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Canadian Highlights - Pacific Salmon

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Objectives

- Overview status for Canada's Pacific salmon
- Comment on unusual climate observations
- Discuss linkages among salmon assessment, ecosystem management, and recent policy initiatives

It's a big area! Many different ecosystems.



Status varies by species, pop'ns & area

Types of data time series that can be used to assess status

- Abundance and/or distribution indices at various life history stages
 - Catch
 - Spawners
- Survivals or recruits/spawners

Status can be Assessed at Various Scales

- Taxonomic species
- Large geographic areas
- Stock groupings
- **WSP Conservation Units**
(>400 groups of wild salmon living in areas sufficiently isolated from other groups that, if extirpated, area unlikely to be recolonized naturally within an acceptable time frame)

Status Can be Assessed at Various Scales

- Taxonomic species
- Large geographic areas
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We can do now

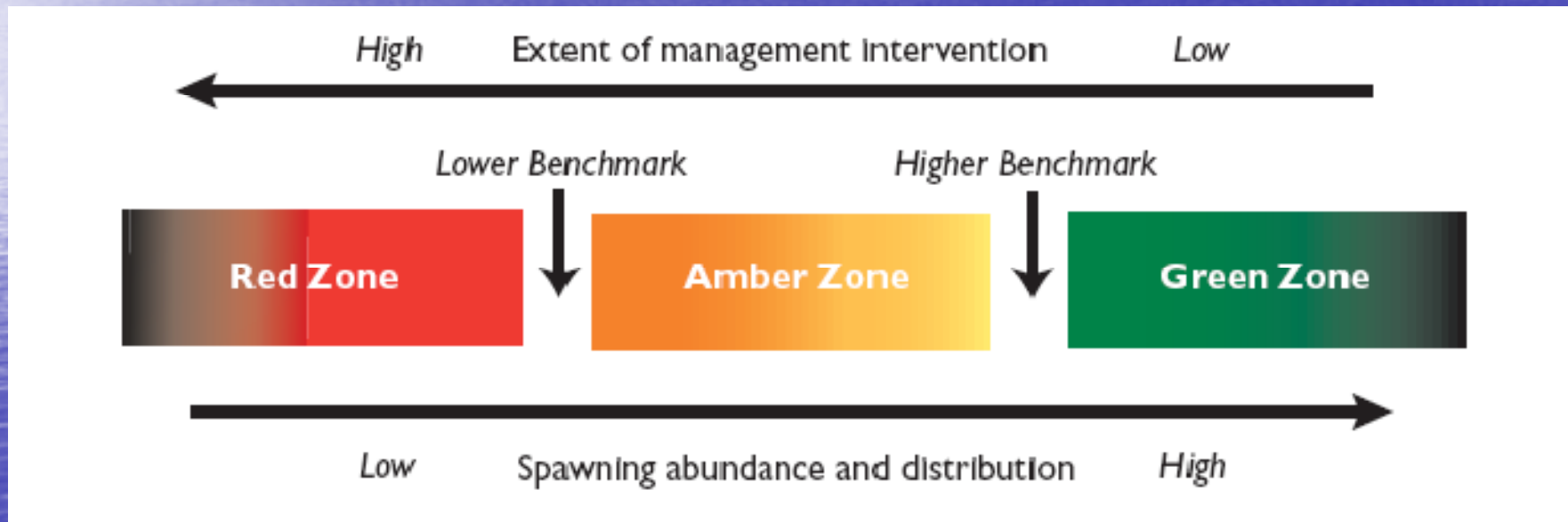
Status can be Assessed at Various Scales

- Taxonomic species
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- WSP Conservation Units

