Stock-related catch, age, and size distributions from San Juan Islands Chinook Recreational Fishery, Summer 2009

Evaluating the Effects of Salmon Fisheries on
Southern Resident Killer Whales
Workshop 3 (of 3) – Sept. 19, 2012

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Washington Department of FISH and WILDLIFE

SRKW: Stock, Age, and Size Selectivity
(Fisheries and Prey Availability)

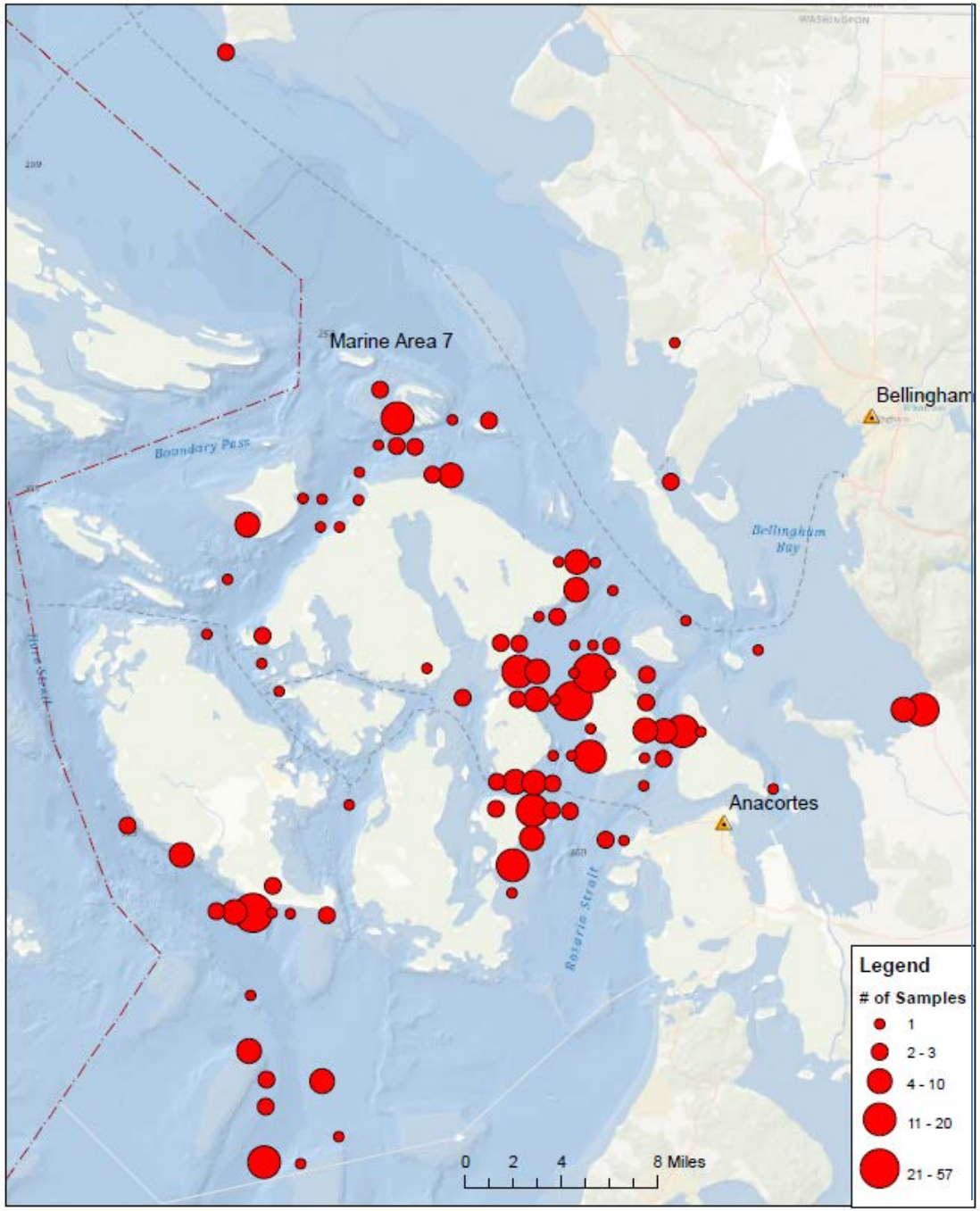
- 2009 Chinook Recreational Fishery – San Juan Islands
  - Genetic Stock Identification (GSI)
    - PSC-CTC GAPS baseline
  - Age
  - Fork length
- Compare this recreational catch with killer whale diet (Hanson et al. 2010)
- Stock-specific age and size in recreational catch

Main Points

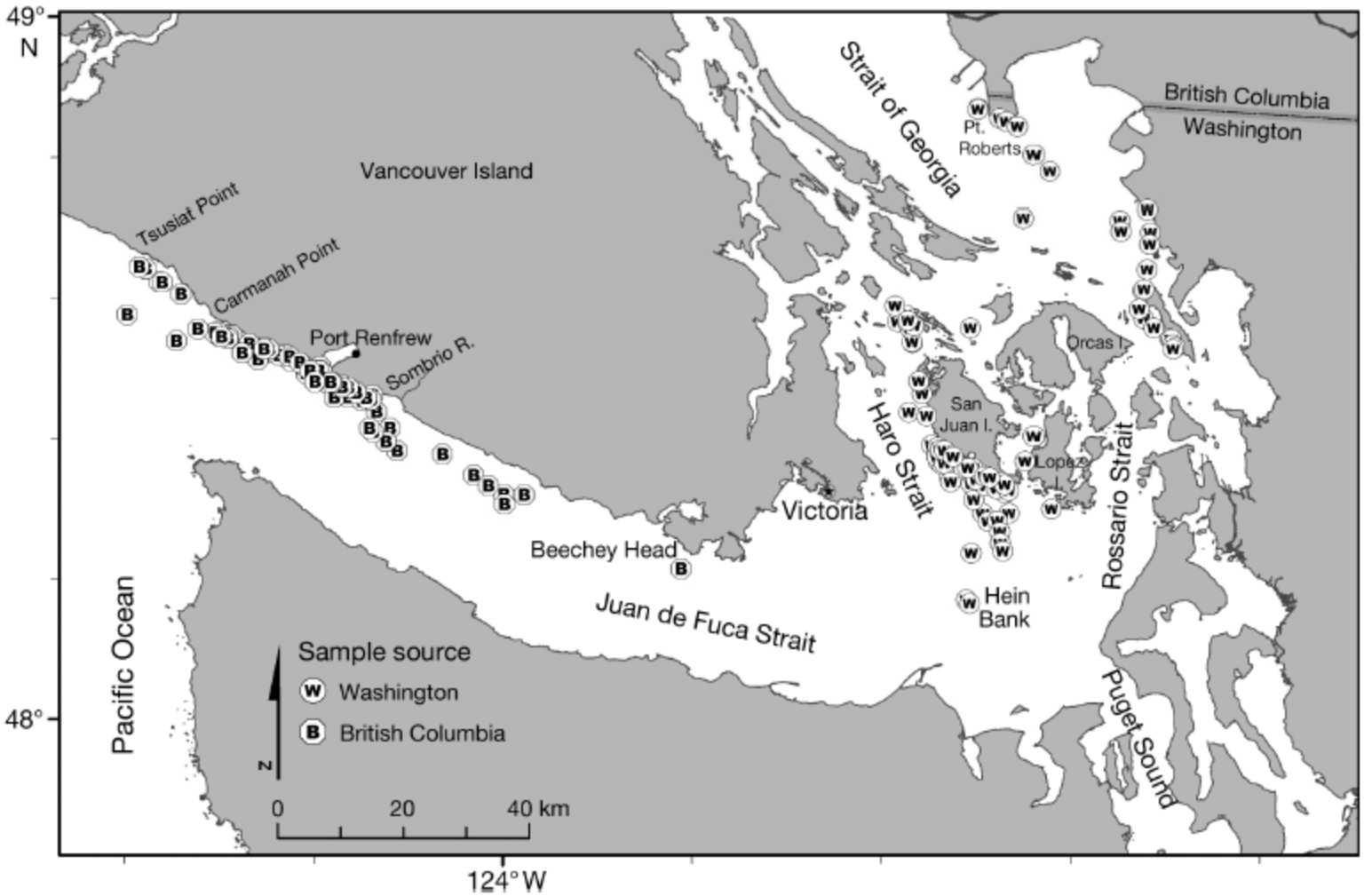
1. Stock composition of the recreational catch is different from SRKW diet
   - Sampling differs in years and location
2. No difference in the size and age distribution between Fraser and Puget Sound stocks (including hatchery fish) in recreational catch
3. SRKW may not use (avoid?) areas that have “large” Chinook
   - But they are Puget Sound not Fraser fish

