



British Columbia 2008 salmon fishery outlook





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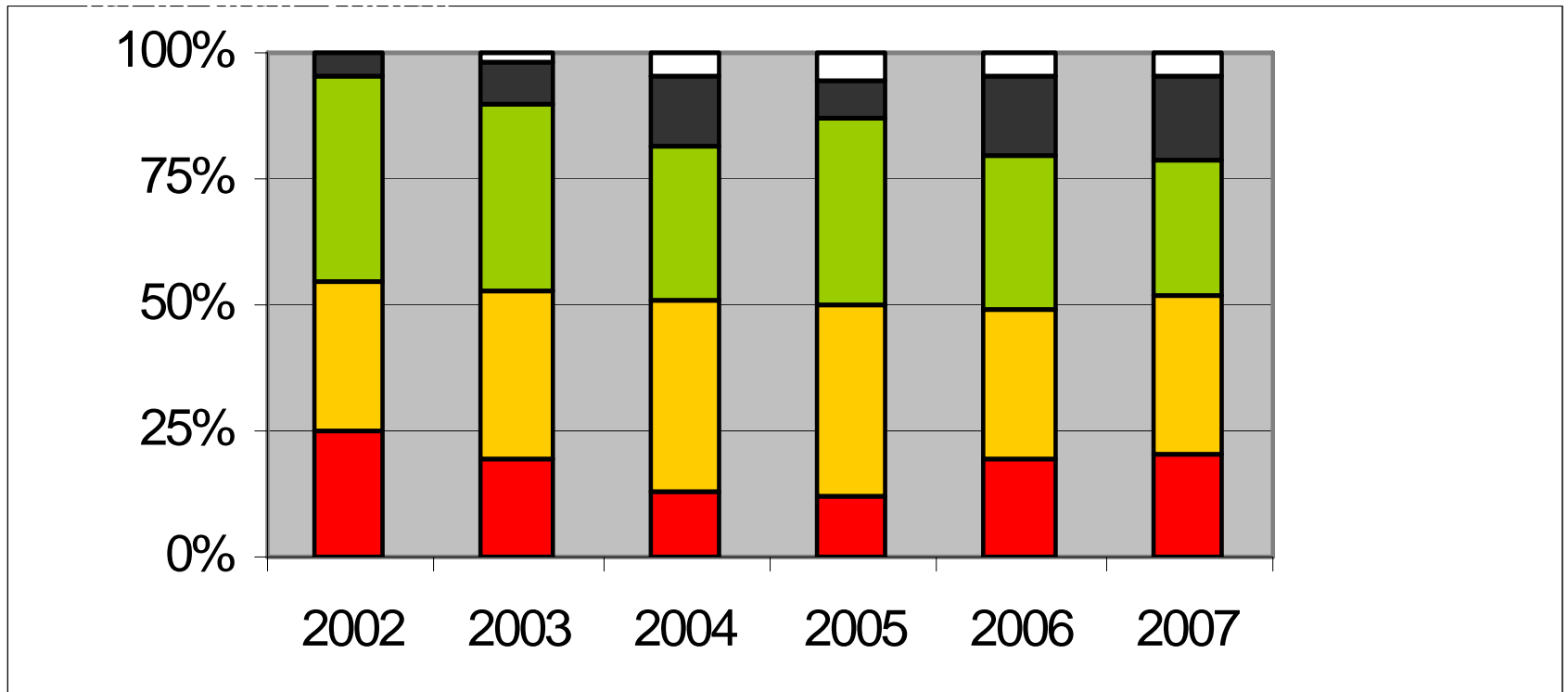
Outlook methods

- Preliminary forecast of status
- Categorical, not quantitative
- Based on a variety of approaches including expert opinion

	<i>Category</i>	<i>Abundance</i>	<i>Trend</i>
	1. Stock of concern	<25% target	Declining rapidly
	2. Low	25% to 75% of target	Declining
	3. Near Target	75% to 125% of target	Stable
	4. Abundant	>125% of target	N/A

Status in previous outlooks

Based on 93 geographic “stock groups”



Results from 2008 compared with 2007

2007

- 40 stock groups at or above target abundance
- 18 stock groups of some conservation concerns
- 31 stock groups with mixed categories due to multiple populations within the group
- 4 stock groups Not Assessed
- 93 Stock groups in total

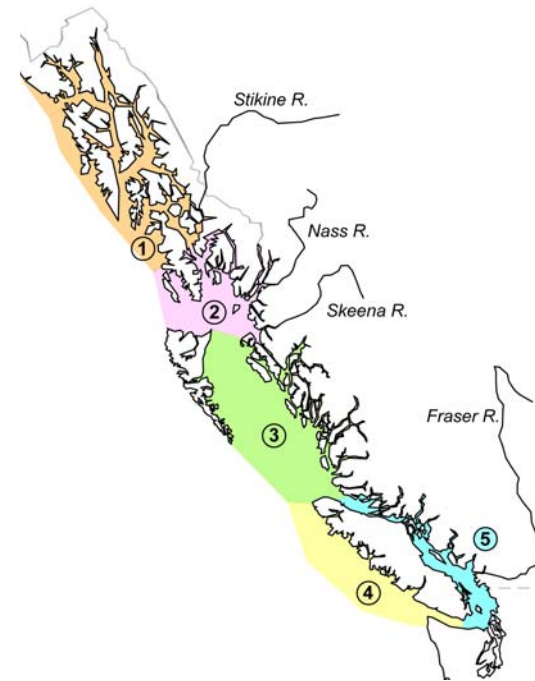
2008

- 34 stock groups at or above target abundance
- 34 stock groups of some conservation concerns
- 21 stock groups with mixed categories due to multiple populations within the group
- 4 stock groups Not Assessed
- 93 Stock groups in total

