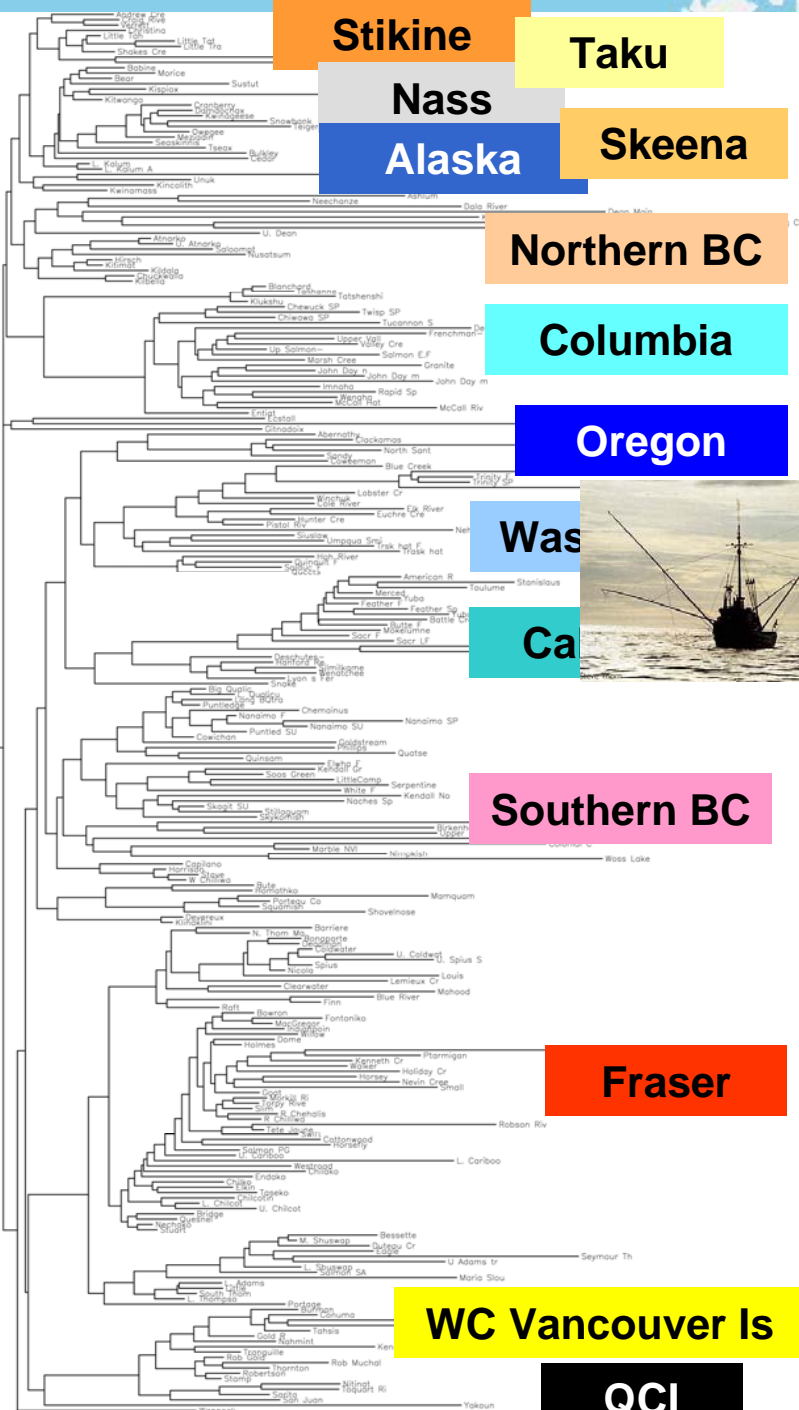


**Intra-annual and inter-annual variation in
estimated stock compositions of Chinook
salmon in the QCI troll fishery**

T.D. Beacham

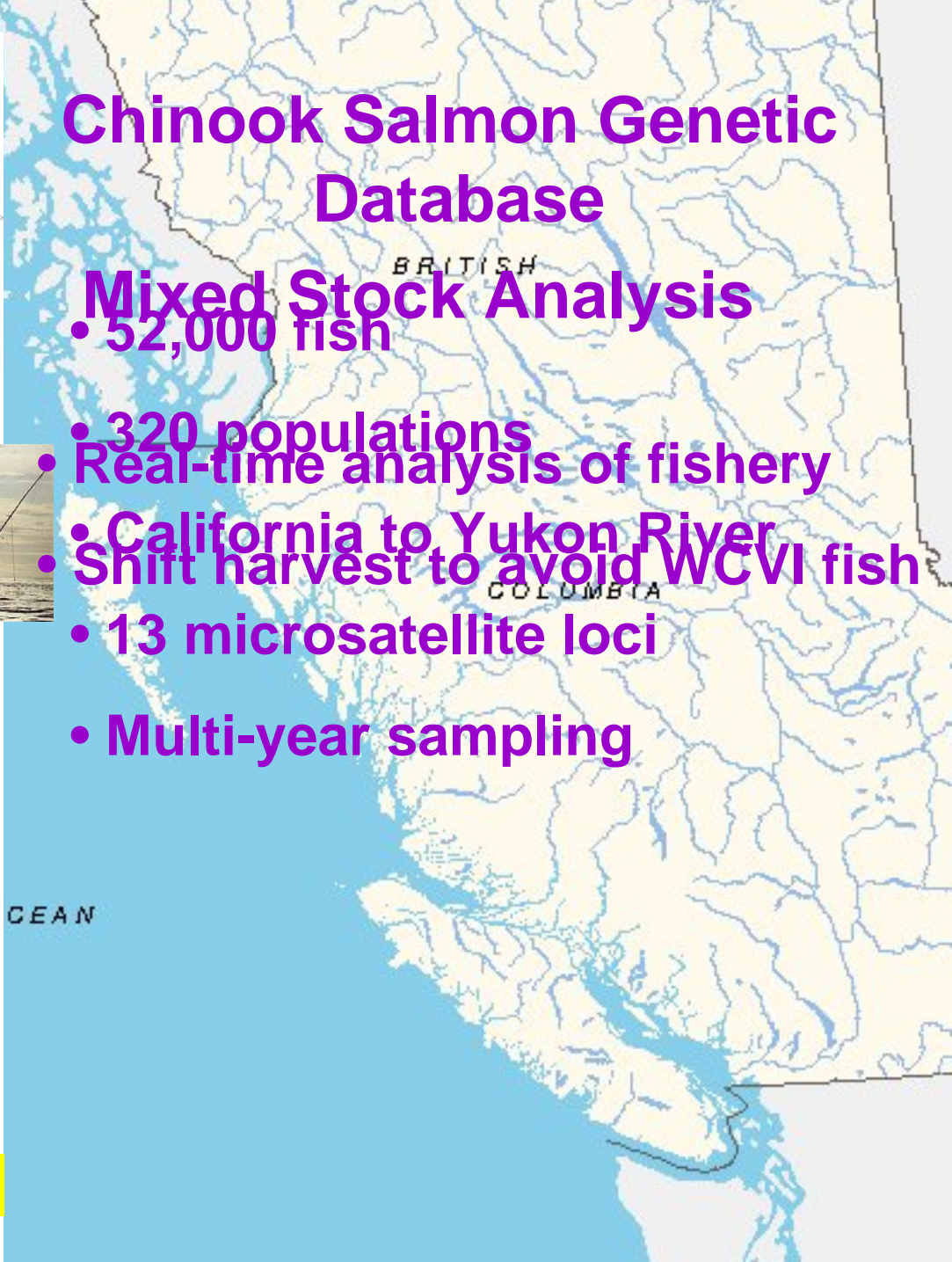
**Fisheries and Oceans Canada,
Pacific Biological Station
Nanaimo, British Columbia, Canada**



Chinook Salmon Genetic Database

Mixed Stock Analysis

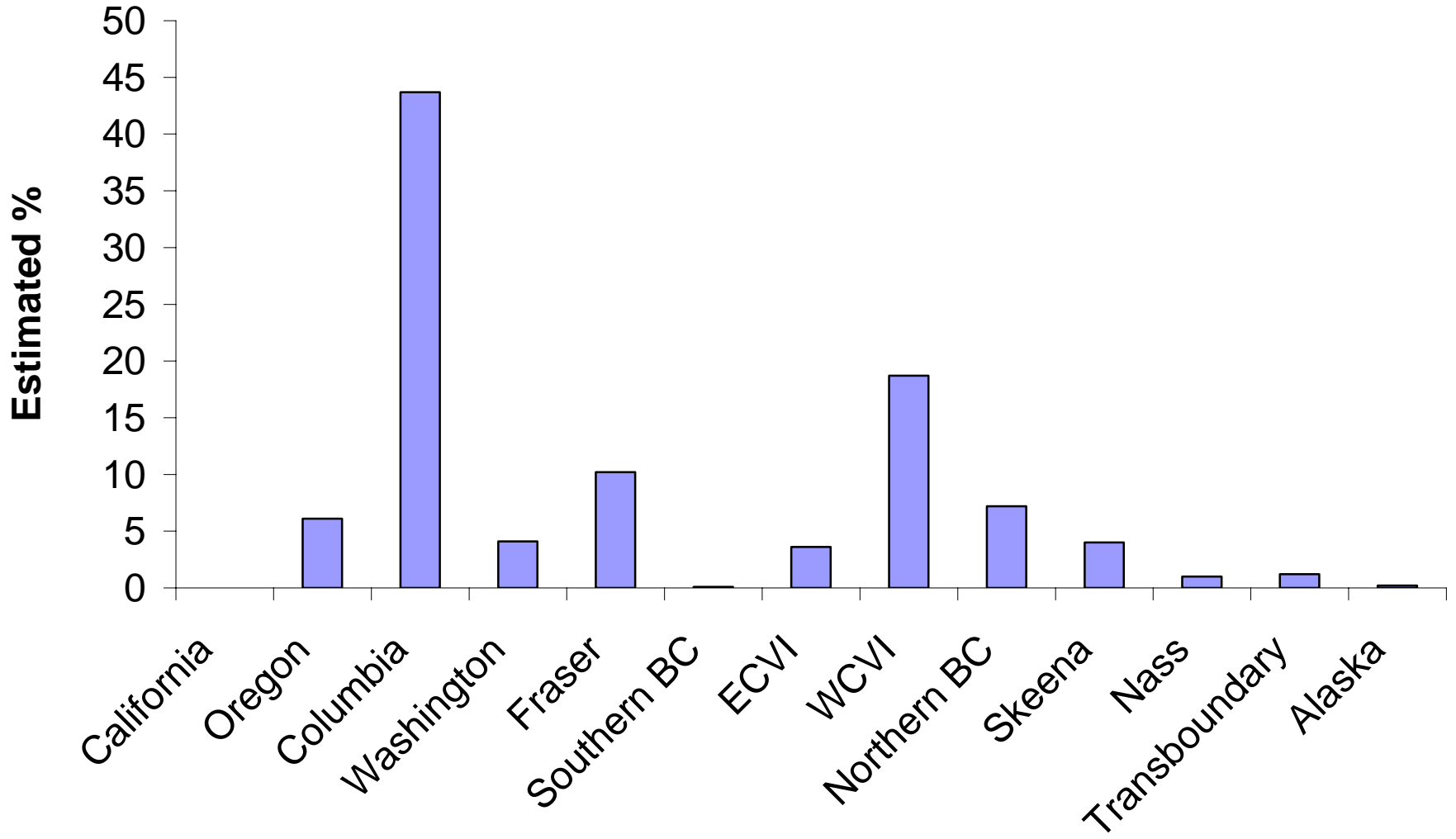
- 52,000 fish
- 320 populations
- Real-time analysis of fishery
- California to Yukon River
- Shift harvest to avoid WCVI fish
- 13 microsatellite loci
- Multi-year sampling