2009
Ocean Genetics Project
Area 7
Chinook Recreational Fishery

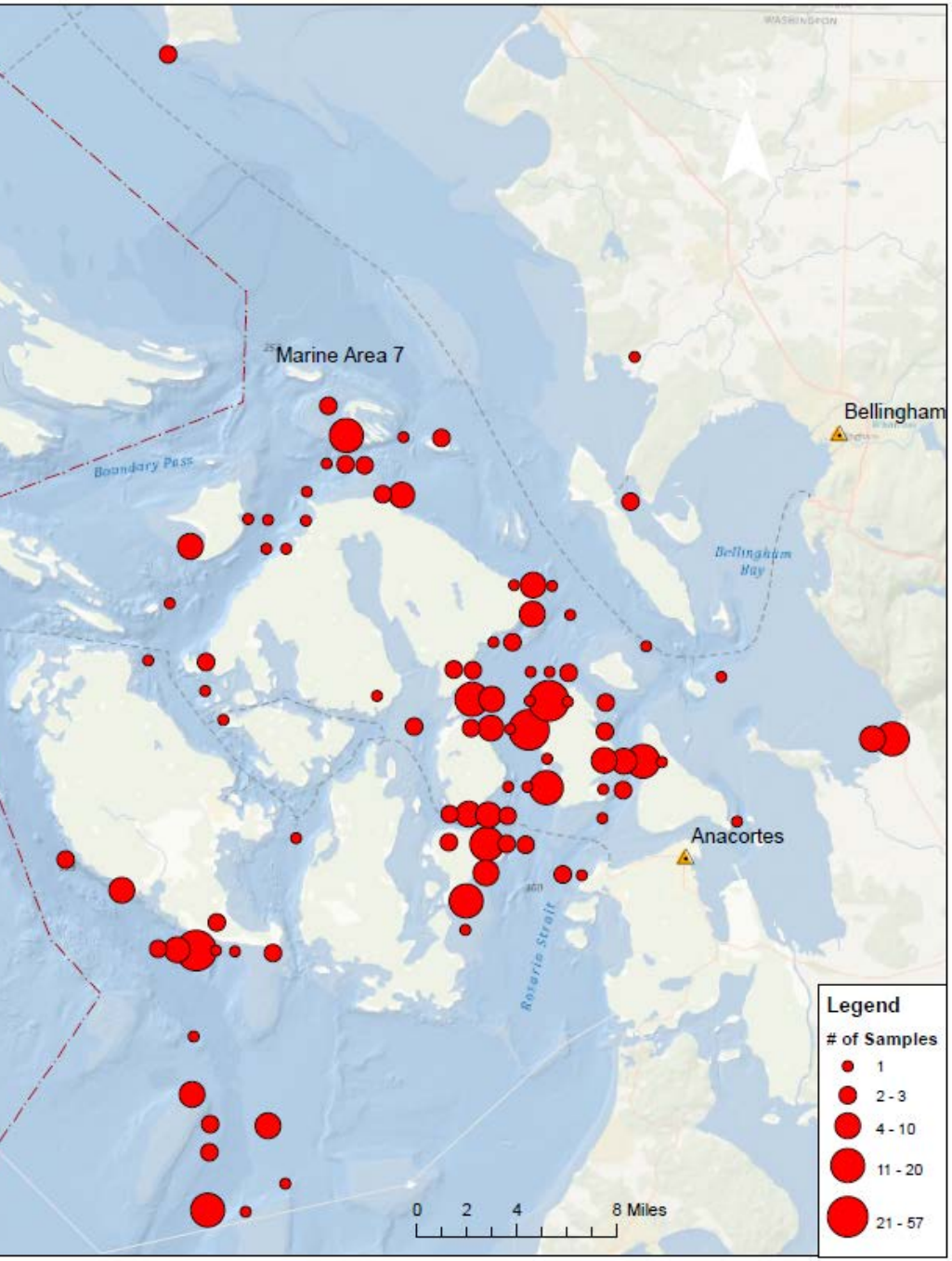
Composite
July – September
N = 437



Aggregate	Population	Counts		
		Marked	Unmarked	Total
Fraser_River		**5**	**96**	**101**
	L_Fraser_River	**2**	**35**	**37**
	Mid_Fraser_River		9	9
	U_Fraser_River		3	3
	N_Thompson_River		6	6
	S_Thompson_River	**3**	**43**	**46**
Puget_Sound		**246**	**51**	**297**
	PSSpSu	16	9	25
	PSFall	32	3	35
	SouthPSFall	**197**	**39**	**236**
	WhiteRSp.	1		1
Other		**16**	**31**	**47**
	SSE_Alaska	2	3	5
	L_Skeena_River	1		1
	Central_BC_Coast		1	1
	E_Vancouver_Island	**7**	**13**	**20**
	W_Vancouver_Island		1	1
	Straits_Juan_de_Fuca	2	3	5
	L_Columbia_R._fall	2	1	3
	Mid_Columbia_R._tule_fall	2		2
	Mid_and_Upper_Columbia_R._spring		1	1
	U_Columbia_R._summer/fall		3	3
	N_Oregon_Coast		1	1
	Mid_Oregon_Coast		1	1
	Rogue_River		1	1
	California_Coast		2	2
Total		**267**	**178**	**445**



From Hanson et al. 2010


Marine Area 7
Bellingham
Boundary Pass
Bellingham Bay
Anacortes
Rosario Strait
Legend
# of Samples
1
2 - 3
4 - 10
11 - 20
21 - 57
0 2 4 8 Miles