2008 projections are NOT as positive as in recent years

2008 Salmon Outlook

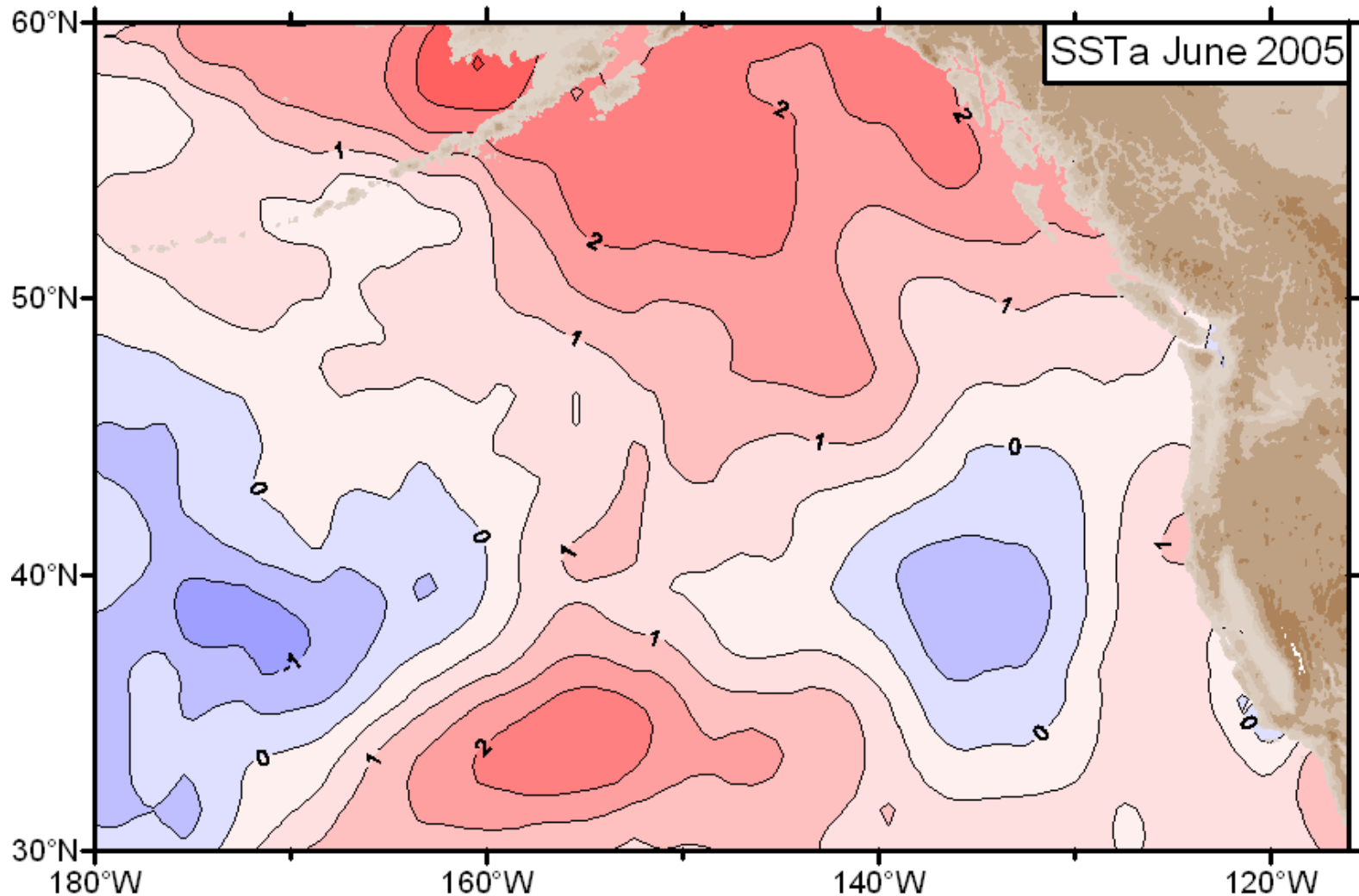
	South Coast	Central Coast	North Coast
Chinook	Well below target	25% of target	25% of target
Coho	Well below target	25% of target	Well above target / 25% of target
Sockeye	Well below target	Well below target	25% of target
Chum	25% of target	25% of target	Well below target / 25% of target
Pink	Well below target / 25% of target	25% of target	25% of target



Well below target
 25% of target
 Well above target

2005 Sea-Entry Year ...

Extremely poor salmon survivals



Chinook salmon

In 2007 returns, failure of 4₂ age-class, significant in WCVI stocks, Cowichan River, Interior Fraser spring and summer Chinooks. (impacts Age-5s in 2008)

Coho salmon

2006 returns in Southern BC amongst poorest recorded (worst since 1975 in BCI) ... 2008 could be similar!