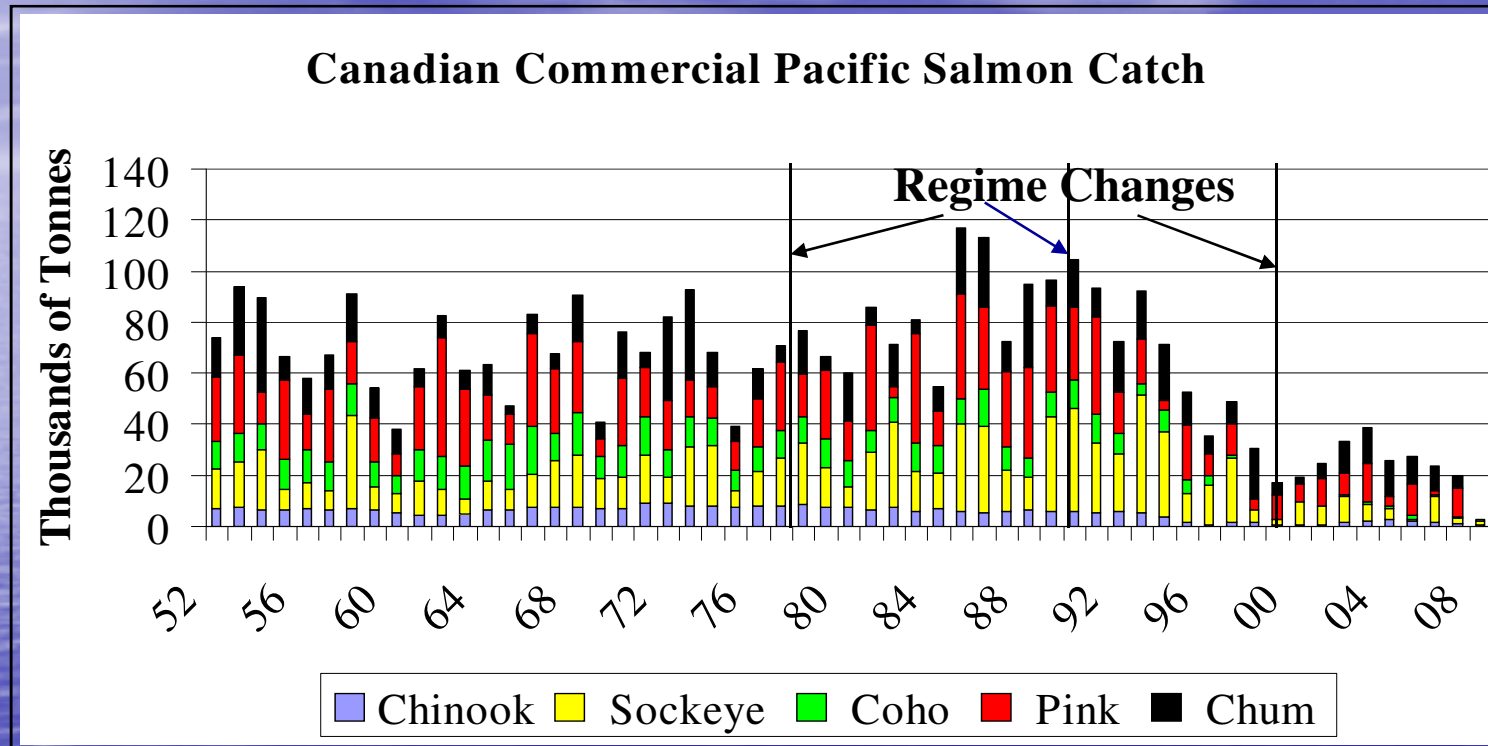
Future
assessments

3 status zones differentiated by measurable benchmarks



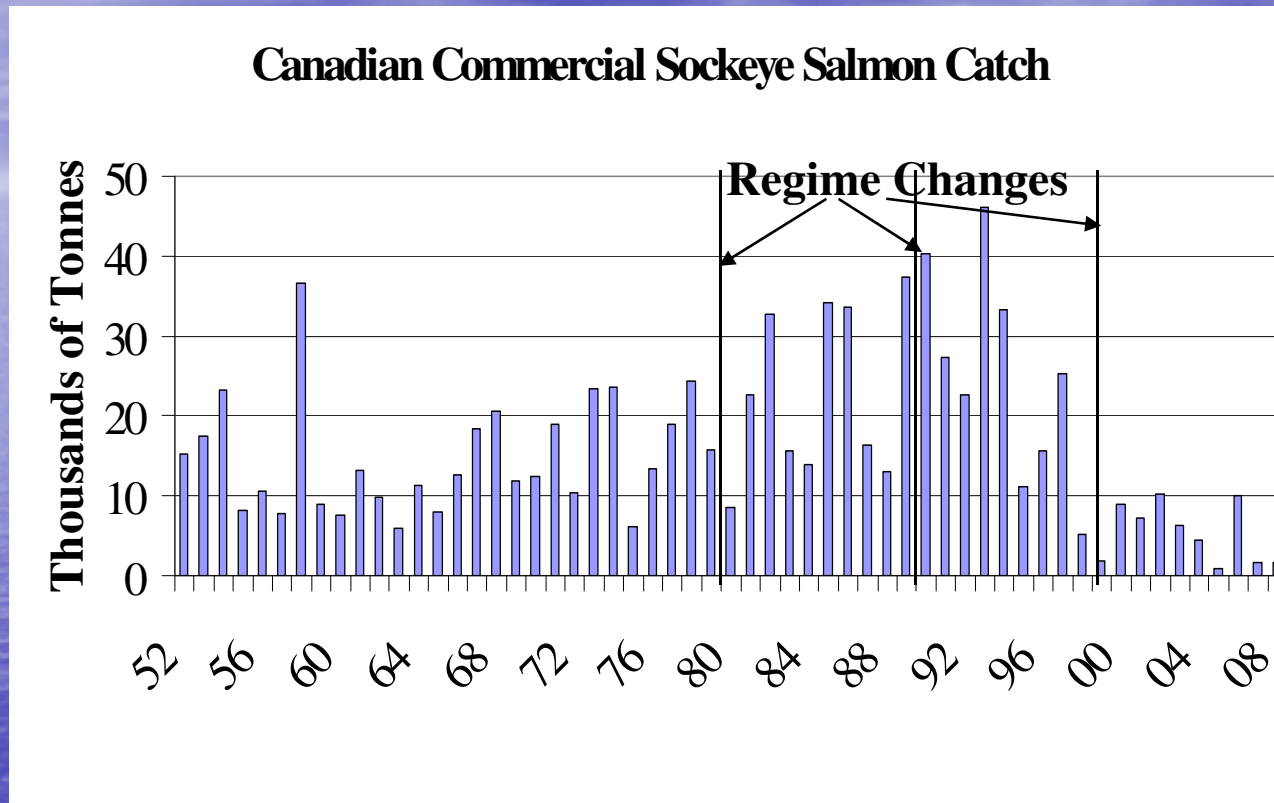
From Canada's 2005 Wild Salmon Policy

What can catch data tell us?



