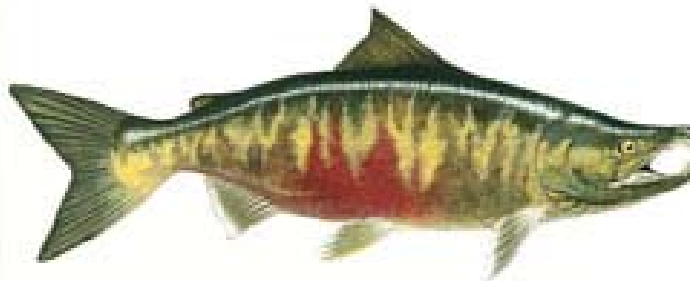
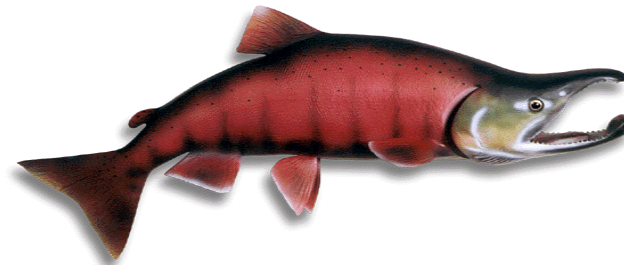
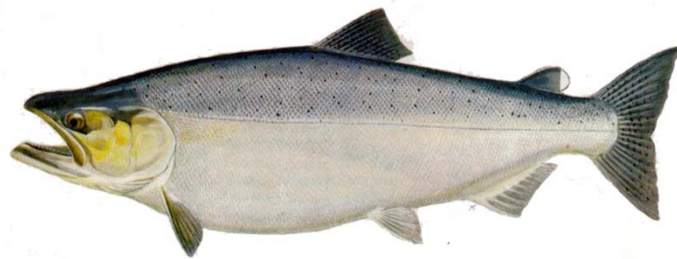




2014 Fraser River Stock Assessment and Fishery Summary Chinook, Coho and Chum





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Background and Stock Assessment



Fraser River Chinook - Background

Diverse group of populations, exhibiting a wide range of life histories, geography, and run timing

Chinook enter the Fraser River from March thru October

Spawning occurs throughout the Fraser, from just above the tidal limits in the Lower Fraser to the upper tributaries of the Stuart basin

Juveniles exhibit both stream and ocean life history types

Currently managed as five Management Units

- Fraser Spring 4(2) Chinook
- Fraser Spring 5(2) Chinook
- Fraser Summer 5(2) Chinook
- Fraser Summer 4(1) Chinook
- Fraser Fall Chinook



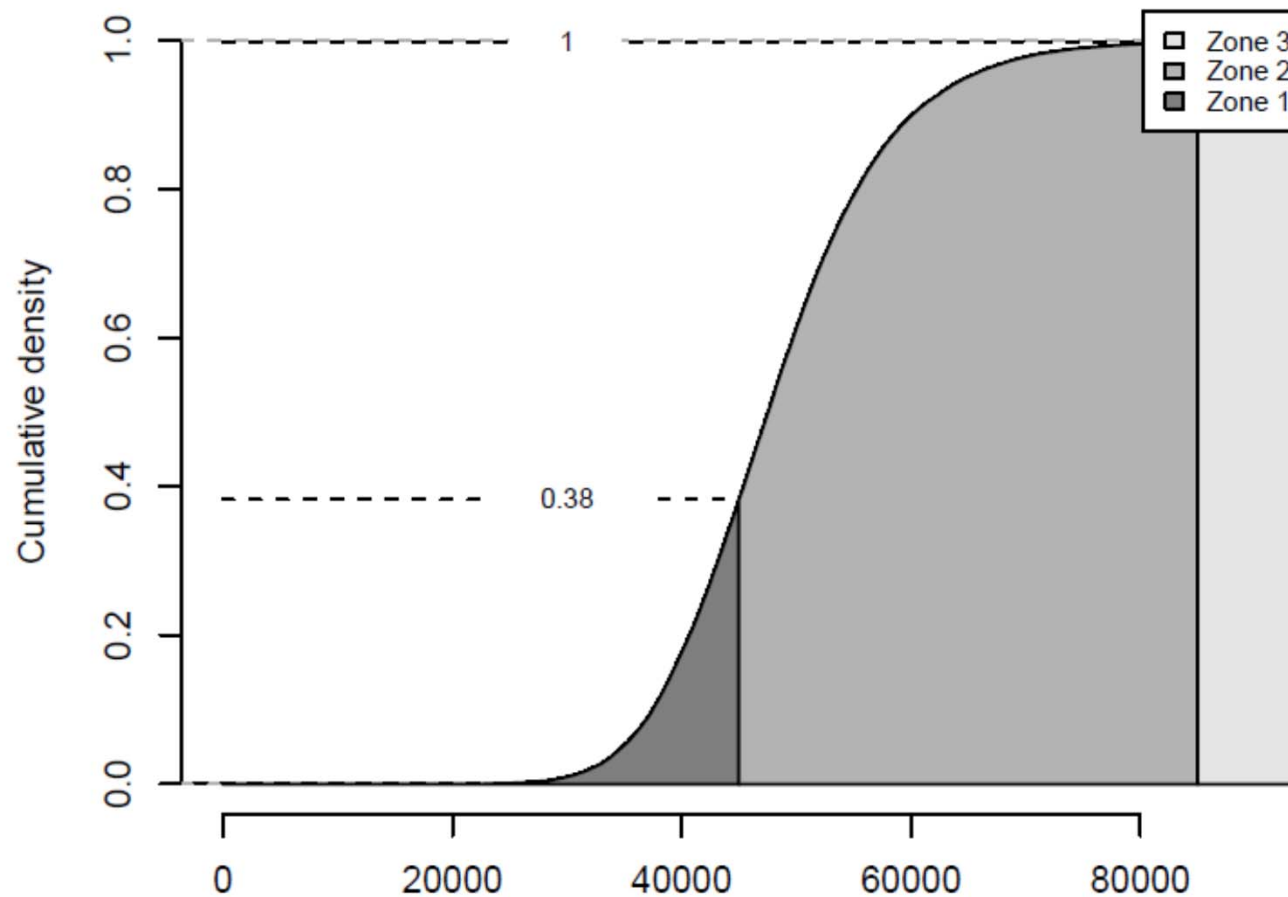
2014 Fraser River Stock Assessment Chinook

In-season Assessment

- Spring and Summer 5(2) Chinook are assessed in-season with an abundance model based on catch from the Albion Test Fishery
- catch for the 6 week time period that generates the in-season estimate was the fourth lowest since 1995 (Chinook catch from 8" net was 13 fish)
- the four years of lowest catch for this same time period have occurred in the last four years
- the 2014 in-season estimate of terminal run size (provided on June 16th) was 47,550
- this estimate resulted in Zone 2 management for 2014 (Zone 1 < 45K; Zone 2 = 45 to 85K; Zone 3 > 85K)