Sockeye salmon

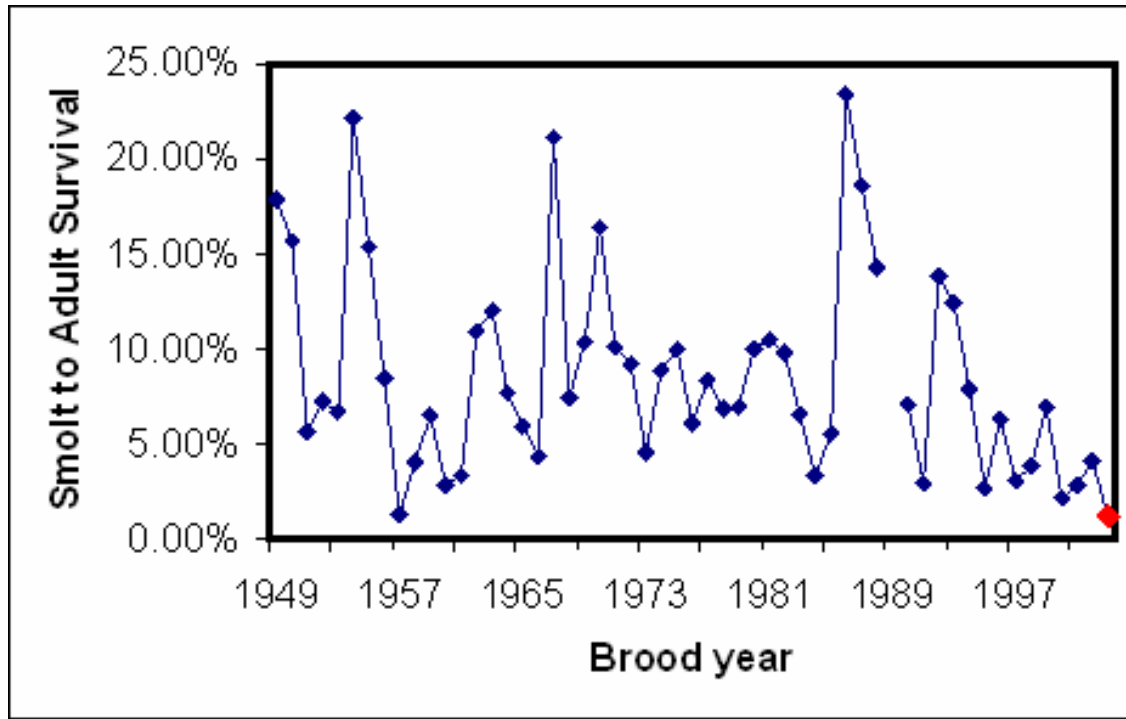
Wide spread failures of 2007 returns (much poorer than forecast) in BC, including Barkley Sound, Fraser River, and Skeena River (impacts Age-5s in 2008)

Pink salmon

2006 returns poor coastwide through to Central Alaska (0.25 to 0.33 of expected return)

2005 Sea-Entry Year examples

1.



Chilko Lake sockeye:

Average 1+ smolt survival = **8.7%**

2007 Return (preliminary in-season) = 1.2%

2.

2007 Skeena River Sockeye Age Structure (Tye Test Fishery):

Jacks $3_2 = 1.2%$ (poor)

Adults $4_2 = 5.7%$ (extremely poor)

Adults $5_2 = 85.8%$ (exceptionally large, strong run also)