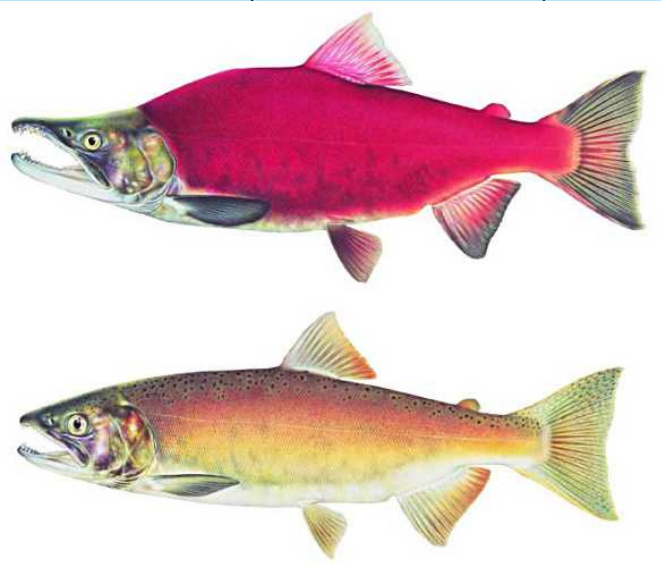
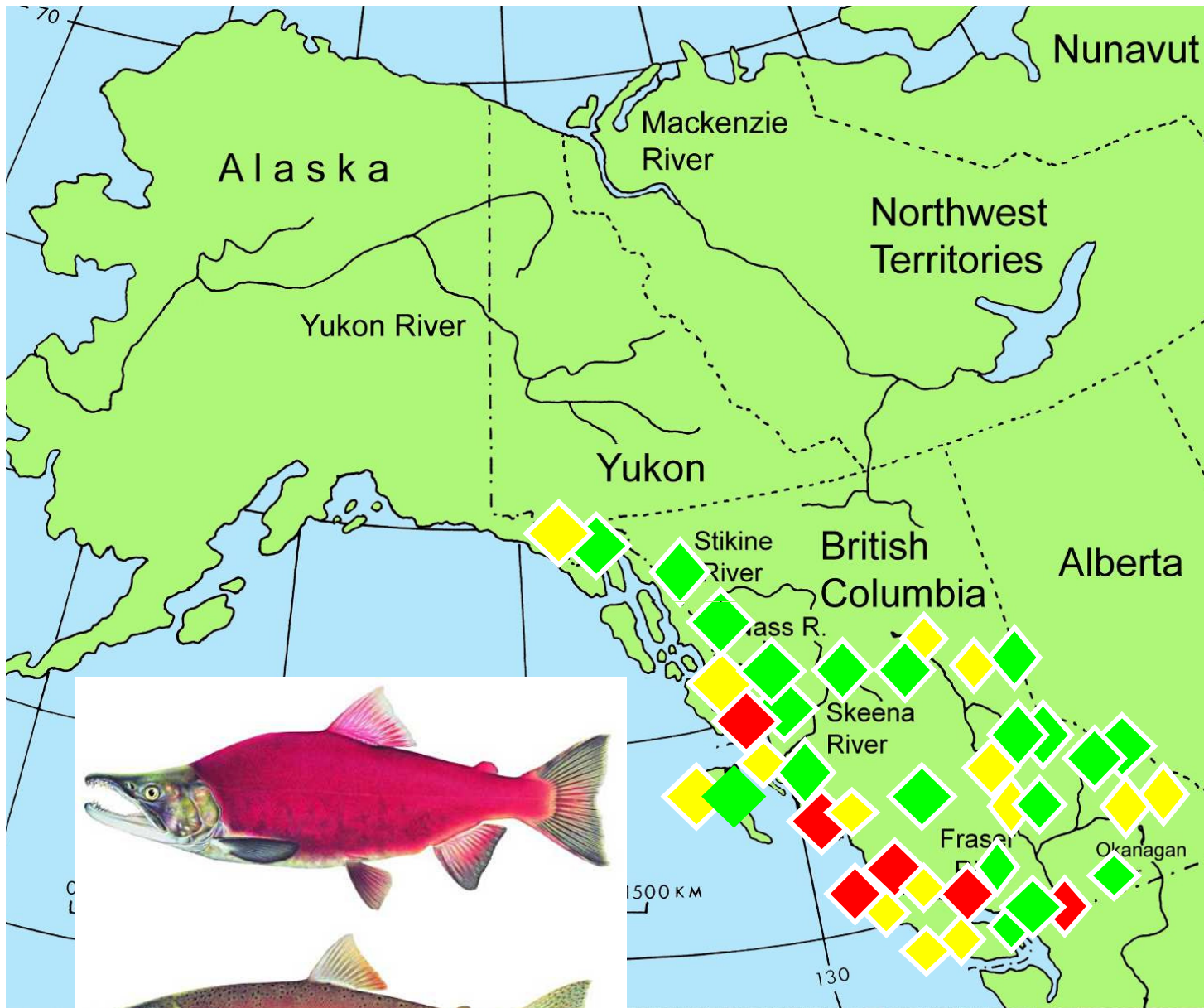
- Low catches during most recent regime – poorest catch on record in 2008 - poor status?
- Even year (low catch) and odd year (higher catches) often apparent for pink salmon
- General declines for all species

Look at one species, sockeye



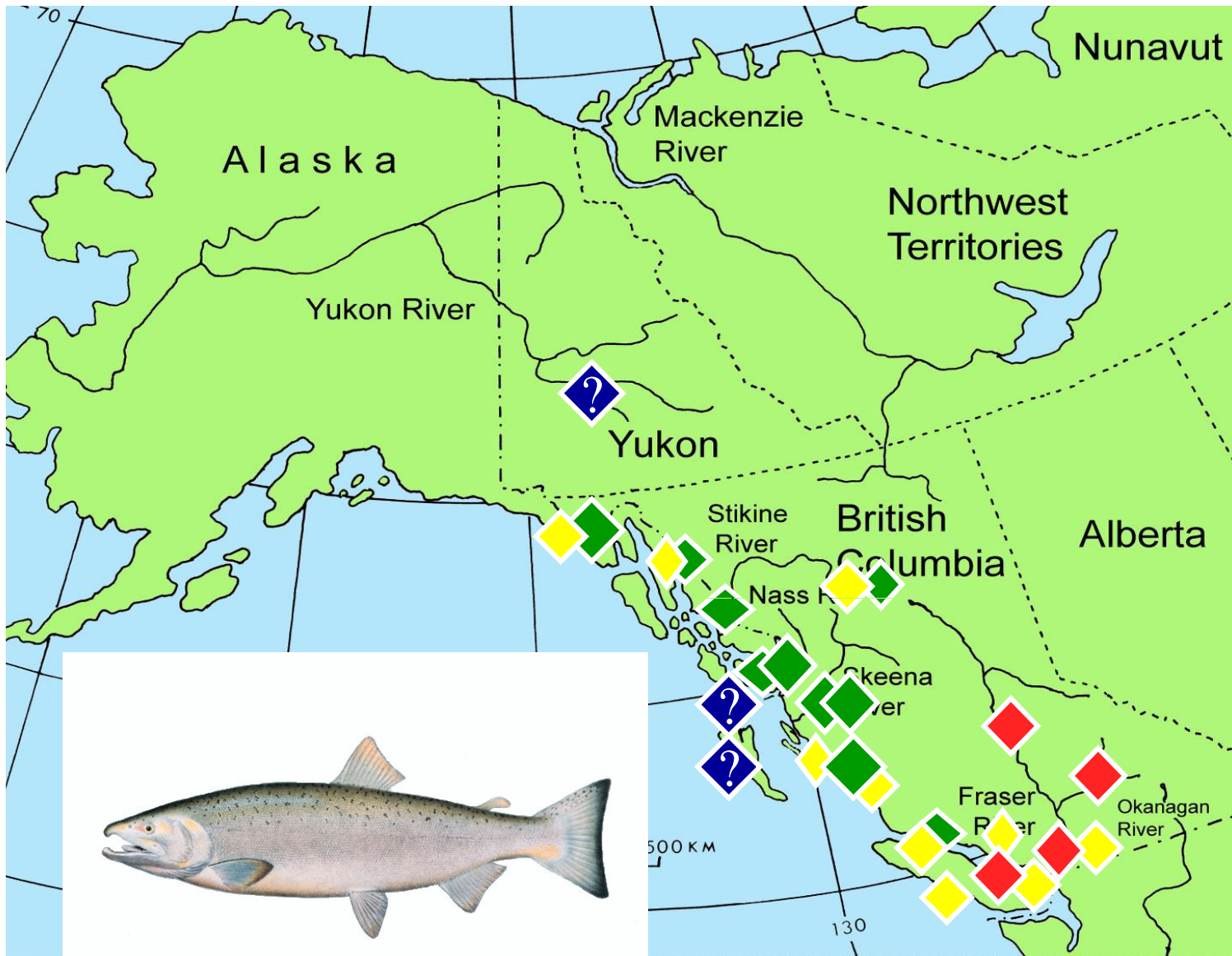
Similar to aggregate plot, this shows low catches in recent years relative to high catches during 90's