2014 Fraser River Stock Assessment - Chinook





2014 Fraser River Stock Assessment Chinook

Post-season Assessment

- spawner abundance is estimated using a number of methods
- mark-recapture studies - Nicola, Harrison, Lower and Mid Shuswap, Chilko
- electronic counters - Bonaparte and Deadman
- fence counts at Salmon River (Salmon Arm)
- remaining assessments are through visual surveys (aerial, foot or float)



2014 Fraser River Stock Assessment - Chinook

Fraser Spring 4₂ Chinook

- aggregate escapement improved considerably at ~9,300
- great improvement over record low 2010 parental brood of 5,200
- Nicola escapement estimate = ~6,900 (visual)

Fraser Spring 5₂ Chinook

- aggregate exceeded parental brood levels, and well above last year (17,000)
- aggregate escapement is ~33,500
- Lower Chilcotin, Cottonwood and Westroad improved considerably

Fraser Summer 5₂ Chinook

- aggregate escapement likely just above parental brood levels (20,500)
- mixed signals for this group - Chilko did well, but Clearwater did not
- aggregate escapement is ~21,500
- Chilko (~10,200) and Clearwater (~2,200)

Values presented are preliminary. Data entry and validation are still in progress.
Estimates represent the sum of all systems surveyed with no expansion for those spawning areas which are not surveyed.



2014 Fraser River Stock Assessment - Chinook

Fraser Summer 4₁ Chinook (late South Thompson)

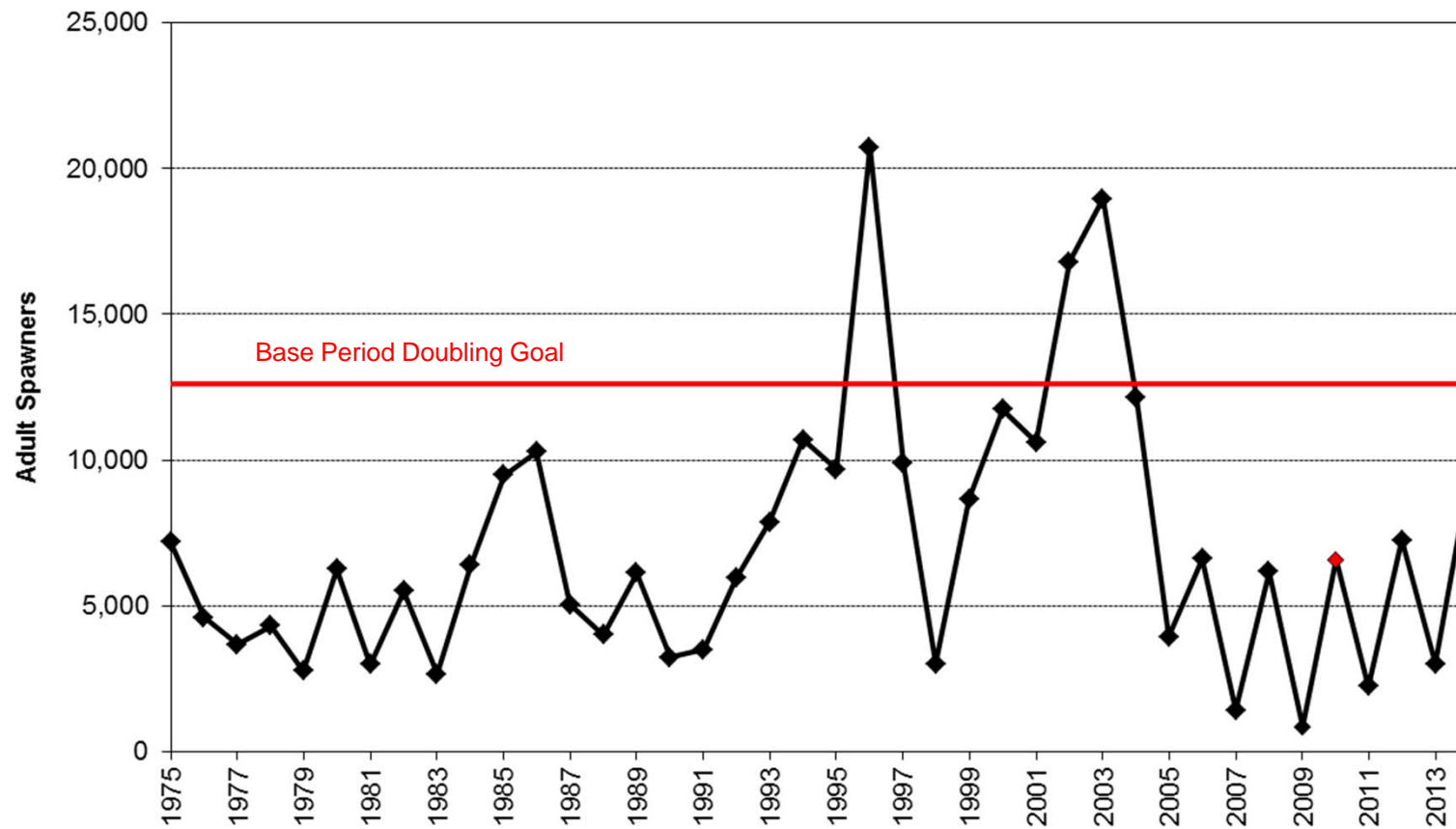
- escapement decreased from last year - similar to decline seen in 2012
- aggregate escapement of 86,000 is about 55% of 2010 parental brood
- declines largest in South Thompson (~38,000) and Little River (~3,400)

Lower Fraser Fall Chinook (Harrison and Chilliwack)

- very limited information is available, but returns are tracking below forecast for both Harrison and Chilliwack
- escapement goal range for Harrison is 75,100 to 98,500
- pre-season forecast for Harrison escapement of less than 75,000
- preliminary escapement estimates are unavailable at this time
- terminal abundance estimates available this spring

