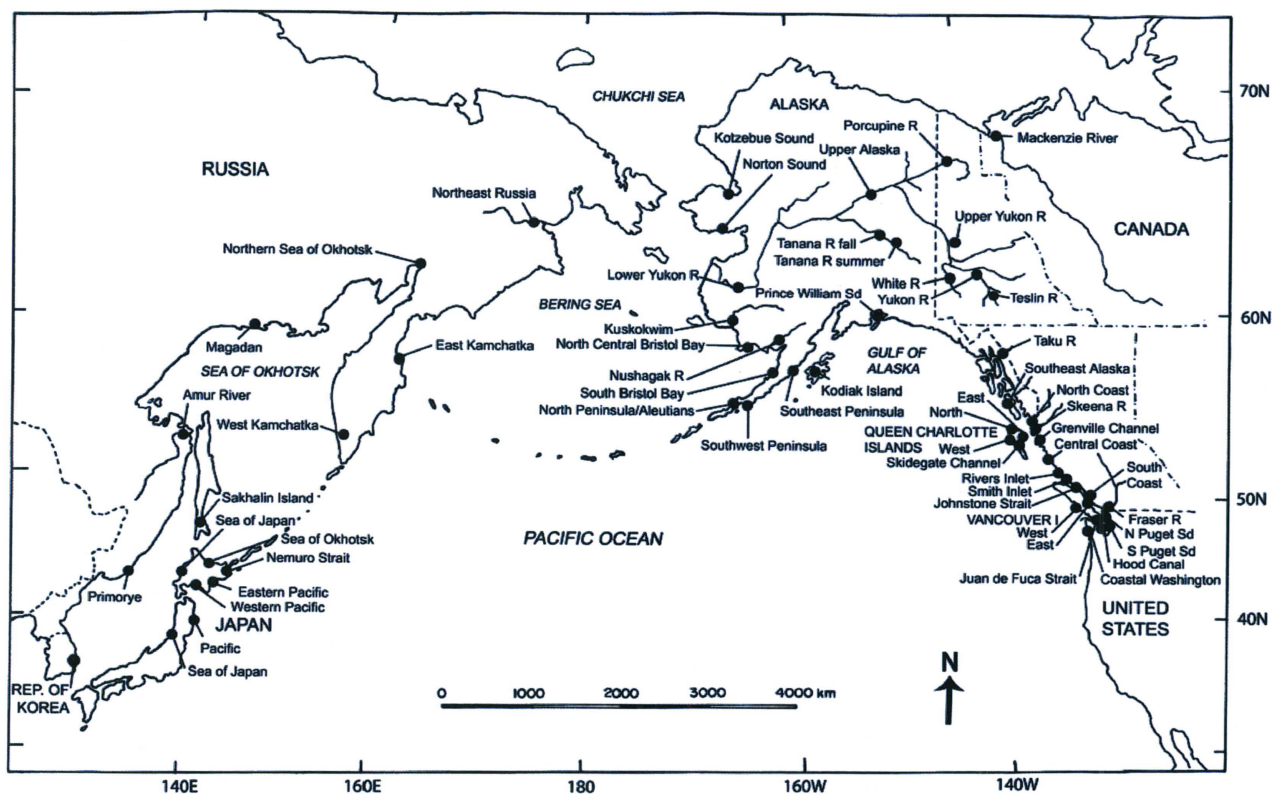
1994: Scales (Patton et al., 1998) - 1,204 samples

1994-1995: Allozymes (Wilmot et al., 1998) - 457 (1994) and 1,680 (1995) samples

1996: Allozymes (Seeb et al., 2004) – Eastern shelf

2005–2013: Microsatellites - 1,084 (2005), 1,367 (2006), 1,279 (2007), 629 (2008), 1,437 (2009), 1,048 (2010), 1,472 (2011), 673 (2012), 4,123 (2013) samples

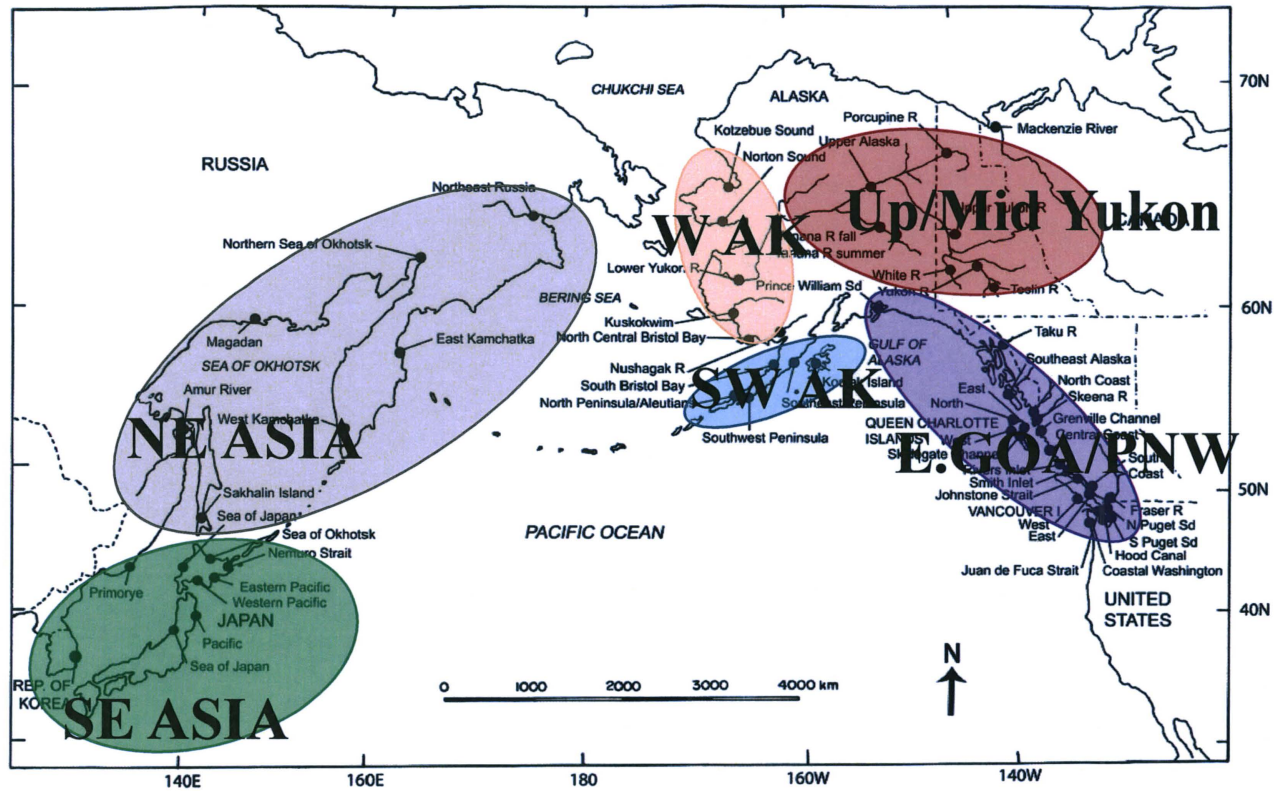
# DFO Microsatellite Chum Salmon Baseline



**Figure 1**

Map of the Pacific Rim indicating the general geographic regions where chum salmon (*Oncorhynchus keta*) from 381 populations were surveyed. The regions are listed in Table 1.