- Catch data can help understand status at species level, & for large geographic areas
- For smaller stock groupings, and for Conservation Units, need finer level information on abundance, distribution, or survival
- Next series of slides based on recent abundances relative to goals as well abundance trends



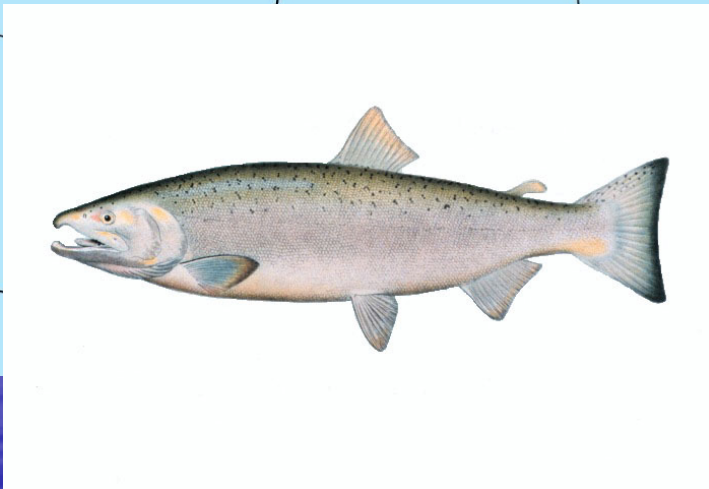
Status varies regionally within species
 e.g. 29 sockeye stock groupings

Pop's of concern: Skeena, Fraser, Georgia & Johnstone St & WCVI

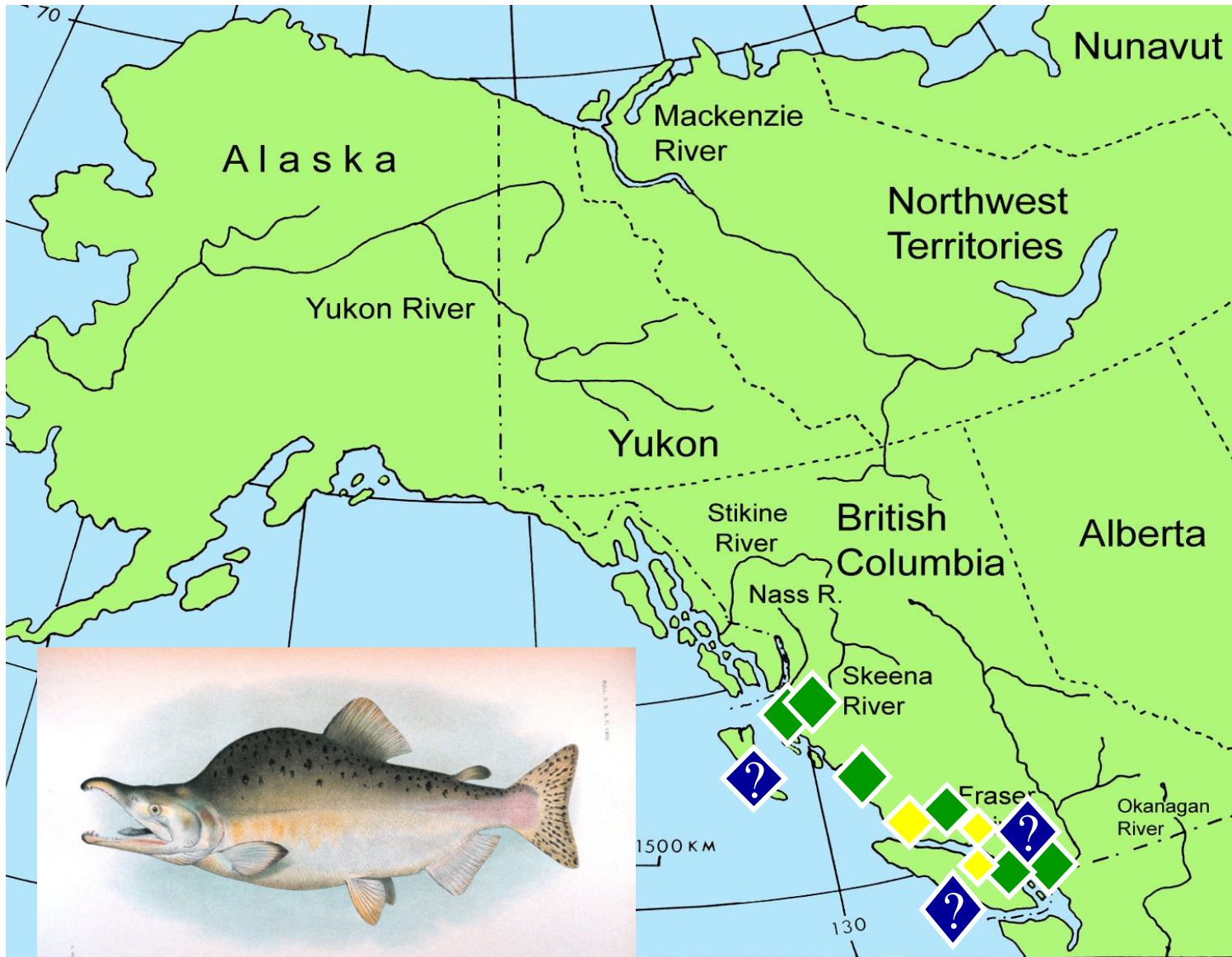


19 stock aggregates for Coho (3 ND)

