Trends in other known SRKW prey species

Pieter Van Will, DFO
Kyle Adicks, WDFW

Southern BC Chum Salmon

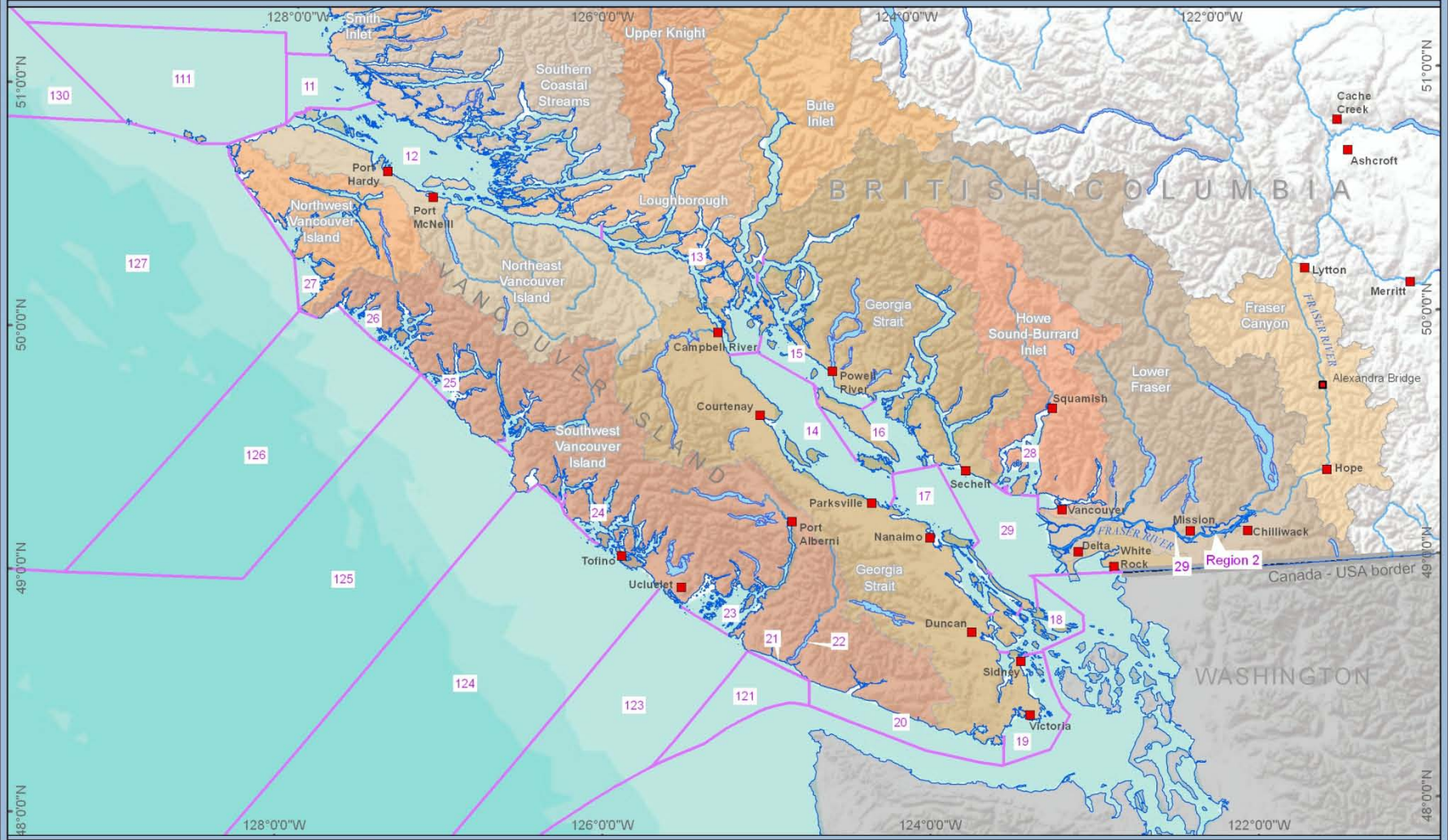
Southern BC Chum Salmon

- Stock Groupings
- Abundance Trends
- Timing, Migration Pathways and Stock Structure
- Fishery Locations and Catch
- Other Species

CDFO, Science Branch
Stock Assessment

Southern BC Chum Salmon - Marine Areas

PSC Joint Chum
Technical Committee
Post Season Report



N

LEGEND

- Town
- River
- Lakes
- CDFO's Pacific Fishery Management Area (PFMA)
- Chum Salmon Conservation Unit

Fisheries and Oceans Canada / Pêches et Océans Canada

Map Scale:
1:2,500,000

0 12.5 25 50 75 100
Kilometers

Source Information:
Basemap - ESRI online
Rivers, Lakes - BC Fresh Water Atlas
PFMA - Fisheries and Oceans Canada
Chum CU - Fisheries and Oceans Canada
Map projection - BC Albers
Production date - March 31, 2011
Produced by - OHEB GIS Unit, Pacific Region

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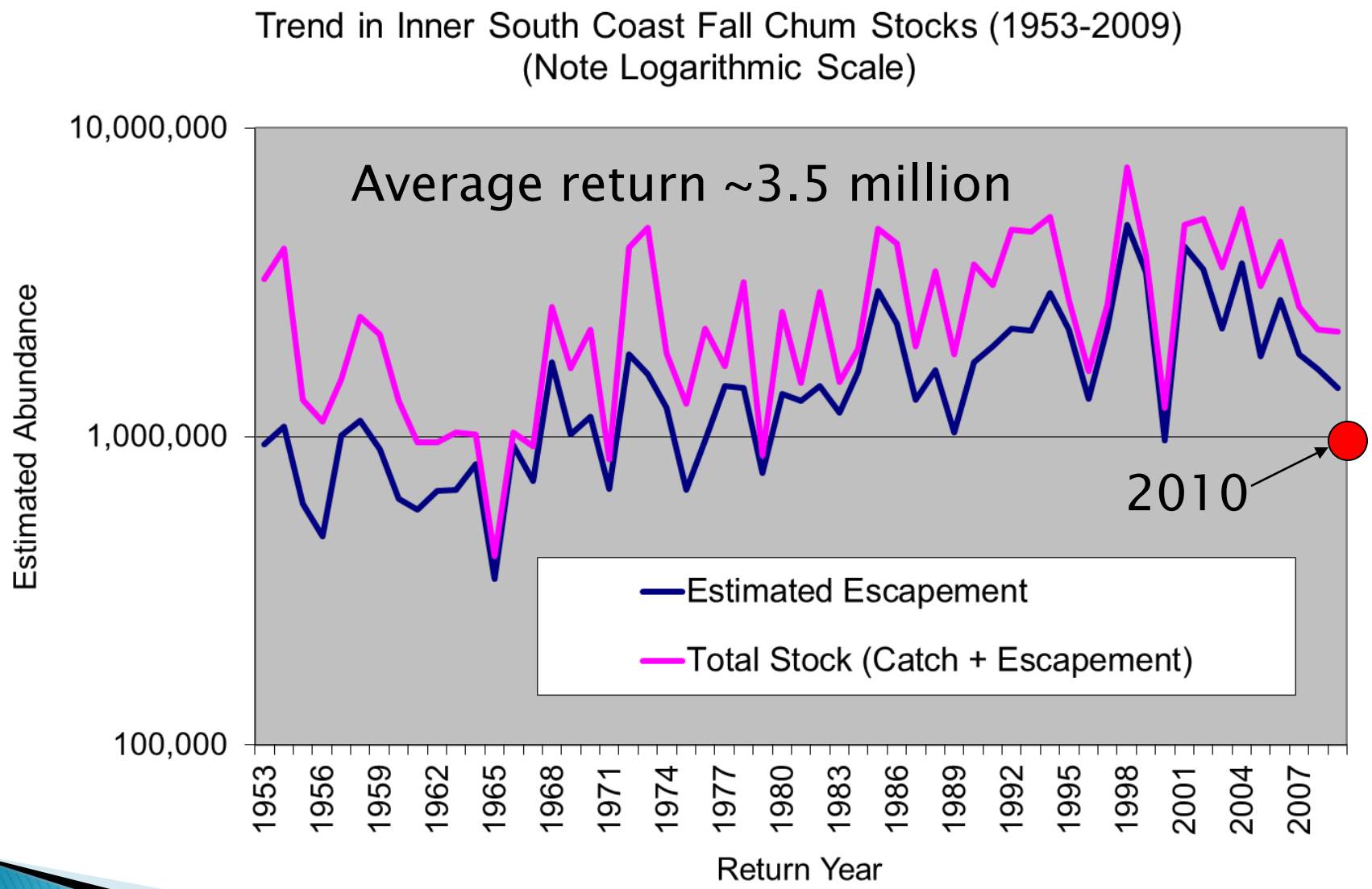
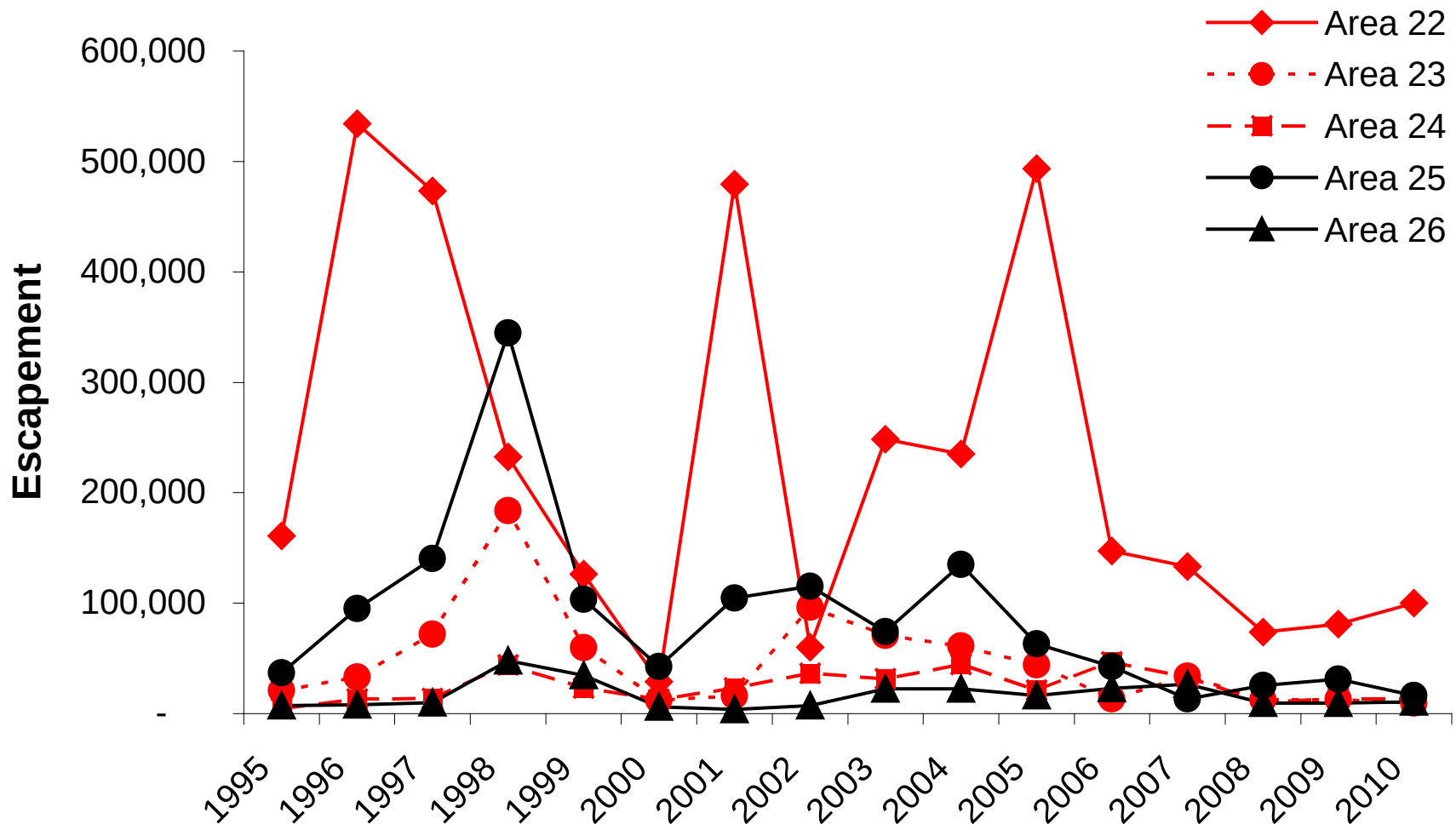
Southern Chum: Trends in Abundance Inside