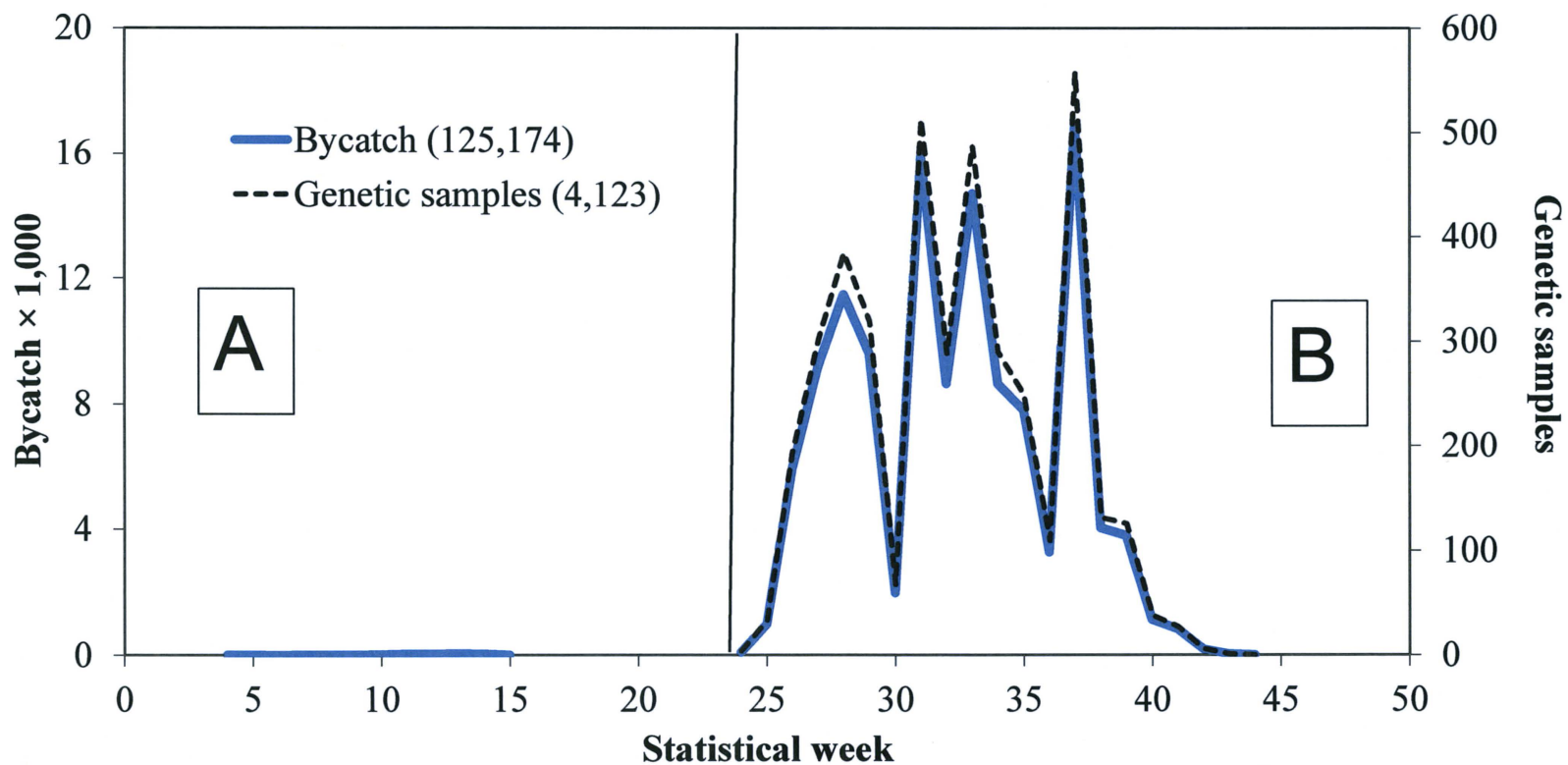
# Our Stock Groupings



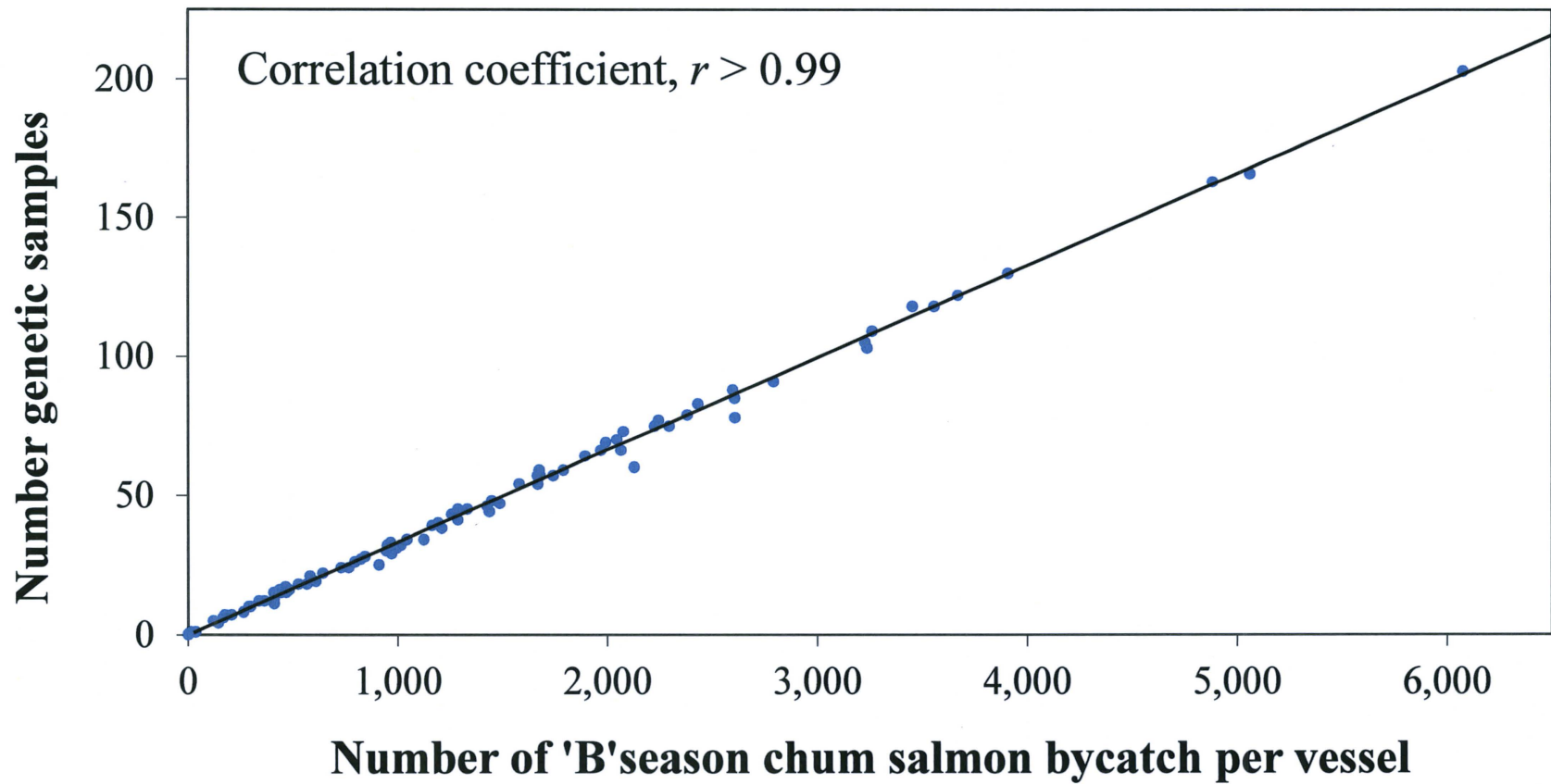
**Figure 1**

Map of the Pacific Rim indicating the general geographic regions where chum salmon (*Oncorhynchus keta*) from 381 populations were surveyed. The regions are listed in Table 1.