CC stocks: low to target abundances

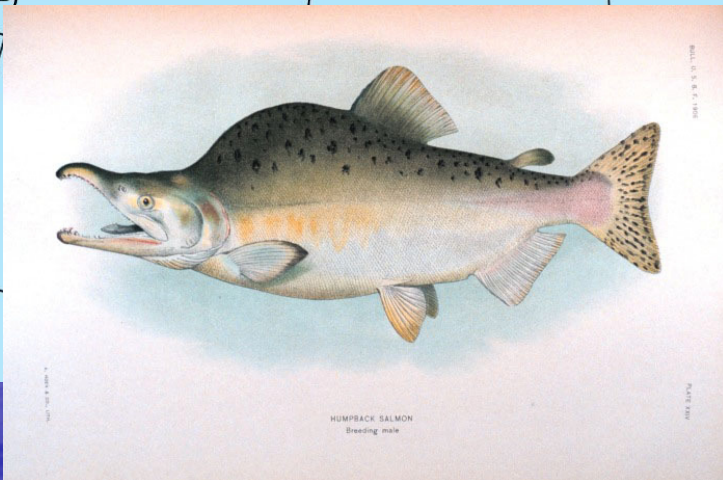


Populations of concern: Thompson, Upper Fraser, Lower Fraser, Strait of Georgia

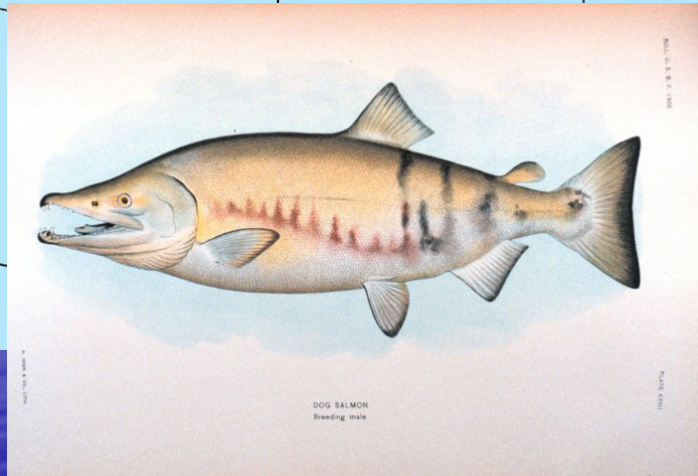
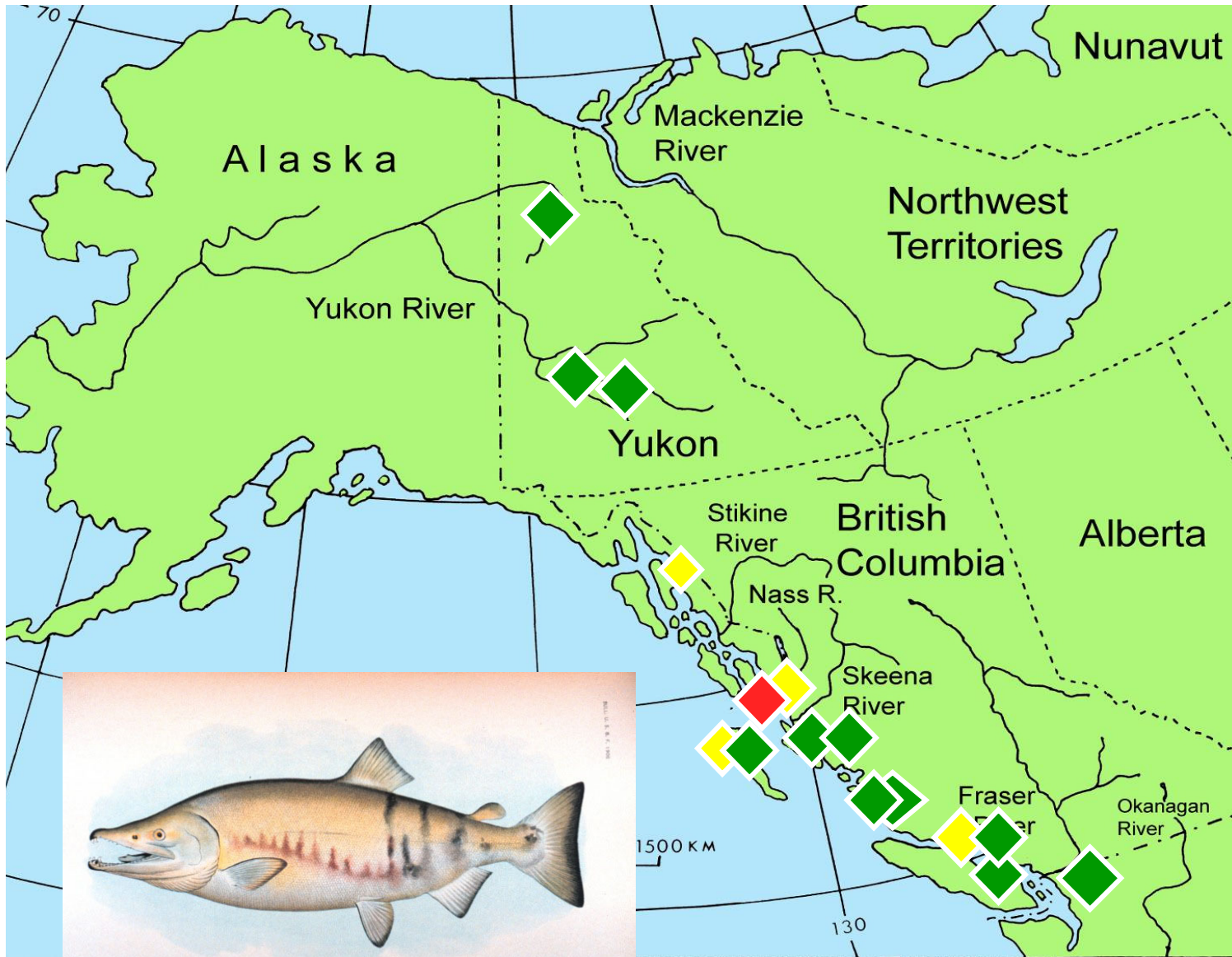