BC Coast

Smolt year

Local and regional physical indicators

- *Water temperature (WCVI)*



Local and regional biological indicators

- *Phytoplankton bloom (WCVI)*



- *Plankton peak (WCVI)*



- *Euphausiid biomass (WCVI)*



- *Southern copepods (WCVI)*



- *Coho growth (WCVI coho)*



- *July size (SoG coho)*



- *July CPUE (SoG coho)*



- *July CPUE (SoG sockeye)*



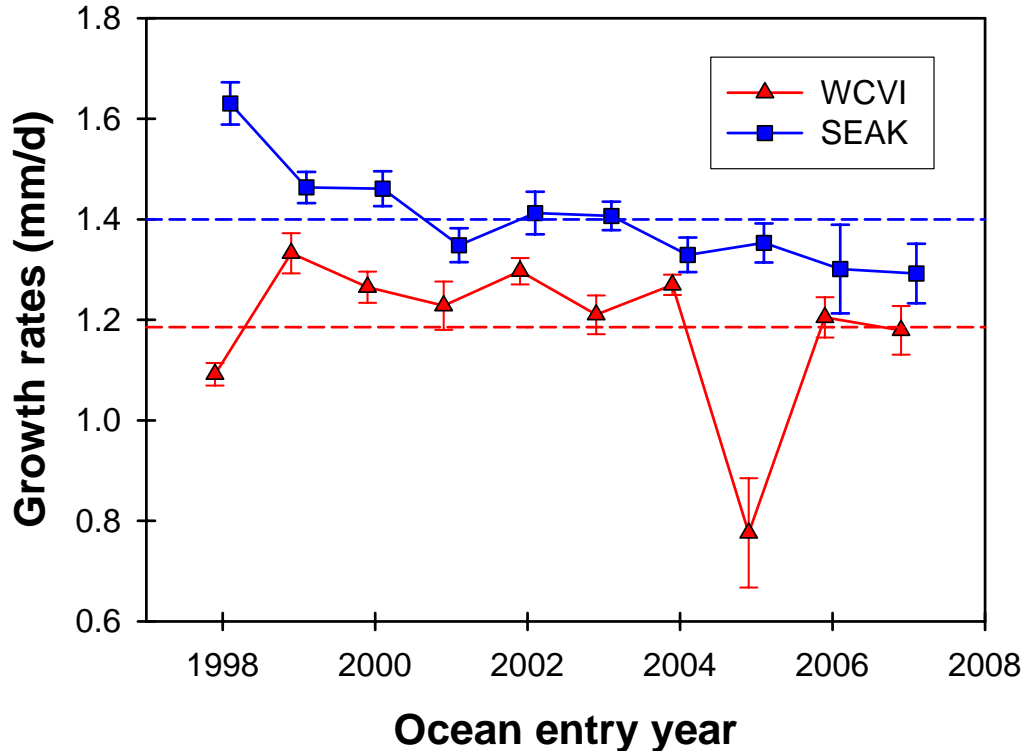
- *Sept CPUE (SoG sockeye)**



- *Bird production (Triangle Is.)*



Juvenile Coho Growth Rates

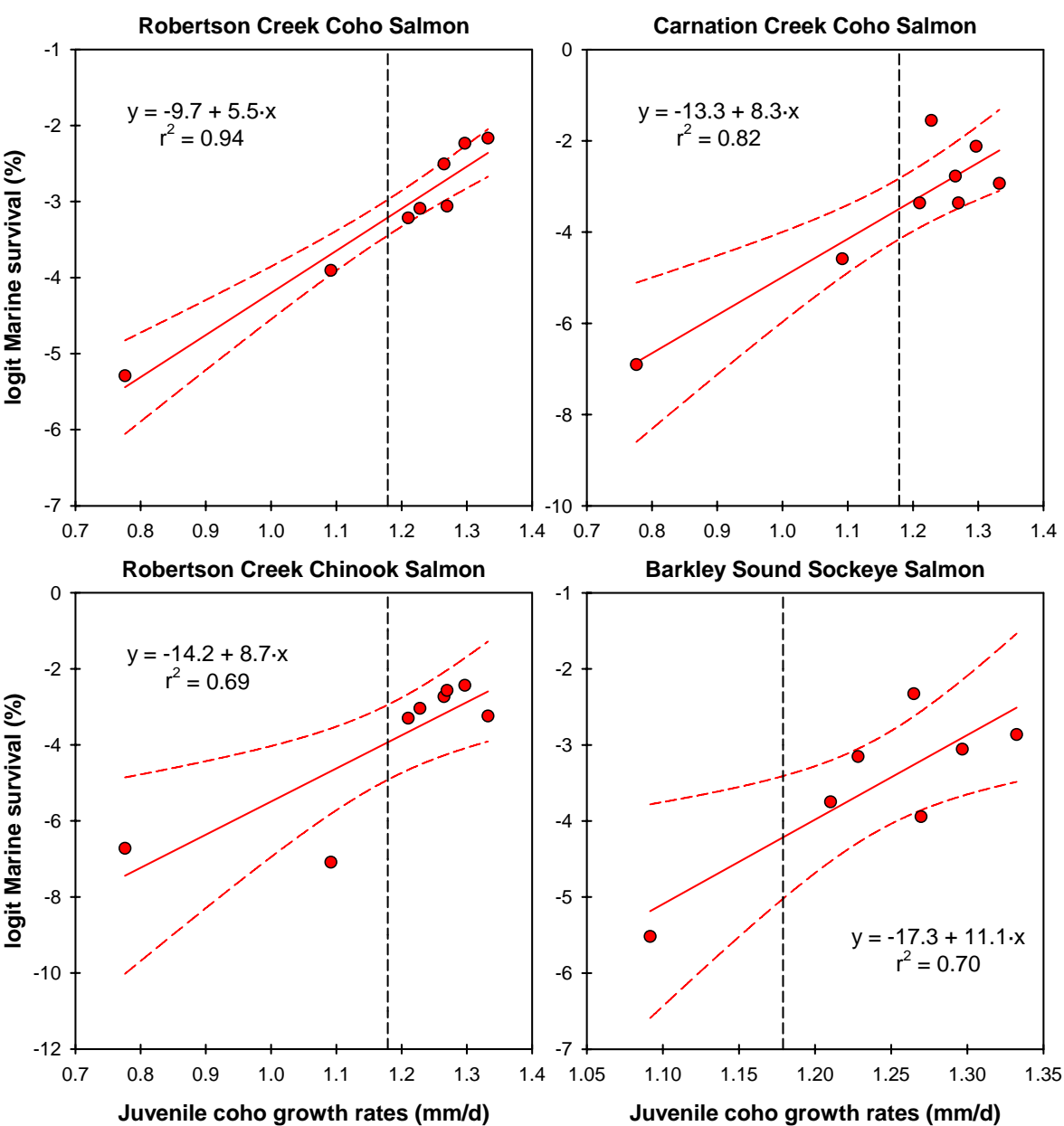


Juvenile coho grow faster in Southeast Alaska than off WCVI, which may explain the higher marine survival of Southeast Alaska coho.