Pt. Roberts
Orcas I.
San Juan I.
Lopez I.
Rossario Strait
Hein Bank

2009
Ocean Genetics Project
Area 7
Chinook Recreational Fishery

Composite
July – September
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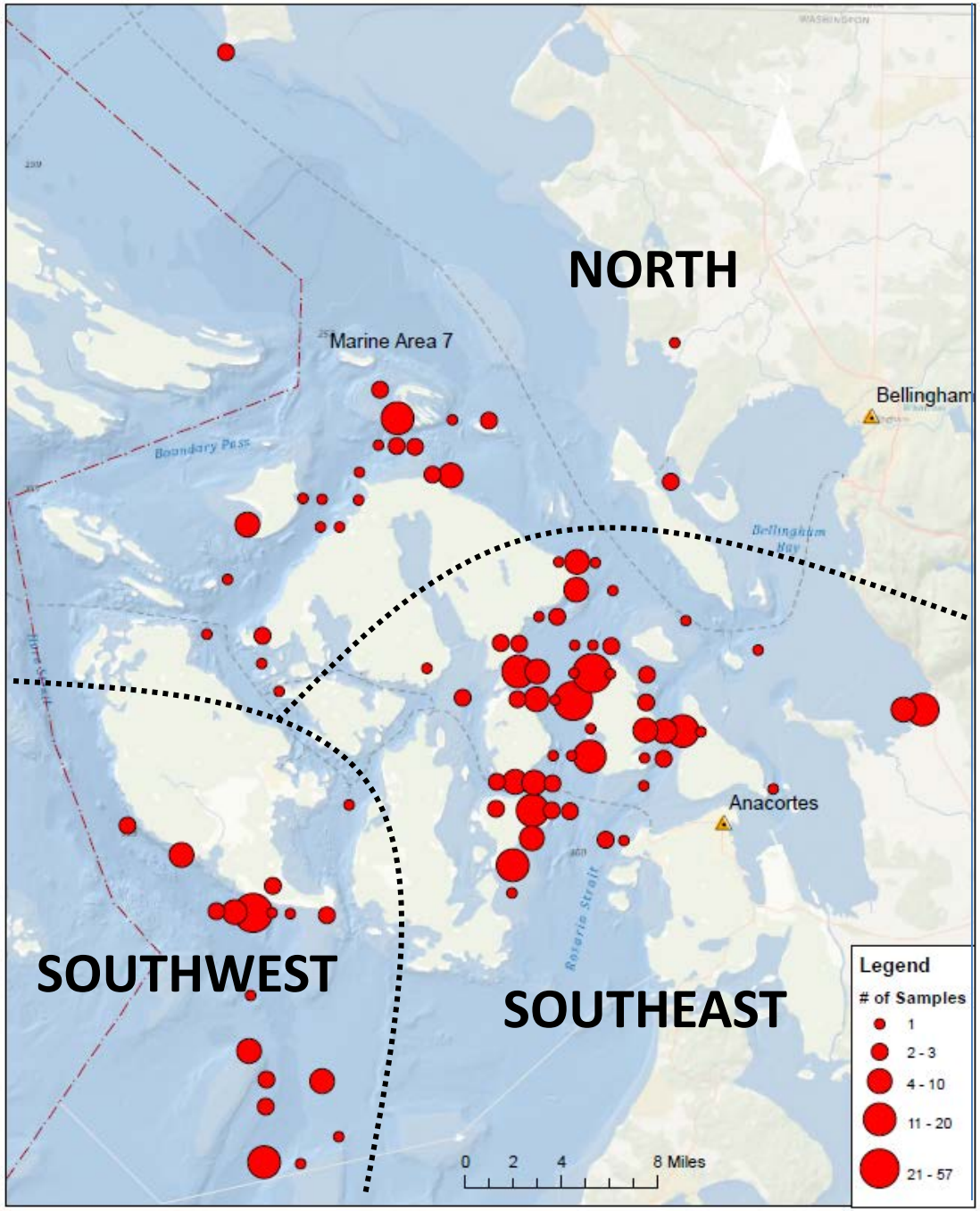

2009
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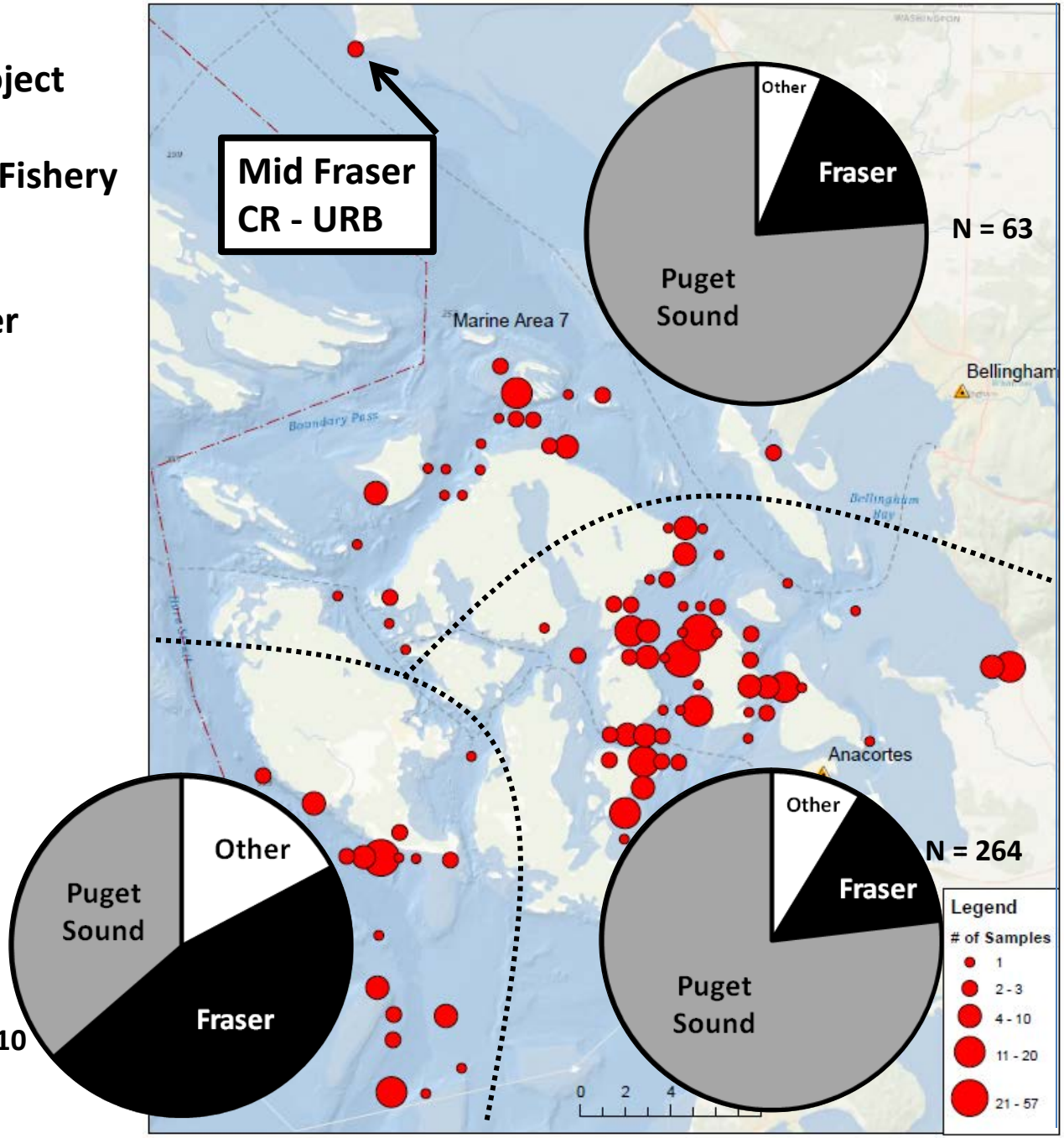
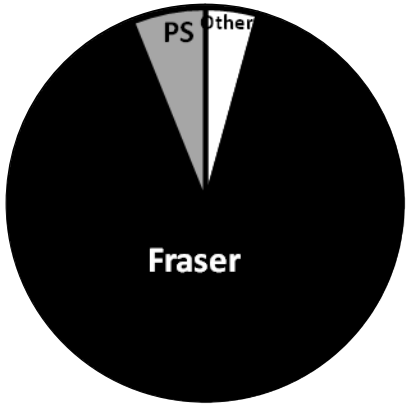
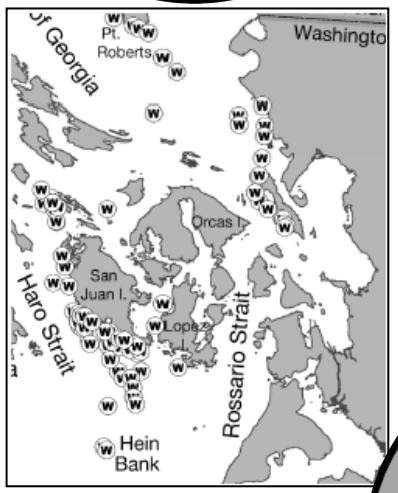
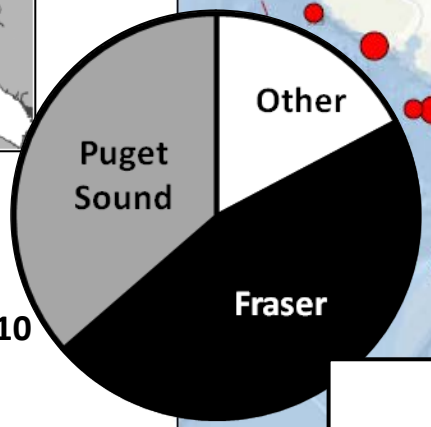
July – September
N = 437