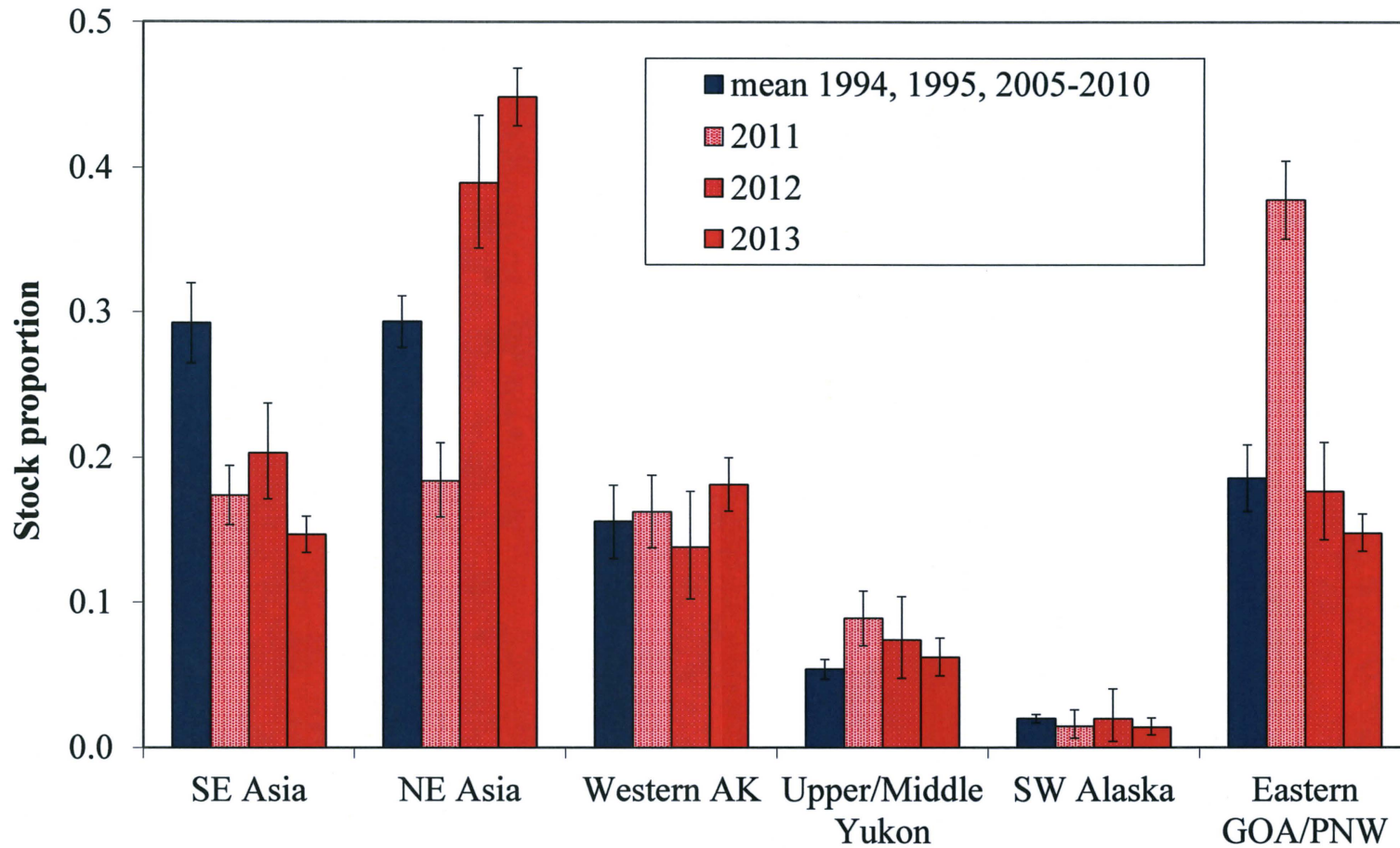
# 2013 Chum Salmon Bering Sea Bycatch



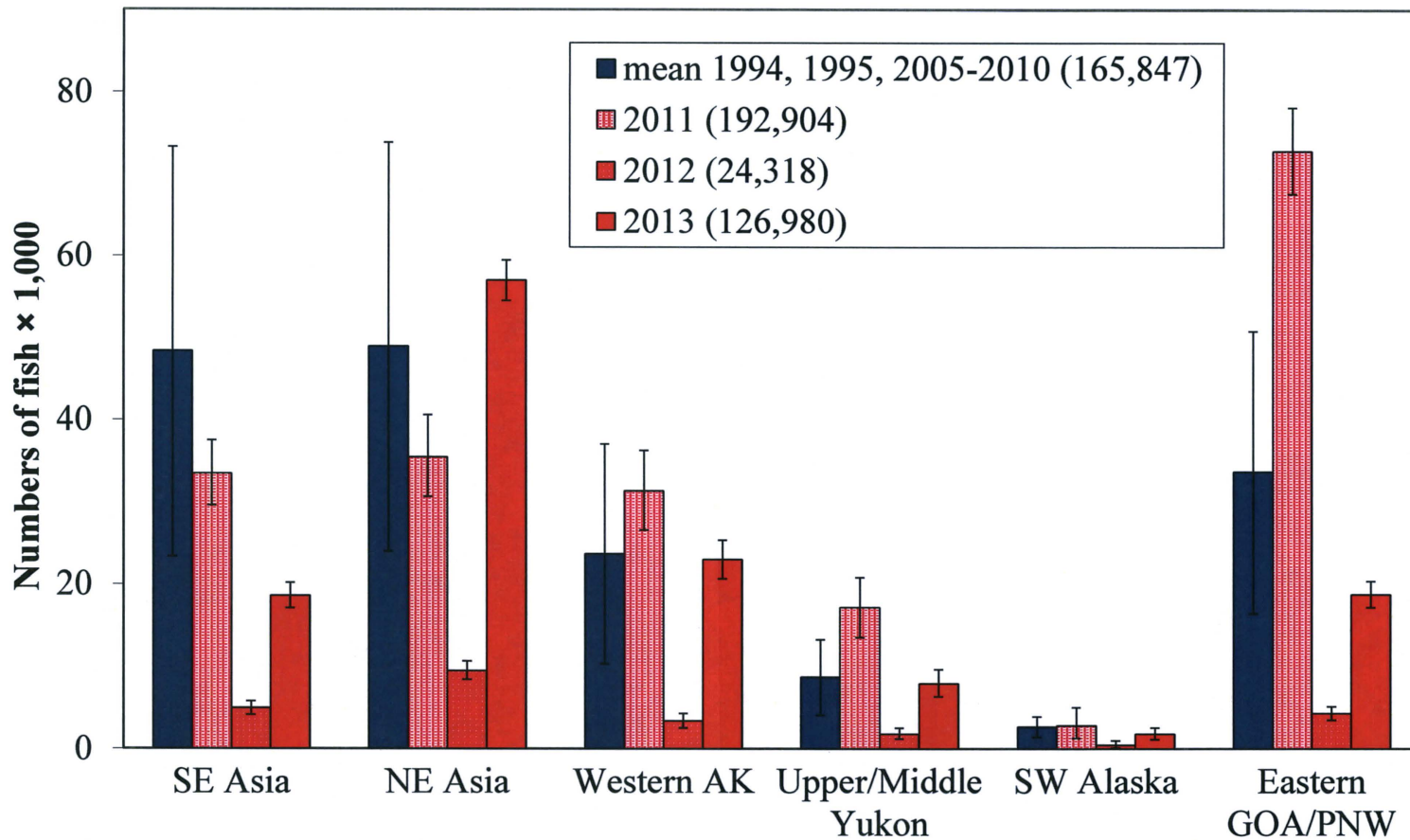
## 2013 Chum Salmon Bering Sea Bycatch



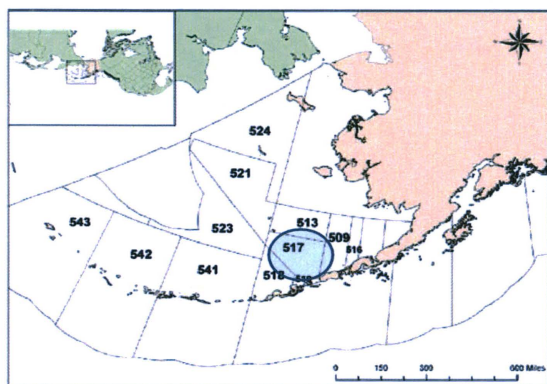
# Chum Salmon Bering Sea Bycatch - Proportions



# Chum Salmon Bering Sea Bycatch – Numbers

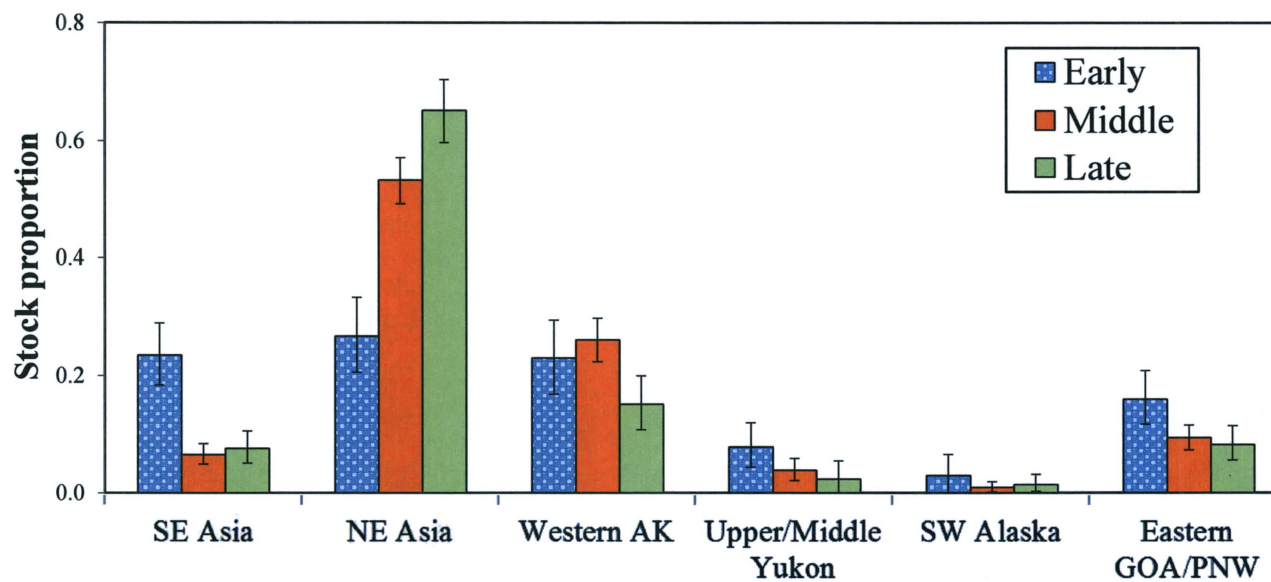


# 2013 Chum Salmon Bering Sea Bycatch



## Area 517

Reporting area	Time period	Number of samples
517	Early	304
517	Middle	1,004
517	Late	473



# CIAP-WASC chum salmon collections

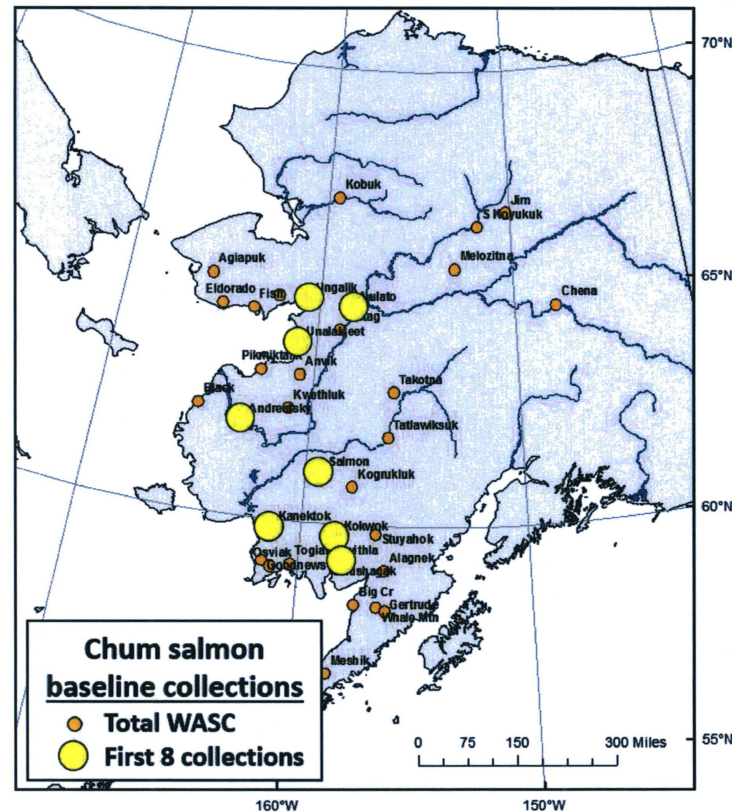
## Goal II

### Objective 1

- Genotype samples from each of 32 collections at pre-existing and new microsatellite markers.