In 2007, the growth rate of juvenile coho salmon was near the 1998-2007 average value WCVI, but was the lowest on record for Southeast Alaska.

Growth rates (May-Oct) of juvenile coho salmon off the west coast of Vancouver Island (▲) and Southeast Alaska (■)

Figure courtesy Marc Trudel, PBS/DFO



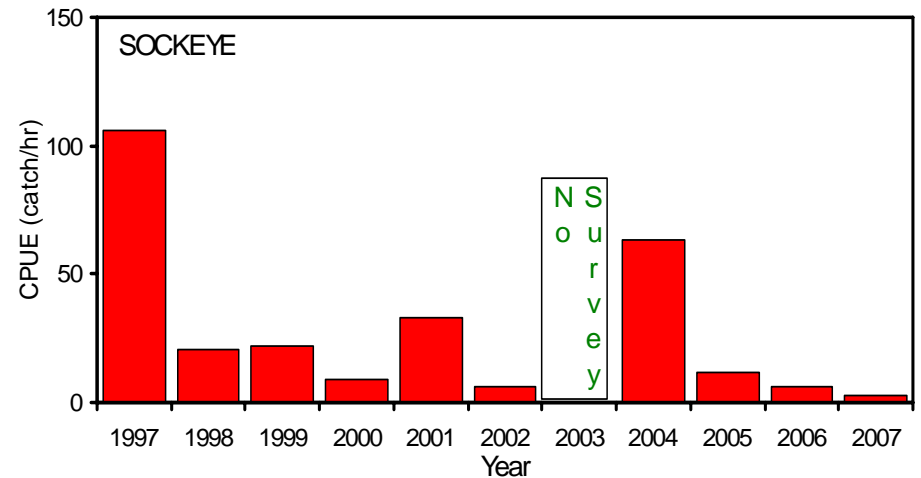
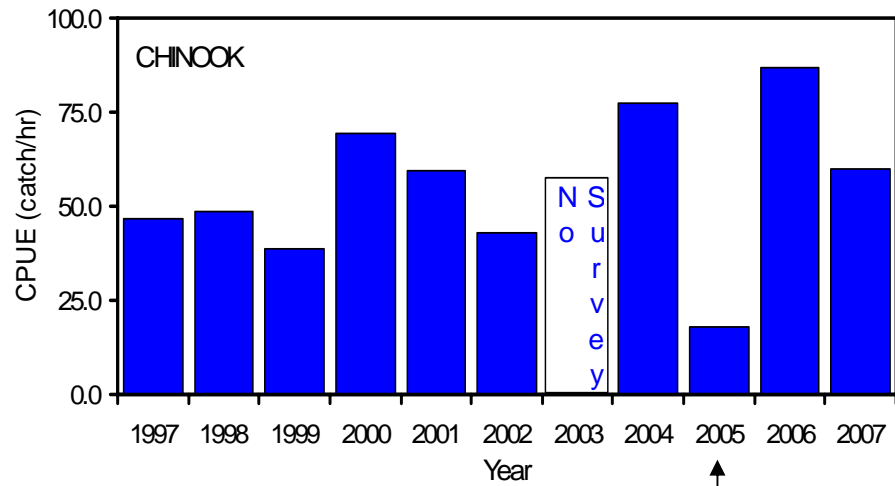
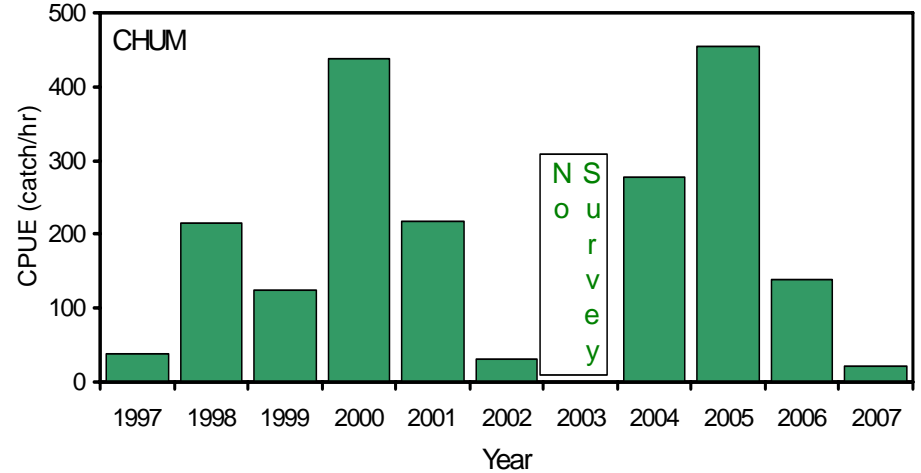
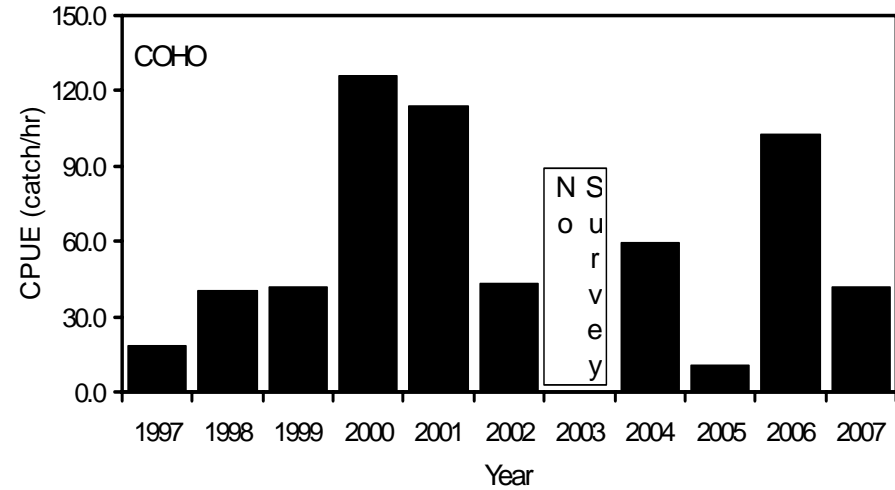
Marine survival of WCVI coho, chinook, & sockeye strongly correlated to early marine growth of coho in this region.