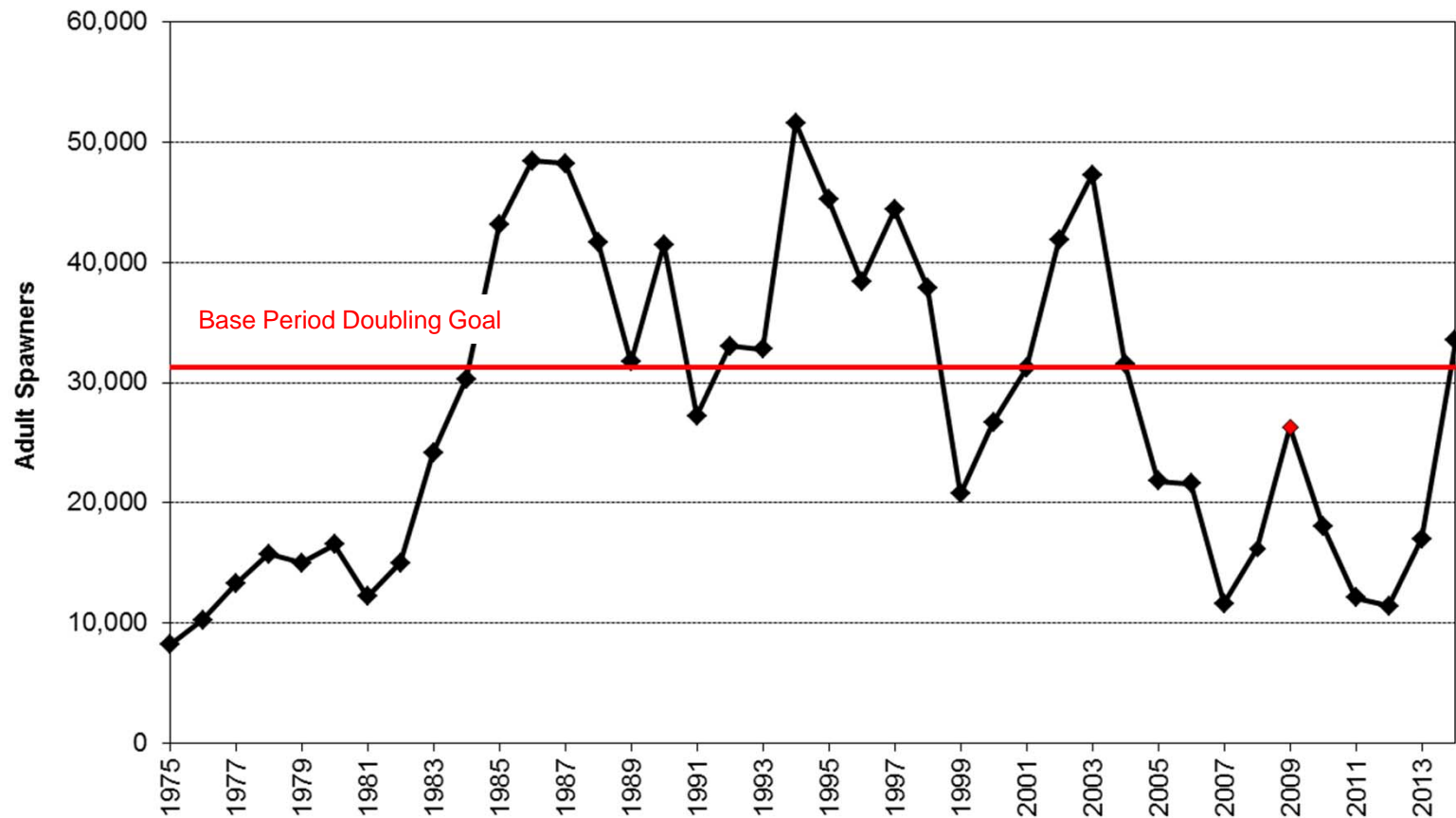


Escapement - Fraser Spring 4₂ Chinook



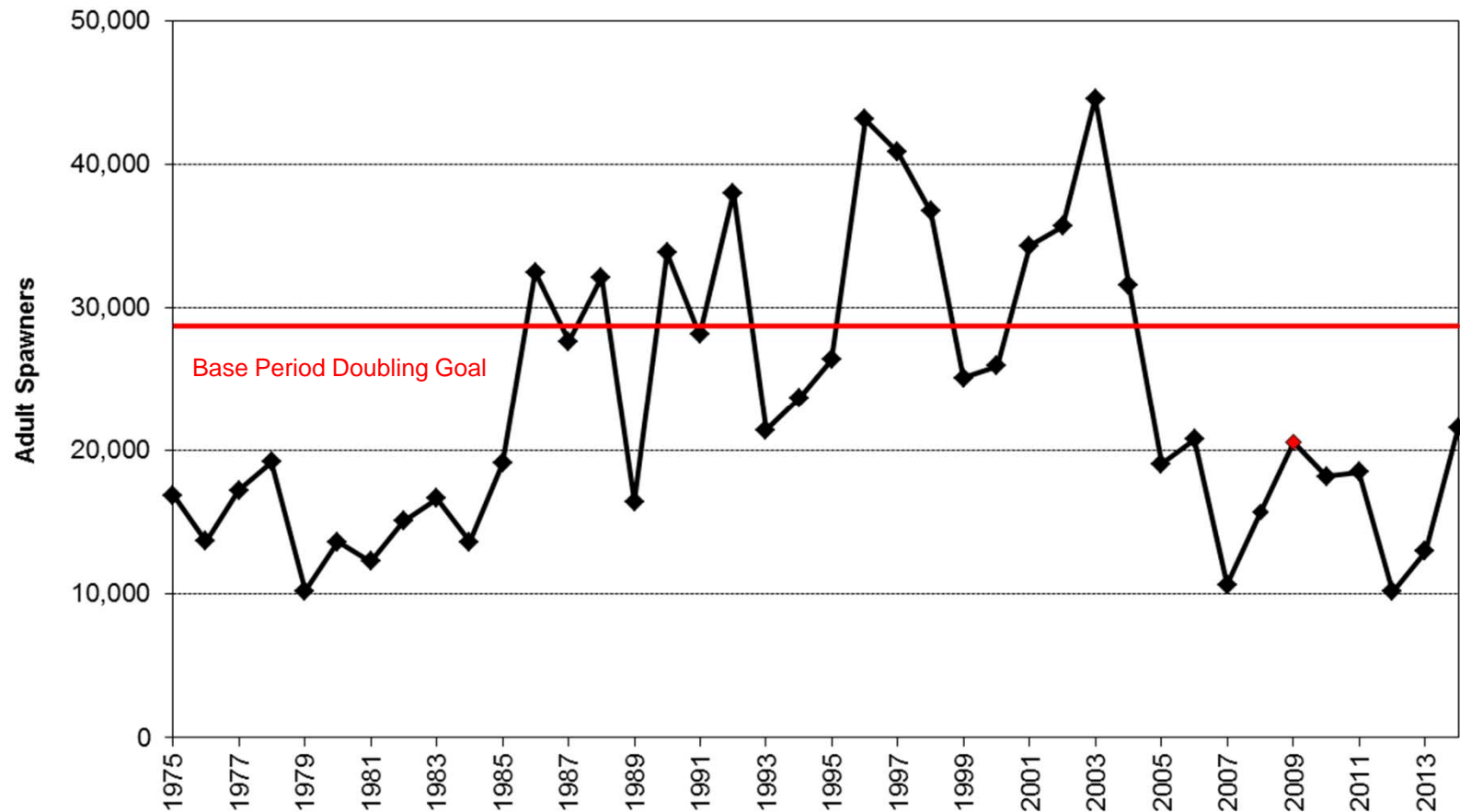


Escapement - Fraser Spring 5₂ Chinook



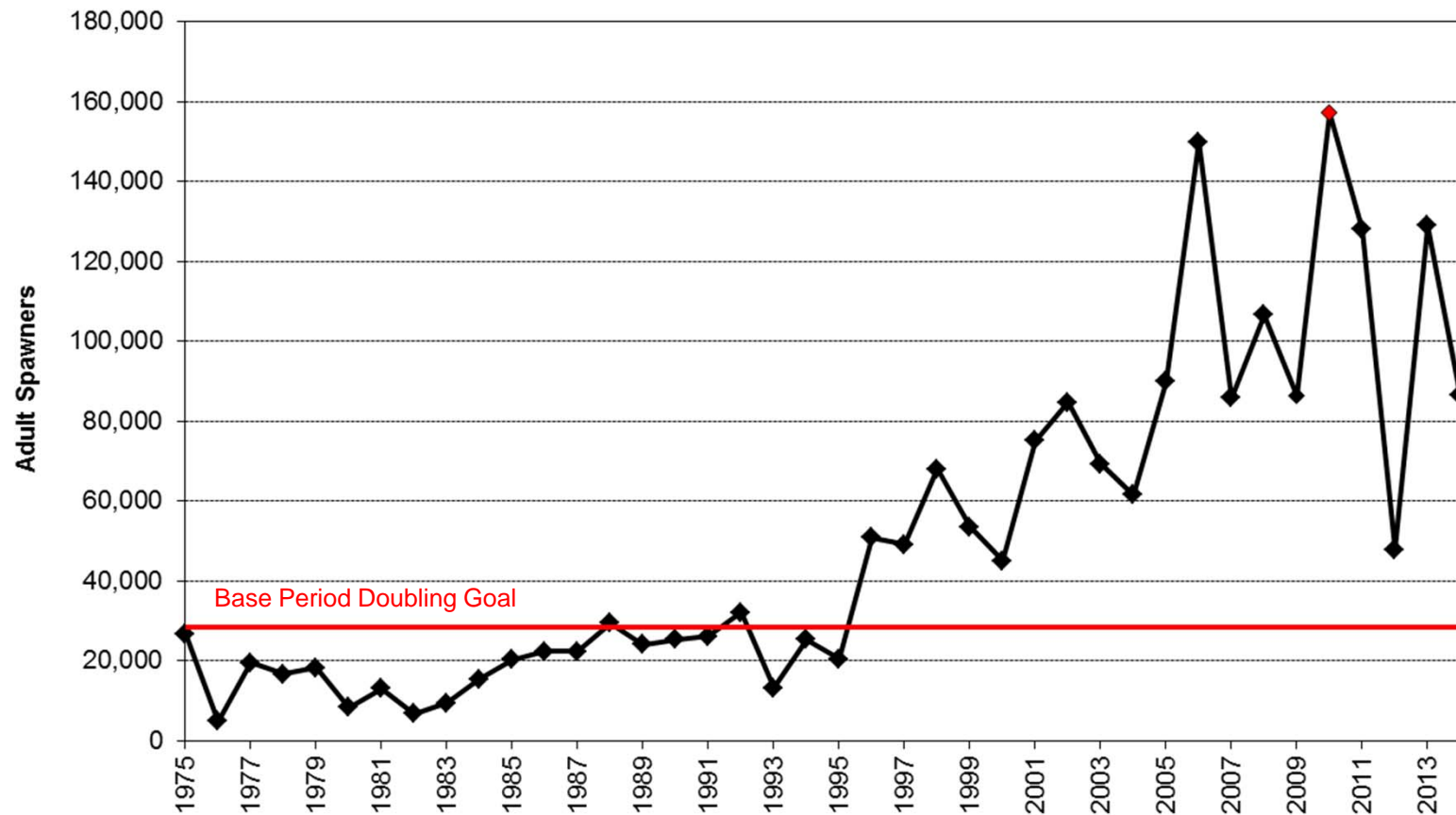


Escapement - Fraser Summer 5₂ Chinook



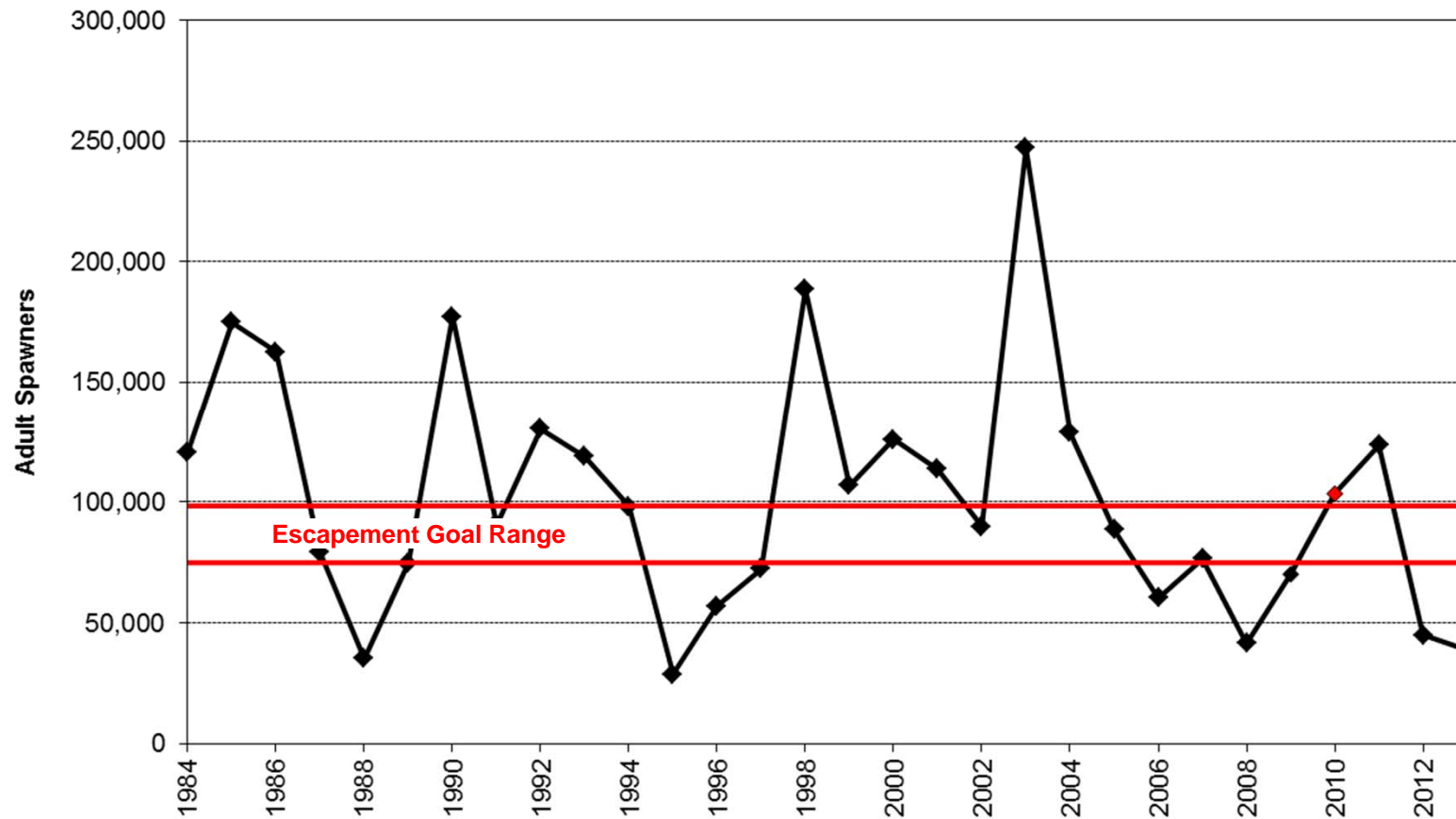


Escapement - Fraser Summer 4₁ Chinook





Escapement - Fraser Fall Chinook





Fraser River Coho - Background

Coho populations spawn throughout the Fraser watershed

- many spawning sites in Lower Fraser River