### Objective 2

- Genotype mixture samples from lower Yukon and Kuskokwim rivers.



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**NMFS-AFSC-310**

<http://www.afsc.noaa.gov/Publications/AFSC-TM/NOAA-TM-AFSC-310.pdf>

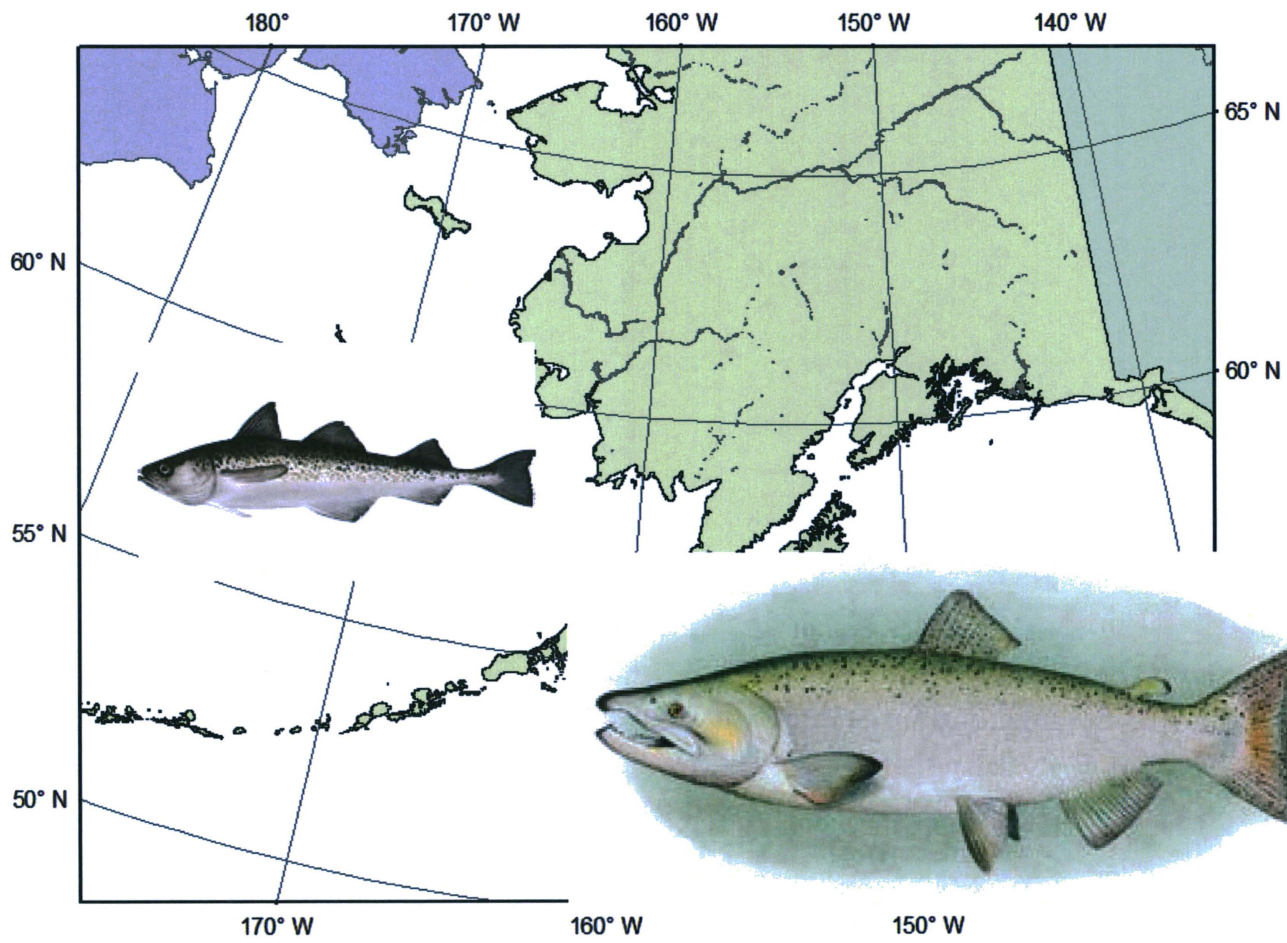
# Genetic Stock Composition Analysis of the Chinook Salmon Bycatch from the **2014** Bering Sea Walleye Pollock (*Gadus chalcogrammus*) Trawl Fishery

**C.M. Guthrie, III, H. T. Nguyen, and J.R. Guyon**  
Genetics Program  
Auke Bay Laboratories  
Juneau, AK

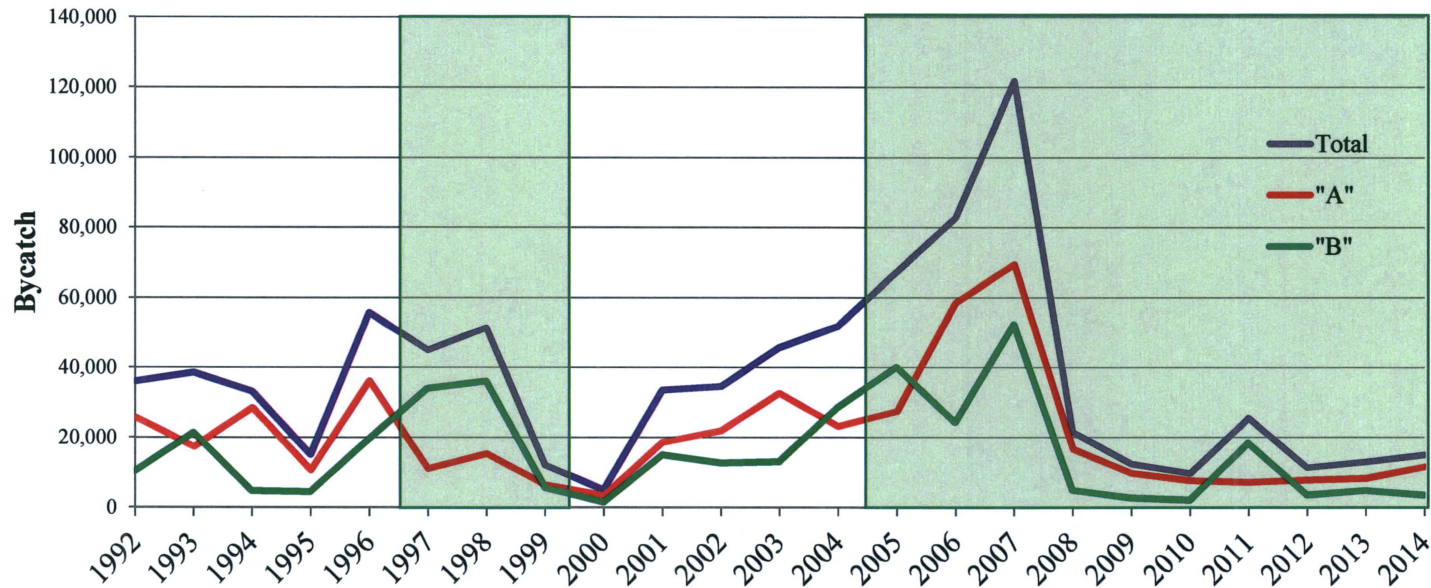
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February 1, 2016