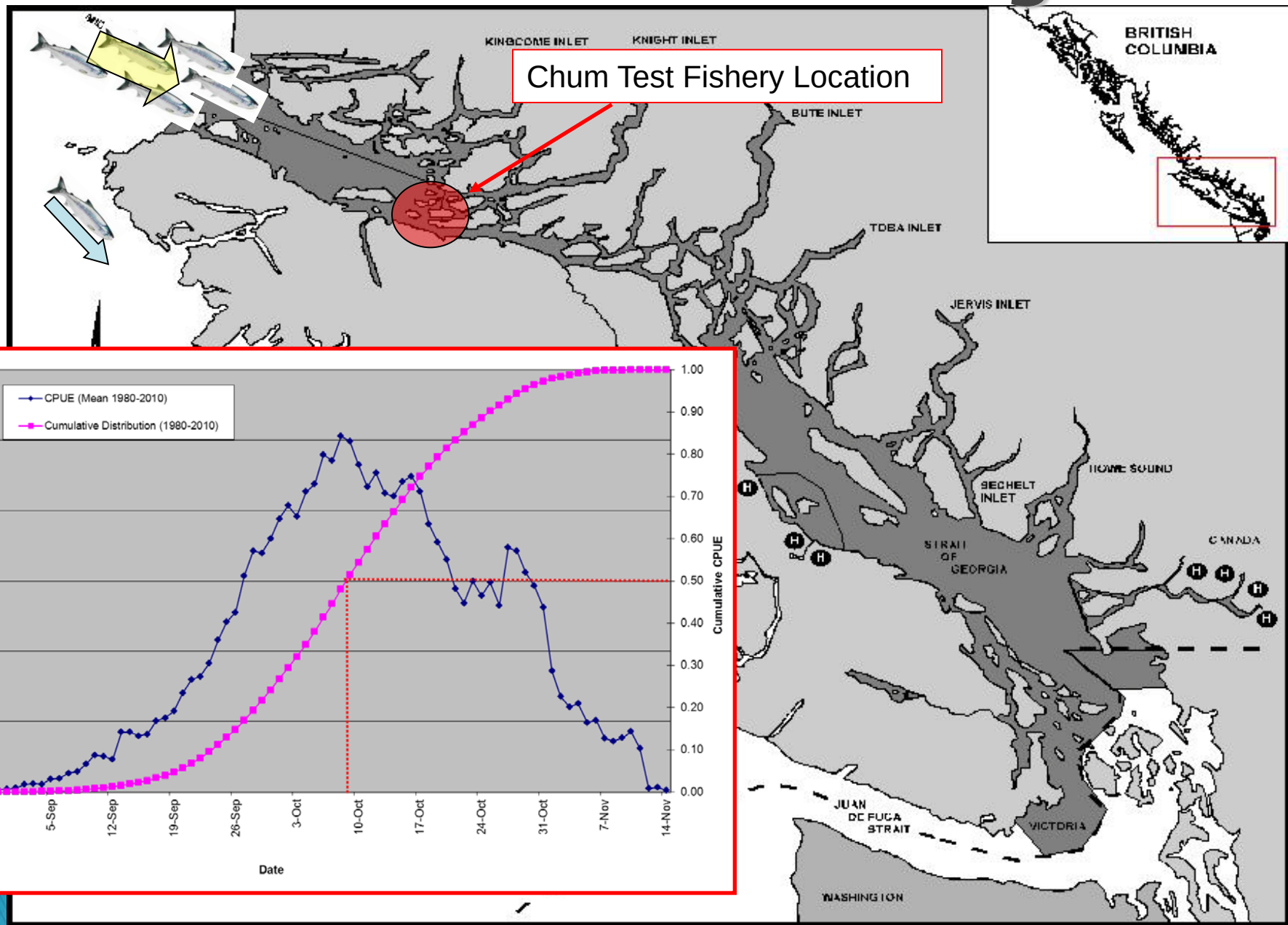
Southern Chum: Trends in Abundance WCVI

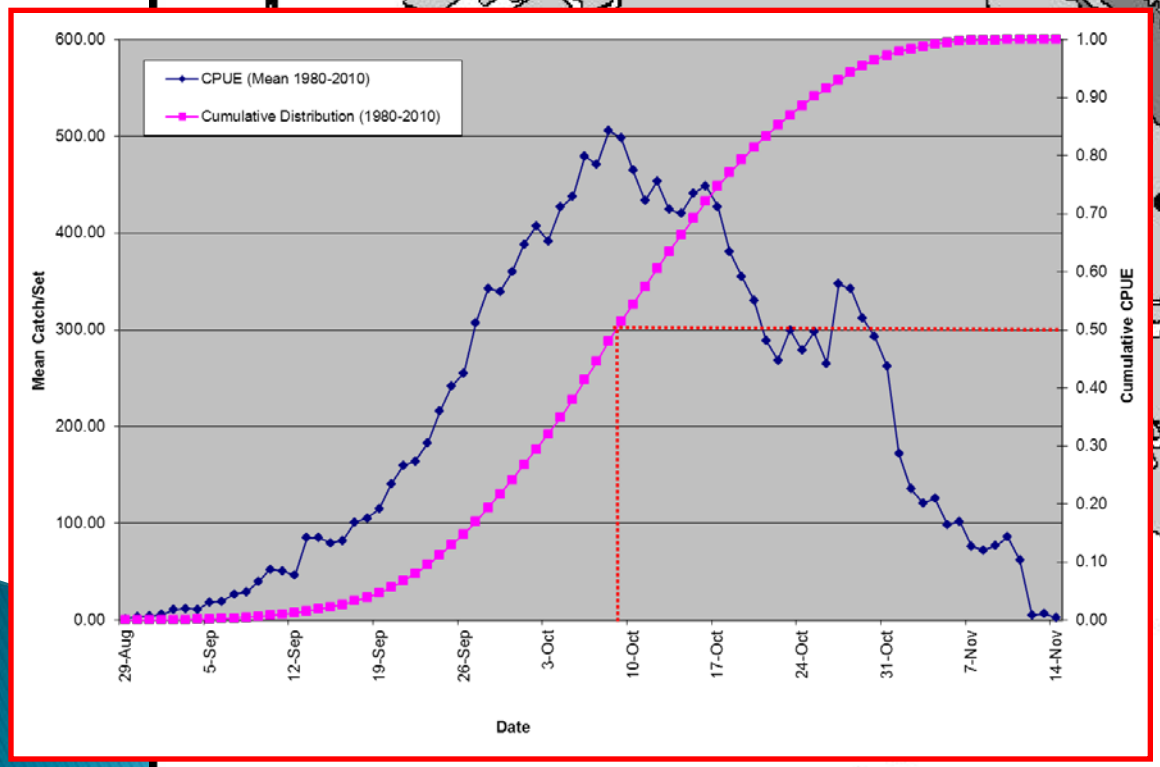


Chum: Timing, pathways and stock structure

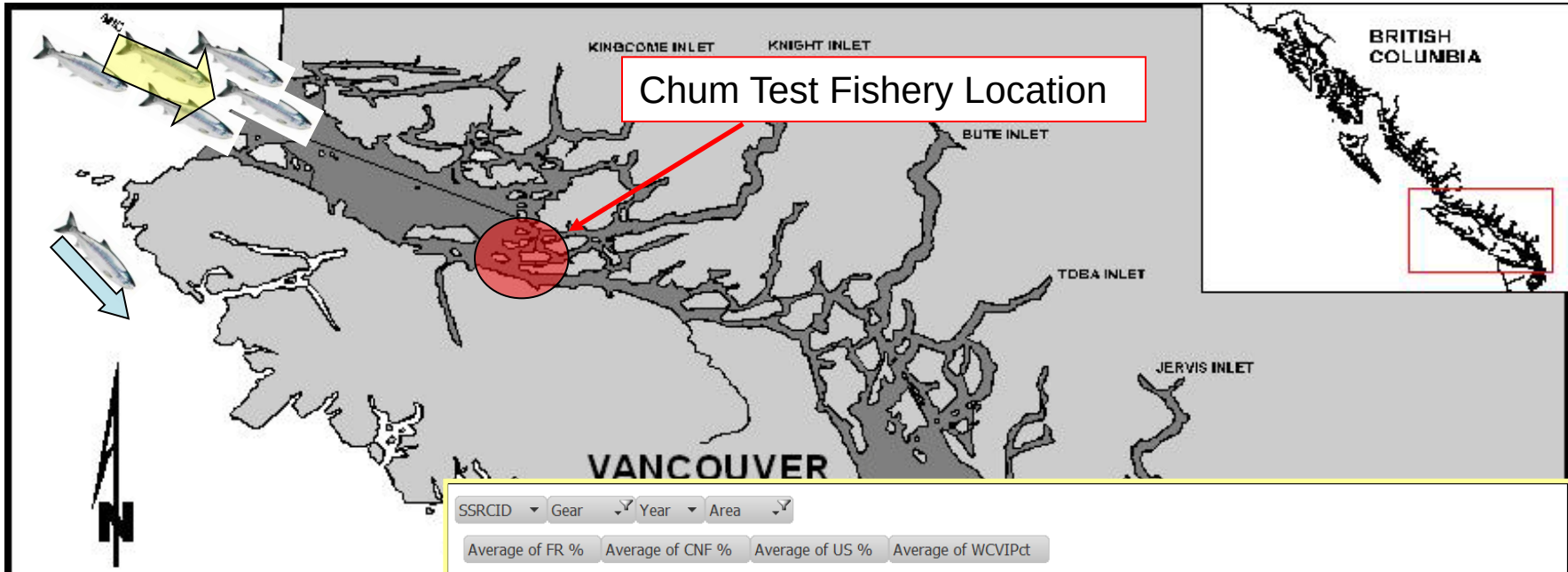
- Summer Chum: some stocks in the area move through approach area in July and into September
- Fall Chum: typically mid September through November. Peak around mid October
- Amount of Diversion unknown but assumed that majority of the inside and Fraser stock move on the inside
- Return age structure 3_1–6_1 dominated typically by 4_1 year old fish

Southern Chum: Fall Timing

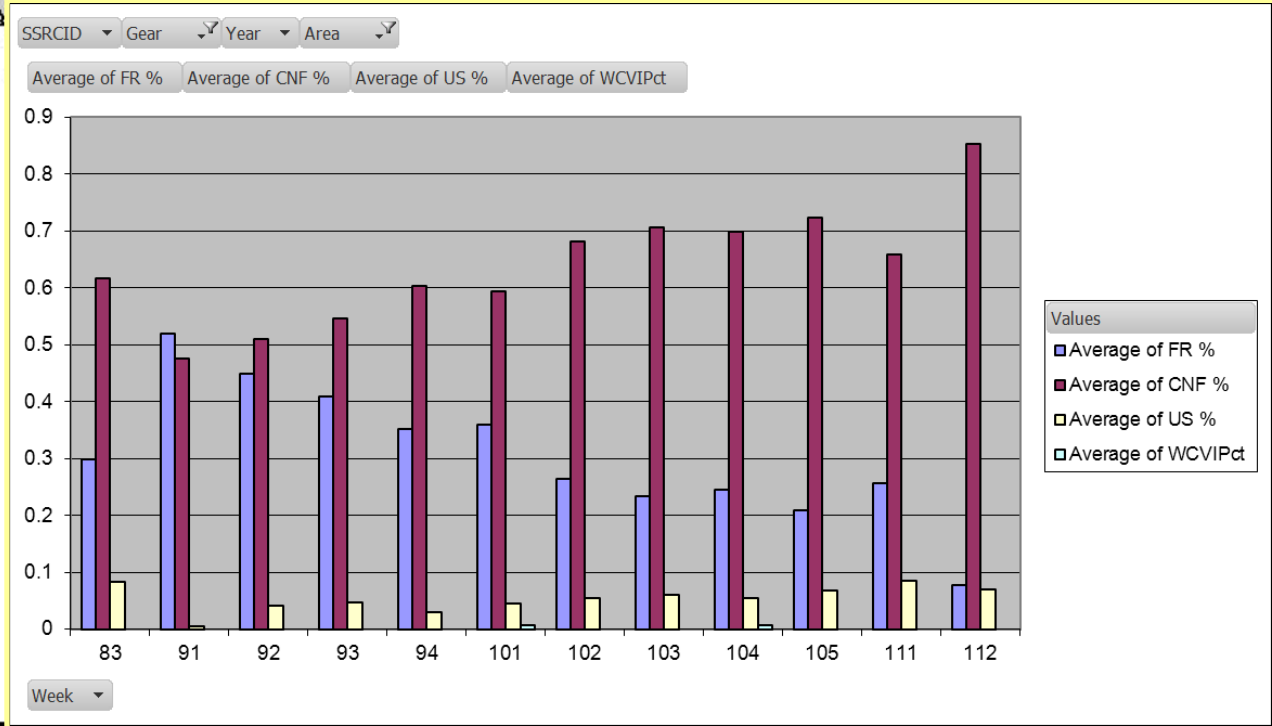




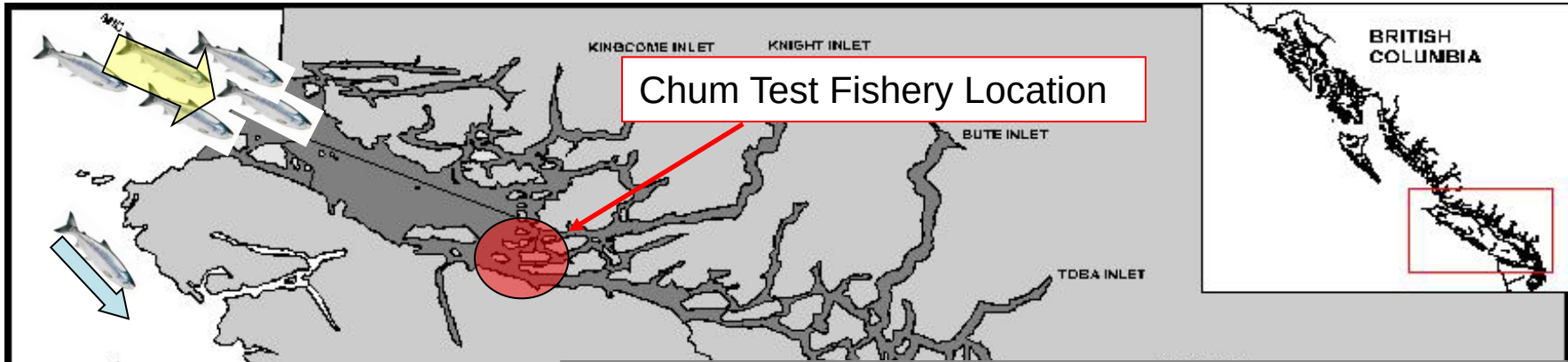
Southern Chum: Stock Composition over time