Hanson et al. 2010
May – September 2004-2008
N= 105







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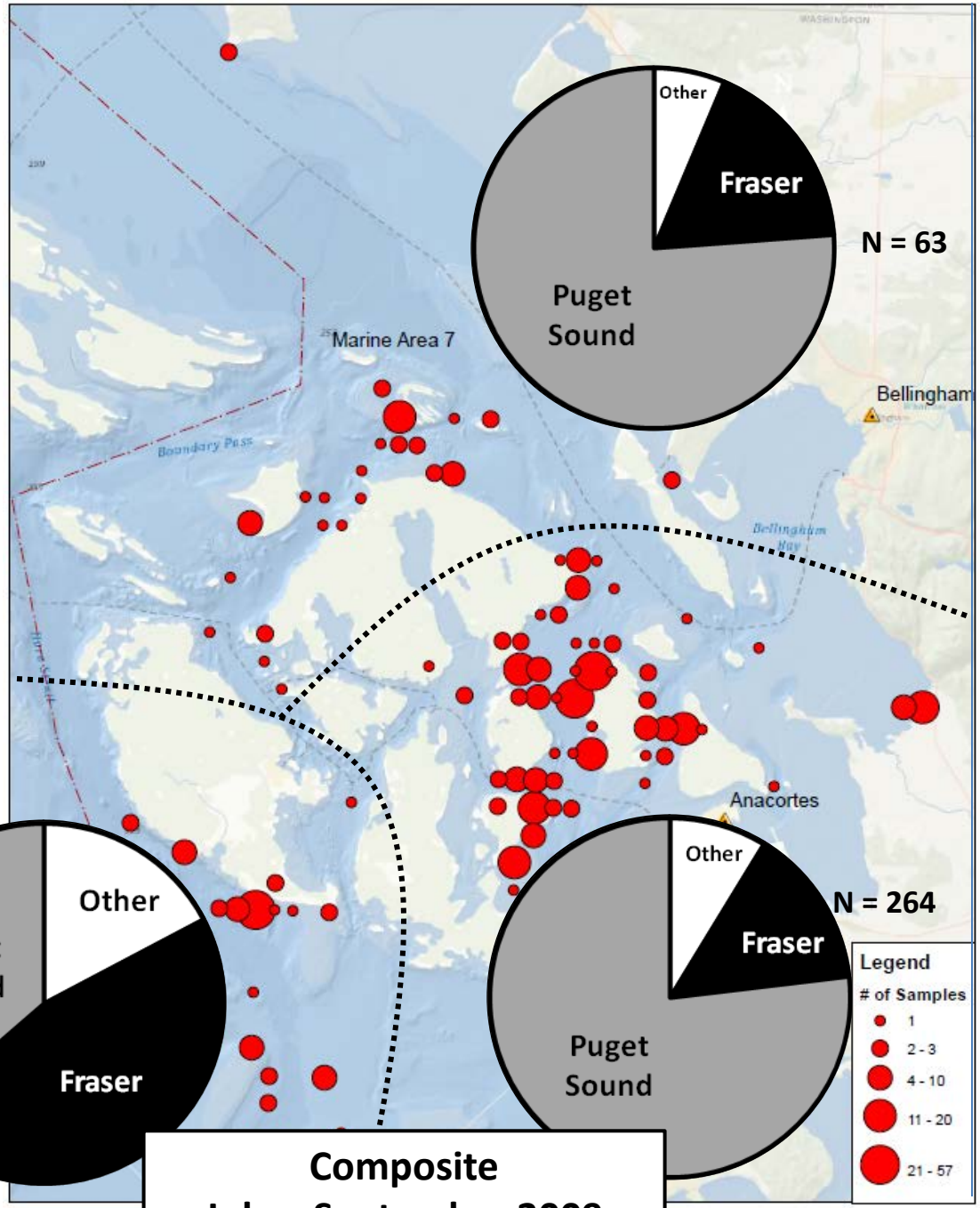
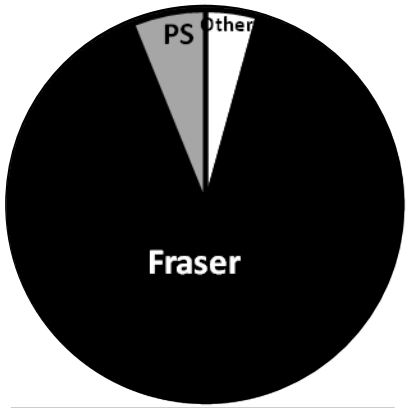
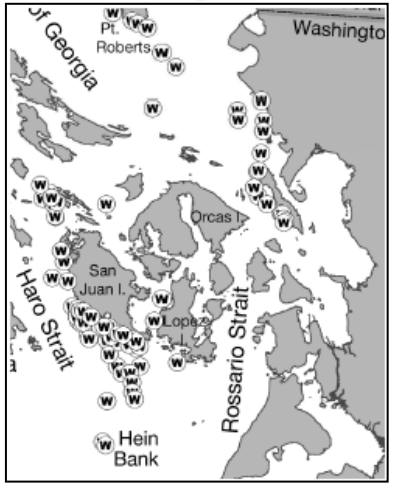


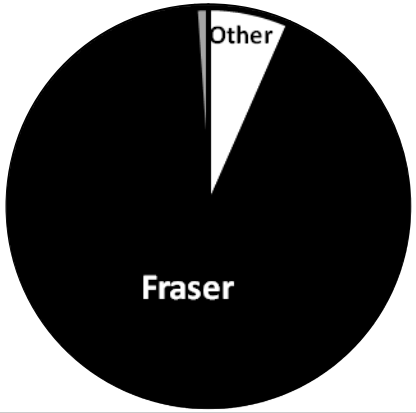
Composite
July – September 2009

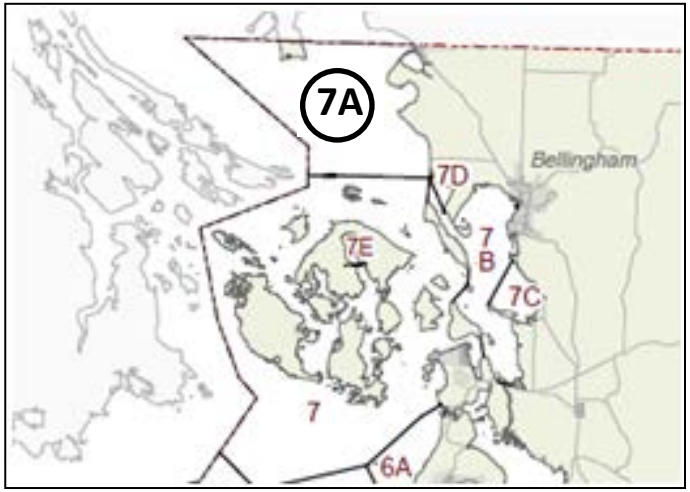
Hanson et al. 2010
May – September 2004-2008
N = 105