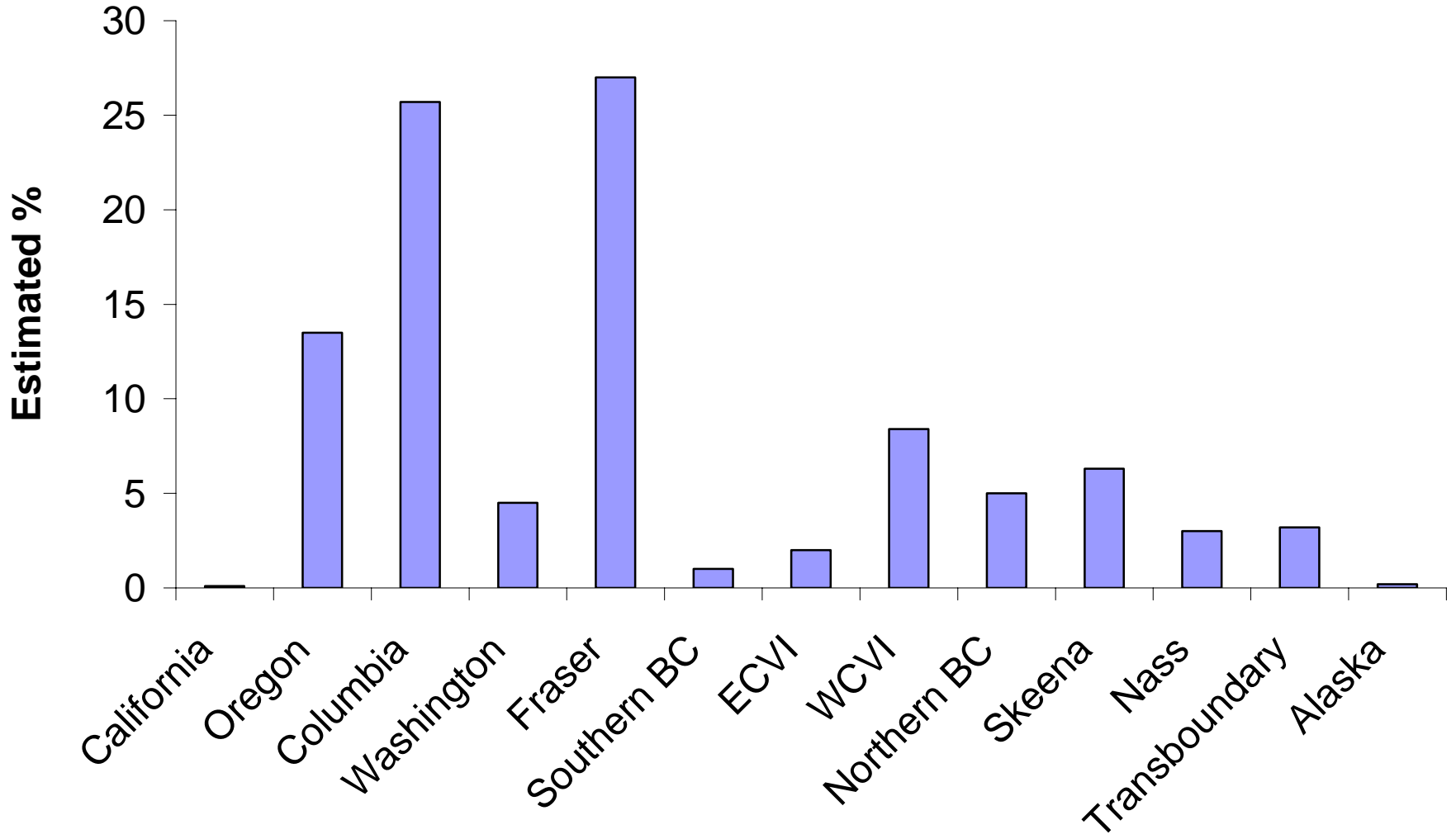
Intra-annual variation

- Does stock composition of Chinook salmon off the northwest coast of the Queen Charlotte Islands display seasonal changes?
- Average monthly stock compositions determined for samples 2002-2006.