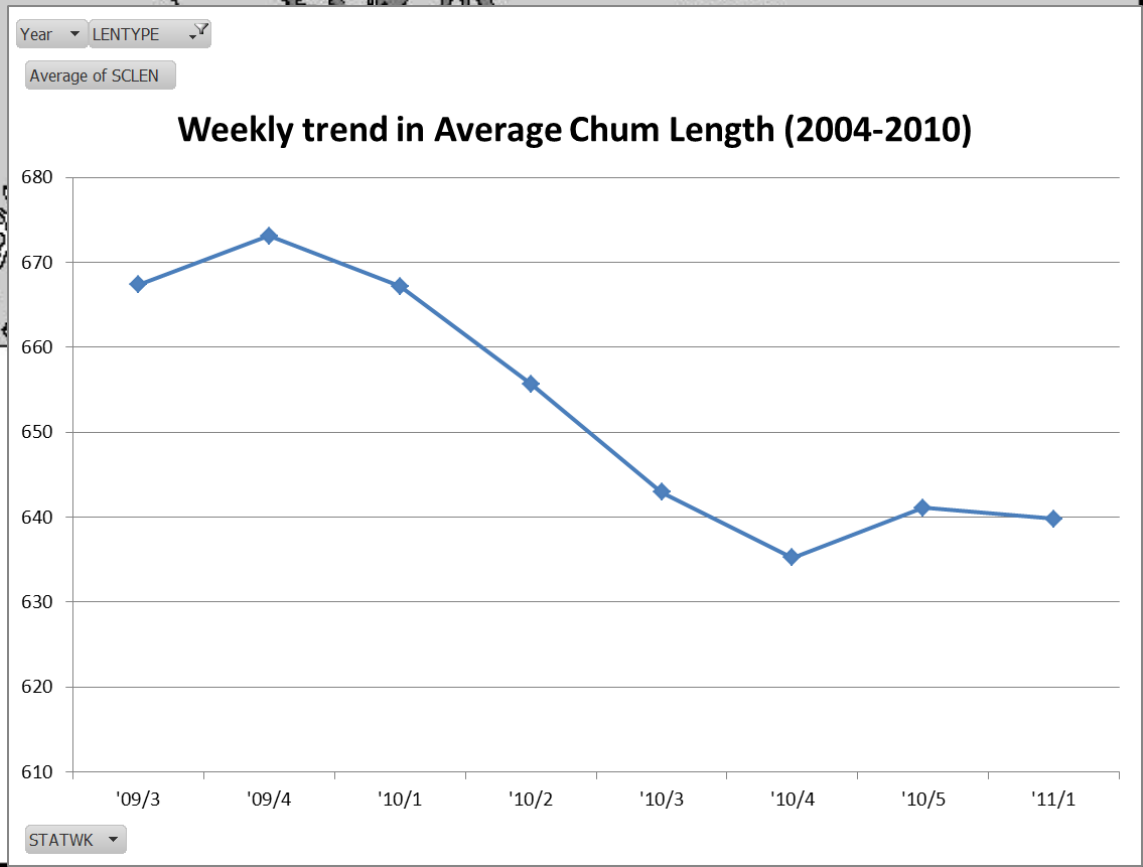


%Diversion: Unknown



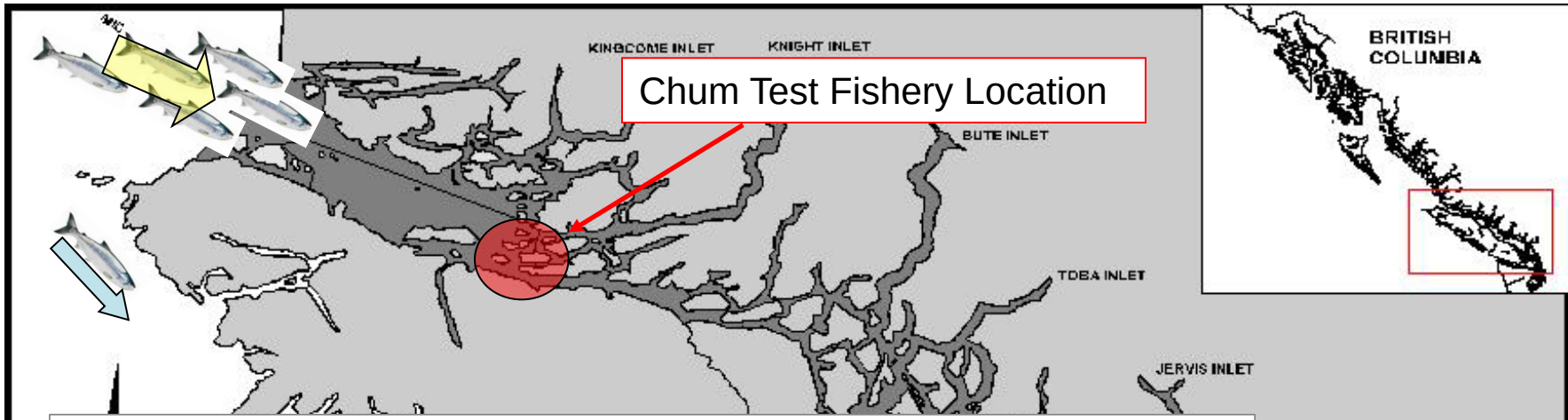
Southern Chum: Fish Size Over Time

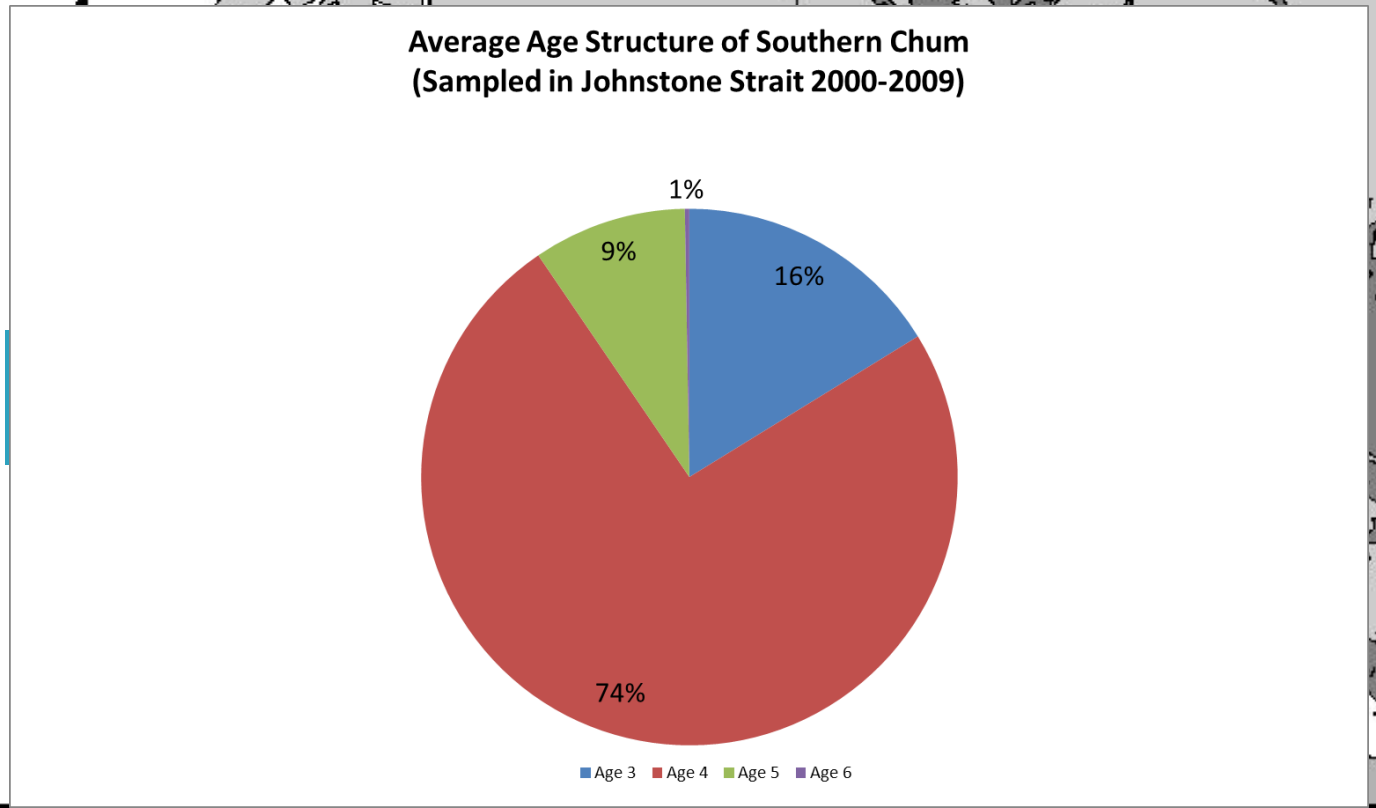


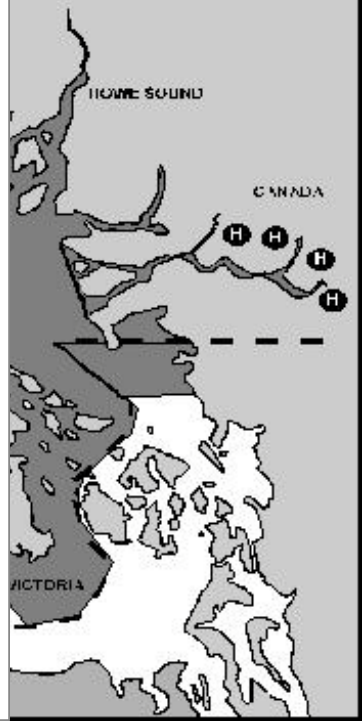


%Diversion: Unknown

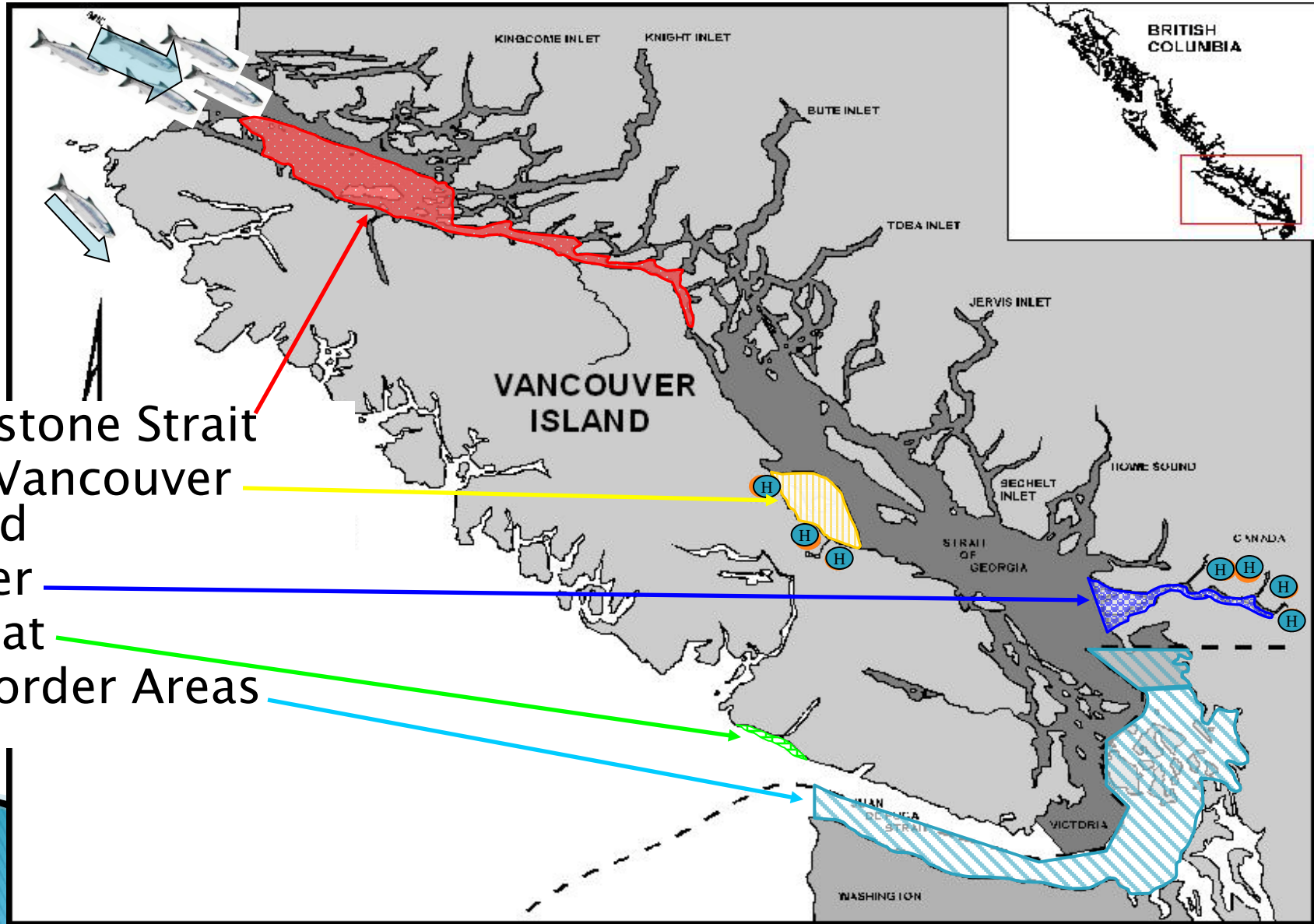