9 pink aggregates (3 ND)

CC & NC - near target to abundant returns expected



Strait of Georgia & Area 11/13 returns highly variable with reduced survival; projected to be moderately low to near target

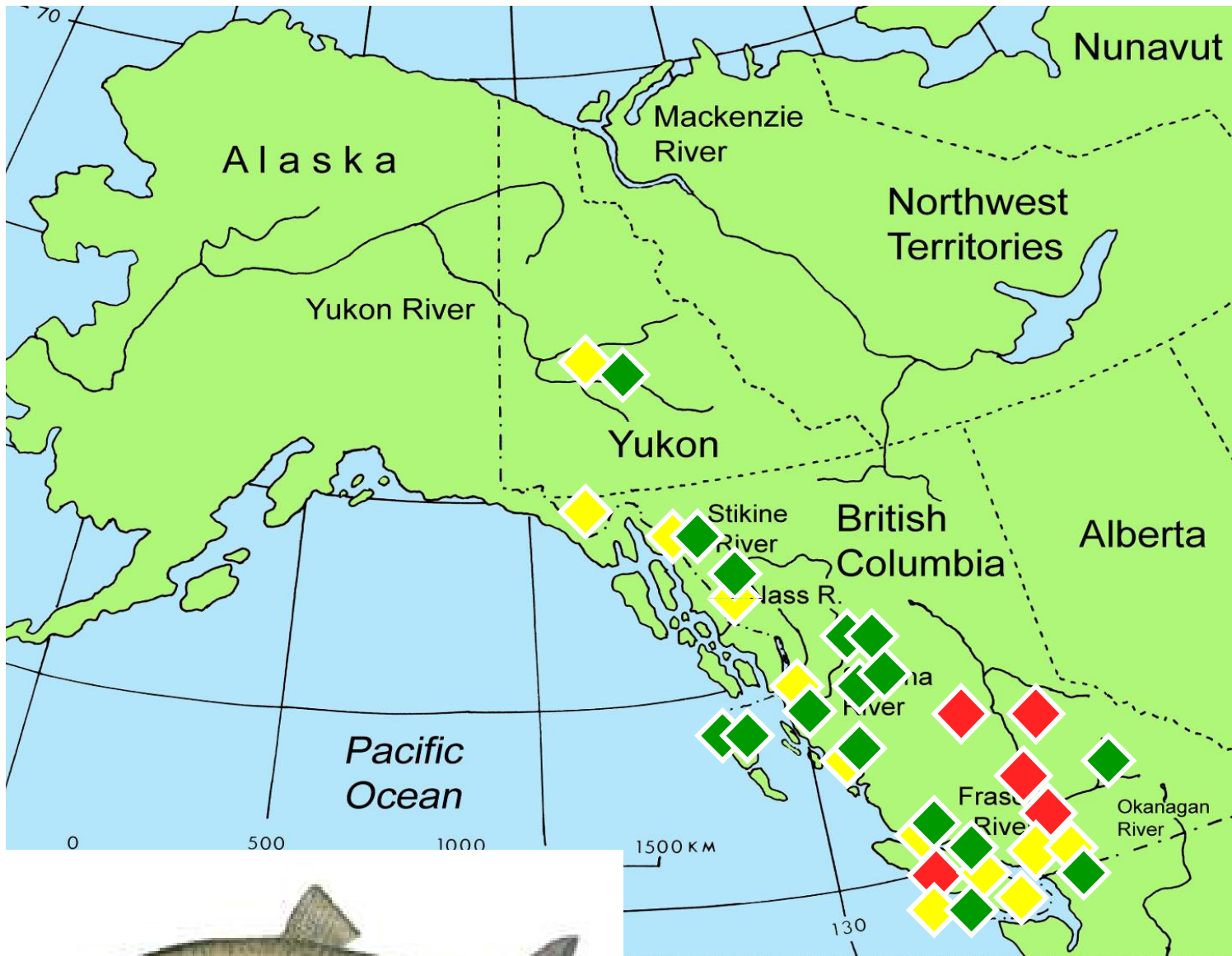


11 chum aggregates

Strong in Yukon

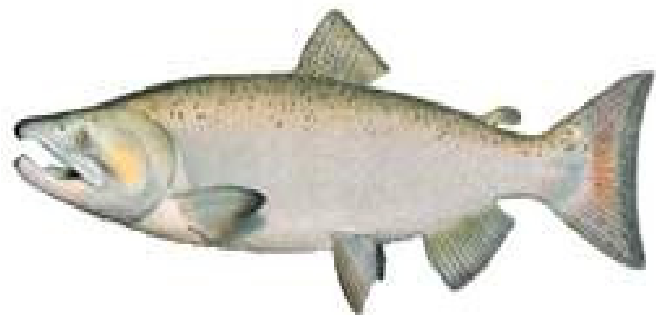
Moderately strong returns expected in CC & south, particularly in the Fraser.