0 162.5 325 650 Miles



# Chinook Salmon Bering Sea Bycatch

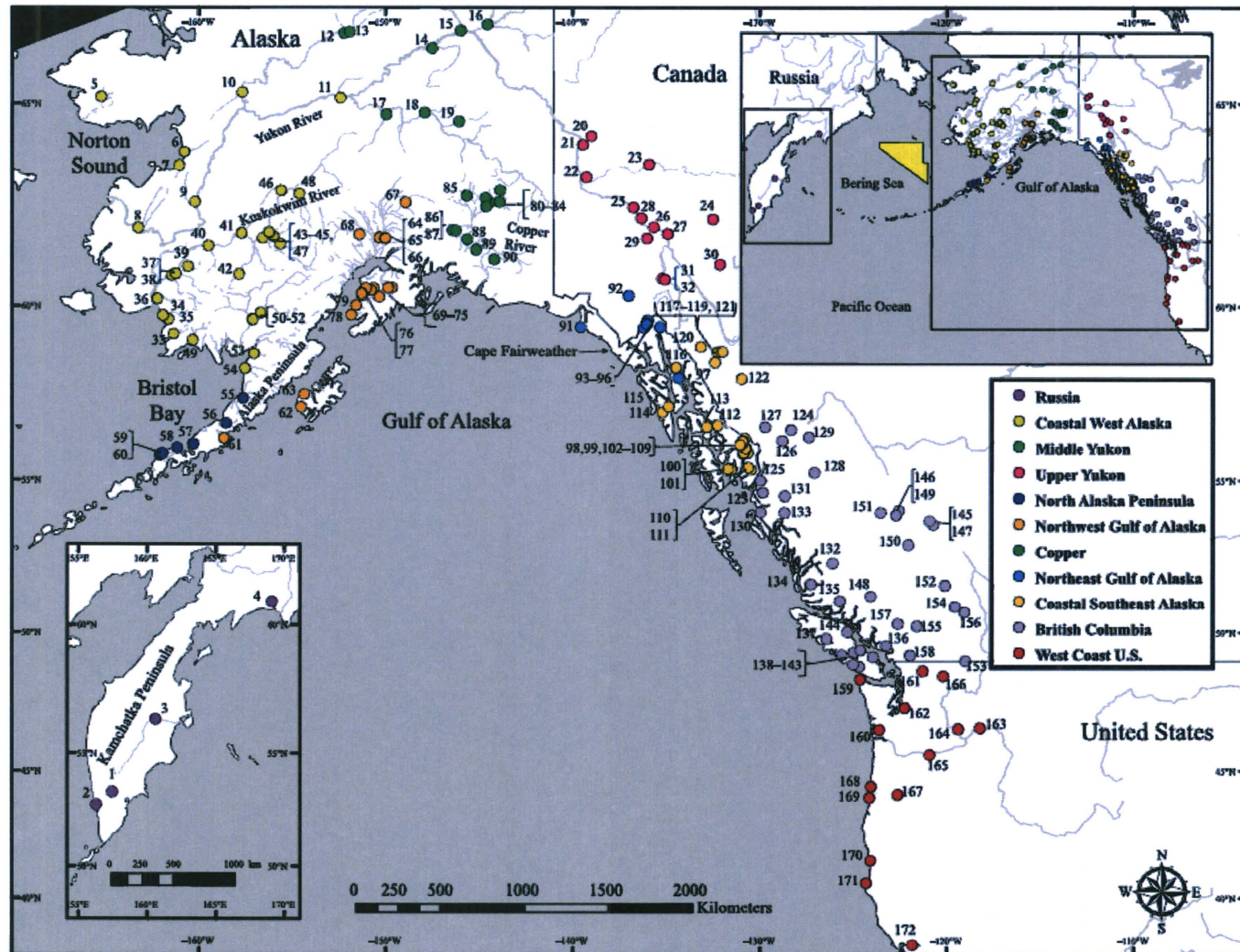


1979-1982: Scales (Myers and Rogers, 1988)

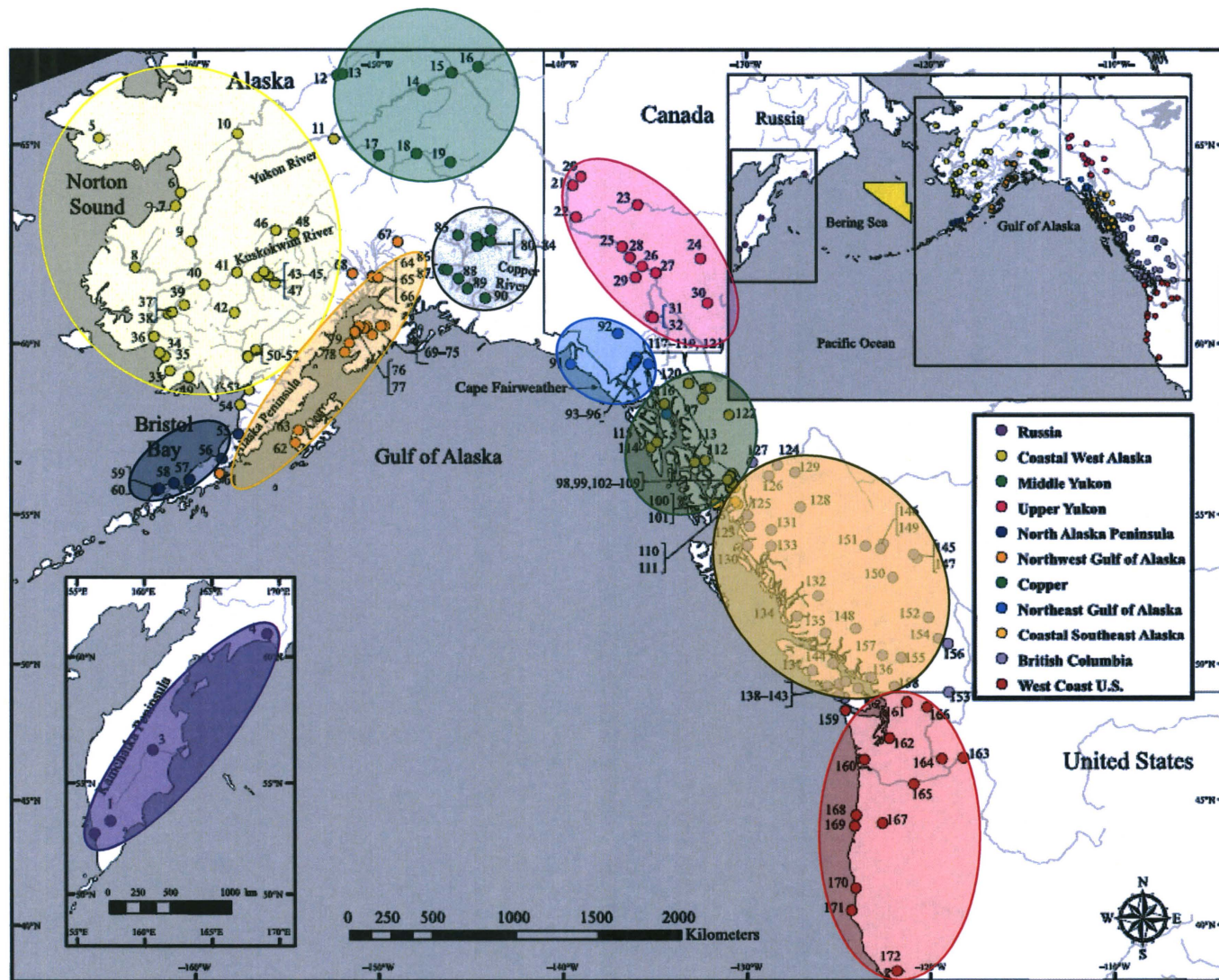
1997-1999: Scales (Myers et al., 2004)

2005 "B" - 2006: SNPs (ADF&G, Chinook Salmon EIS)

2007 – 2014: SNPs – 867 (2007 "B"), 863 (2008), 386 (2009), 826 (2010), 2,473 (2011), 1,111 (2012), 1,246 (2013), 1,385 (2014) samples.