Southern Chum: Average Age





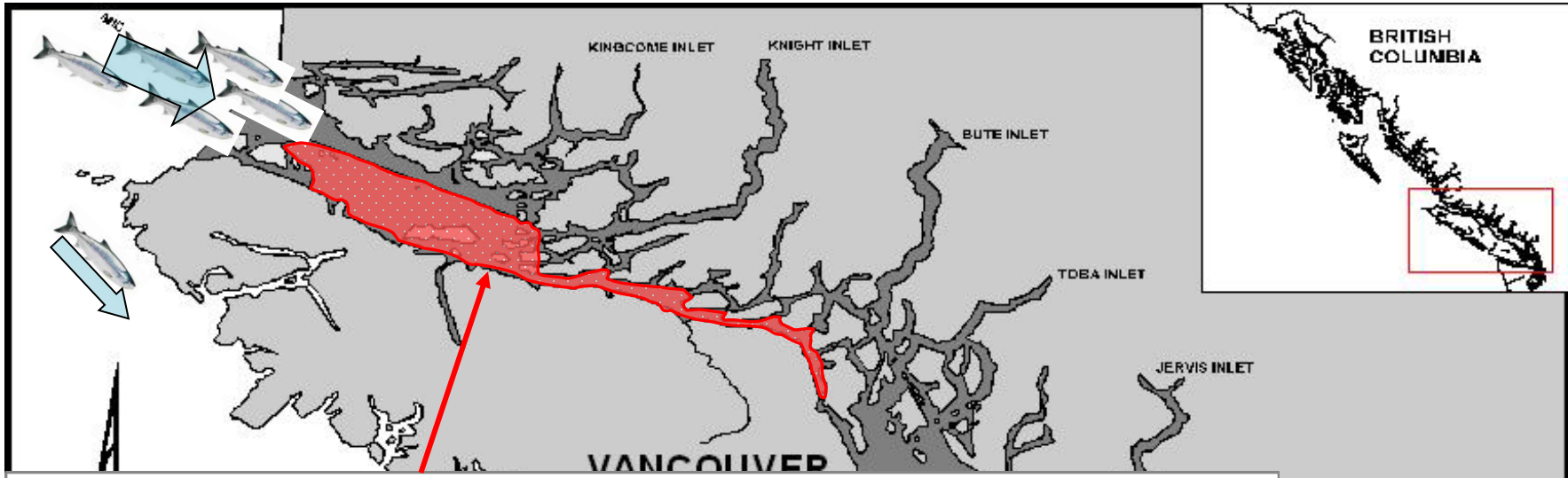


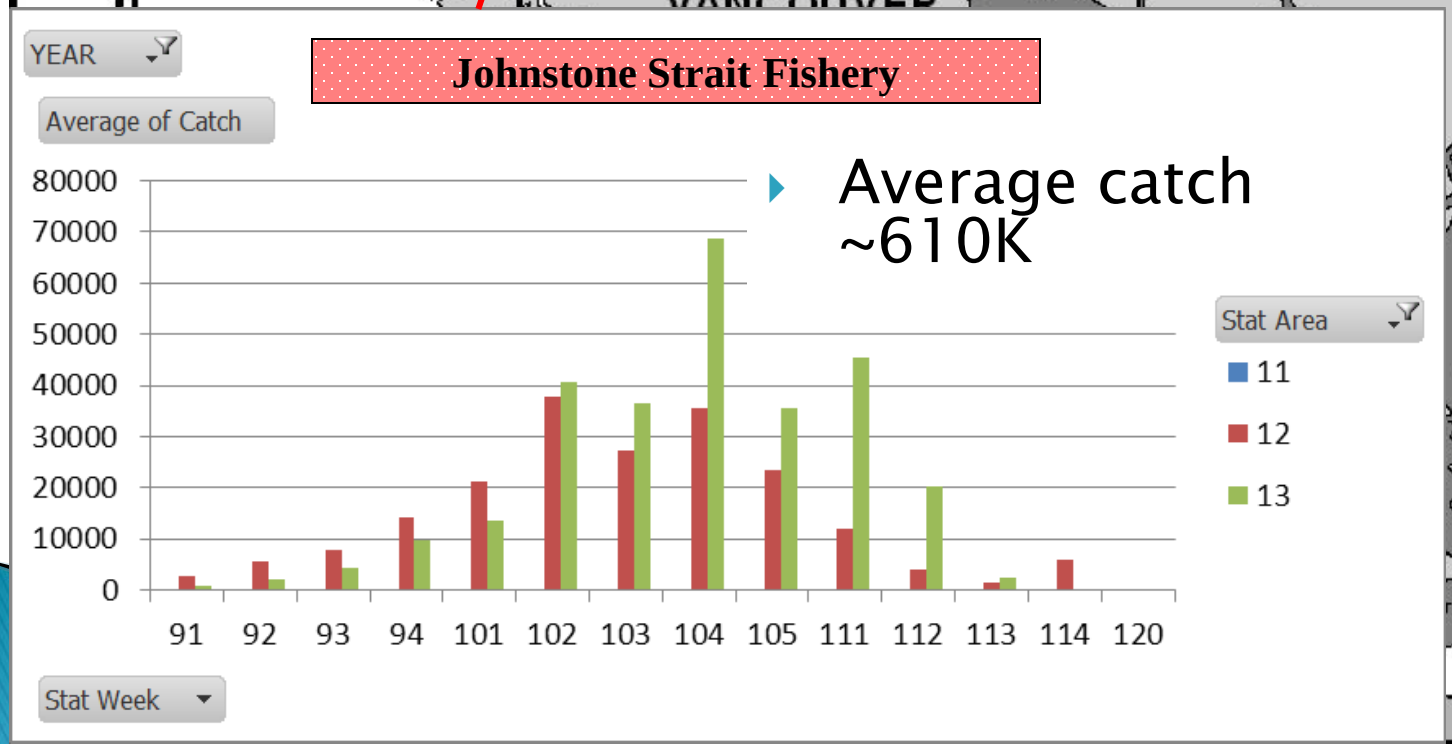
Southern Chum: Fisheries



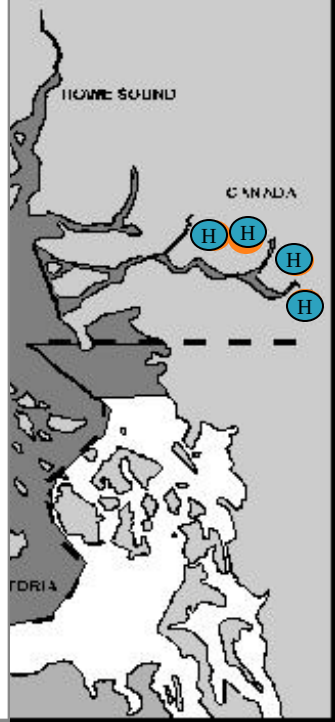
- Johnstone Strait
- Mid Vancouver Island
- Fraser
- Nitinat
- US Border Areas