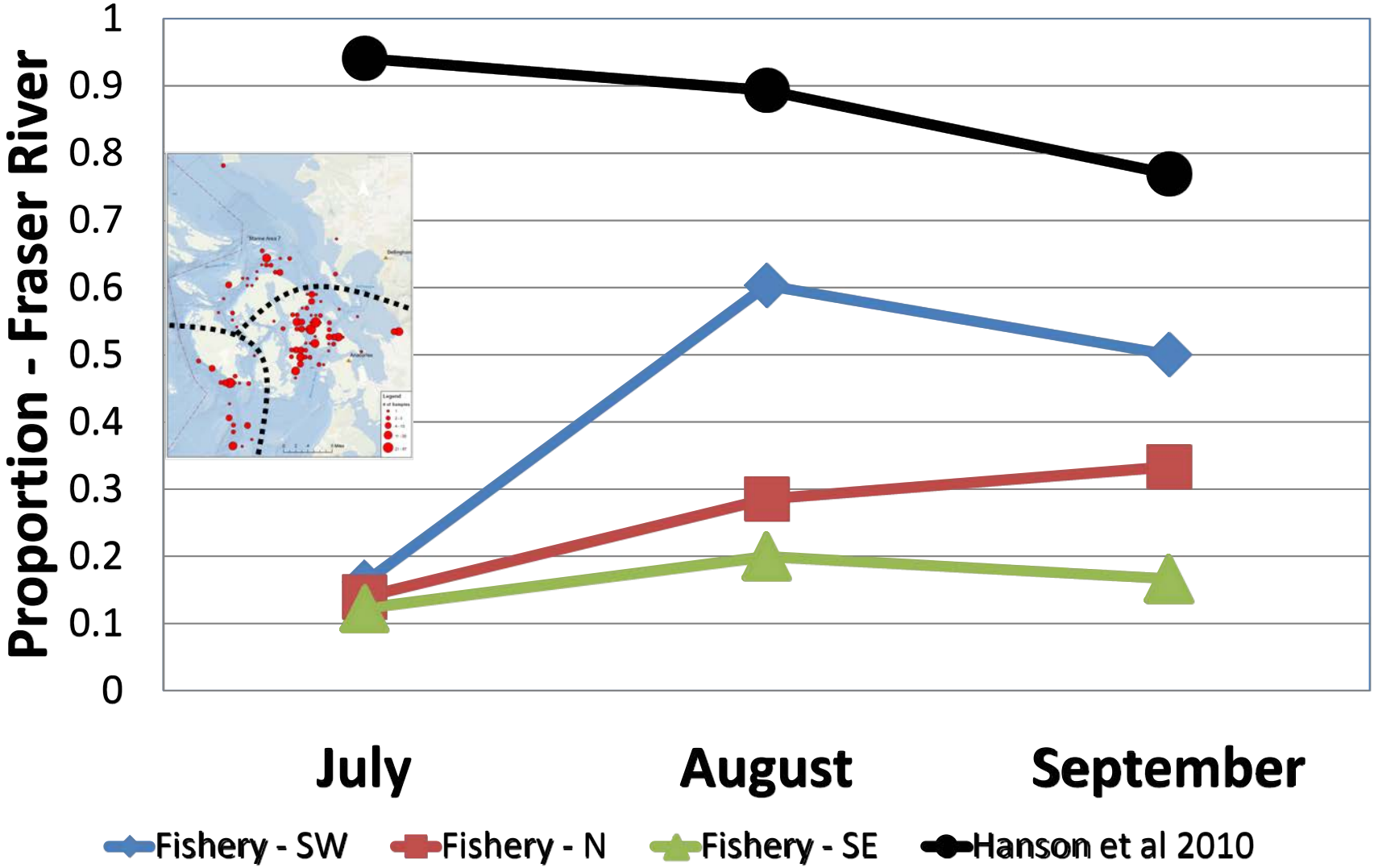




WDFW unpublished
Lummi Treaty Sockeye Fishery – Chinook Bycatch
July – August 2006
N = 275

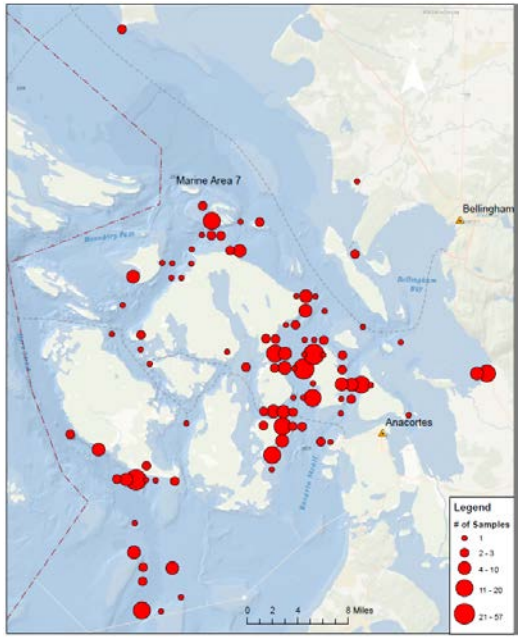





Proportion - Fraser River
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
July
August
September
Fishery - SW
Fishery - N
Fishery - SE
Hanson et al 2010

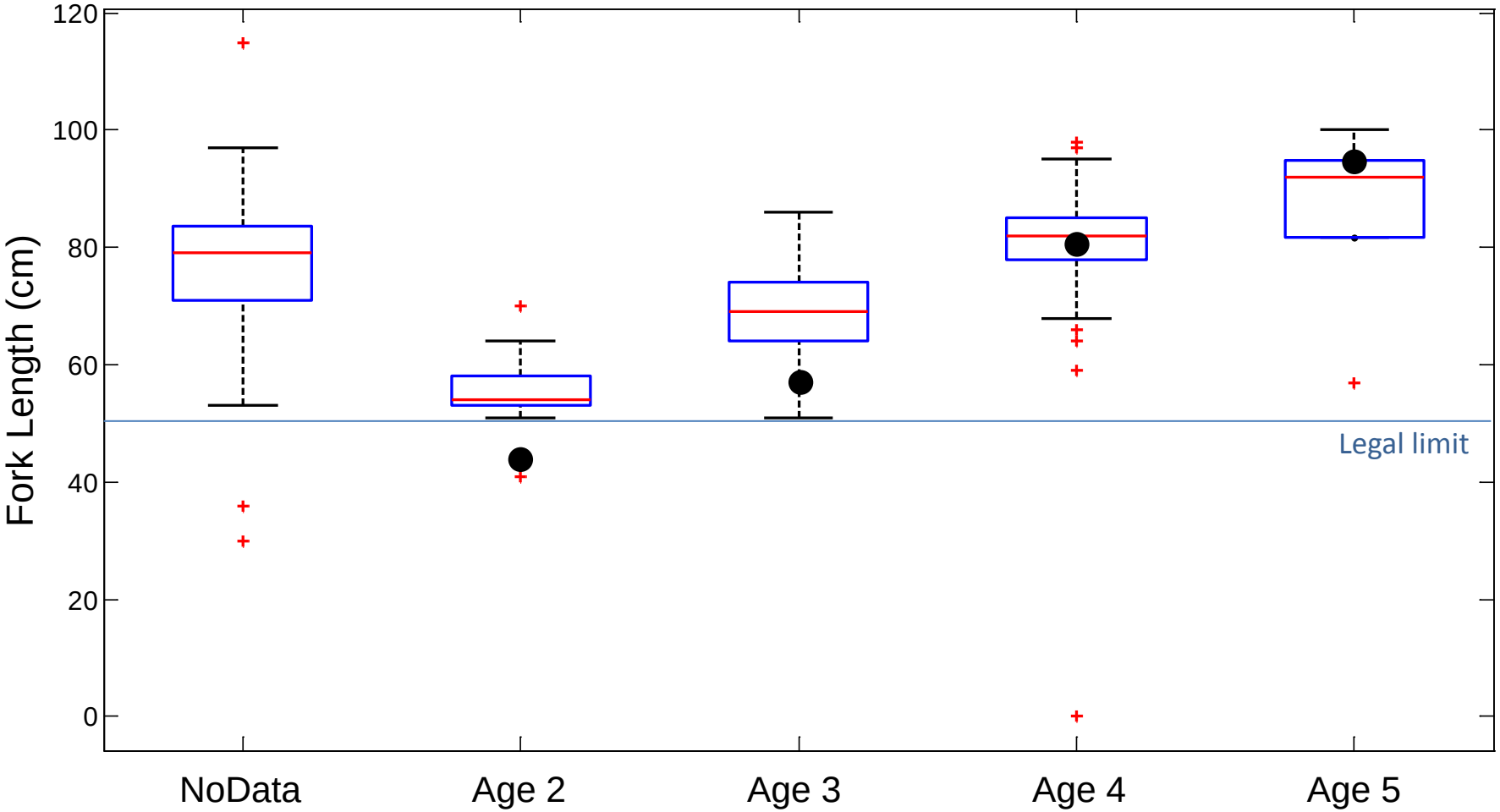
Population	Age (Scale)					Total
	Missing	2	3	4	5	
Fraser_River	14	8	35	41	3	101
Puget_Sound	61	17	85	133	1	297
Other	8	5	17	16	1	47
Total	83	30	137	190	5	445