Populations of concern:
Taku, Skeena, Nass & coastal A5/6



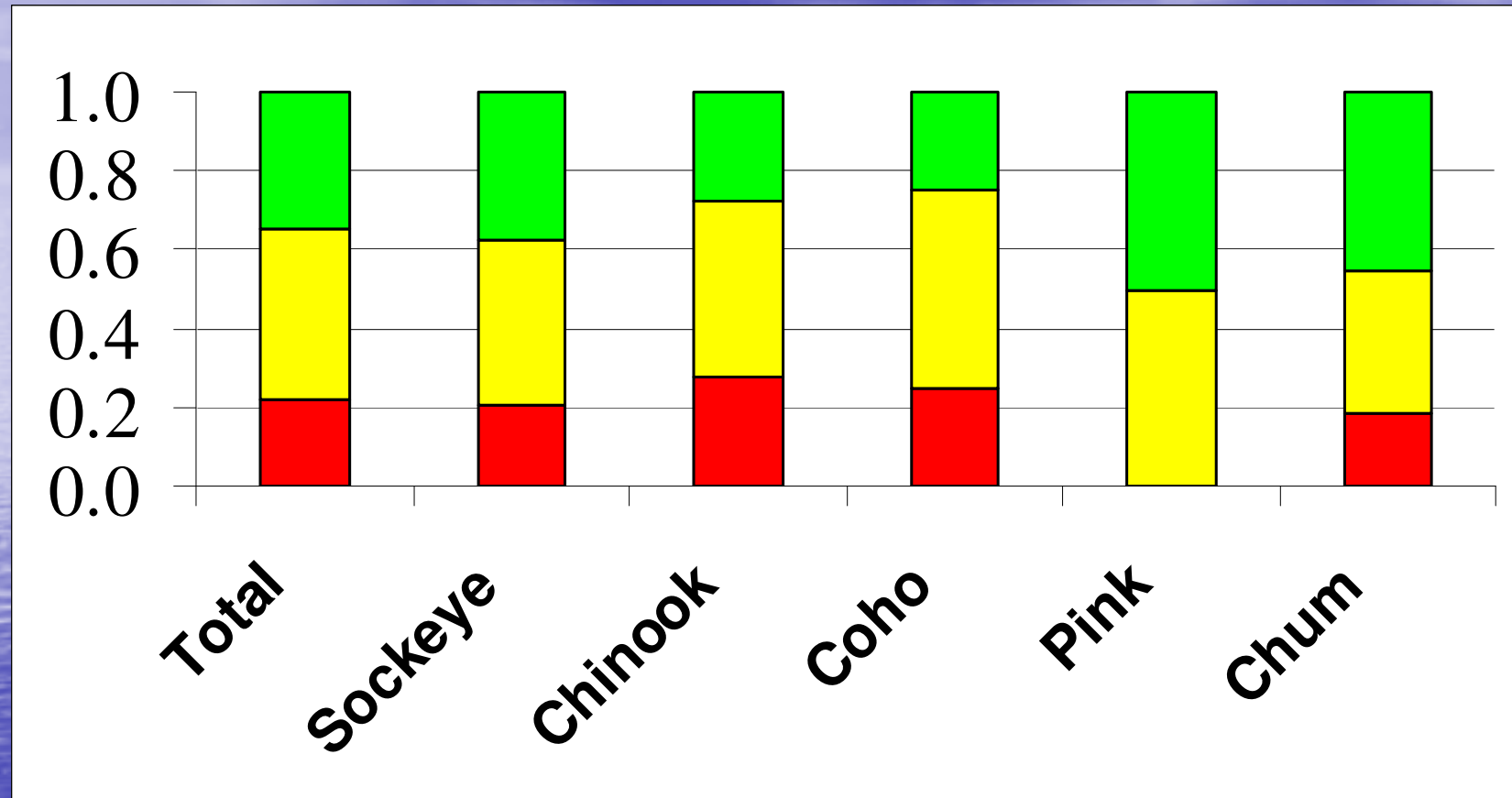
25 chinook aggregates

Fraser summer run doing very well

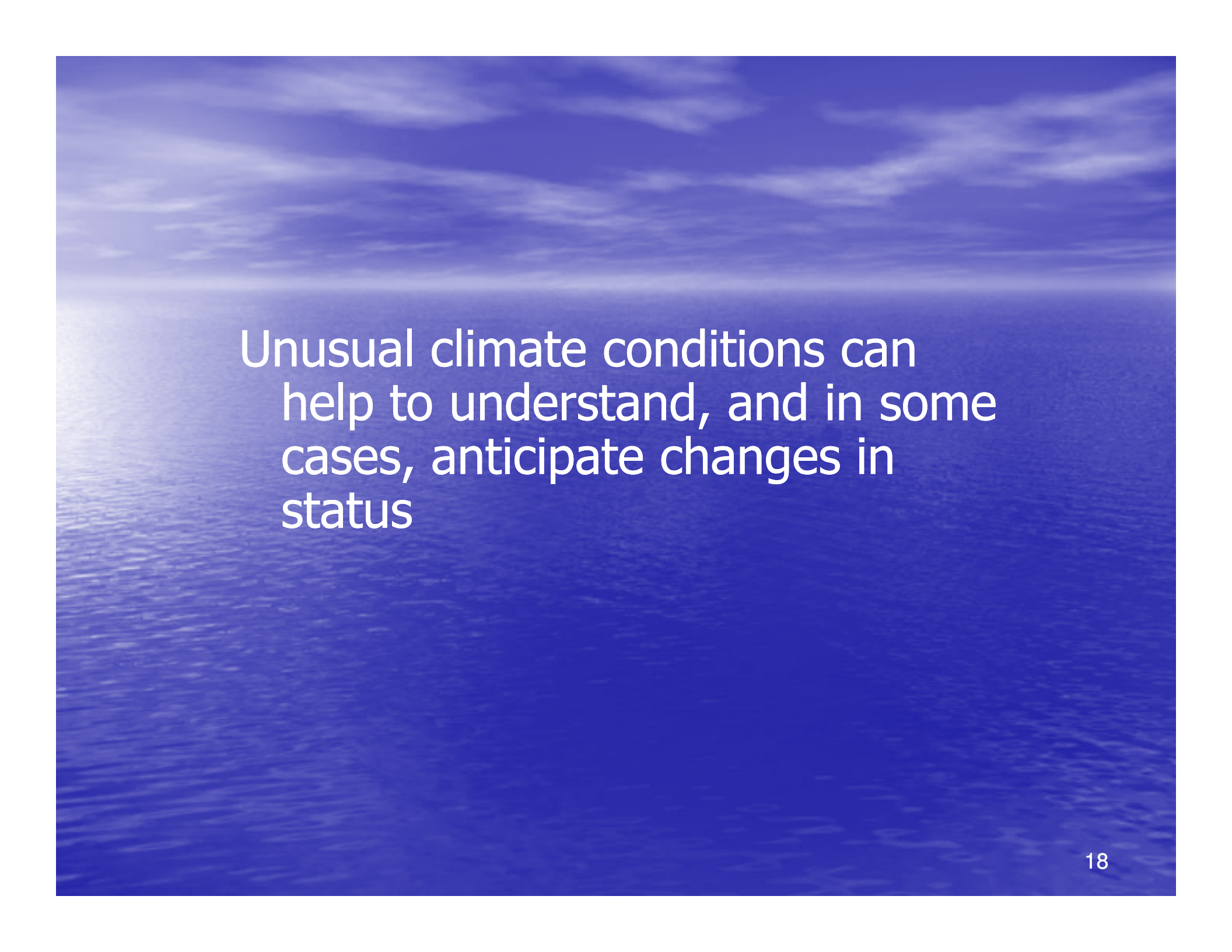


Pops of concern: St. of Georgia, WCVI, some Fraser

Status by Species















































- Preliminary results for 93 stock groupings
- Future assessments will be based on >400 CUs!