Southern Chum: Fisheries

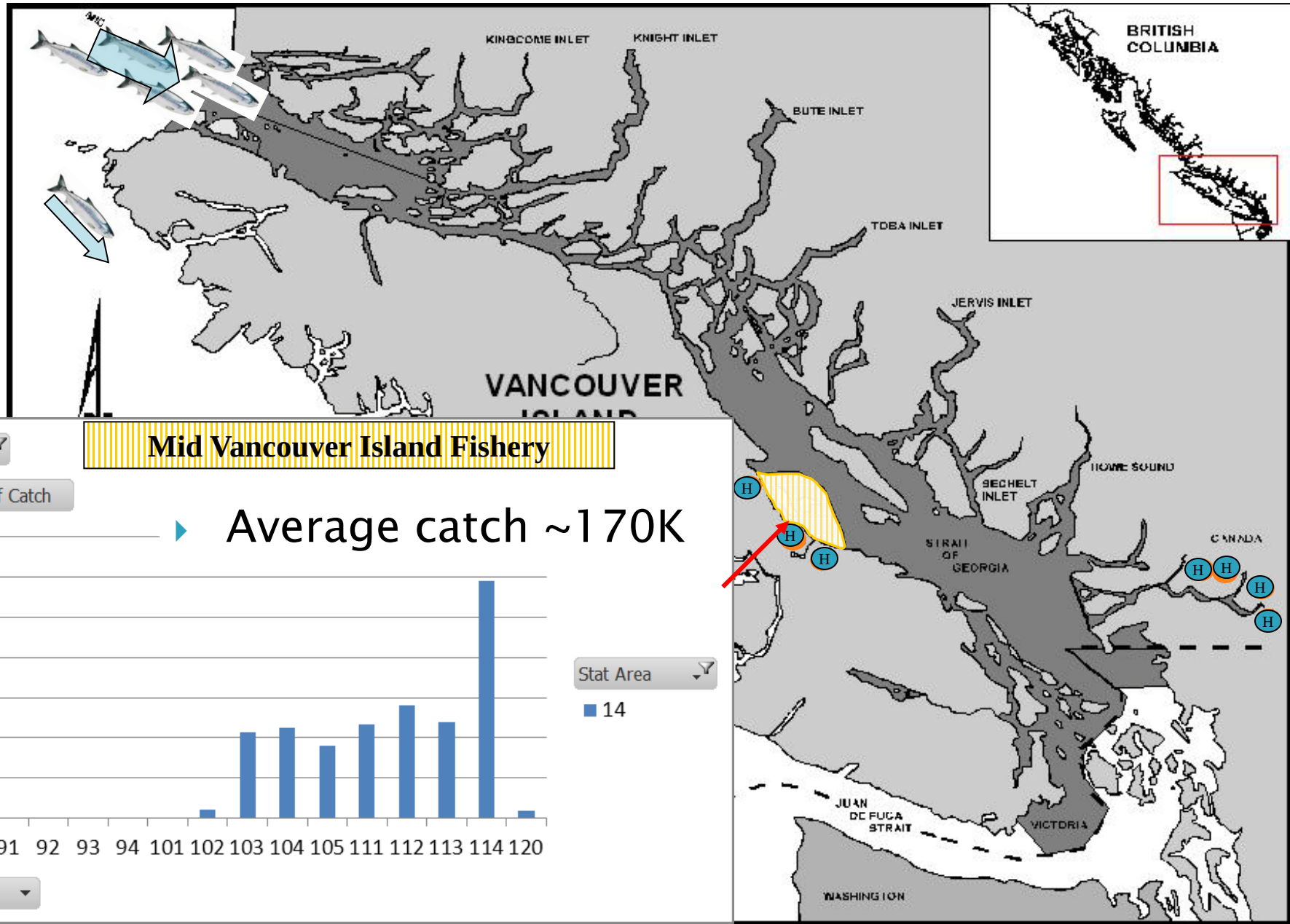




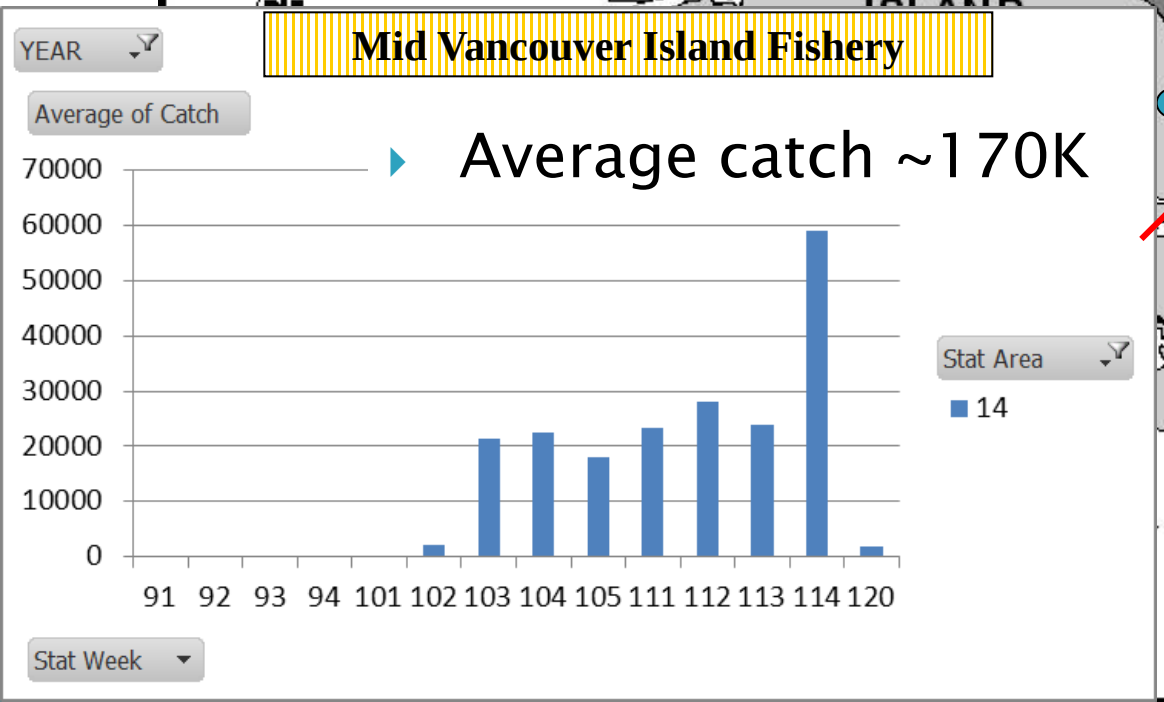
- Average catch ~610K



Southern Chum: Fisheries

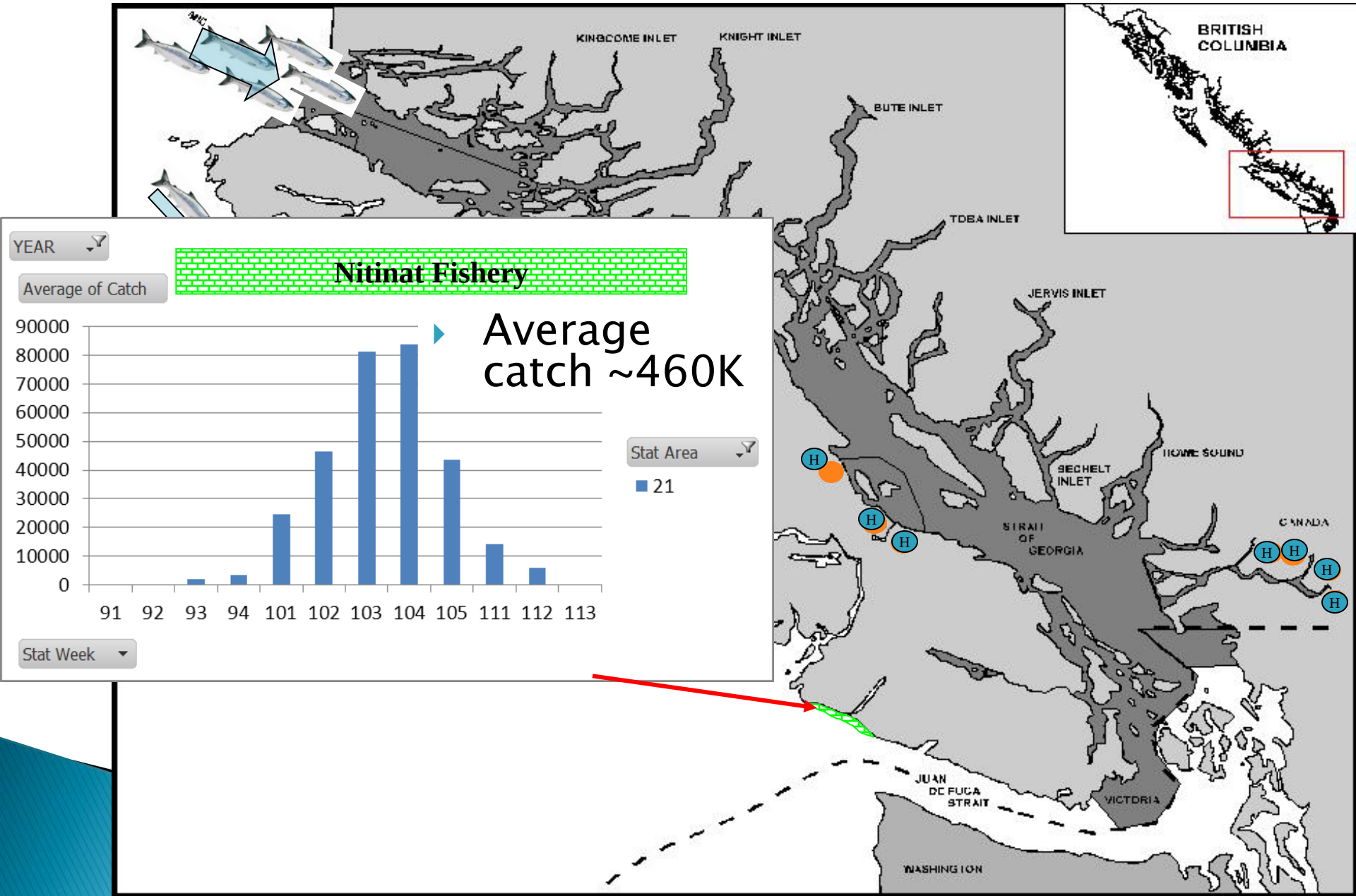


Mid Vancouver Island Fishery

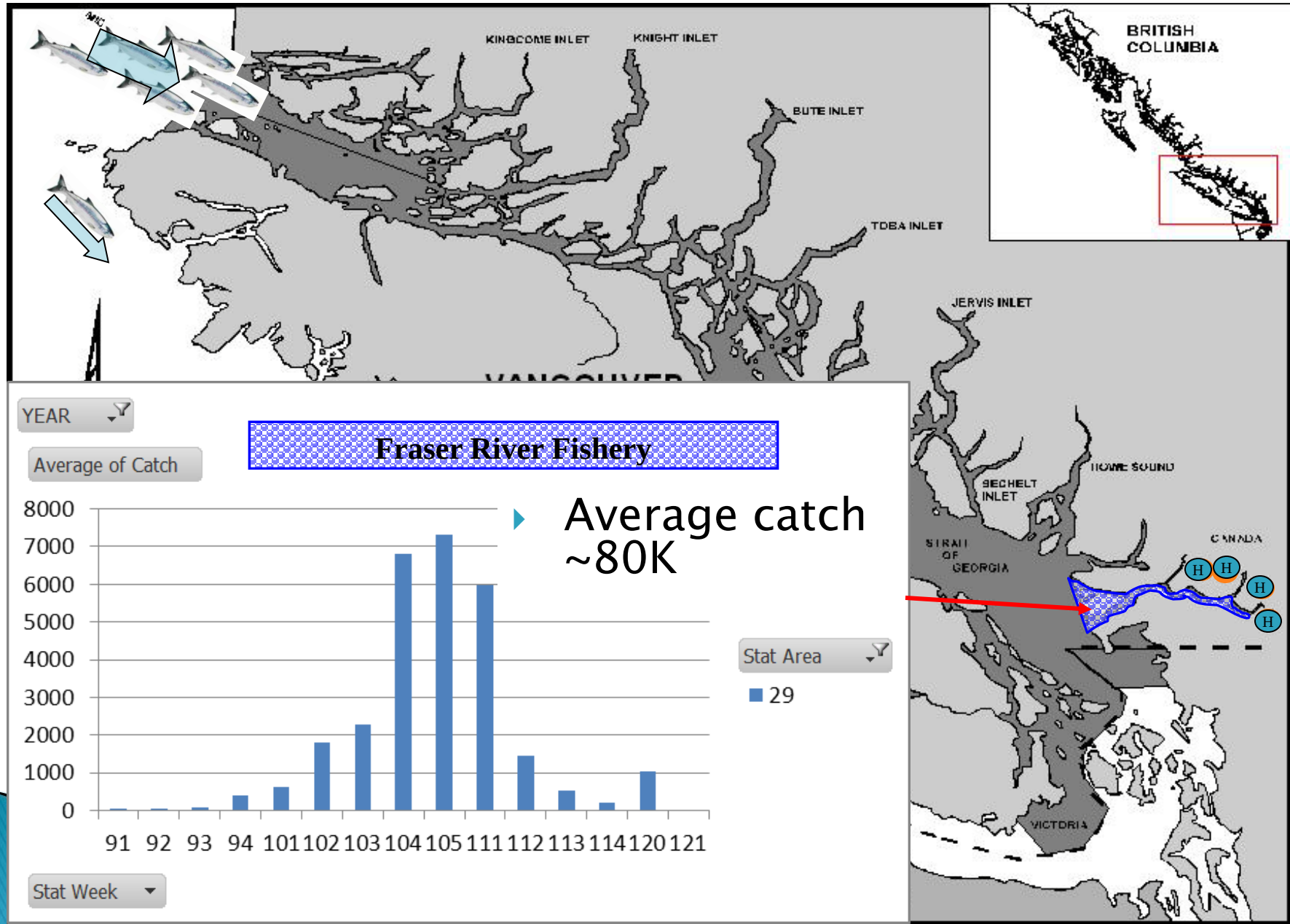


- Average catch ~170K

Southern Chum: Fisheries



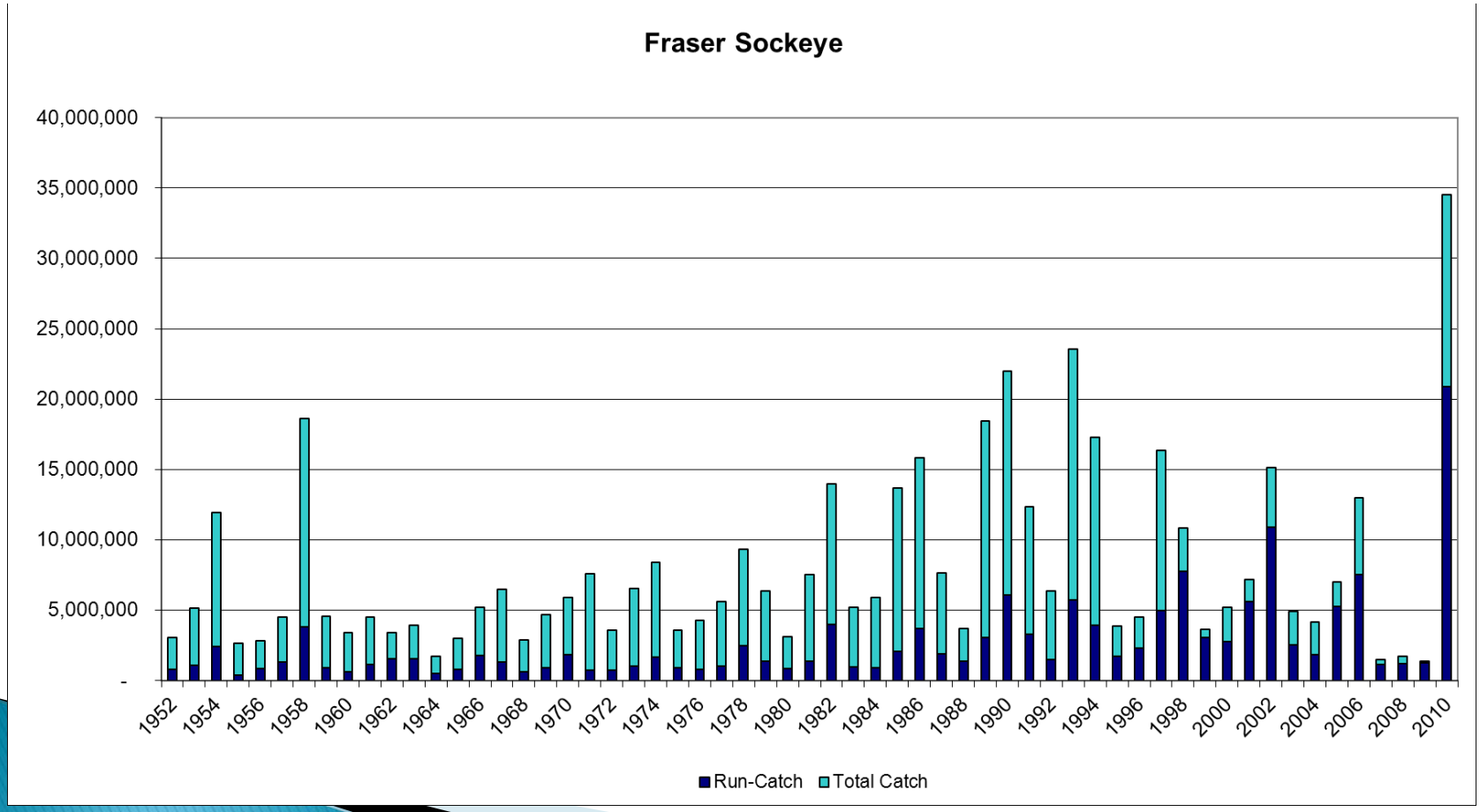
Southern Chum: Fisheries



- Average catch ~80K

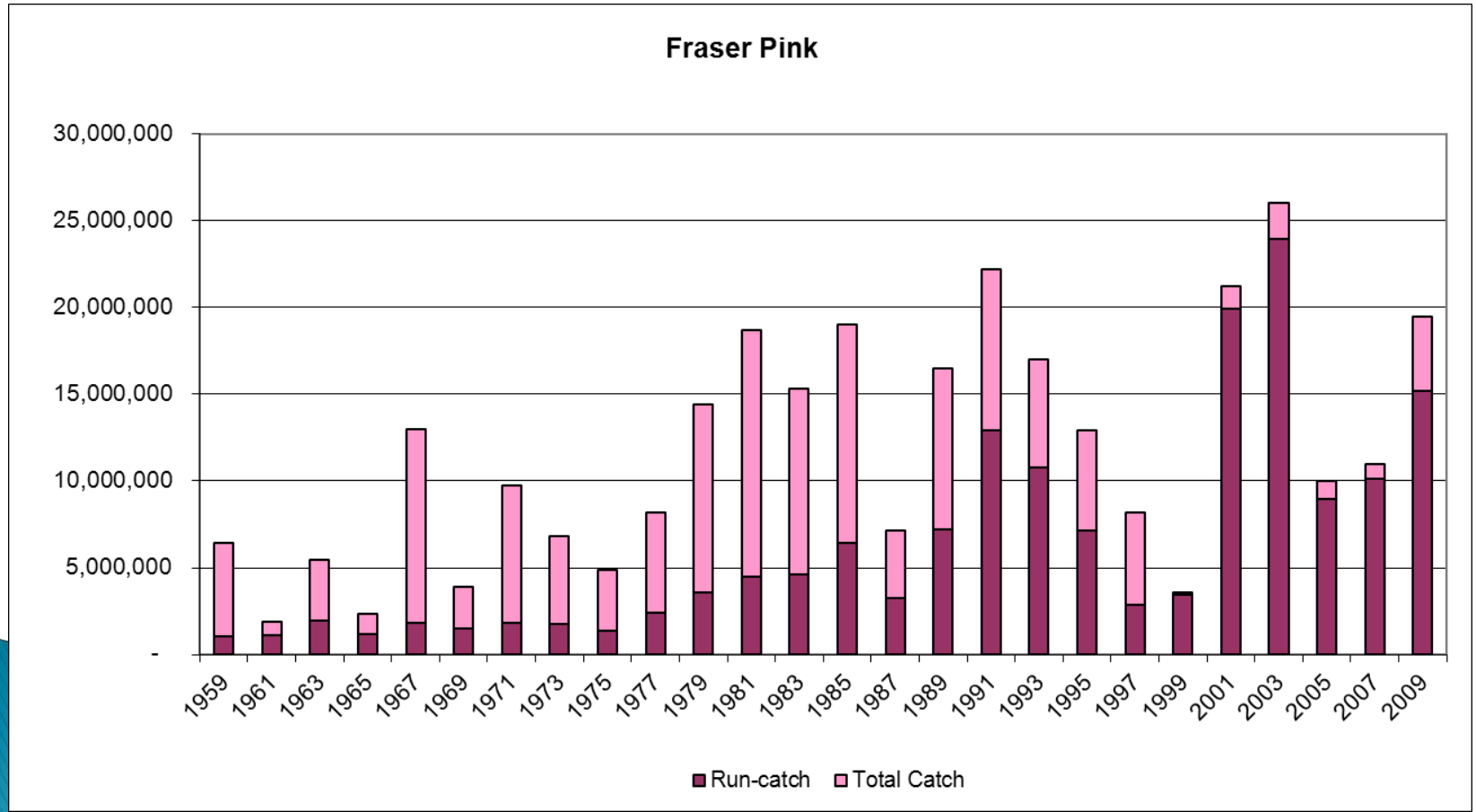
Other Salmon Species

- Fraser Sockeye: average return ~8 million



Other Salmon Species

- Fraser pink
  - Average return
    - ~12 million (long term)
    - ~18 million (last 5 return years)



Puget Sound Chum Salmon