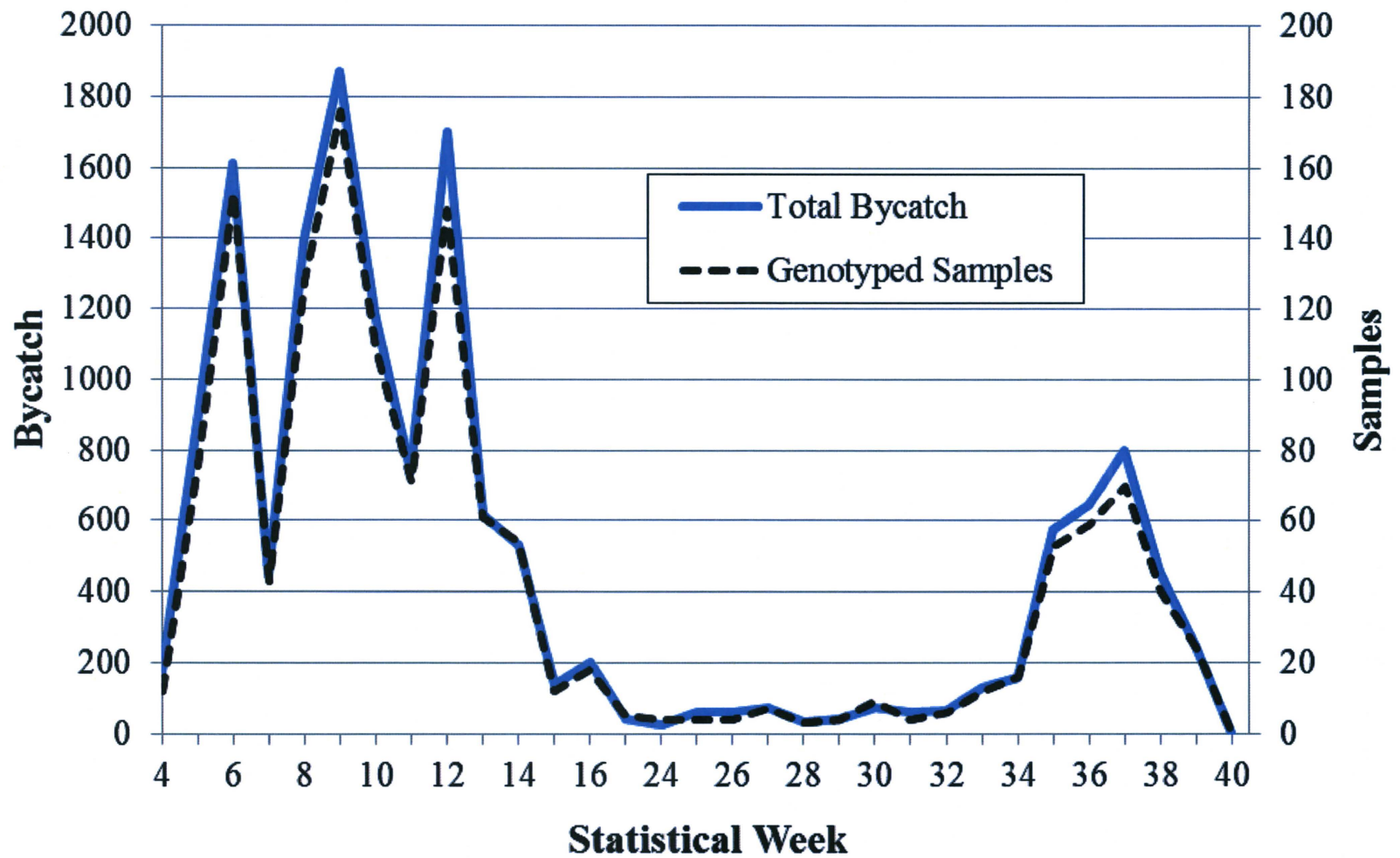


Templin et al., 2011

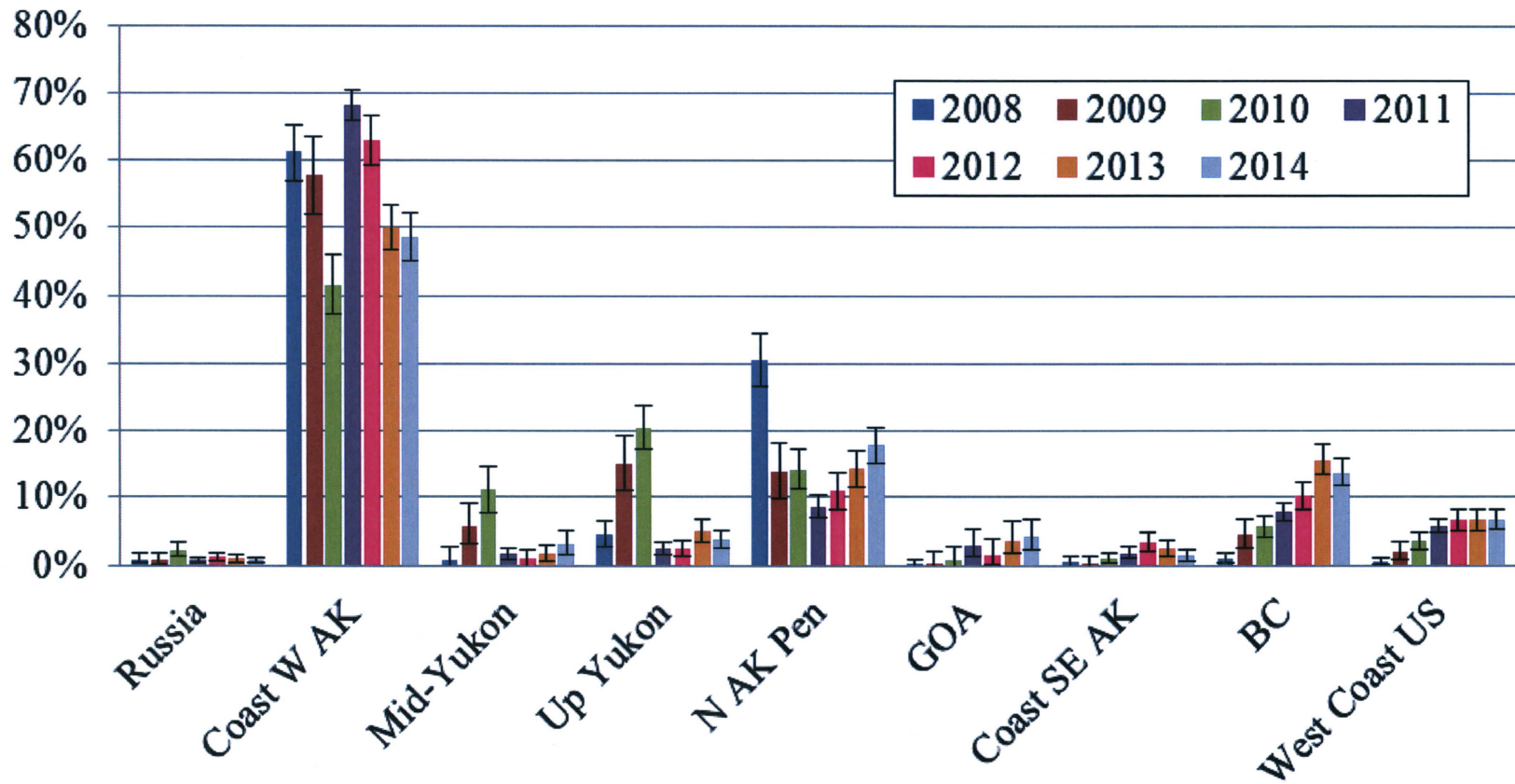


Templin et al., 2011

# 2014 Chinook Salmon Bering Sea Bycatch



# Chinook Salmon Bering Sea Bycatch - Proportions



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**NMFS-AFSC-311**

<http://www.afsc.noaa.gov/Publications/AFSC-TM/NOAA-TM-AFSC-311.pdf>

# Genetic Stock Composition Analysis to the Chinook Salmon Bycatch Samples from the **2014** Gulf of Alaska Trawl Fishery

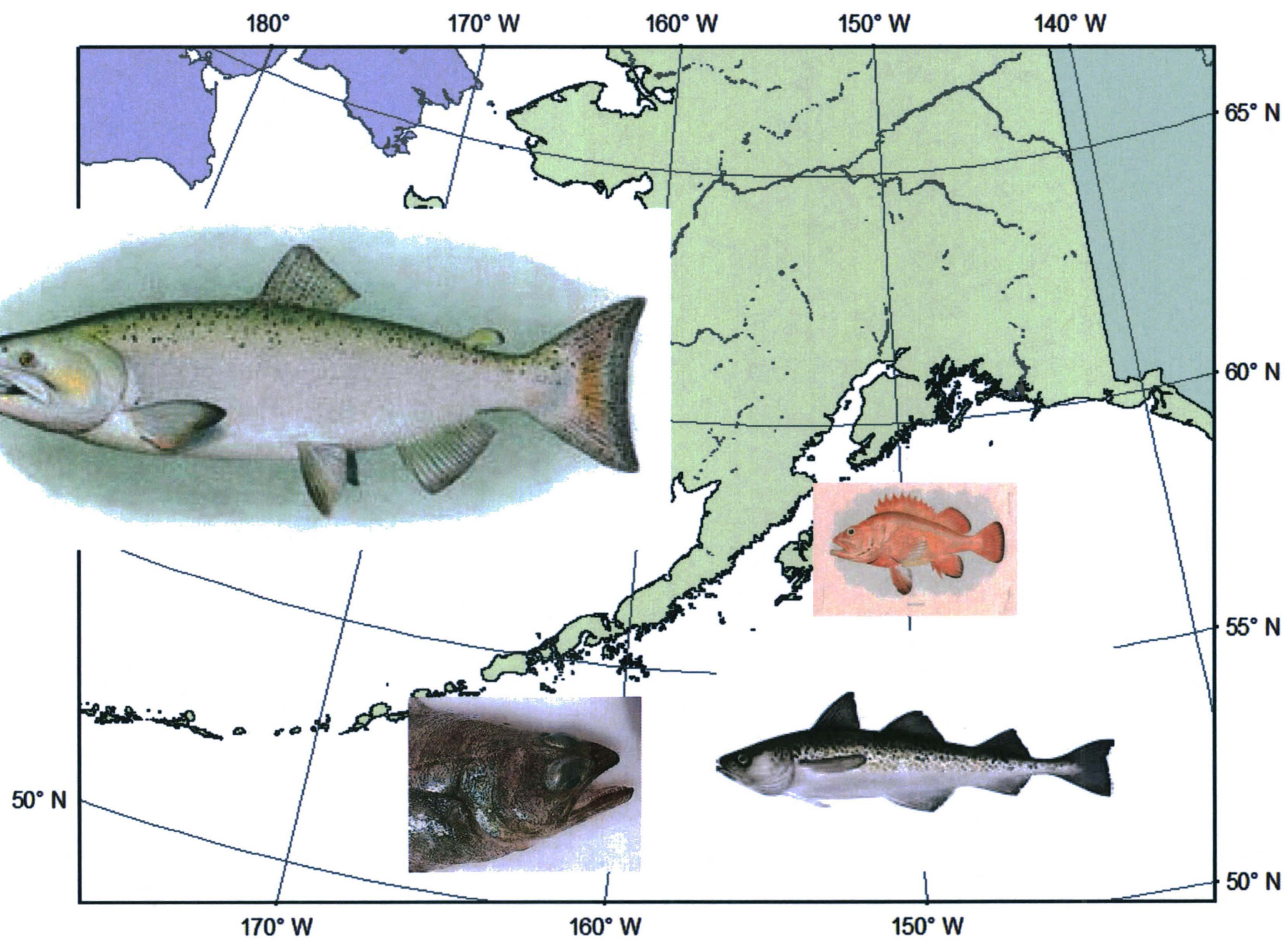
**C.M. Guthrie, III, H. T. Nguyen, and J.R. Guyon**