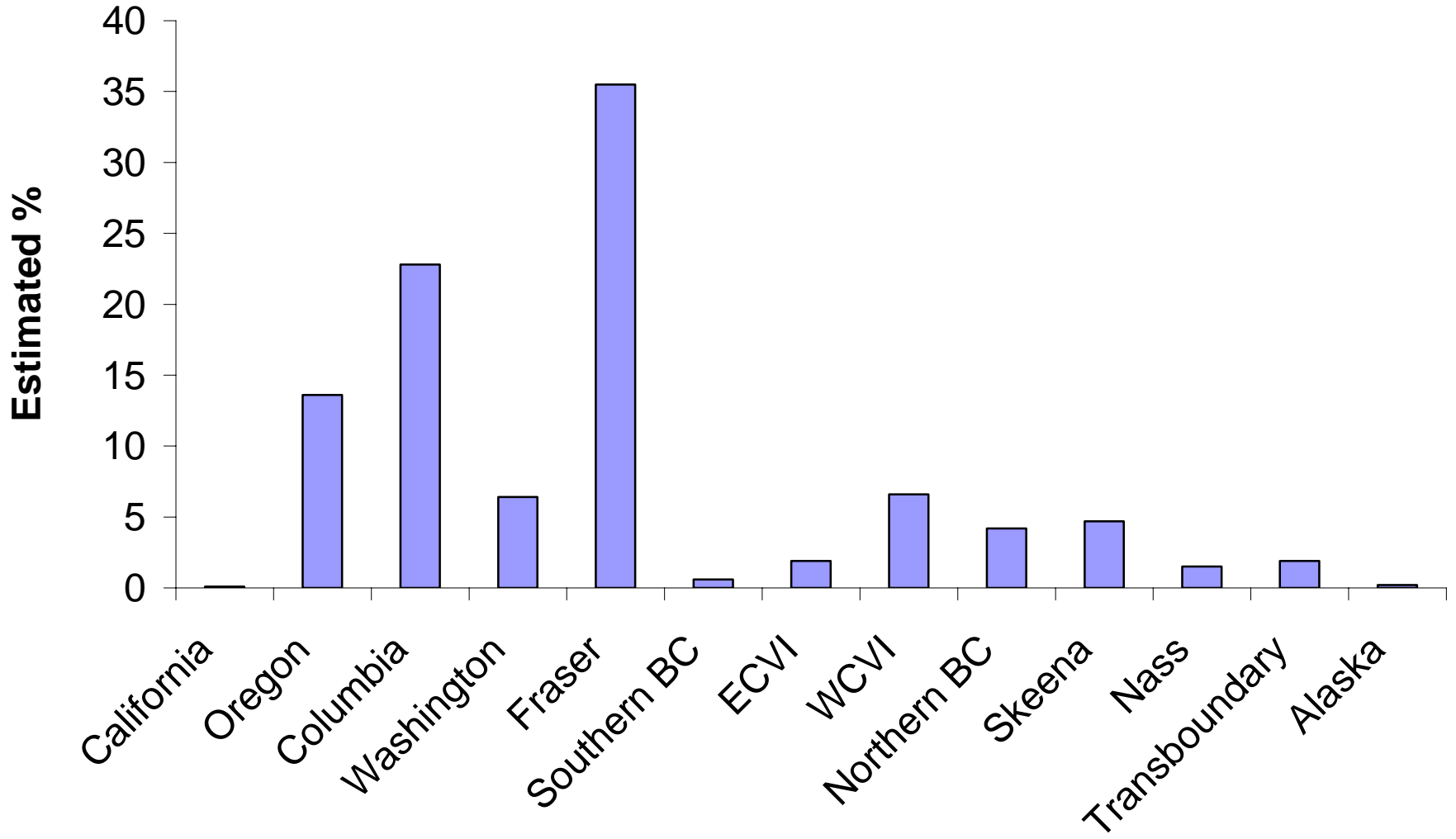
April



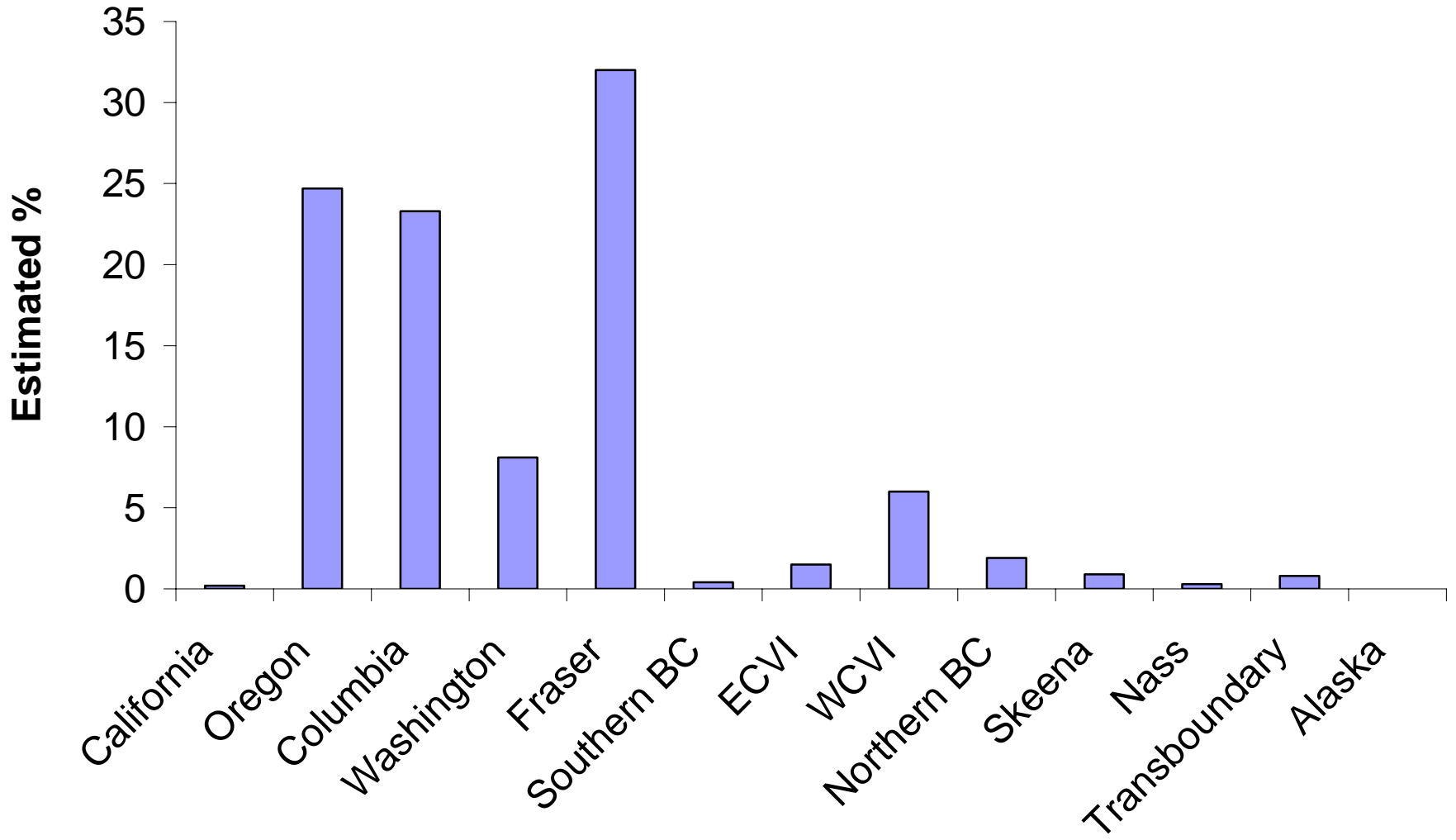
May



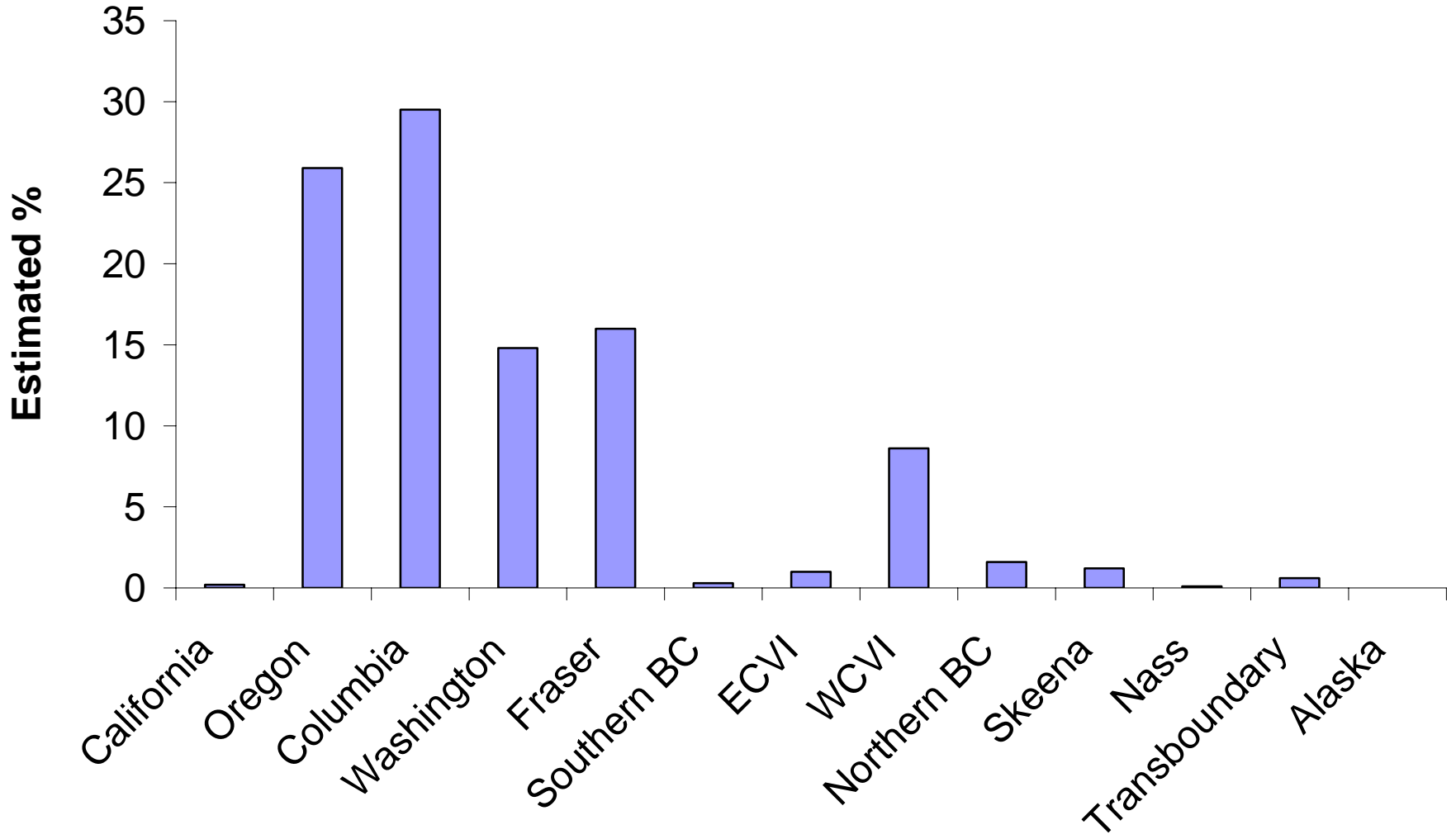
June



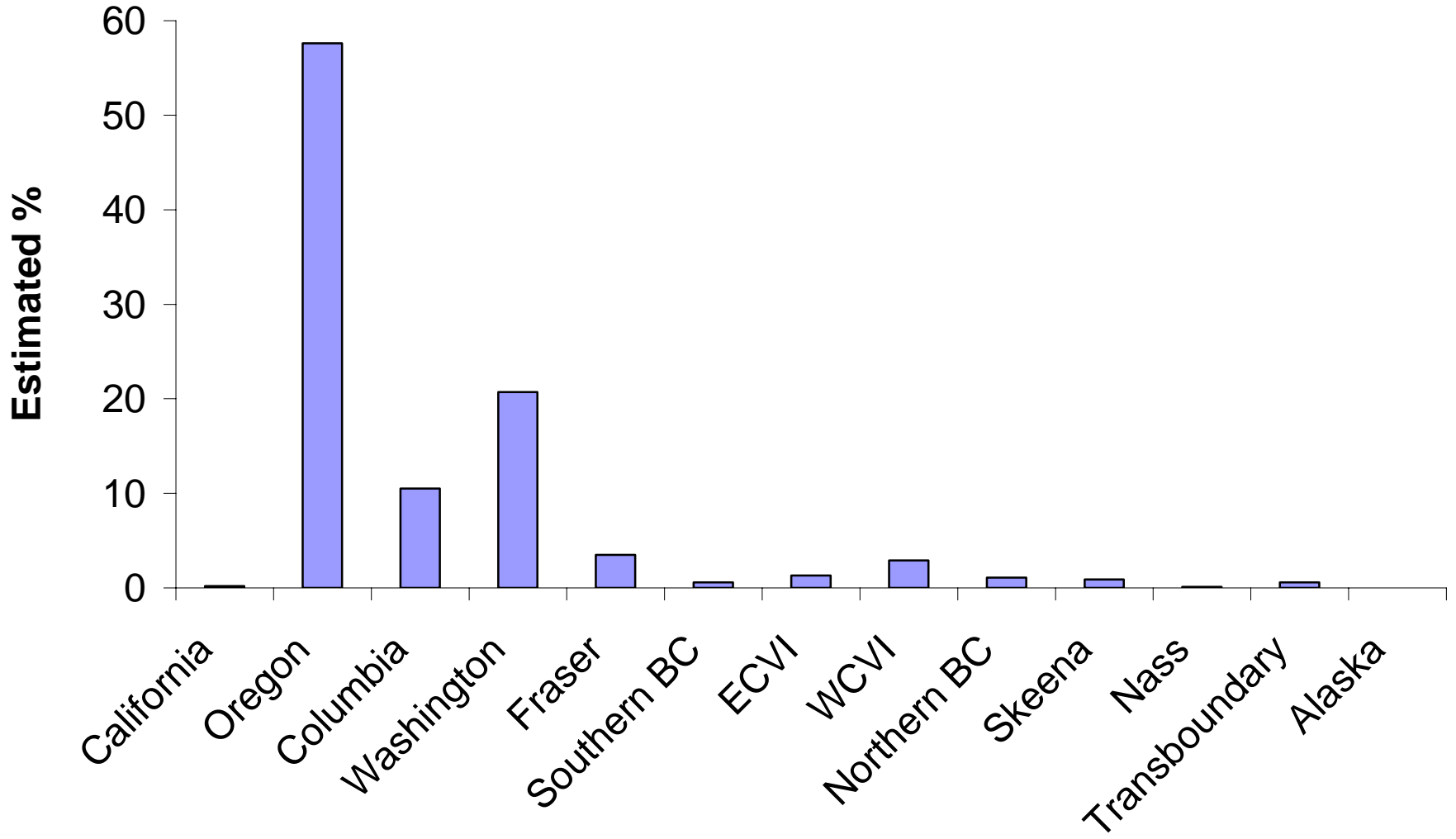
July



August

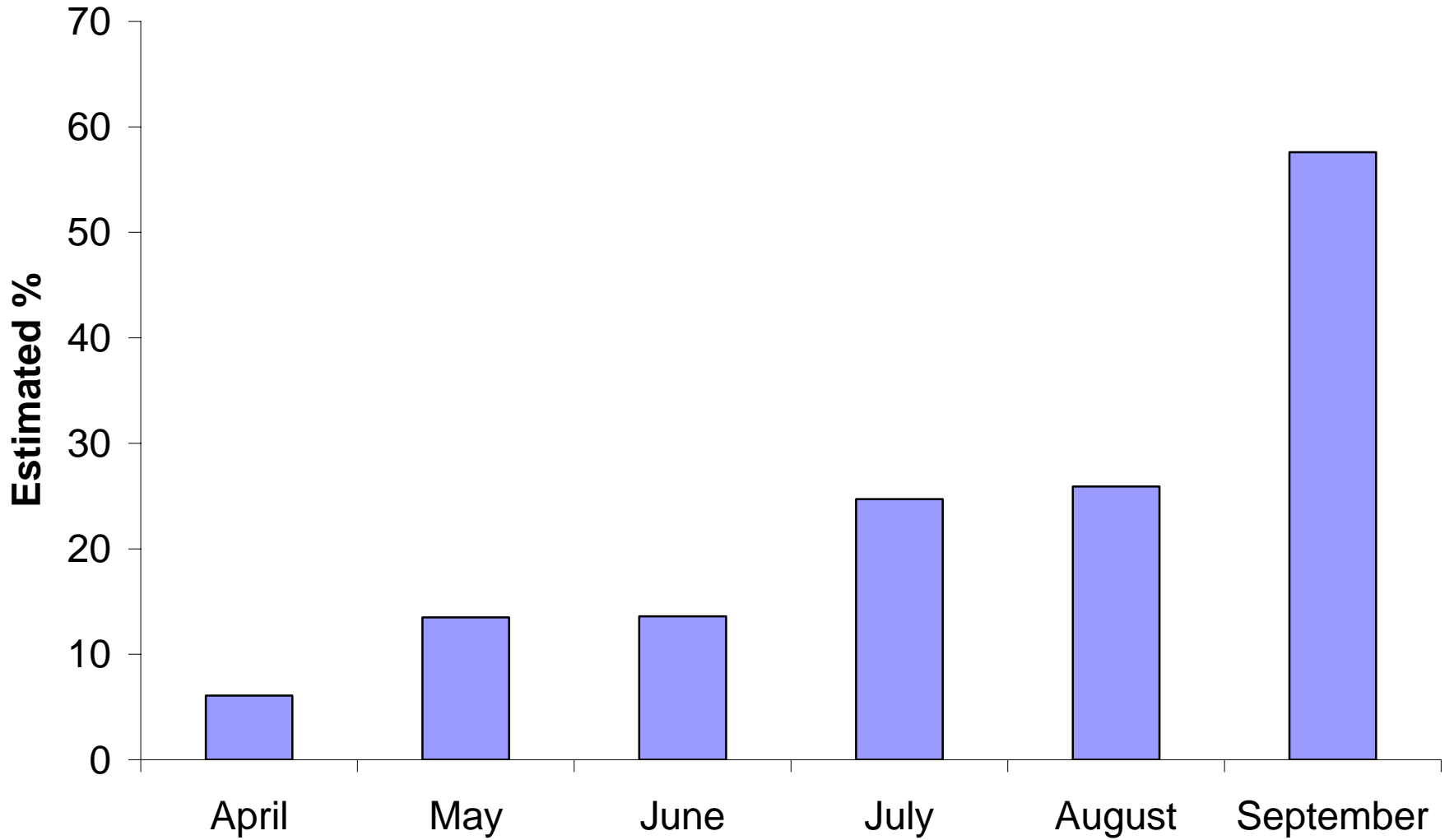


September

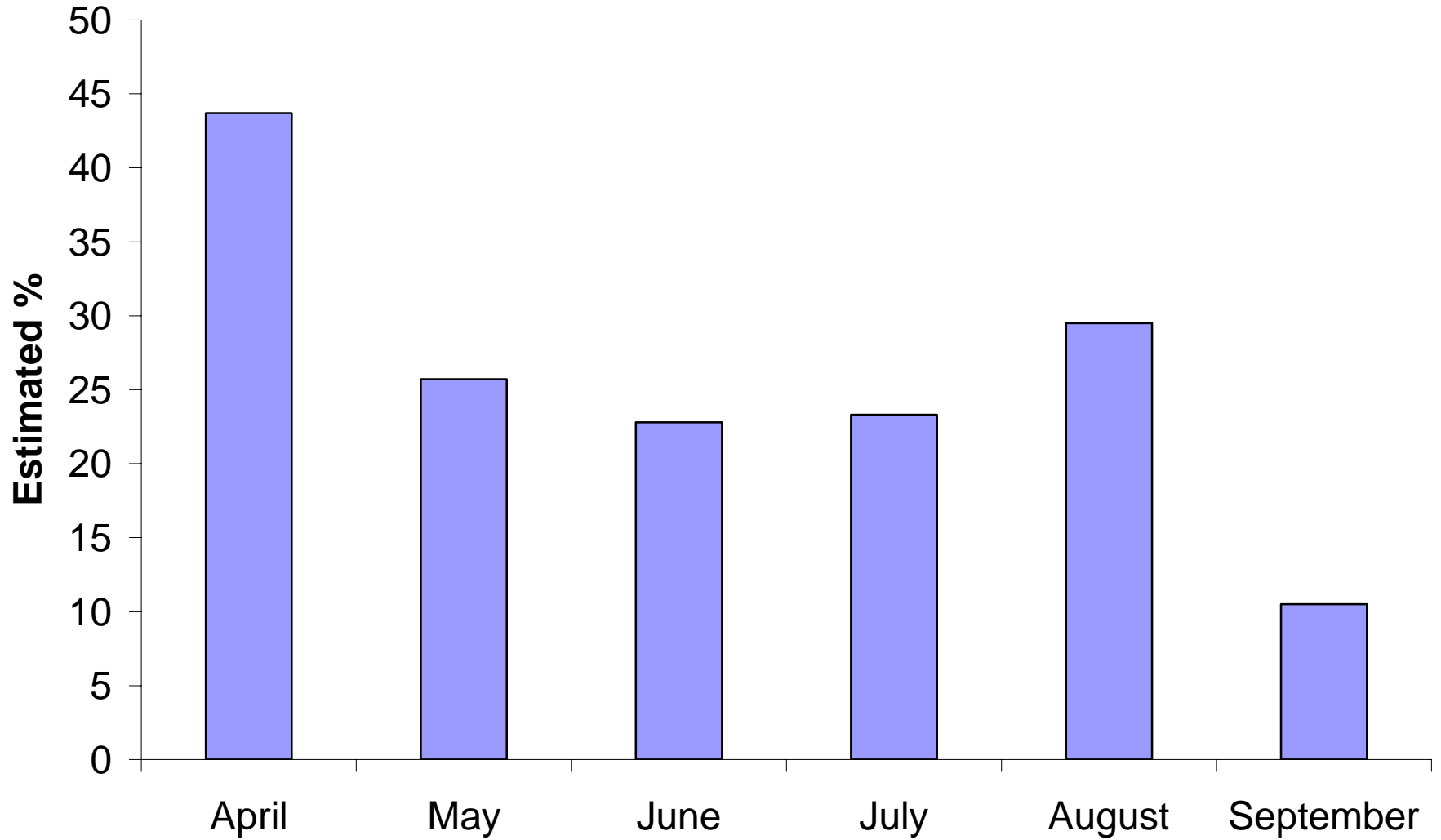


Intra-annual variation by major stock

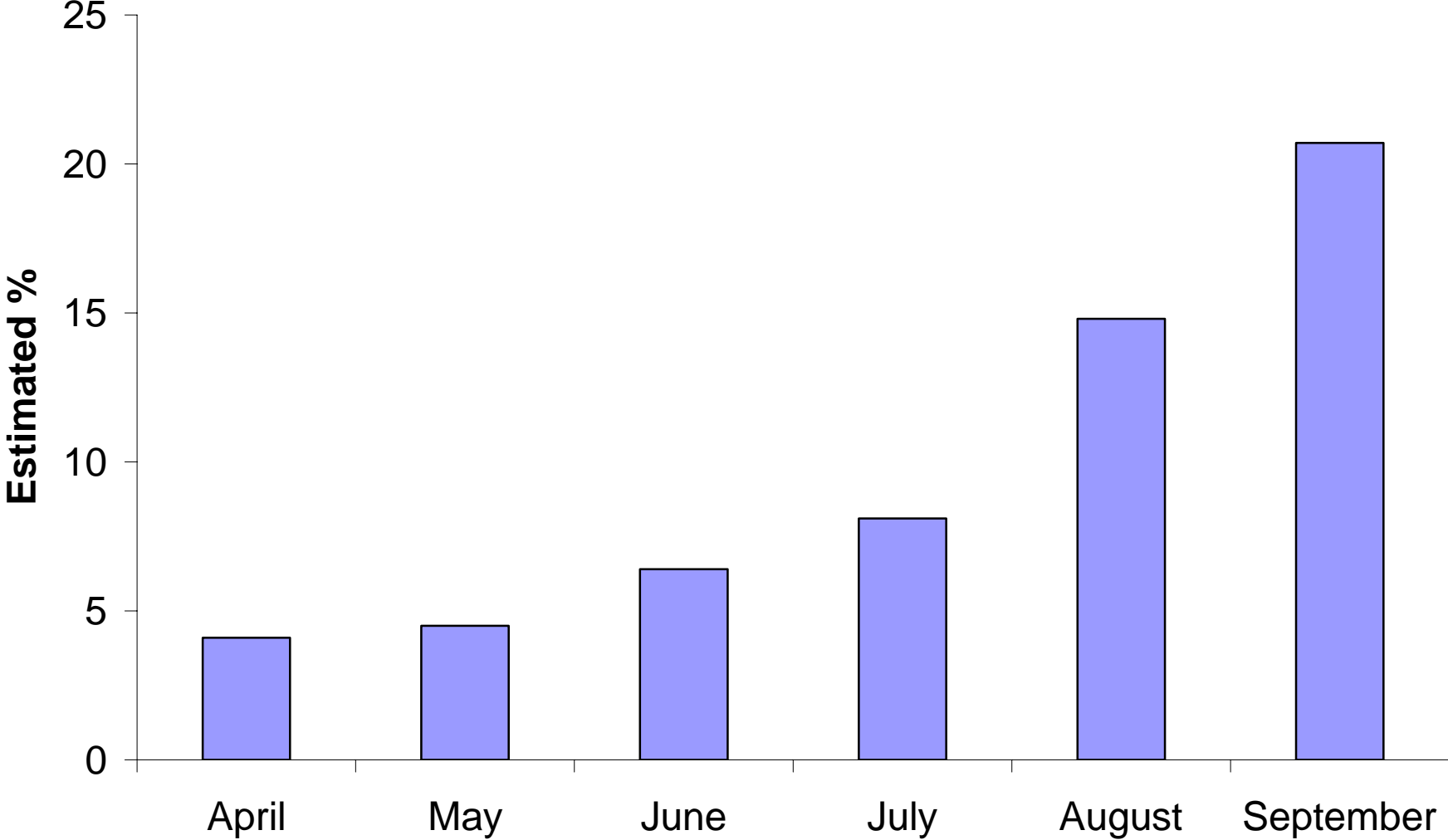
Oregon



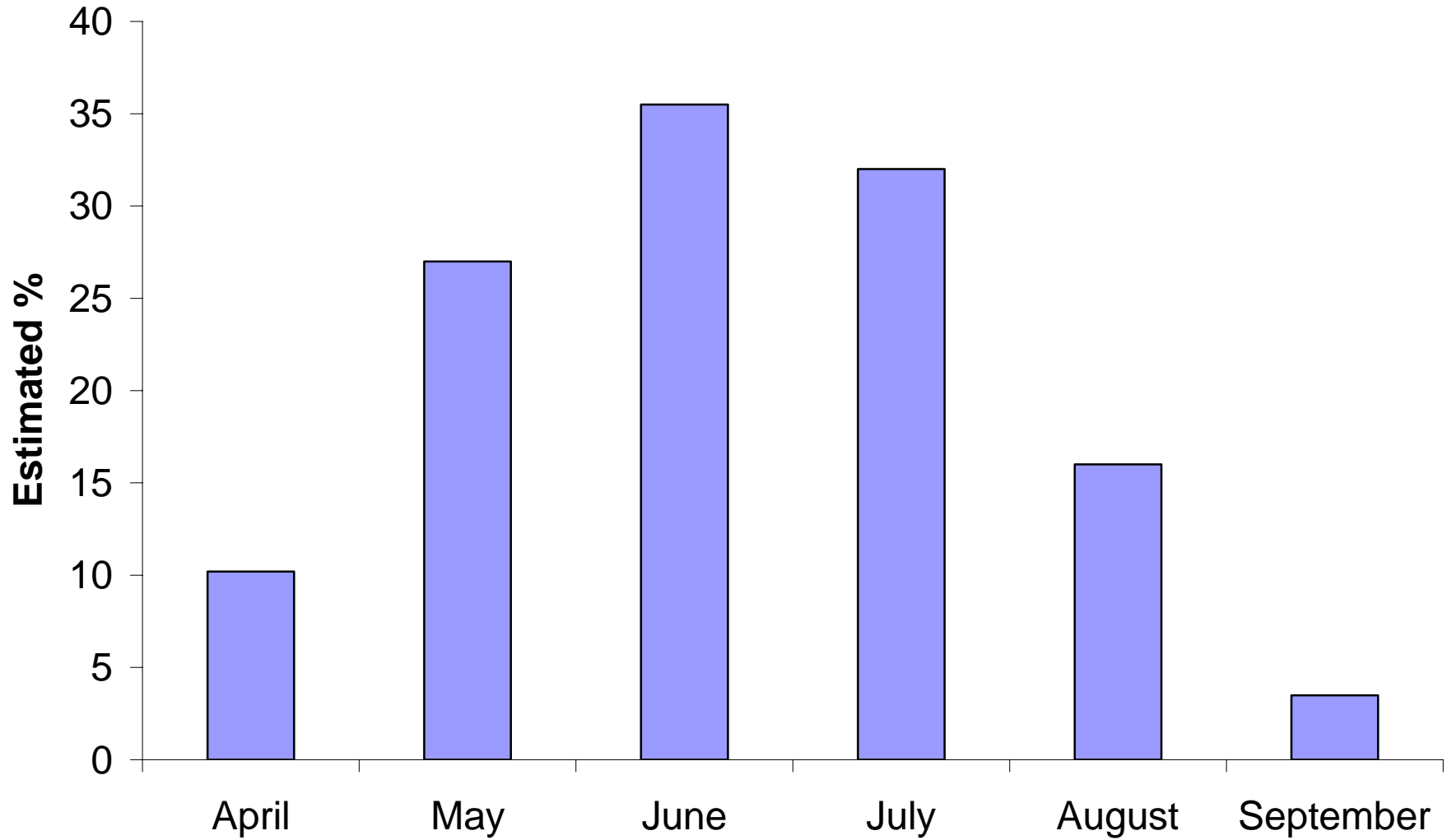
Columbia



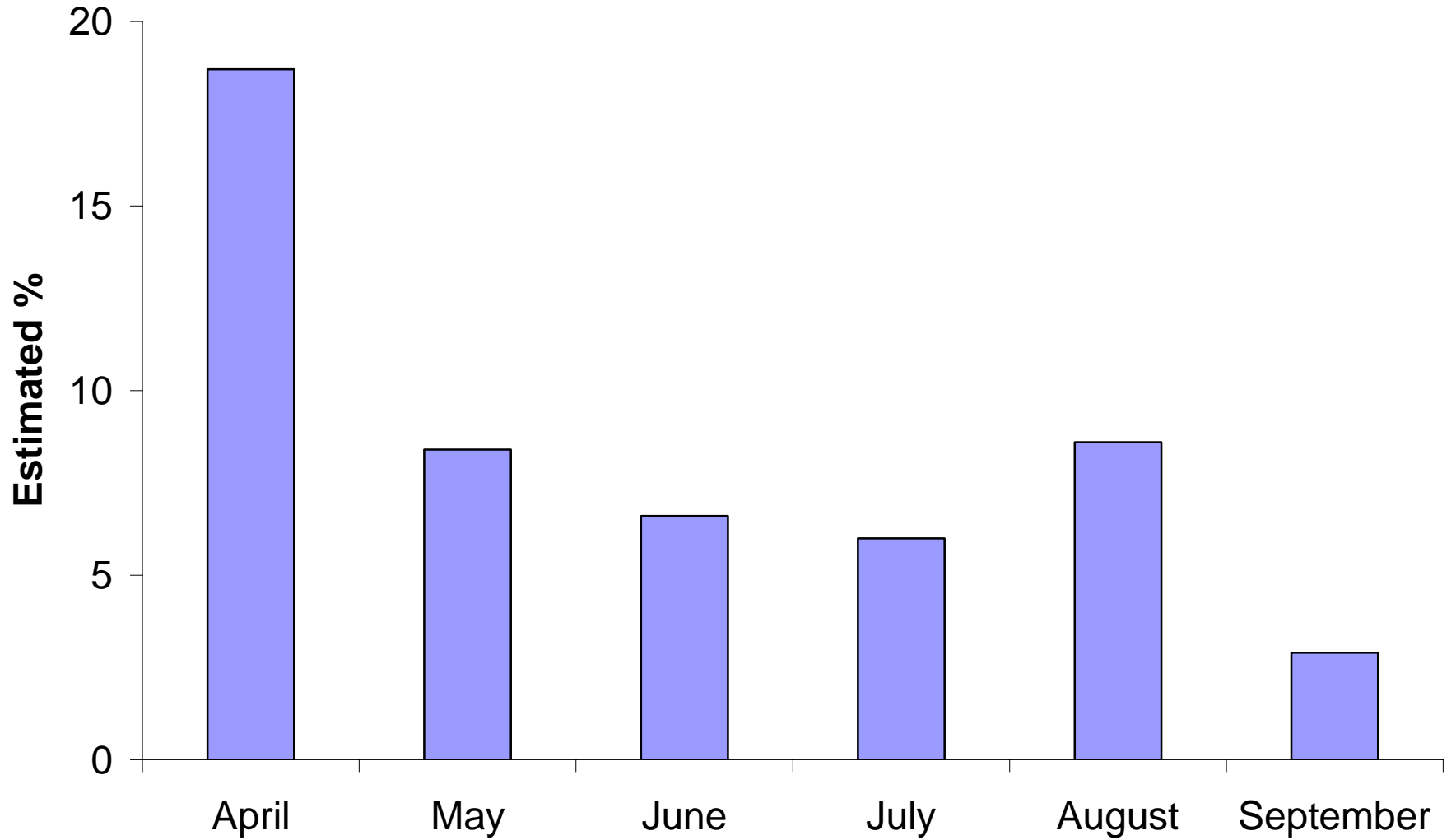
Washington



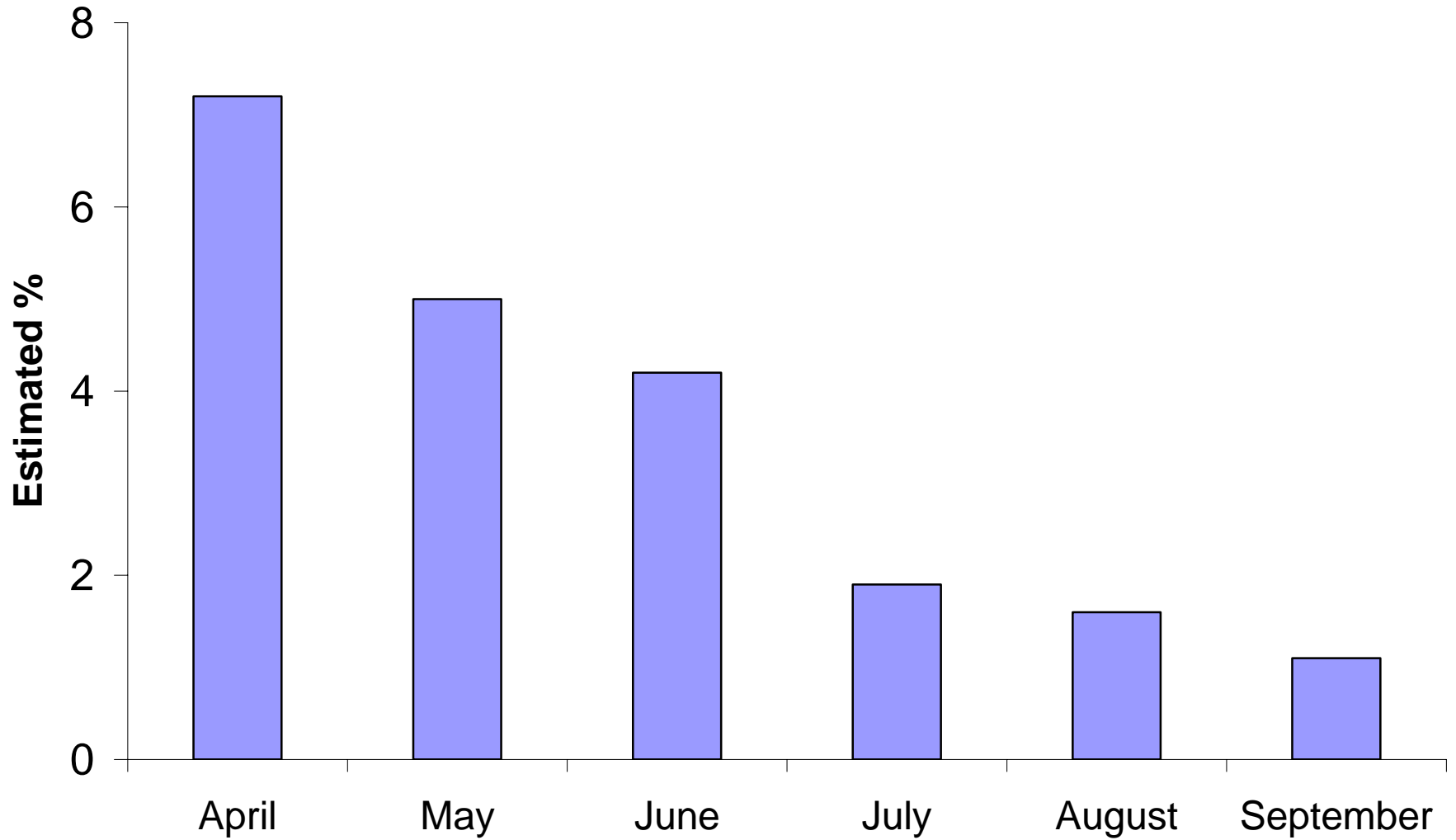
Fraser



WCVI

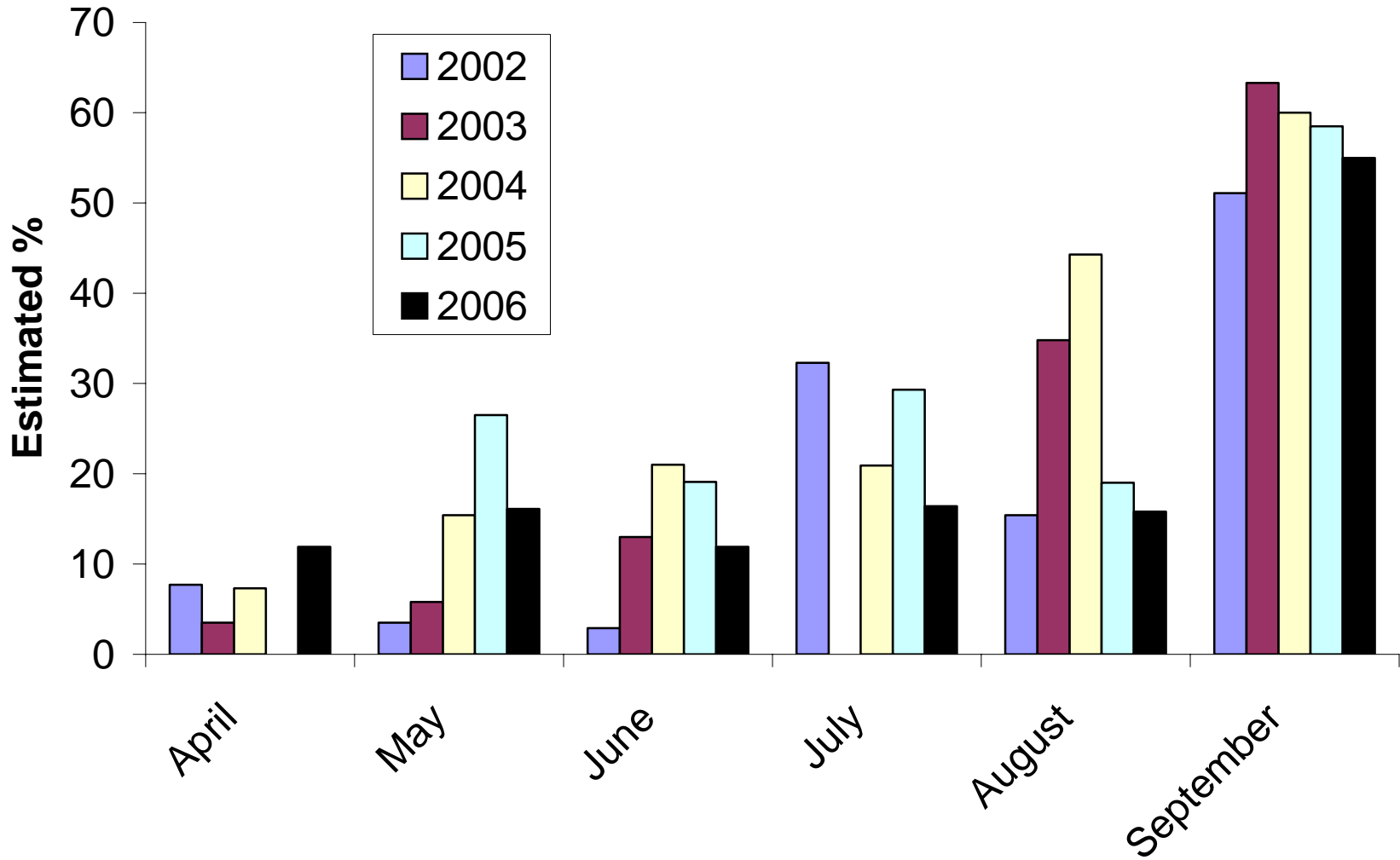