Puget Sound Chum Salmon

- Washington chum salmon ESUs
  - Puget Sound/Strait of Georgia
  - Hood Canal summer (ESA listed as threatened)
  - Pacific Coast
  - Columbia River (ESA listed listed as threatened)

Puget Sound Chum Salmon

- 3 run timings
  - Summer (early) chum
    - July–September migration through inside waters,
      August– mid–October spawn timing
    - Small populations in Eastern Strait of Juan de Fuca, Hood Canal (ESA listed) & South Sound
    - Average runsize ~80,000
  - Fall (normal) chum
    - September–December migration, Late October–January spawn timing
    - Most abundant group, populations throughout the Sound
    - Average runsize 1–2 million
  - Winter (late) chum
    - November–January migration, January–February spawn timing
    - Only in Nisqually River & some nearby Deep South Sound tributaries
    - Average runsize ~60,000

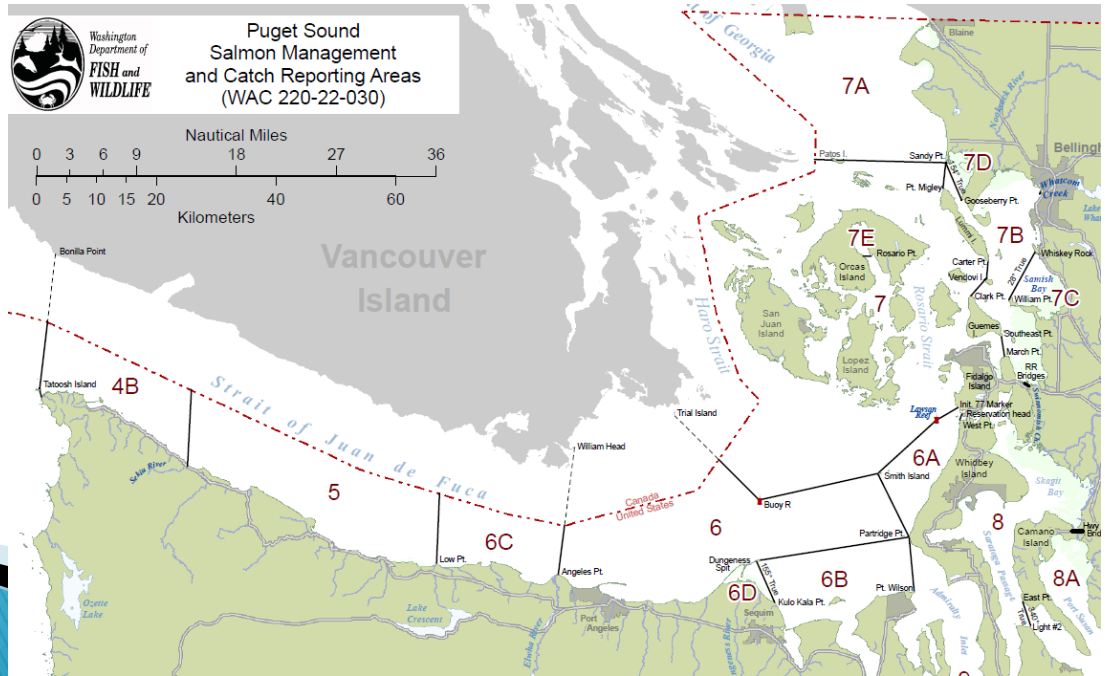
Puget Sound Fall Chum Salmon Management Units

Puget Sound Chum Salmon

- Migration pathway
  - The majority of returning Puget Sound chum are assumed to enter through the Strait of Juan de Fuca, although the proportions using northern and southern approaches are not known
  - Assumed to follow relatively direct route through the Strait and/or San Juans to terminal areas, although the limited tagging and genetic data available show some movement outside of direct pathways