Population	Age (Scale)			
	2	3	4	5
Fraser_River	0.09	0.40	0.47	0.03
Puget_Sound	0.07	0.36	0.56	0.00
Other	0.13	0.44	0.41	0.03
Total	0.08	0.38	0.52	0.01



Fork Length by Age

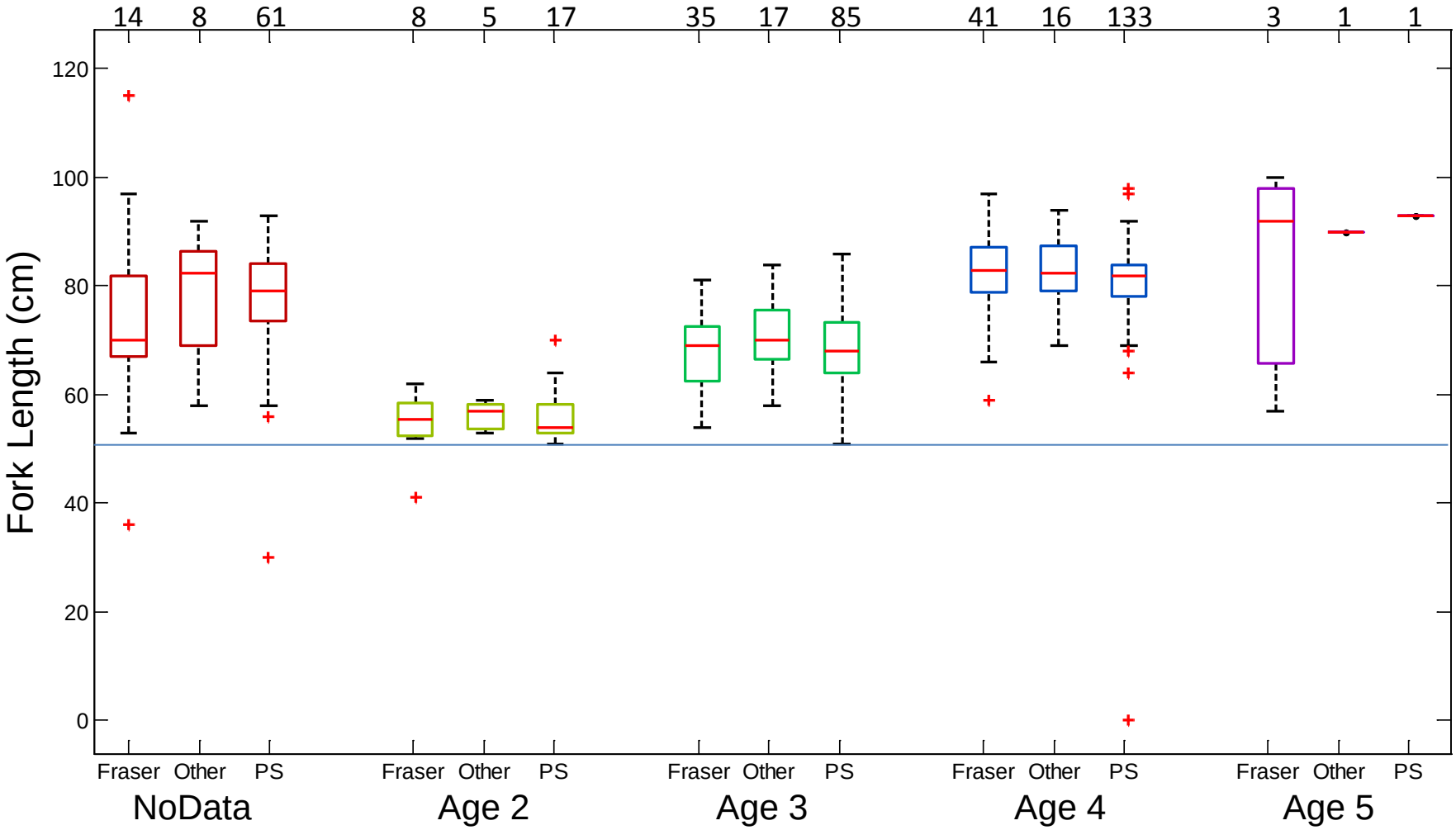
Pooled stocks and areas



● Mean fork lengths from Kuhn (1988; cited in Ford and Ellis 2006)