- Interior Fraser coho return to the Upper Fraser and Thompson Rivers

Stream-type life history

Most return as three year olds

Coho enter the Lower Fraser River from late August to December

- peak migration period for Interior Fraser coho from early September to early October

Interior Fraser coho populations have declined dramatically from peak abundances observed in the 1980's. While spawning escapements have improved somewhat in recent years, overall returns remain well below levels observed prior this decline.



2014 Fraser River Stock Assessment Coho

Interior Fraser coho

- very preliminary escapement estimate between 15,000 and 20,000
- decrease from 2011 parental brood escapement of ~25,500
- 2013 aggregate escapement was 58,360

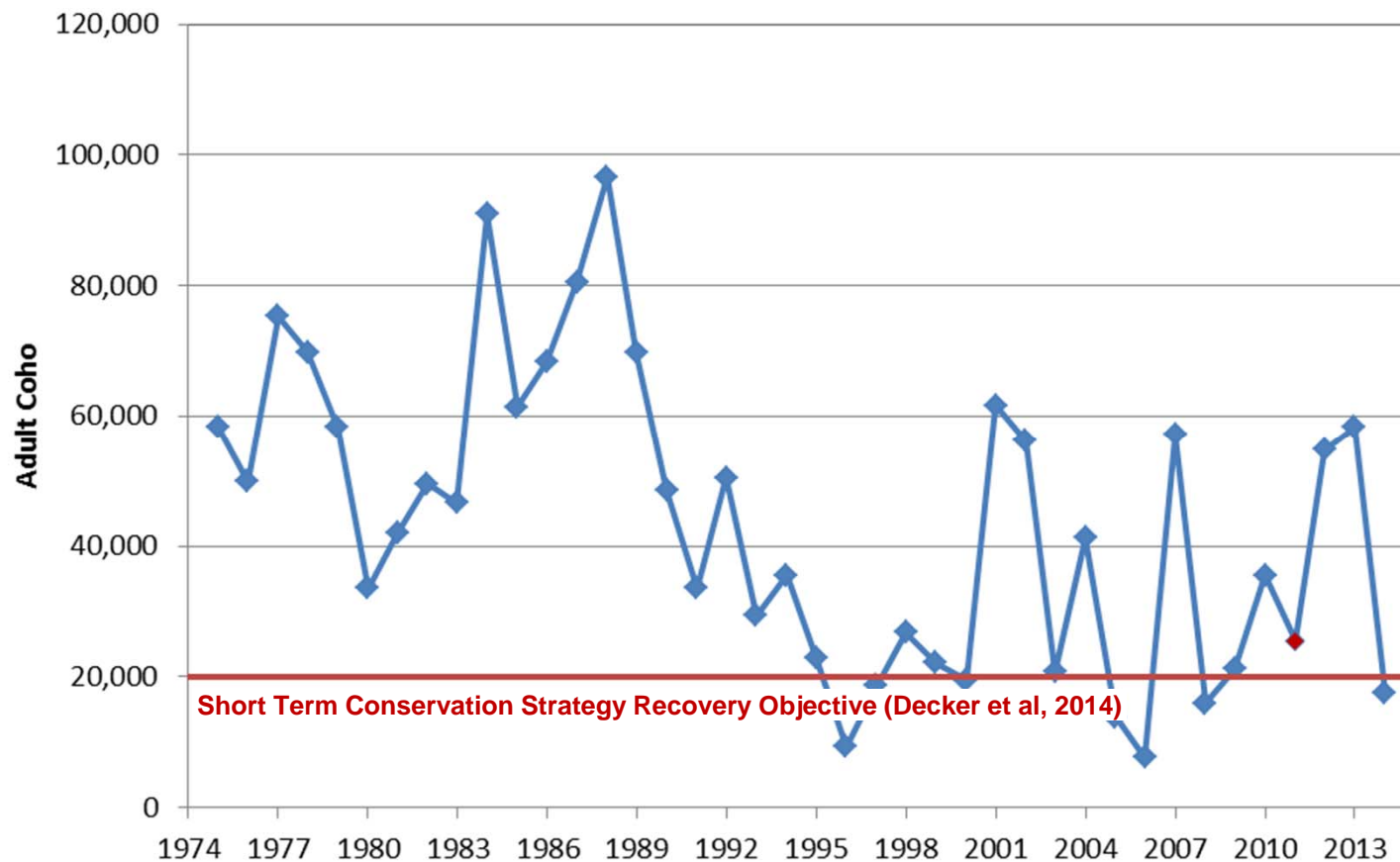
Lower Fraser coho

- escapement assessments are still underway
- estimates are expected late February
- work continues to identify a suite of systems to use for tracking annual abundance