Genetics Program  
Auke Bay Laboratories  
Juneau, AK

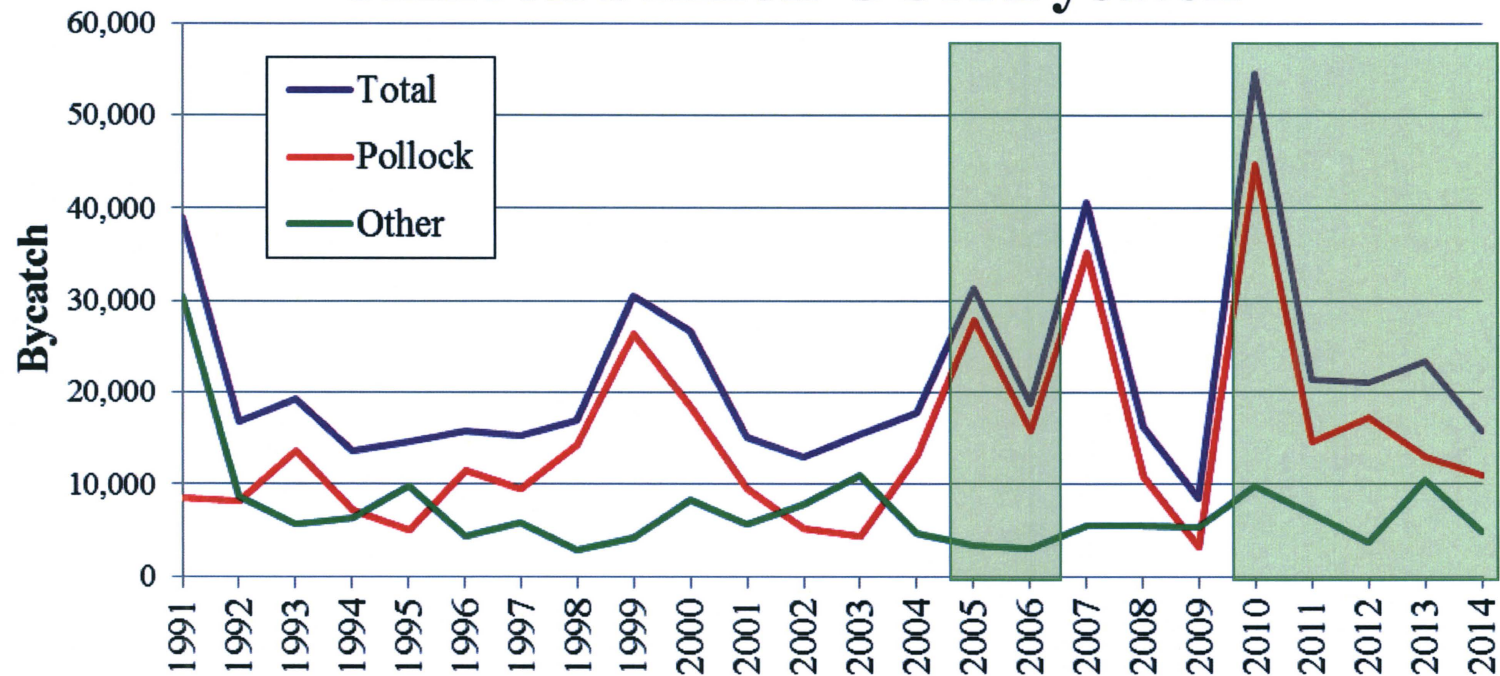
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February 1, 2016

0 162.5 325 650 Miles



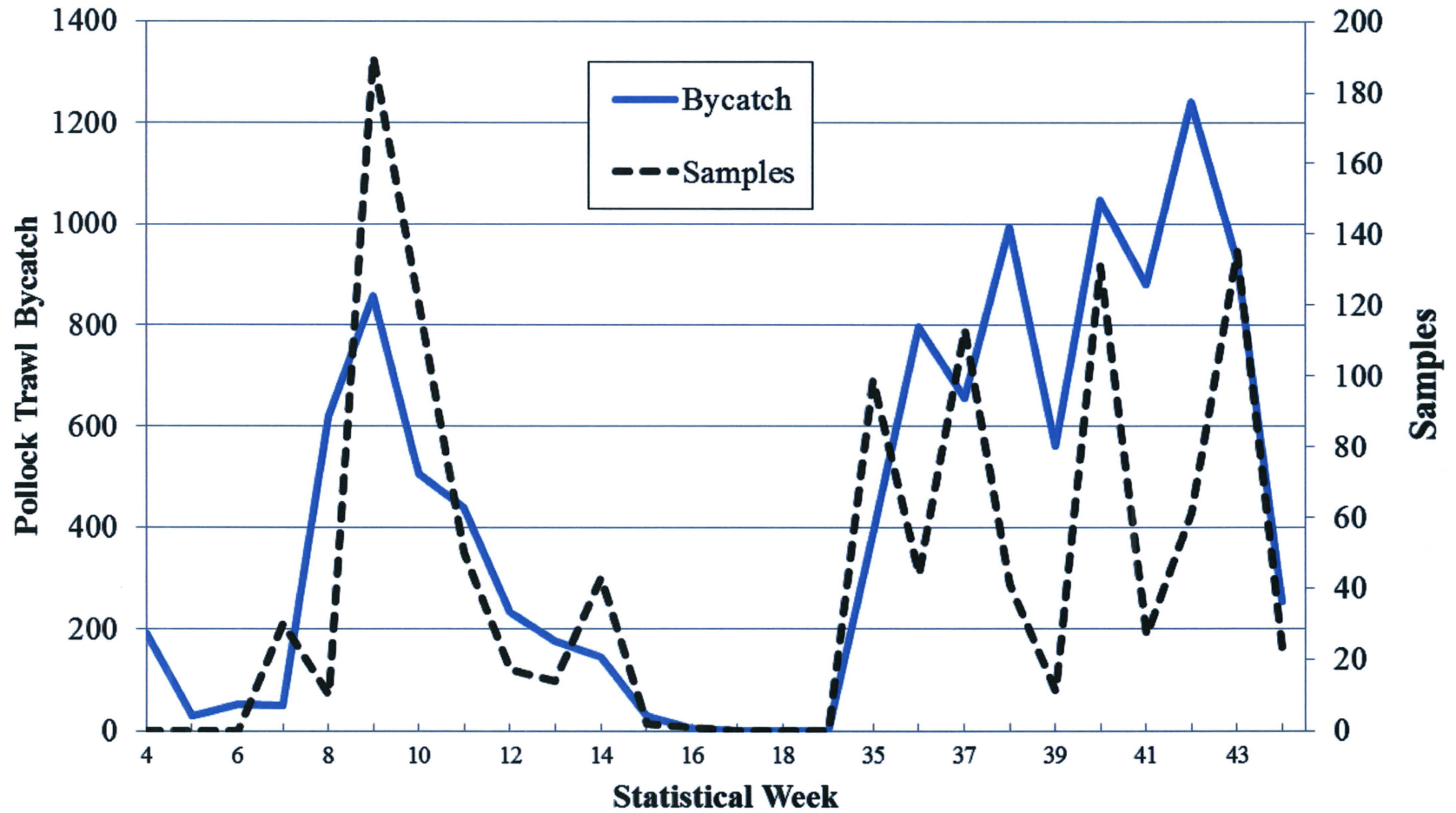
## Chinook Salmon GOA Bycatch



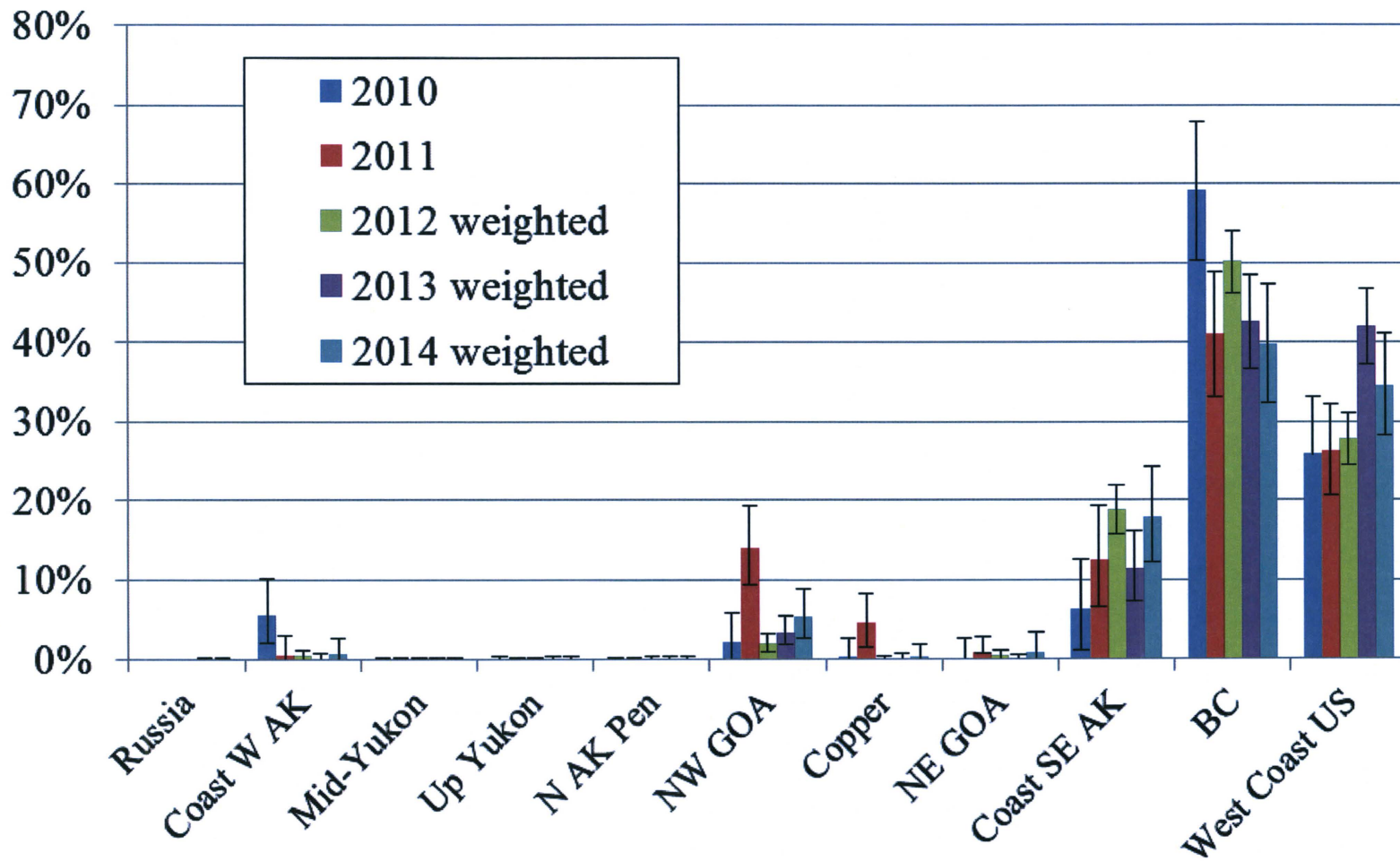
2005 – 2006: SNPs – 219 (Winter 2006), 62 (Summer 2005-6), 127 (Fall 2005-6) samples

2010 – 2014: SNPs – 161 (2010), 240 (2011), 948 (2012), 693 (2013), and 1,163 (2014) samples.