Marine survival expected to be average for WCVI coho in 2008 and chinook in 2009 relative to 1999-2006, but slightly below the 1999-2004 average for Barkley Sound sockeye in 2009.

Figure courtesy Marc Trudel, PBS/DFO

Marine survival of Robertson Creek coho and Chinook, Carnation Creek coho, and Barkley Sound sockeye in relation to the May-Oct growth rates of juvenile coho off WCVI

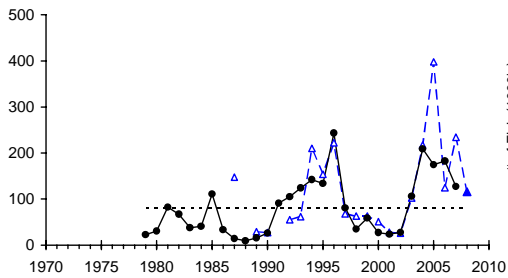
July surveys – Catch Per Unit Effort of juvenile salmon (1997-2007) in the Strait of Georgia



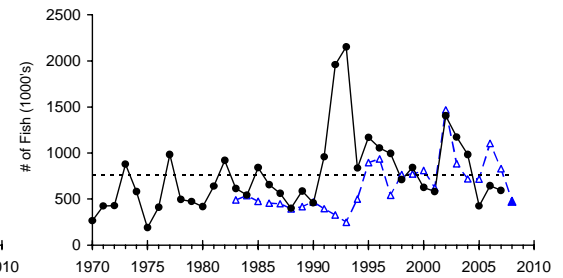
Observed and forecast returns (1000's fish) for BC sockeye index stocks

1. Tahltan Lake
2. Nass River
3. Smith's Inlet
4. Barkley Sound
5. Chilko Lake

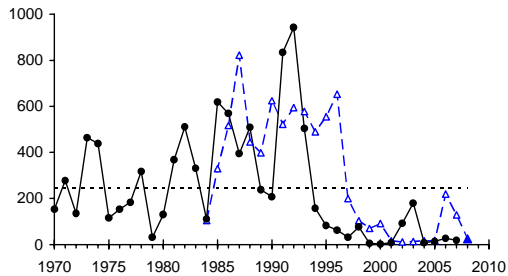
1. Alaska - Transboundary



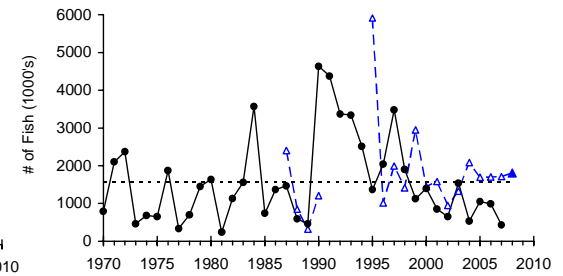
2. North Coast - Dixon Entrance



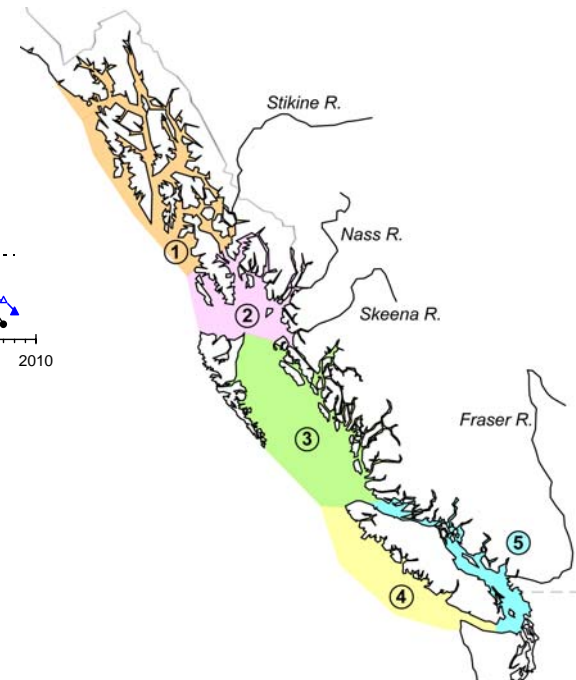
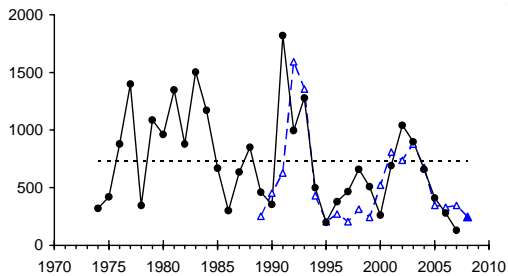
3. Central Coast - Hecate Strait