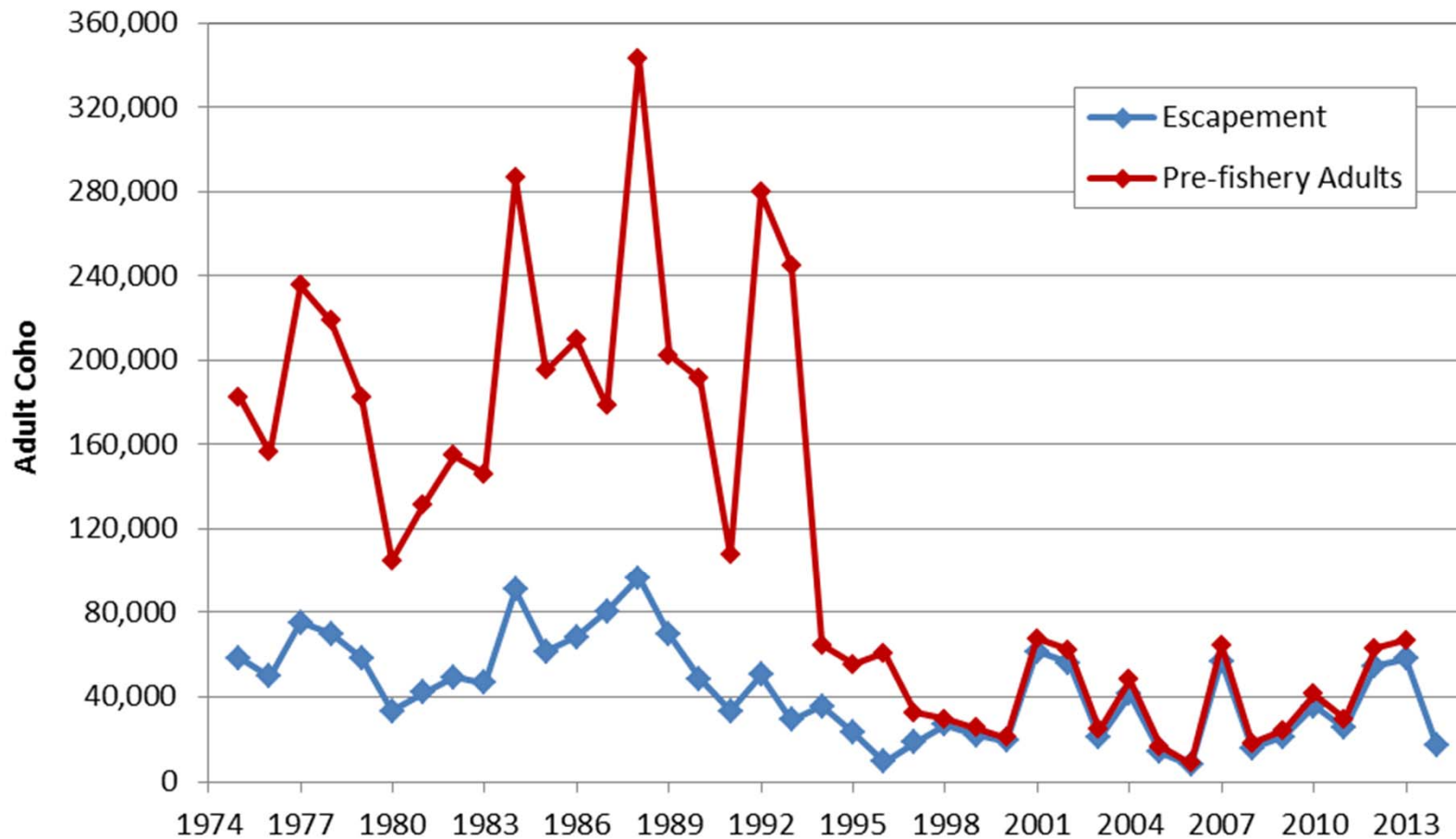
Escapement - Interior Fraser River Coho

(2014 estimate is preliminary)





Pre-fishery Abundance - Interior Fraser River Coho





Fraser River Chum - Background

Largest chum population in British Columbia

- two Conservation Units (Lower Fraser and Fraser Canyon)
- managed as one management unit

Escapement goal is 800,000

Return to Fraser from September through November

- recent year peak migration mid/late-October

Major spawning areas are below Hope

- Harrison/Weaver/Chehalis, Chilliwack/Vedder, Stave

Enhancement

- Weaver spawning channels, Inch Creek, Chilliwack, and Chehalis hatcheries
- production relatively consistent over the last 10 years
- proportion of fed fry decreased in the last decade, but has been increased in recent years



2014 Fraser River Stock Assessment Chum

Managed based on in-season information derived from the Albion test fishery

2014 in-season assessment

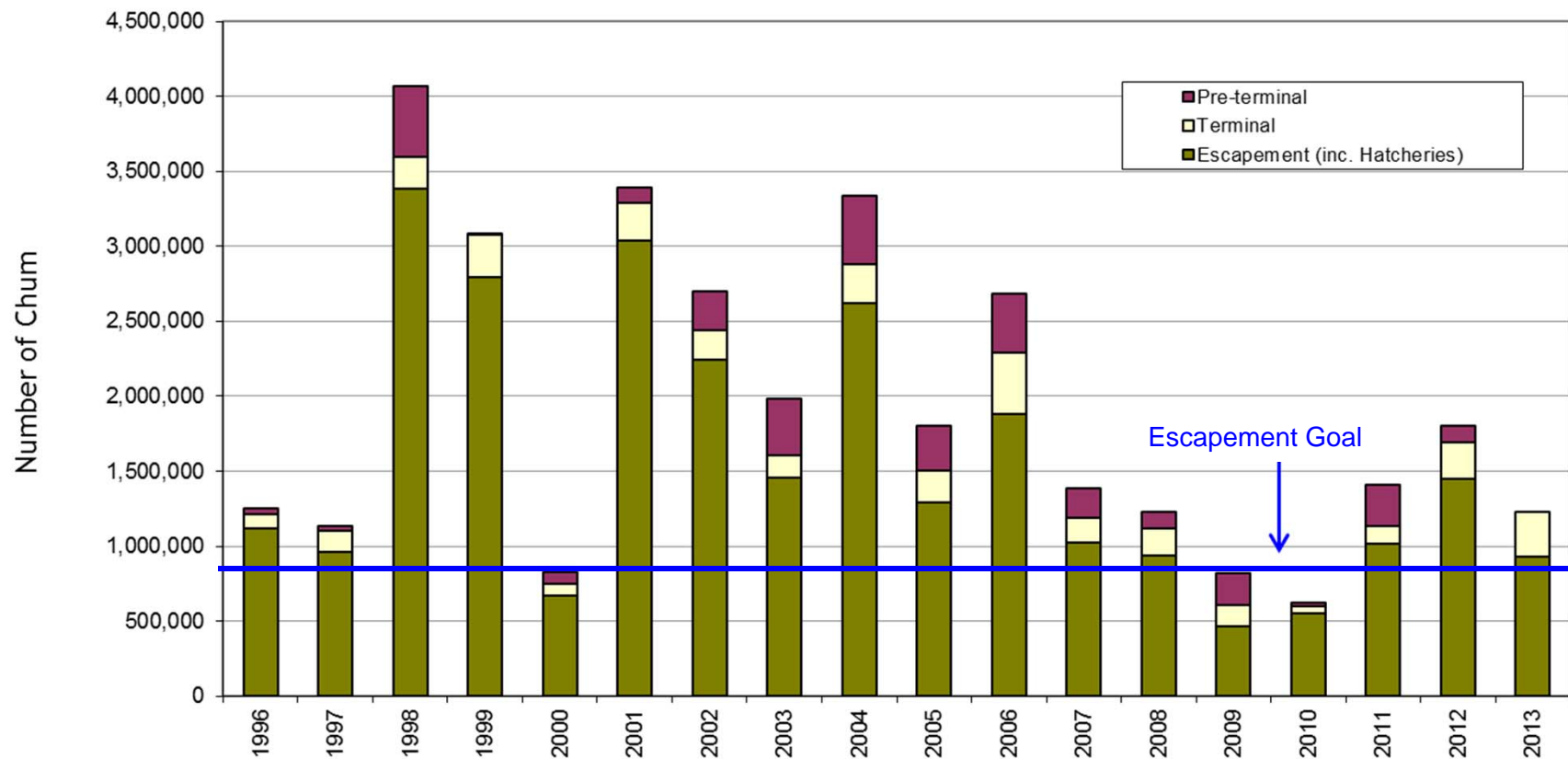
- Albion test fishing catch was not as strong early in the run as it has been for the last two years. Catch picked up significantly in early October.
- October 15th preliminary run size estimate of 1.01 million
- October 19th run size estimate was 1.329 million, with a peak date of October 16th