# 2014 Chinook Salmon GOA Bycatch - Pollock



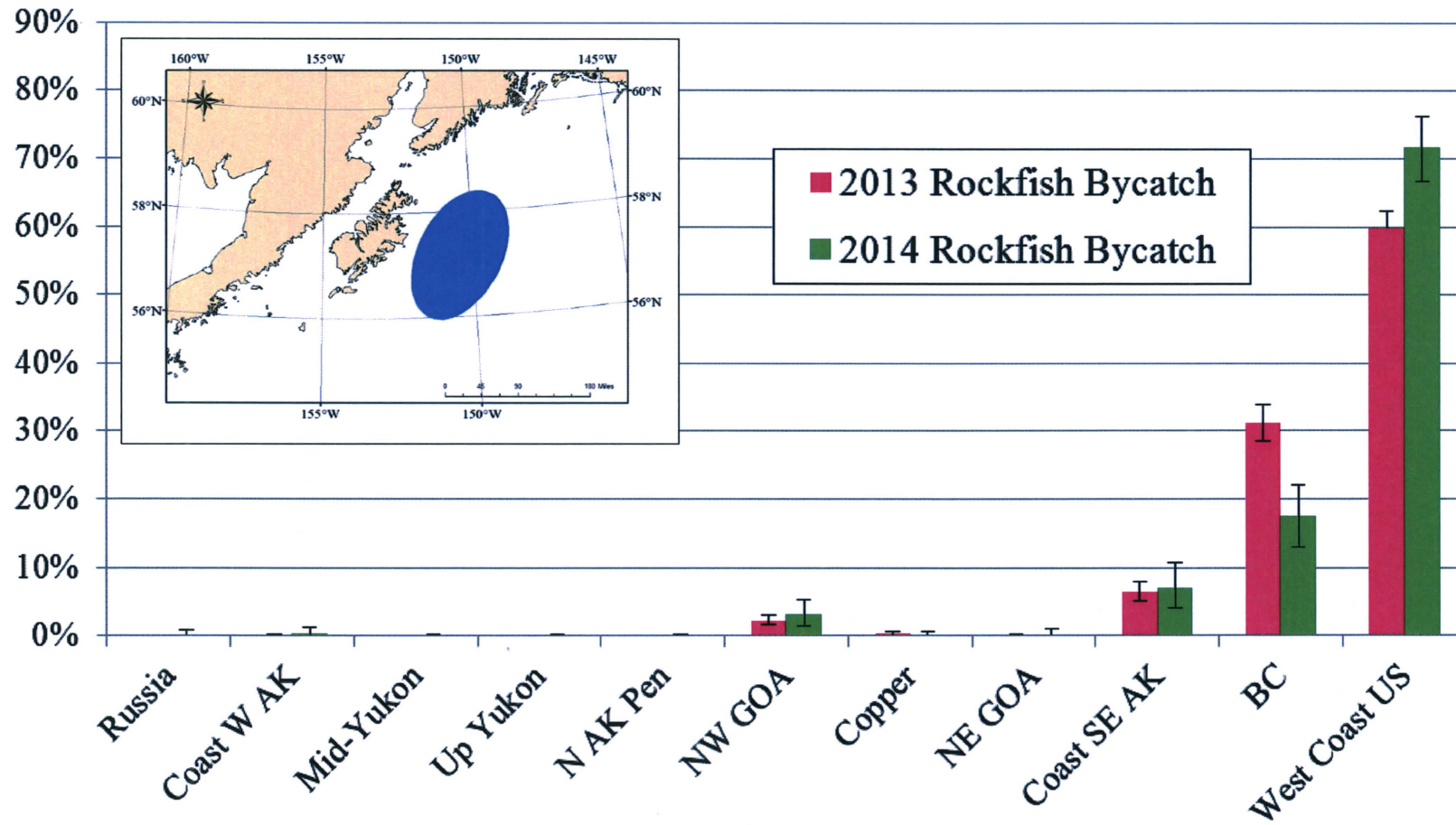
## Chinook Salmon GOA Bycatch - Pollock



# Rockfish – GOA Chinook Bycatch

2013: 2,029 samples genotyped, May - Nov, 2013

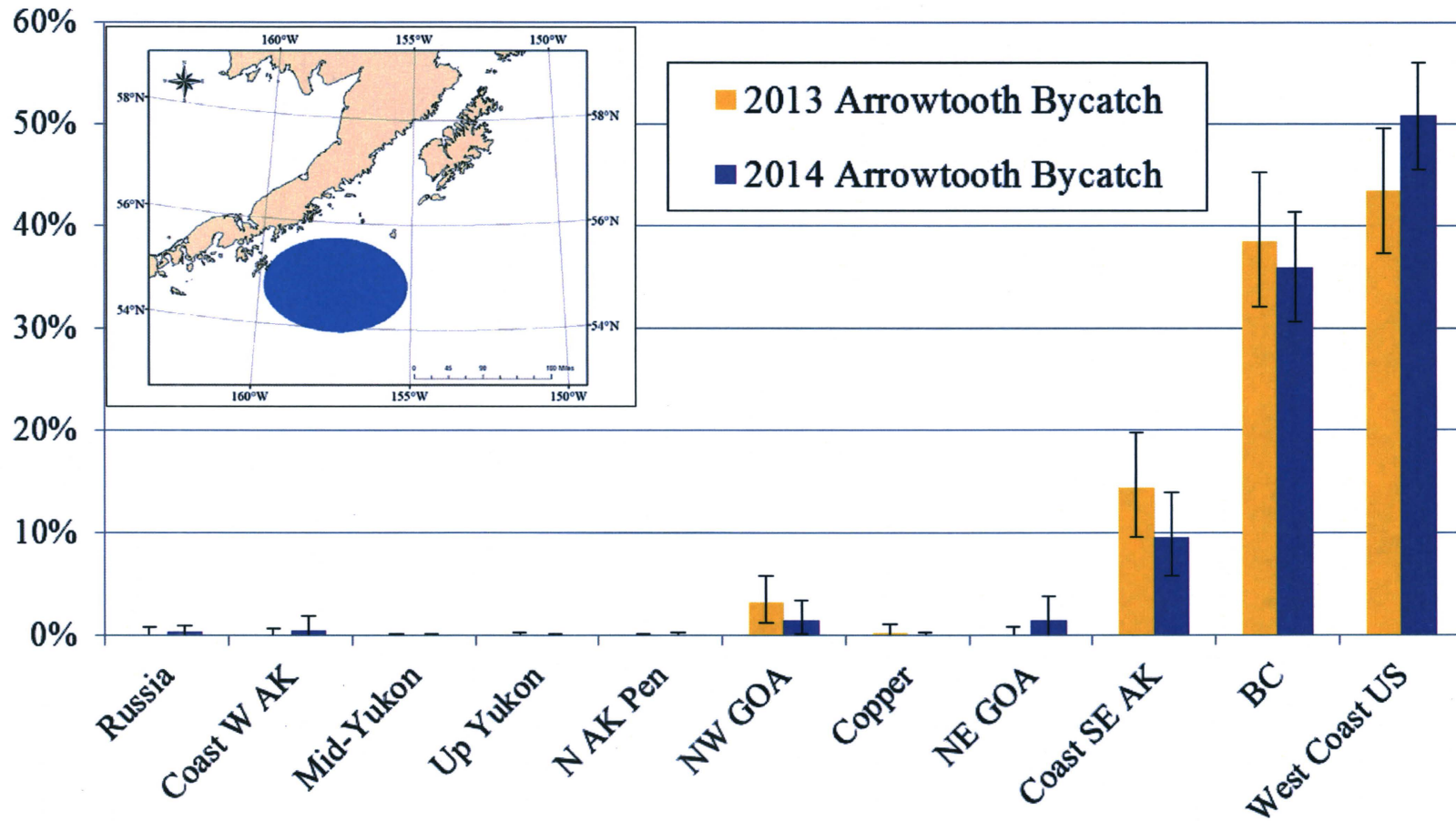
2014: 398 samples genotyped, May - Nov, 2014



# Arrowtooth Flounder – GOA Chinook Bycatch

2013: 279 samples genotyped, April – May, 2014

2014: 404 samples genotyped, April - May, 2014



# Acknowledgements

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