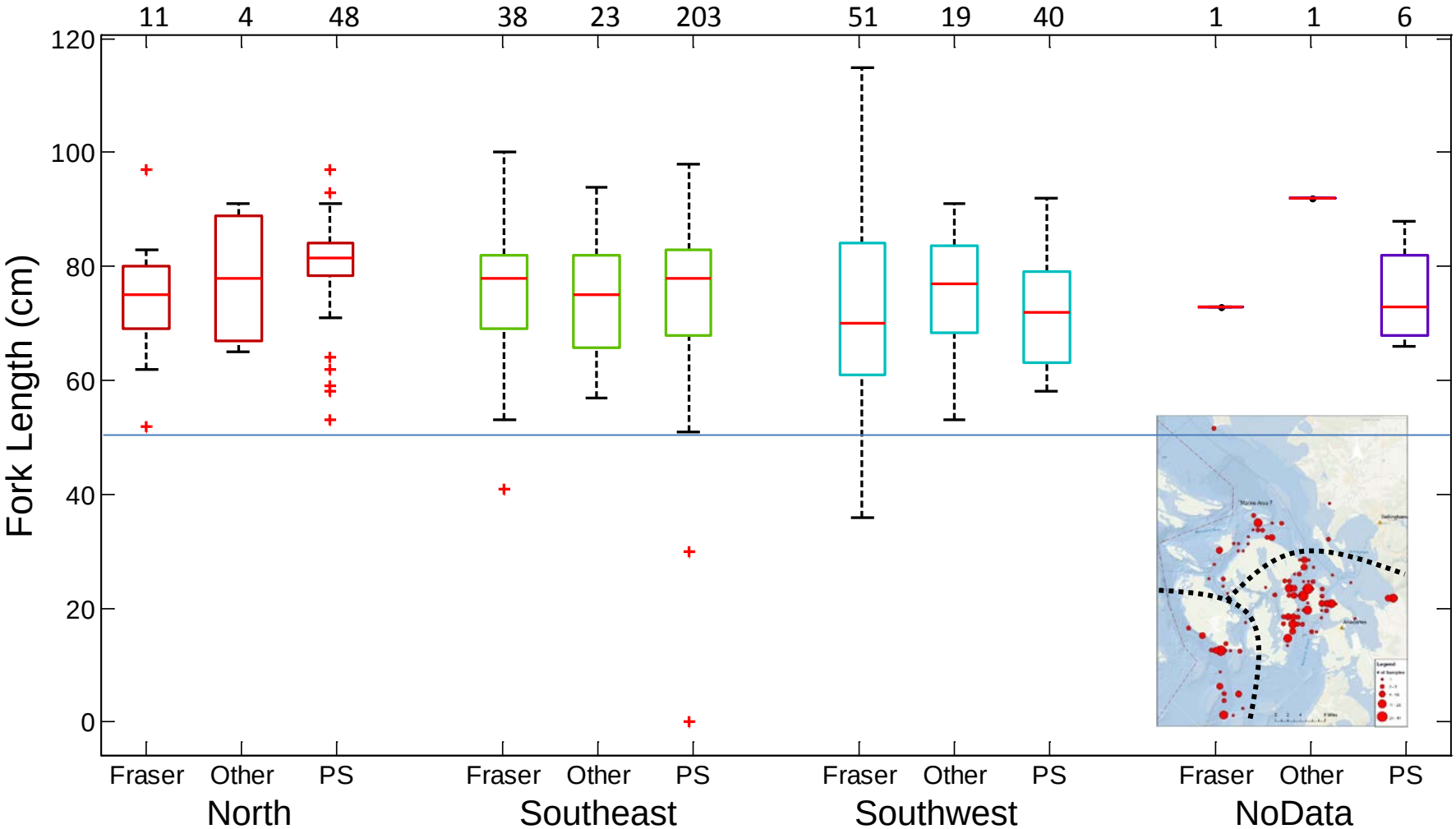
Fork Length by Age and Stock

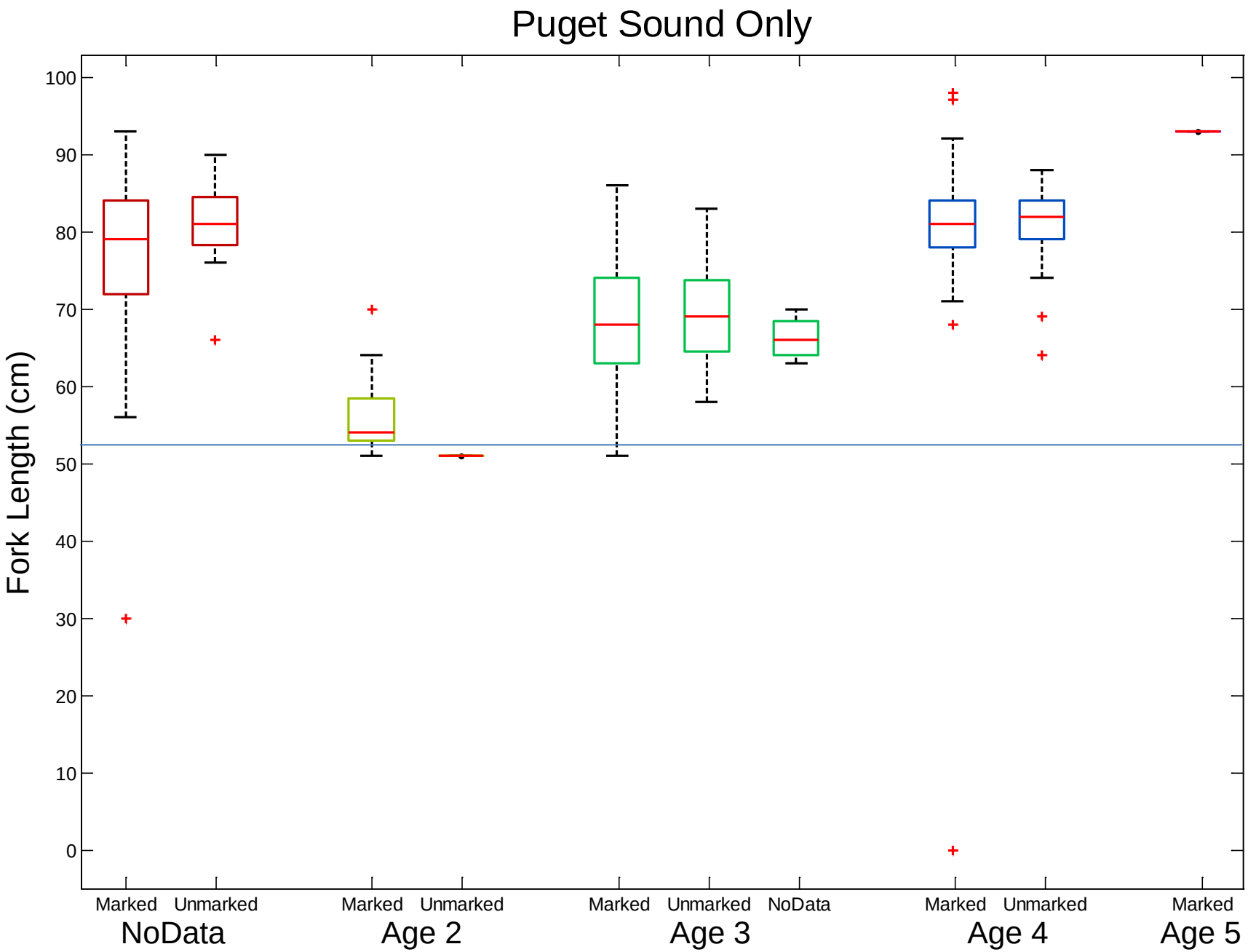
Pooled areas



Fork Length by Location and Stock

Pooled ages




Puget Sound Only
Fork Length (cm)
100
90
80
70
60
50
40
30
20
10
0
Marked
Unmarked
NoData
Marked
Unmarked
Age 2
Marked
Unmarked
NoData
Age 3
Marked
Unmarked
Age 4
Marked
Age 5