5. Fraser River - Georgia Basin



4. West Coast Vancouver Island

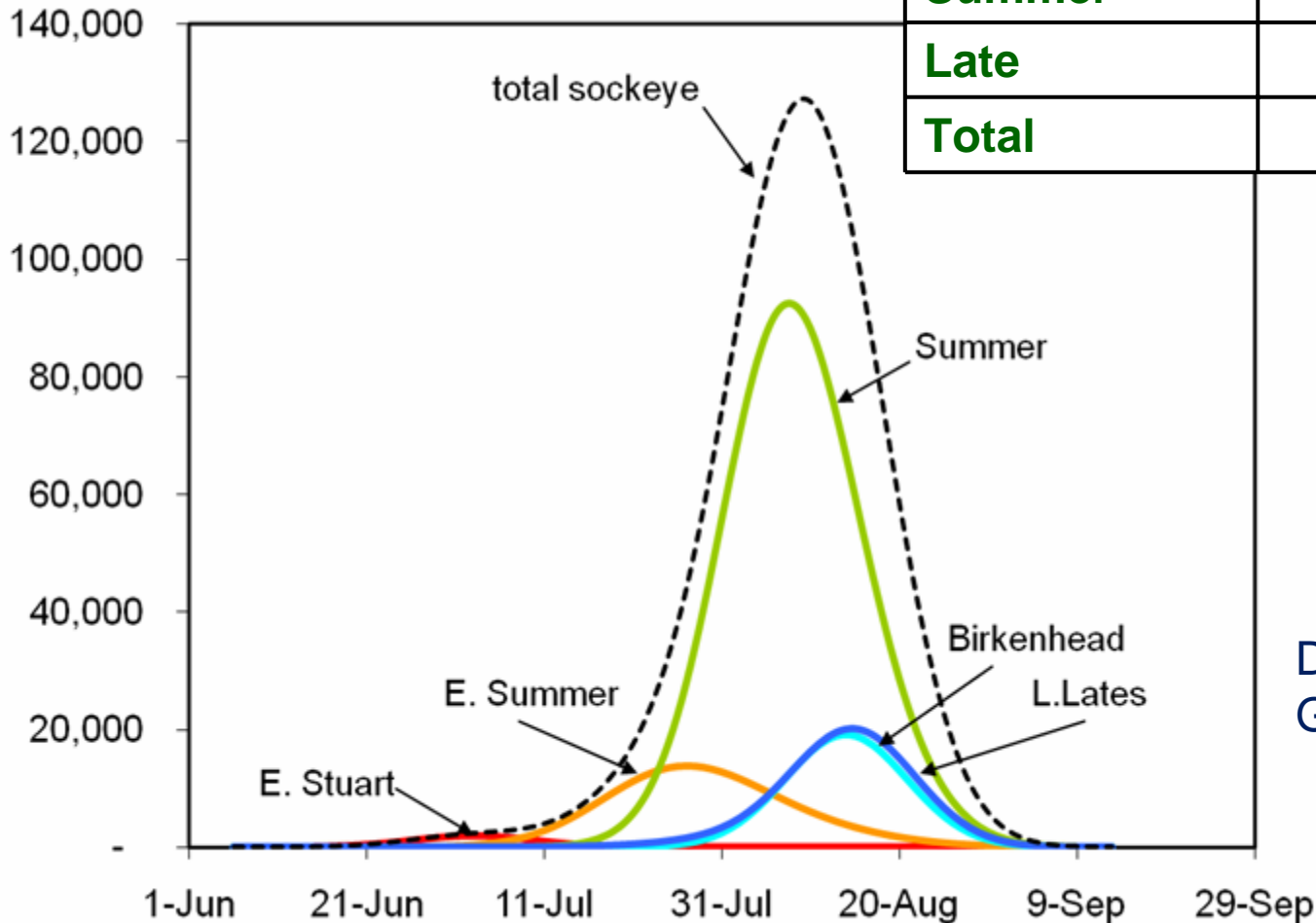


- Observed Returns
- - -△- - - Forecast Returns
- All Year Average
- ▲ 2008 Forecast