Unusual climate conditions can help to understand, and in some cases, anticipate changes in status

Southern BC marine indicators

Local and regional physical indicator	Smolt year			
	2000	2005	2006	2007
- <i>Water temperature (WCVI)</i>				
Local and regional biological indicators				
- <i>Phytoplankton bloom (WCVI)</i>				
- <i>Plankton peak (WCVI)</i>				
- <i>Euphausiid biomass (WCVI)</i>				
- <i>Southern copepods (WCVI)</i>				
- <i>Coho growth (WCVI coho)</i>				
- <i>July size (SoG coho)</i>				
- <i>July CPUE (SoG coho)</i>				
- <i>July CPUE (SoG sockeye)</i>				
- <i>Sept CPUE (SoG sockeye)</i>				
- <i>Bird production (Triangle Is.)</i>				

2005 Sea-Entry Year...

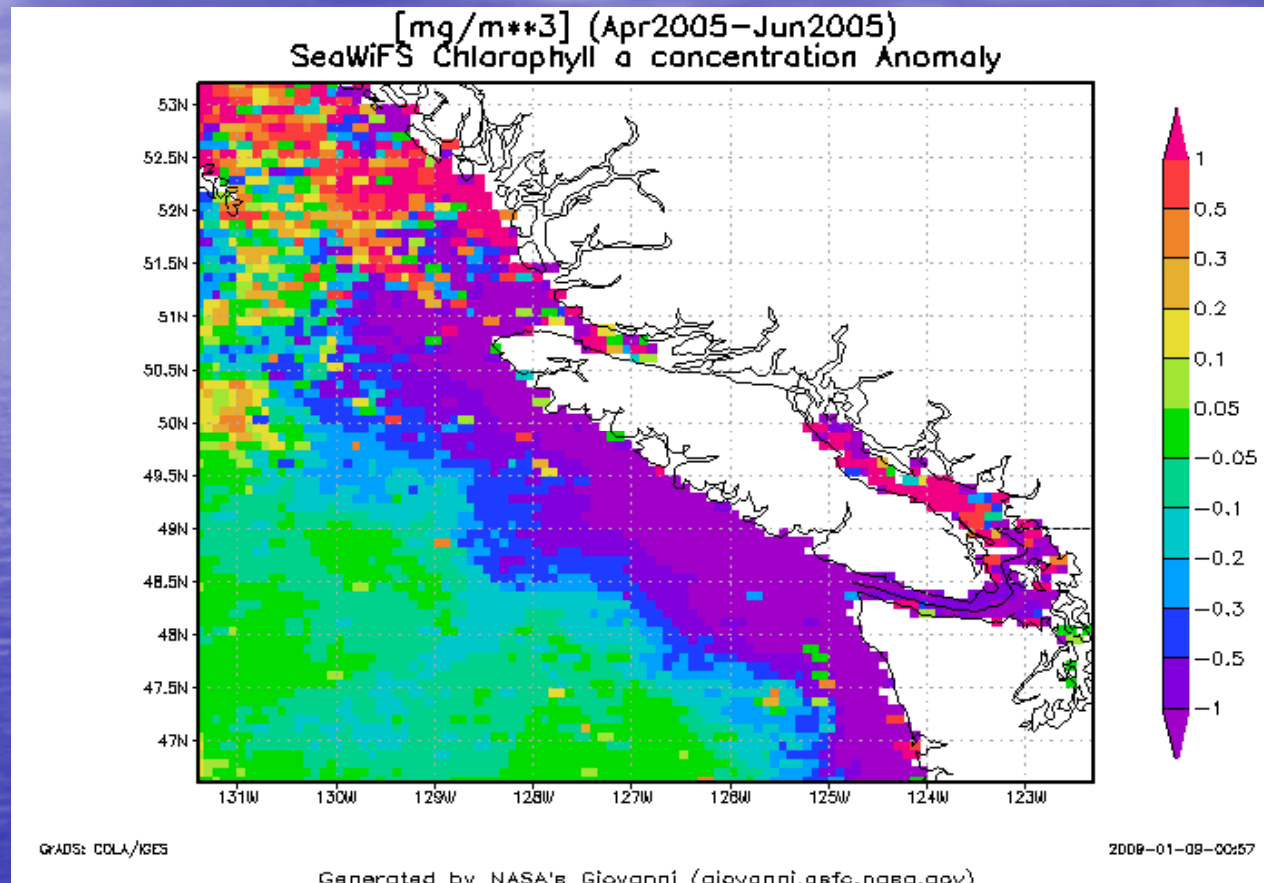
extremely poor salmon survivals

- 2006 returns of pink salmon poor coast-wide
- 2006 returns of coho salmon in Southern BC amongst poorest recorded
- 2007 & 2008 returns of sockeye salmon much poorer than forecast in Barkley Sound & Fraser River

2005 Sea-Entry Year... extremely poor salmon survivals

- 2007 returns of Chinook salmon
 - failure of 4₂ age-class,
 - significant declines for WCVI stocks, Cowichan River, Interior Fraser spring and summer Chinooks
- 2007 & 2008 returns of southern BC chum
 - no notable failure

Why poor survival for salmon going to sea in 2005? Perhaps a lack of food?



Chlorophyll anomalies for April–June 2005

Low for WCVI & Juan de Fuca but high in Strait of Georgia

Summary & Conclusions

- Status & appropriate status indicators are scale dependent
- Catch data suggest that, overall, status is poor
 - 2008 catches lowest in history
- Finer level information indicate that within areas and species, there is much variability in status
 - within the Fraser watershed, some sockeye and chinook pop'ns are healthy, while others are doing poorly

Summary and Conclusions Cont`d

- In the future, we need
 - ecosystem studies
 - studies that focus on identifying marine mortality
 - whole-life cycle studies (i.e. separate out marine & freshwater mortalities)

Summary and Conclusions Cont`d

- To ensure we have salmon in the future, we need to conserve diversity
 - within populations, habitat & ecosystem
 - this is the primary purpose of Canada's Wild Salmon Policy



Thank You

Questions?