Post-season assessment (escapement)

- 2013 terminal return of approx. 1.3 million fish
- 2013 escapement of over 1.0 million chum
- 2014 escapement assessments are still underway - no preliminary estimates available



Run Size - Fraser River Chum





2014 Fraser River Fishery Summary



Please note that the term “Lower Fraser” is meant to include the Fraser River mainstem below Sawmill Creek and tributaries to the Lower Fraser River, where applicable.



2014 Fraser River Fisheries - Commercial

Directed sockeye and chum fisheries in-river if a commercial TAC is identified

- constraints due to co-migrating stocks of concern

Area E Fraser River Sockeye Fishery

- nine openings between Aug 11 and Sept 23
- harvest of over 1.6 million sockeye
- retained bycatch of 6,512 Chinook, 17 coho, and 1,645 chum
- 7,761 Chinook, 1,752 coho, 87 chum and 70 steelhead were released

Area E Fraser River Chum Fishery

- 8 hr opening on Oct 23rd; 10 hr opening on Oct 28th
- harvest of 62,143 chum
- retained bycatch of 1 Chinook, 50 coho and 1 steelhead
- 111 Chinook, 2,088 coho, and 31 steelhead were released



2014 Fraser River Fisheries

Commercial and Demonstration Fisheries

Area B Sockeye in Area 29

- open Sept 16 to Sept 27
- harvested 1.285 million sockeye
- retained bycatch of 20 Chinook, 30 coho, and 292 chum
- 84 Chinook, 92 coho, 16 chum and 2 steelhead were released

Area E Demonstration fisheries

- no demonstration fisheries occurred in 2014

Area B Chum Demonstration fishery in Area 29

- fishery opened Oct 29th
- limited participation
- harvested 25 chum with 8 coho released



2014 Fraser River Catch Commercial and Demonstration

	Chinook		Coho		Chum	
	rel	kept	rel	kept	rel	kept
Area E						
<i>Sockeye directed</i>	7,761	6,512	1,752	17	87	1,645
<i>Chum directed</i>	111	1	2,088	50	25	62,143
Area B						
<i>Sockeye directed (Area 29)</i>	84	20	92	30	16	292
<i>Chum directed (Area 29)</i>	0	0	8	0	4	25
All Fisheries	7,956	6,533	3,940	97	132	64,105



2014 Fraser River Fisheries - Recreational

Chinook management actions in Region 2 (Lower Mainland)

- closed until July 15th to avoid Spring 4(2) Chinook
- opened for Chinook retention from July 16 to July 27, 1 per day
 - Mouth to Mission size limit of 30 to 77 cm
 - Mission to Alexandra maximum size limit of 77 cm
- July 28 to August 31, 4 per day, only 1 over 50 cm.
- September 1 to December 31st, 4 per day, only 1 over 62 cm



2014 Fraser River Fisheries - Recreational

Chinook management actions in Region 3 (Thompson-Nicola)

Fisheries in Region 3 generally target a specific stock group and are short duration opportunities designed to avoid impacts on non-target stocks. Areas not specifically mentioned are closed to fishing for salmon year-round.

Fisheries targeting Sp/Sum 5(2) stocks

- Clearwater and North Thompson Rivers catch and release last 2 weeks of July, then 1 Chinook per day until Aug 21 (monthly limit of 2)
- Fraser River at Bridge River open Sunday through Thursday from June 17 to July 3; 1 per day
- Fraser River at Lillooet open August 15 to Sept 29; 4 per day, 1 > 50 cm (sockeye directed)

Fisheries targeting Summer 4(1) stocks

- Fraser River jack fishery July 16 to Sept 16; 4 per day, none > 50 cm
- Thompson River July 16 to Aug 21; 4 per day, none > 50 cm
- Kamloops Lake Aug 22 to Oct 20 4 per day, 1 > 50 cm (sockeye directed)
- South Thompson River Aug 16 to Sept 22, 4 per day, 2 > 50 cm



2014 Fraser River Fisheries - Recreational

Chinook management actions in Region 5A and 7 (Cariboo/Peace)

All fisheries in these Regions target Spring or Summer 5(2) Chinook

One Chinook per day, none > 77 cm in the following areas and times:

- Bowron River: July 15 to Aug 15
- Cariboo and Chilko Rivers: July 25 to Aug 16
- Nechako River: Aug 15 to Aug 27
- Quesnel River: July 15 to Sept 1

Chinook management actions in Region 8 (Okanagan)

These fisheries target Summer 4(1) Chinook with some measures in place to avoid Besette Spring 4(2) stocks. Areas not specifically mentioned are closed to fishing for salmon year round.

- Mabel Lake and Lower Shuswap River opened to Chinook Jul 25 to Sept 12 with daily and size limits to avoid Besette stocks in place through Aug 15
- Middle Shuswap River opened to Chinook Jul 25 to Aug 15 with daily and size limits and area closures to avoid Besette stocks



2014 Fraser River Fisheries - Recreational

Coho management actions

- Mouth to Sawmill Creek - no fishing for coho (bait ban) during “Coho Window Closure” from early September to early October
- Sawmill Creek to Lytton - No fishing for salmon Sept 16 to Dec 31
- Lytton to Williams Lake - No fishing for salmon Oct 6 to Dec 31
- Upstream of Williams Lake - No fishing for salmon Oct 13 to Dec 31

Chum management actions

- July 16 to December 31 - 2 per day (Mission to Sawmill Cr); 4 per day (below Mission)



2014 Fraser River Catch Recreational

	Chinook		Coho		Chum	
	rel	kept	rel	kept	rel	kept
Lower Fraser	9,321	10,933	2,334	2,165	3,562	1,479
BC Interior	567	2,295	7	0	0	0
Totals	9,888	13,228	2,341	2,165	3,562	1,479

Kept coho reported in the Lower Fraser are from fisheries in the Nicomen Slough and Chilliwack/Vedder Rivers.