Northern BC

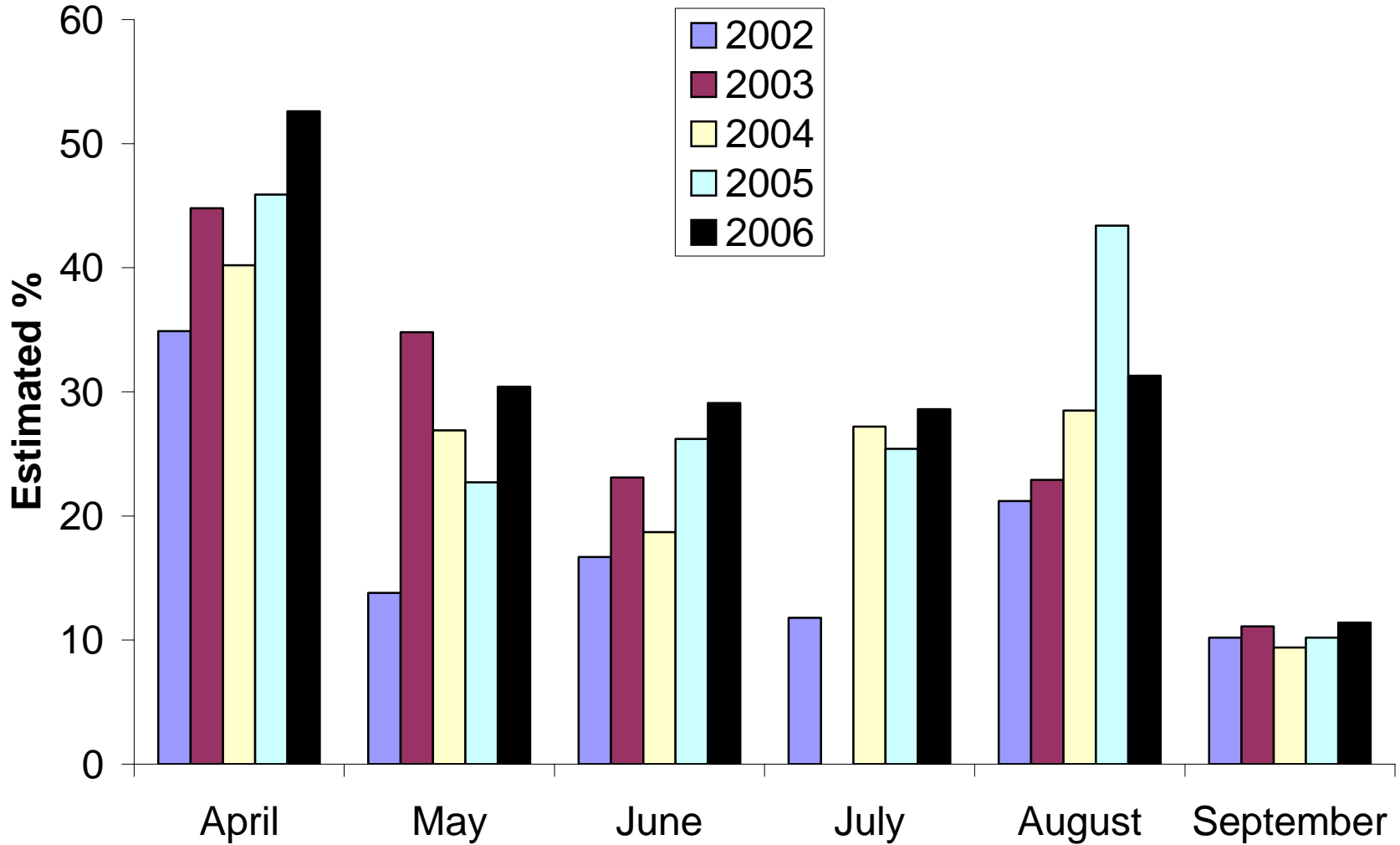


Inter-annual variation by major stock

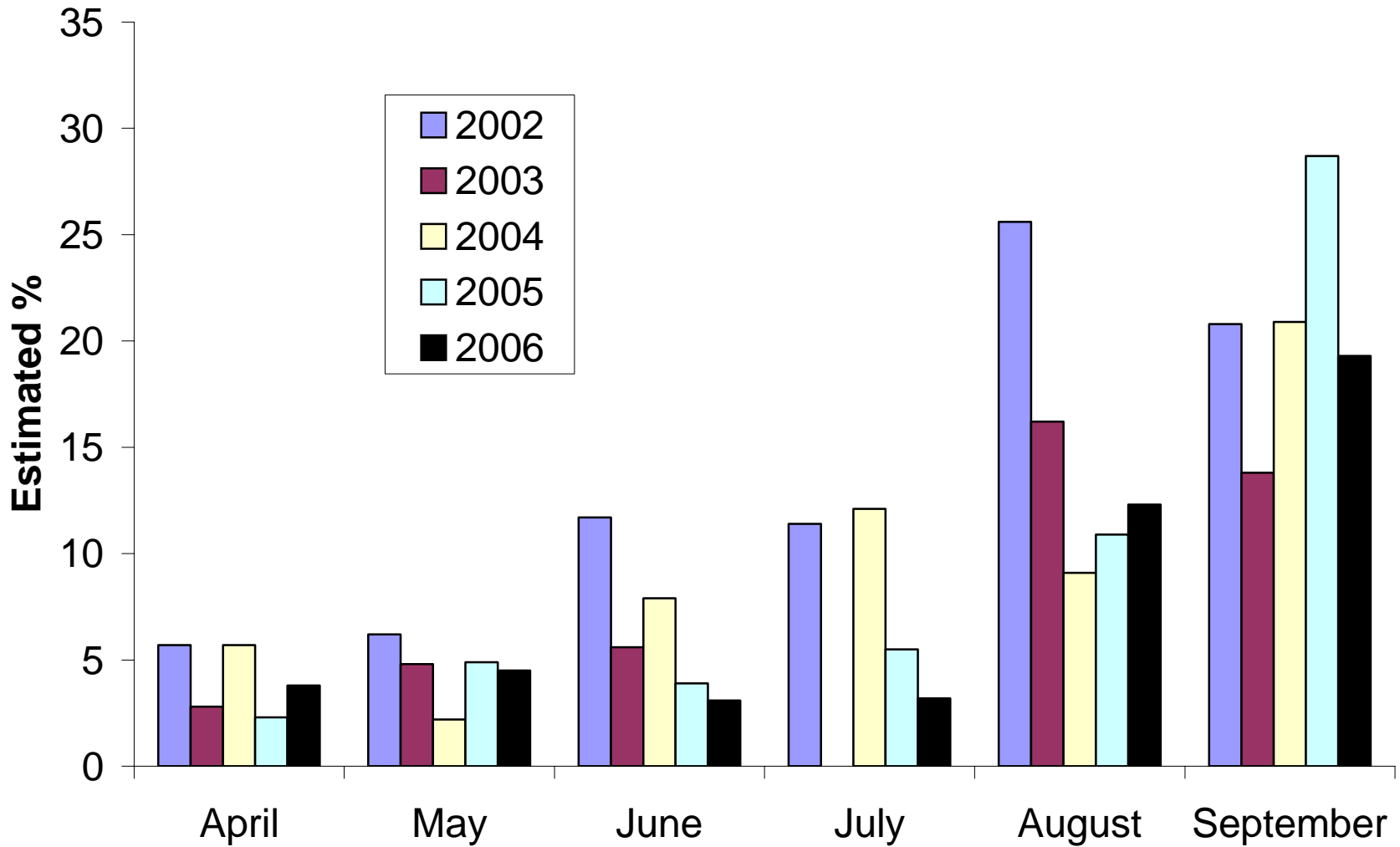
Oregon



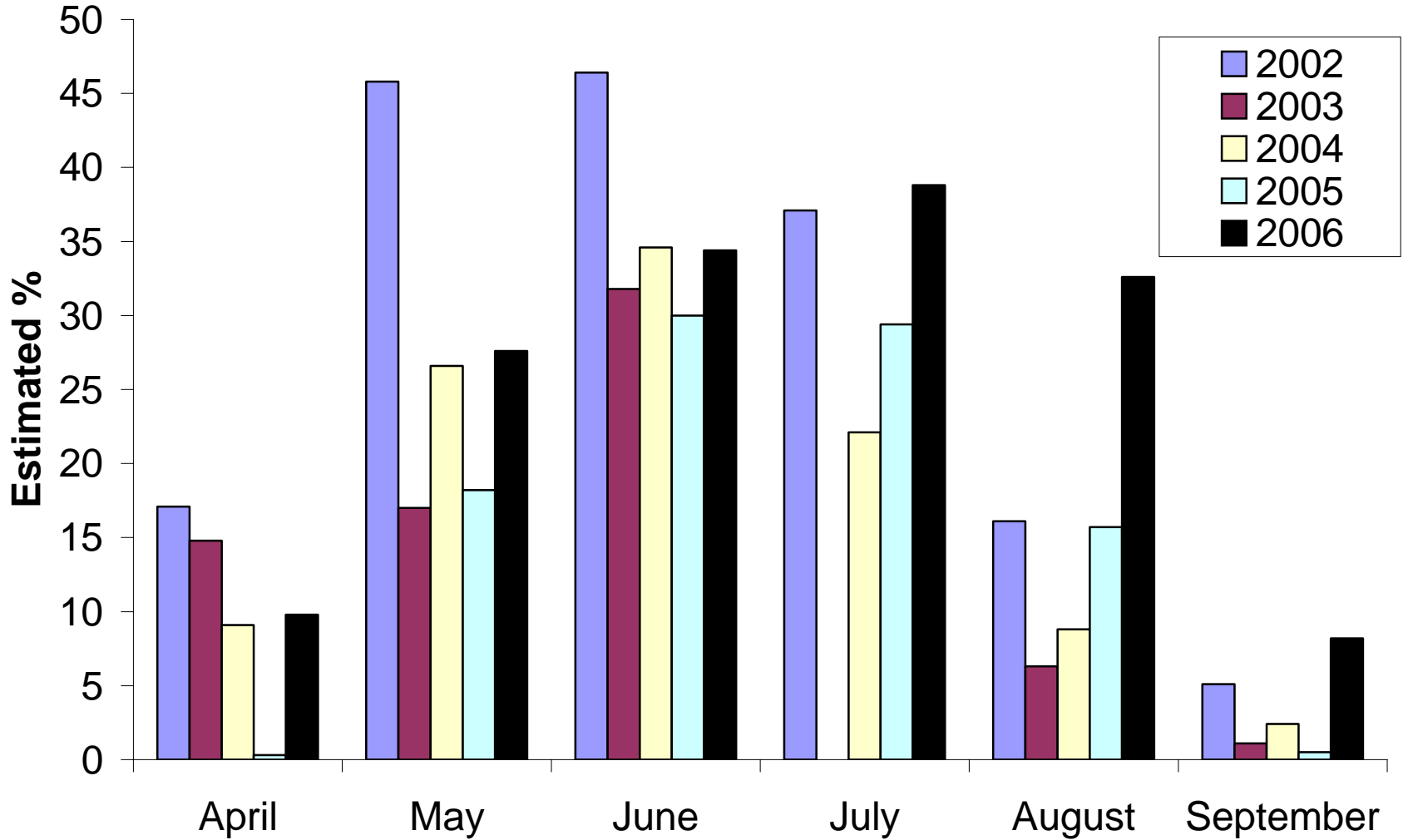
Columbia River



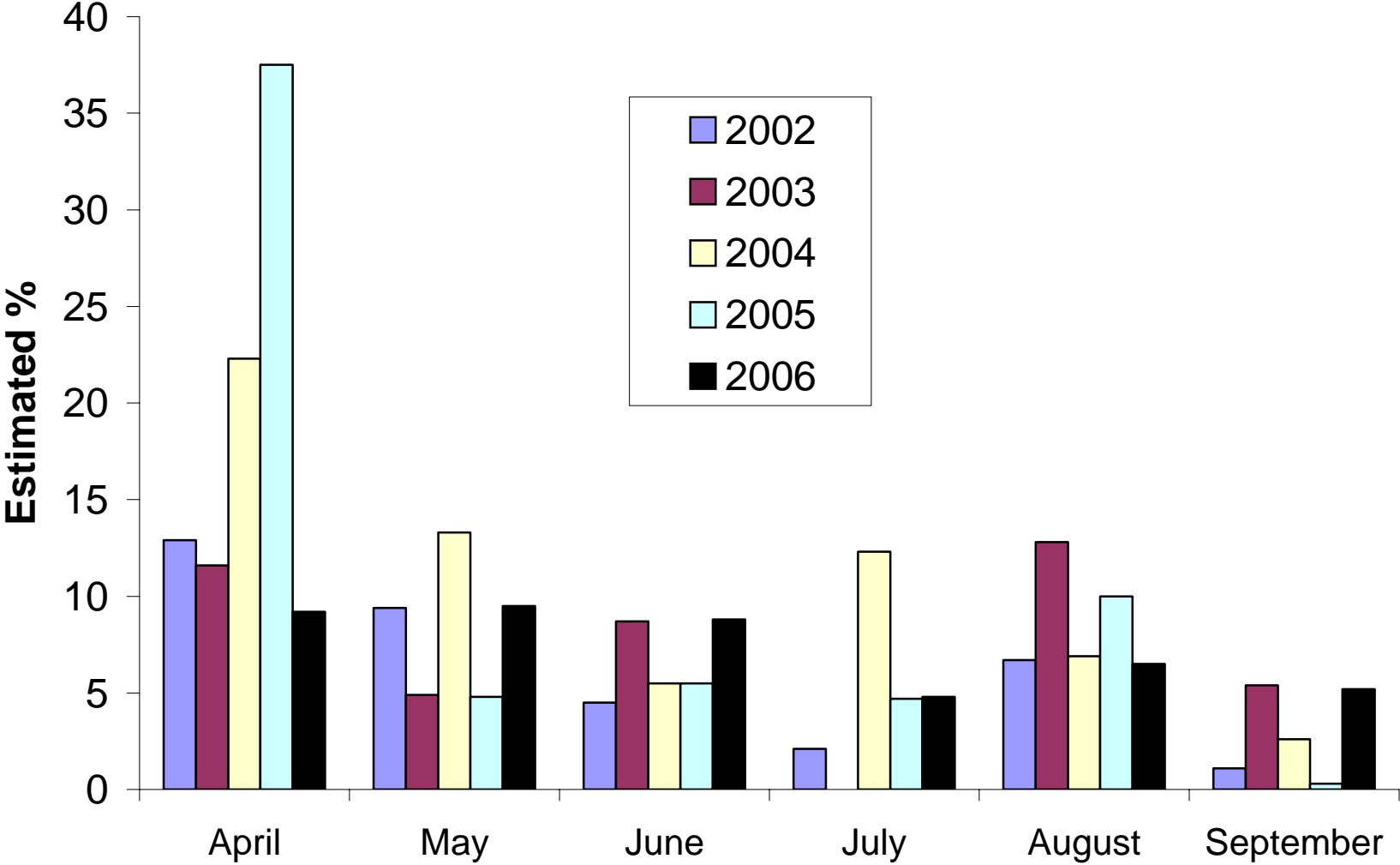
Washington



Fraser River



West Coast Vancouver Island



Impact on WCVI Chinook

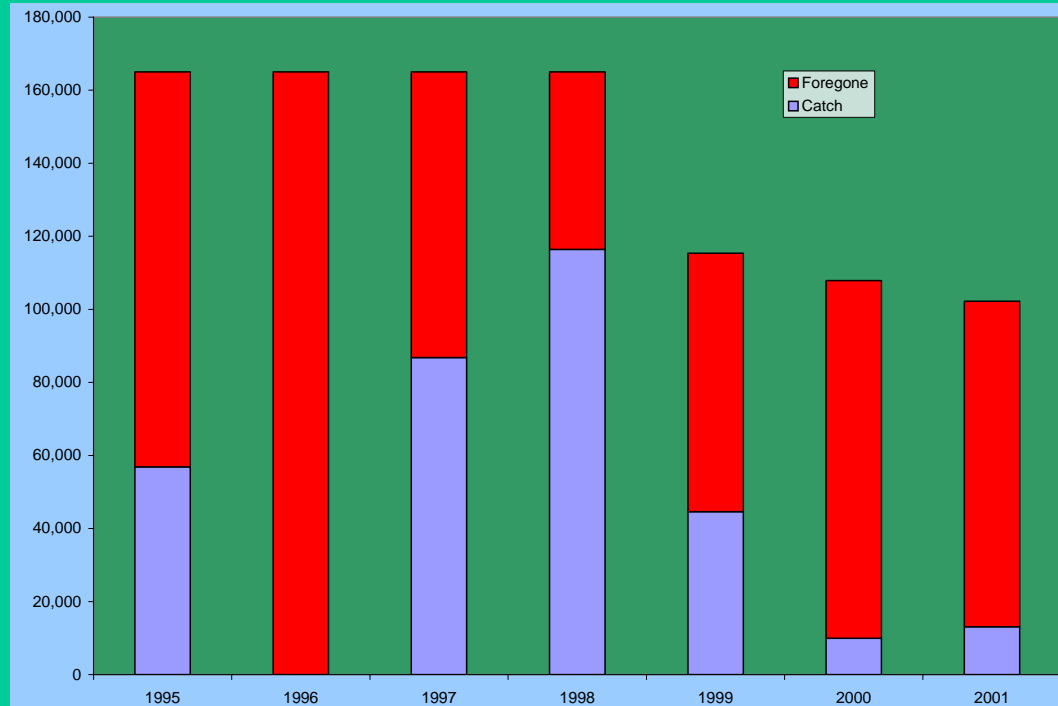
Average Total Fishing Mortality

1985 - 1994 9.2%

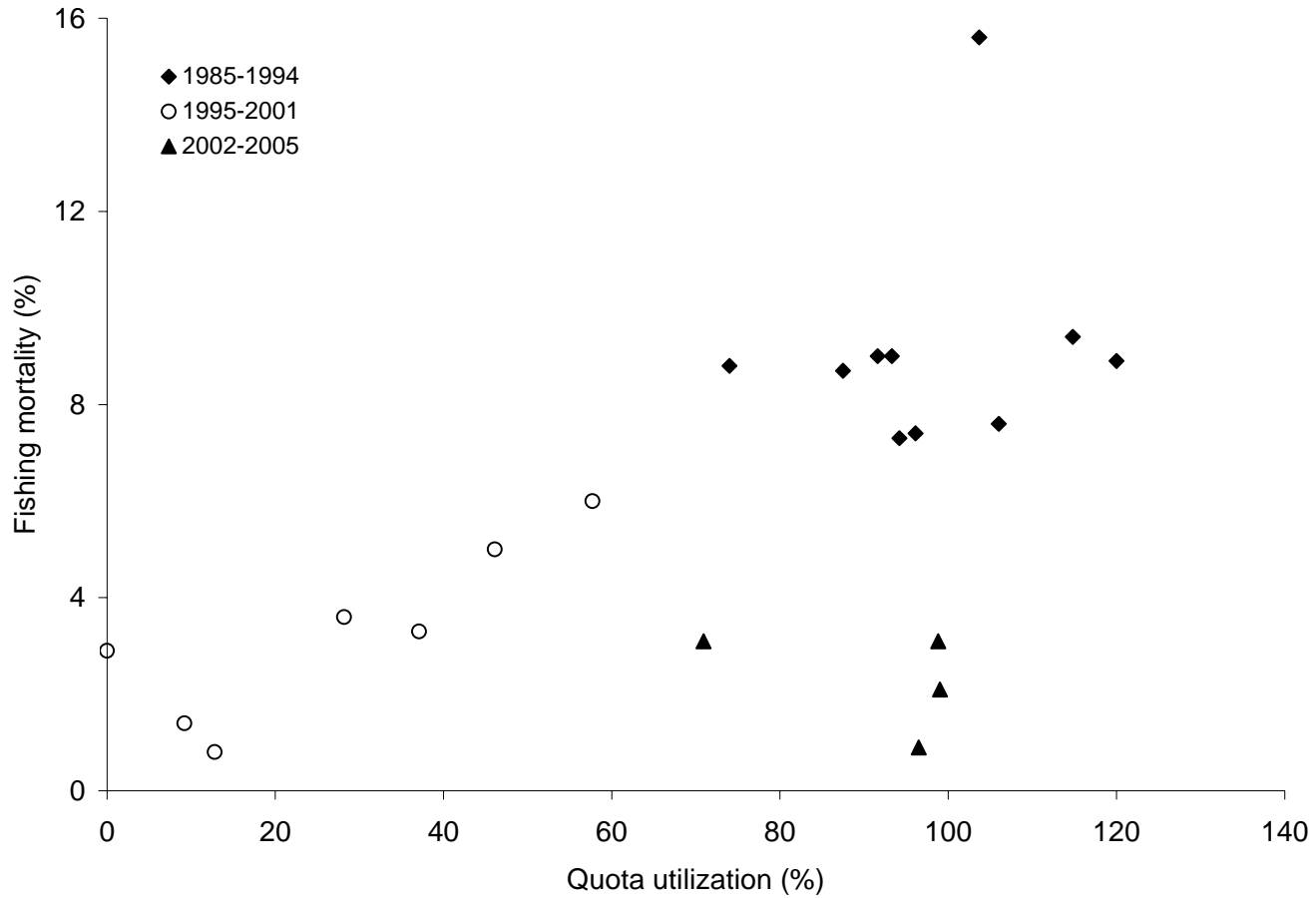
1995 - 2001 3.2%

2002 - 2005 2.3%

from CTC in prep.



Robertson Creek fishing mortality



Summary