Figures
Courtesy Kim
Hyatt,
PBS/DFO

Fraser Sockeye 2008 Forecast

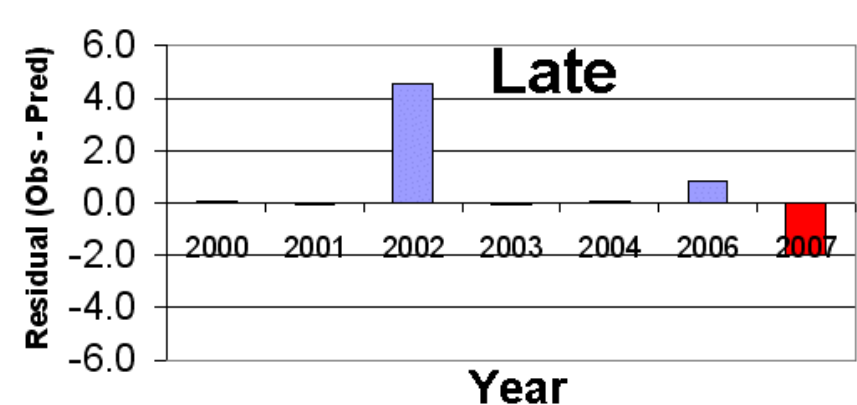
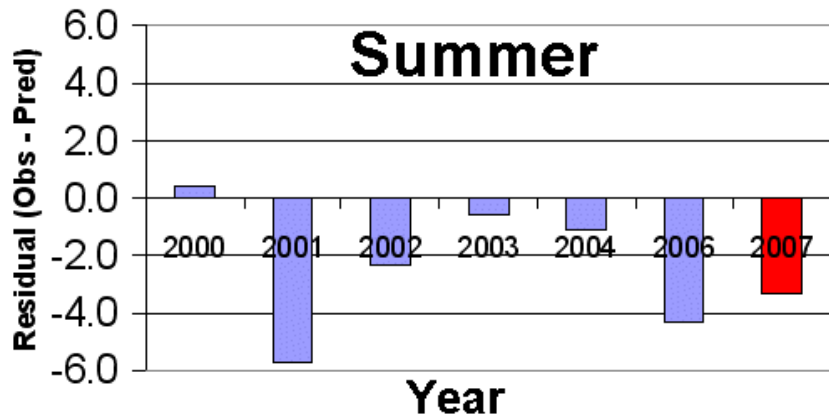
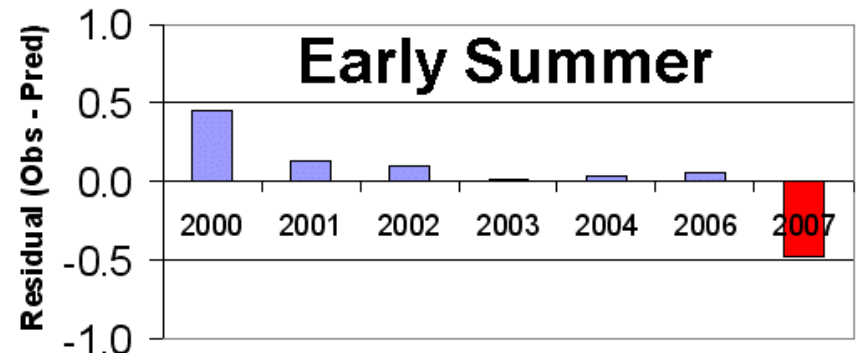
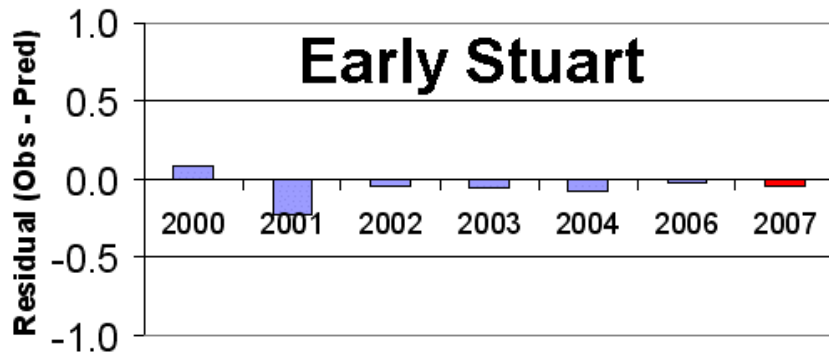
Sockeye run timing group	Mean Run Size - 2008 cycle	Forecast median
Early Stuart	182,000	35,000
Early Summer	538,000	349,000
Summer	2,882,000	1,810,000
Late	788,000	705,000
Total	4,390,000	2,899,000



Data courtesy Sue Grant & Al Cass, DFO

Limitations:

Forecasts are associated with high uncertainty; models assume average survival conditions (including smolt outmigrating size/env conditions etc.)



Stocks of concern - managing southern BC salmon stocks in 2008

- **Lower Georgia Strait Chinook** - *continue with reduced fishery as in 2007 in areas where LGS Chinook are present (i.e. time–areas closures off WCVI)*
- **West Coast Vancouver Island Chinook** - *manage WCVI ocean fisheries to an exploitation rate of 10%; manage NC fisheries to a 3% harvest rate*
- **Interior Fraser River Coho** – *limit Canadian harvest rate to 3% on wild stocks*
- **Fraser River sockeye**
 - *very limited commercial or sports fishery given low forecast for all populations.*
 - *Cultus - limit harvest rate to about 20% and continue hatchery supplementation to promote recovery*
- **Other stocks of concern (Sakinaw sockeye, Nimkish sockeye, Okanagan sockeye, interior Fraser steelhead, early timed Fraser Chinook)**