2014 Fraser River Fisheries

First Nations Food, Social and Ceremonial

Chinook-directed fisheries

Lower Fraser

- open every weekend for most groups from May 17 through July 20
- managed to reduced hours to maintain effort consistent with Zone 2 management

Mid Fraser

- limited Chinook 8-inch mesh in a few areas starting late April and directed Chinook with selective gear began June
- Chinook fisheries with sockeye non-retention occurred from July 1 to 29

Thompson River Upstream of Bonaparte

- licensed July 15 for Chinook/sockeye

Upper Fraser

- directed Chinook fisheries began June 1 with selective gear including angling and dip net
- sockeye non-retention fisheries occurred during the Early Stuart closure with selective gear, including 8" mesh gillnets



2014 Fraser River Fisheries

First Nations Food, Social and Ceremonial

Sockeye-directed fisheries

Lower Fraser

- dry rack fisheries July 25 to 31
- FSC openings weekends from July 26 to Aug 23 (non-signatories continued until Sept 14)

Mid Fraser

- sockeye/Chinook fisheries took place from July 30 to October 20

Upper Fraser

- Deadman to Hixon: directed sockeye fishing with dipnets initiated Aug 4
- Upstream of Hixon: directed gillnet fishing initiated Aug 8
- limited retention in July in terminal areas with access to only Early Stuart

Coho-directed fisheries

- No coho-directed fisheries in 2014

Chum-directed fisheries (Lower Fraser only)

- FSC openings on weekends from Oct 4 to Nov 9



2014 Fraser River Fisheries

First Nations Economic Opportunity and Demo

Lower Fraser River Economic Opportunity Fisheries

- targeted sockeye and chum salmon in 2014

Sockeye-directed fisheries occurred between Aug 12 and Sept 26

- 529,000 sockeye retained
- bycatch of 6,498 Chinook, 6 coho, 130 chum and 4 steelhead
- 479 Chinook, 788 coho, 785 chum and 18 steelhead released

Chum-directed fisheries occurred between Oct 21 and Nov 5

- 93,600 chum retained
- bycatch of 27 coho
- 426 Chinook, 4,036 coho, and 33 steelhead released



2014 Fraser River Fisheries First Nations Economic Opportunity and Demo

Mid and Upper Fraser Demonstration fisheries

Secwepemc Fisheries Commission

- South Thompson 4(1) Chinook on Kamloops Lake and Little Shuswap Lake
- Chinook allocation was 5,200; harvest was 1,549, mostly taken as bycatch in Kamloops Lake sockeye fishery
- bycatch mortalities of 145 kept coho (600 released coho) from Kamloops Lake fishery; no bycatch in Little Shuswap Lake

Upper Fraser Fisheries Conservation Alliance

- dip net fishery targeted sockeye on Fraser River mainstem in Siska Canyon
- bycatch in this fishery was 78 released coho, and 11 released Chinook



2014 Fraser River Catch - First Nations

	Chinook		Coho		Chum		Steelhead	
	rel	kept	rel	kept	rel	kept	rel	kept
FSC								
<i>Lower Fraser</i>	61	19,180	144	4,120	27	39,214	89	13
<i>BC Interior</i>	16	2,811	NA	NA	0	0	NA	NA
<i>FSC Total</i>	77	21,991	144	4,120	27	39,214	89	13
Economic Opportunity								
<i>Lower Fraser</i>	912	7,098	4,856	36	915	98,576	51	4
<i>BC Interior</i>	902	2,024	703	182	0	0	NA	NA
<i>Ec Opp Total</i>	1,814	9,122	5,559	218	915	98,576	51	4
ESSR								
<i>Lower Fraser</i>	0	10,073	0	19,295	0	18,881	0	0
<i>BC Interior</i>	0	0	0	0	0	0	0	0
<i>ESSR Total</i>	0	10,073	0	19,295	0	18,881	0	0
All Catch								
<i>Lower Fraser</i>	973	36,351	5,000	23,451	942	156,671	140	17
<i>BC Interior</i>	918	4,835	703	182	0	0	NA	NA
<i>All Catch Total</i>	1,891	41,186	5,703	23,633	942	156,671	140	17

Nearly all kept coho in the Lower Fraser FSC fishery occurred after October 5th, 2014.
Coho retention was permitted in all FSC fisheries in 2014.



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Interior Fraser Coho



2014 Coho Management Approach

- CSAS scientific review to assess stock status and implications of exploitation rates on recovery objectives completed.
 - Current productivity still well below that in relatively high productivity period of 1978-1993; still in the *low productivity* period.
 - Based on the results of the simulations, exploitation rates exceeding 30% suggested there is lower than a 50% probability of achieving the short term conservation objective of 20,000 spawners (3-year geometric mean).
- IFMP objective: *The objective for Interior Fraser River coho (including Thompson River coho) is to limit the Canadian exploitation rate to 16% or less for the 2014 season only.*
- 2014 forecast return for the Interior Fraser coho aggregate was 49,472 (CI of 31,477 to 77,754).
 - Taking into account the 2014 ER limit, forecast, and abundance of wild spawners in recent years, the projected 3-year geometric mean (2012-2014) escapement was expected to meet or exceed the longer term recovery objective (i.e. 40,000 coho), even for returns at low end of the 2014 forecast range.



2014 Coho Assessment

Pre-season and In-season Assessment of fishery impacts:

- Interior Fraser coho fishing mortality is estimated pre-season and in-season using a series of models that integrate assumptions about anticipated coho encounters, fishing effort levels, estimates of proportion of Interior Fraser River coho stocks within the total encounters based on past data, and average release mortality rates.
- There are two primary models used domestically:
 - Marine fisheries - Spreadsheet Model
 - Fraser River fisheries - Decay Model
- The final in-season IFR coho exploitation rate is 10.9%

First Nations	3.0%
FSC	1.7%
EO and Demo.	1.3%
Commercial	4.1%
Recreational	3.4%
Test Fishery	0.4%
<hr/>	
In-season Total	10.9%



2014 Coho Post Season Assessment

- Near final post season exploitation rate estimates will be completed in March 2015
- The post season exploitation rate estimate is developed from the same models mentioned previously but using any actual information on encounter rates (kept and released) and fishing effort collected during the fishing season.
- Timelines for the availability of data required:
 - *Catch- February*
 - *Escapement- February*
 - *DNA analysis: Independent exploitation rate for marine fisheries- February*
- *Based on preliminary estimates of IFR coho spawner abundance (approx. 15K-20K), the 3-year geometric mean (2012-2014) spawner abundance is in the range of 36K to 40K. For comparison, the conservation strategy recovery objectives are 20K (short term) and 40K (long term).*



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The End