- Managers moved fishery away from areas of high WCVI abundance. Area 2W often closed and 1 mile ribbon boundary in Area 1 to keep trollers off beach.
- Incremental catch 2002-2006 attributable to change in management strategy was about 558,000 fish.
- Exploitation rate of RCH indicator stock declined from 3.2% during 1995-2001 to 2.3% 2002-2005.

Sockeye salmon loci in DFO baseline

Locus	Alleles
<i>Oki1a</i>	8
<i>Oki1b</i>	10
<i>Ots107</i>	15
<i>Omy77</i>	20
<i>Ots2</i>	26
<i>Ots3</i>	26
<i>Oki16</i>	26
<i>Ots108</i>	29
<i>Ots103</i>	30
<i>One8</i>	32
<i>Ots100</i>	33
<i>Oki6</i>	37
<i>Oki29</i>	39
<i>Oki10</i>	83
<i>DAB-β1</i>	15

Sockeye salmon: Summary of the number of sampling sites or populations within geographic regions from Beacham et al. (2006). Range of annual and population samples sizes within regions is in parentheses. Fourteen microsatellite loci and an MHC locus were surveyed.

Region	Number of populations	Mean annual sample size	Mean population sample size
Columbia River	2	71 (15, 194)	285 (68,502)
Washington	3	114 (50, 201)	114 (50, 201)
Fraser River	53	94 (5, 400)	270 (15, 858)
West coast Vancouver Island	15	90 (19, 197)	132 (19, 279)
Nimkish River	3	108 (42, 290)	288 (203, 367)