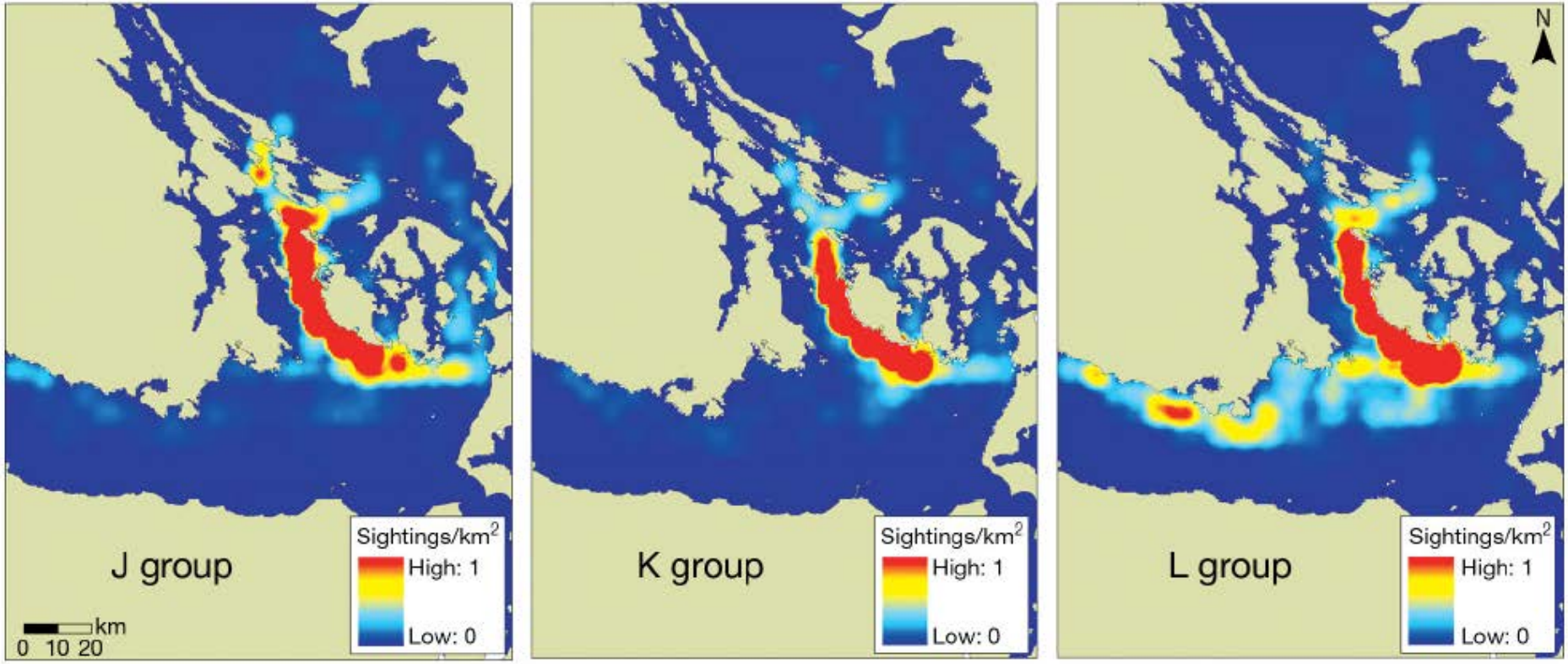
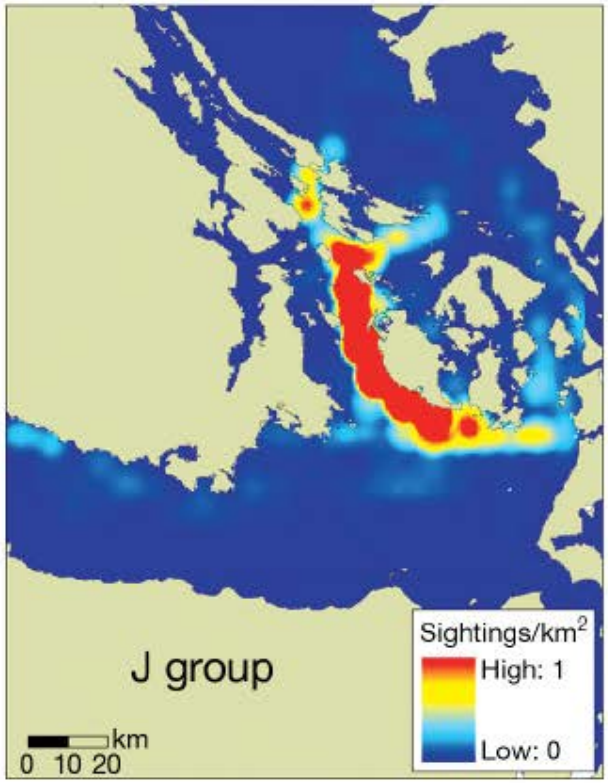
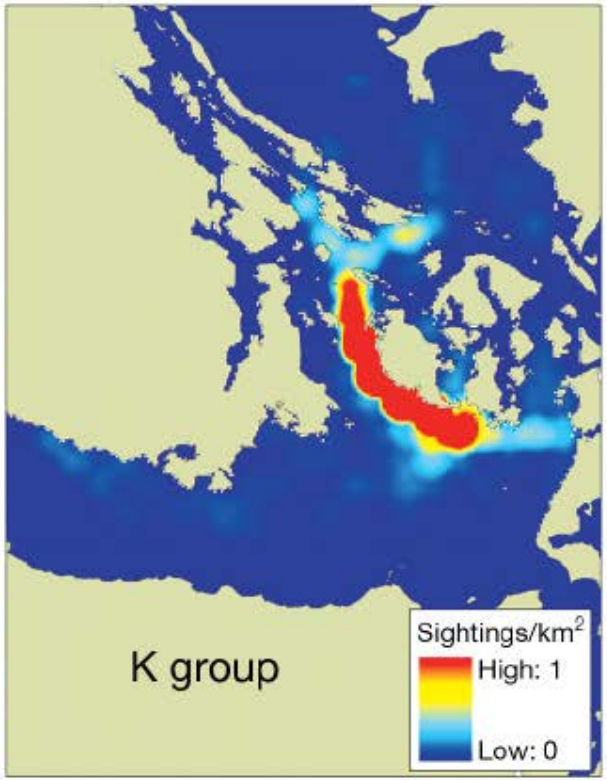
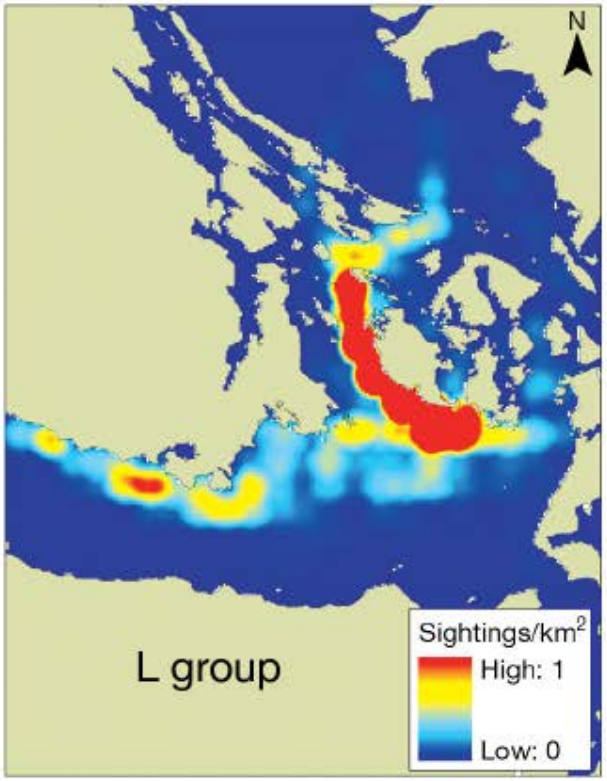


Fig. 3. *Orcinus orca*. Kernel density distributions for J, K and L groups, normalized as proportion of maximum density. Observation effort corrected using recommendations in Hauser et al. (2006)

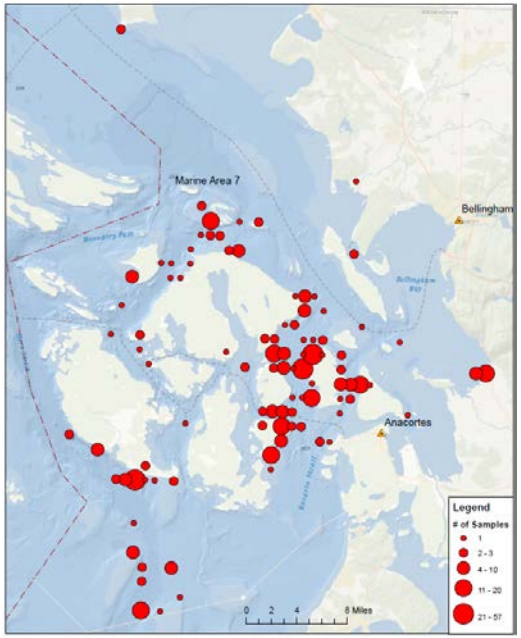
From Hauser et al. 2007


J group
Sightings/km2
High: 1
Low: 0
km
0 10 20


K group
Sightings/km2
High: 1
Low: 0


N
L group
Sightings/km2
High: 1
Low: 0

Pt. Roberts
Washingto
Orcas I.
San Juan I.
Lopez I.
Haro Strait
Rossario Strait
Hein Bank


Marine Area 7
Bellingham
Anacortes
Legend
# of Samples
1
2 - 3
4 - 10
11 - 20
21 - 57
0 2 4 8 Miles

Thanks to:

- PSC – CTC – LOA for funding
- Independent Science Panel for invitation
- Field samplers
- Recreational fishers
- WDFW Molecular Genetics Lab staff
- Andy Weiss for map
- Scott Blankenship (now at Cramer Fish Sciences)