Southern BC	6	114 (12, 219)	171 (18, 325)

Central BC	16	79 (27, 223)	97 (27, 223)
Owikeno Lake	10	77 (7, 114)	224 (86, 398)
Long Lake	3	99 (39, 205)	297 (139, 490)
Queen Charlotte	5	71 (41, 99)	114 (41, 190)
Islands			
Nass River	11	96 (24, 264)	313 (40, 797)
Skeena River	14	78 (33, 200)	151 (33, 287)
Babine Lake	11	95 (54, 200)	208 (78, 499)
Unuk River	1	50 (50,50)	50 (50,50)
Stikine River	17	83 (6, 405)	152 (26, 474)
Taku River	10	57 (12, 100)	86 (12, 199)
Alsek River	15	83 (10, 238)	144 (10, 592)
Southeast Alaska	20	151 (45, 343)	197 (45, 300)

Coho salmon loci in DFO baseline

Locus

Ots2

Ots3

Ots101

Ots103

Oki1

Oki10

Oki100

Oki101

Ogo2

Omy325

One111

OtsG253b

Ssa408

Alpha1

Alpha2

Coho salmon: Summary of the number of regions, sampling sites or populations within geographic regions, and individuals surveyed. Thirteen microsatellite loci and two MHC loci were surveyed.

Region	# of collections	# of coho
Transboundary	7	700
SE Alaska	9	1450
QCI	20	1400
Nass	3	750
Skeena	29	4500
Central Coast	40	5850
South Coast	28	3650
ECVI	22	6350
WCVI	13	4300
Fraser	47	13,300
Washington	15	1400
Columbia	9	800
Oregon	10	850
California	4	150