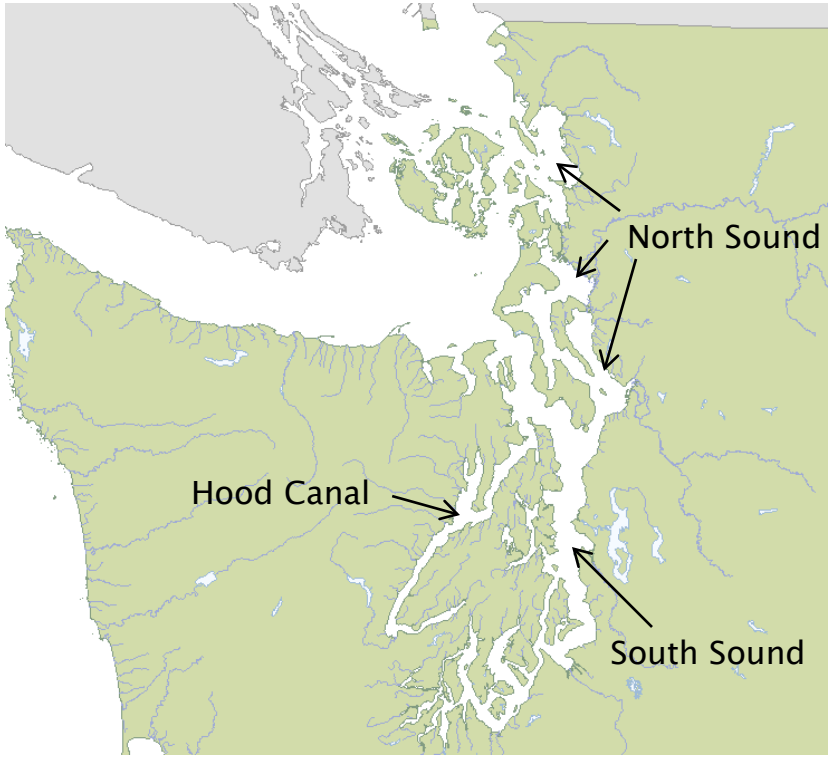
Puget Sound Chum Salmon

- Fisheries
  - Border area fisheries in mid-October
    - Small tribal gillnet fishery in the Strait of Juan de Fuca (3,400 4-year mean catch)
    - Seine and gillnet fisheries in San Juan Islands and Point Roberts areas (37,000 4-year mean catch)
    - Harvest a mix of Canadian and Puget Sound chum stocks

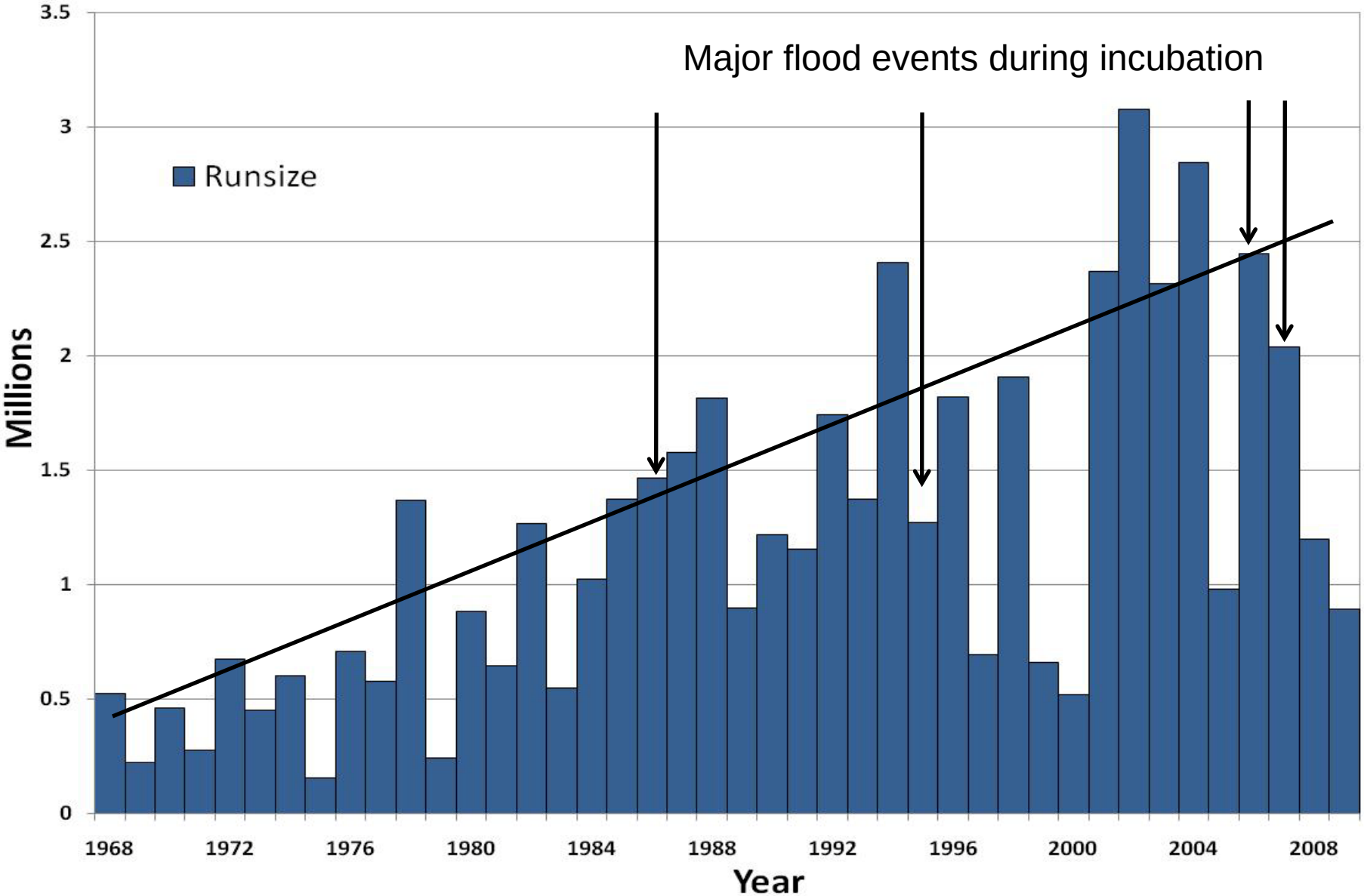


Puget Sound Chum Salmon

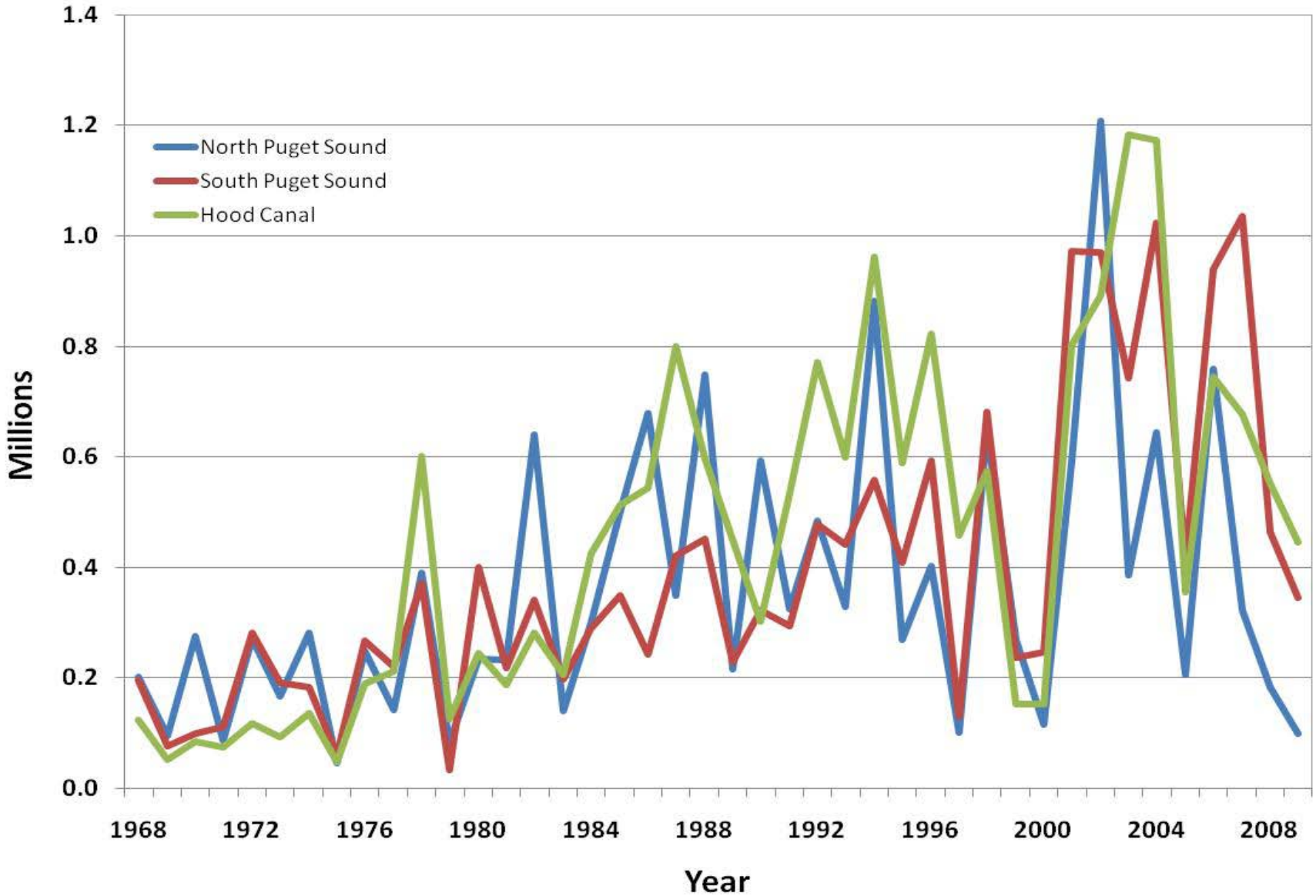
- Fisheries
  - Larger fisheries in terminal areas harvest local stocks as abundance permits, late October–November
    - South Sound (360,000 4-year mean catch)
    - Hood Canal (375,000 4-year mean catch)
    - Smaller fisheries in each of the North Puget Sound terminal areas



Puget Sound fall chum abundance



Puget Sound fall chum abundance

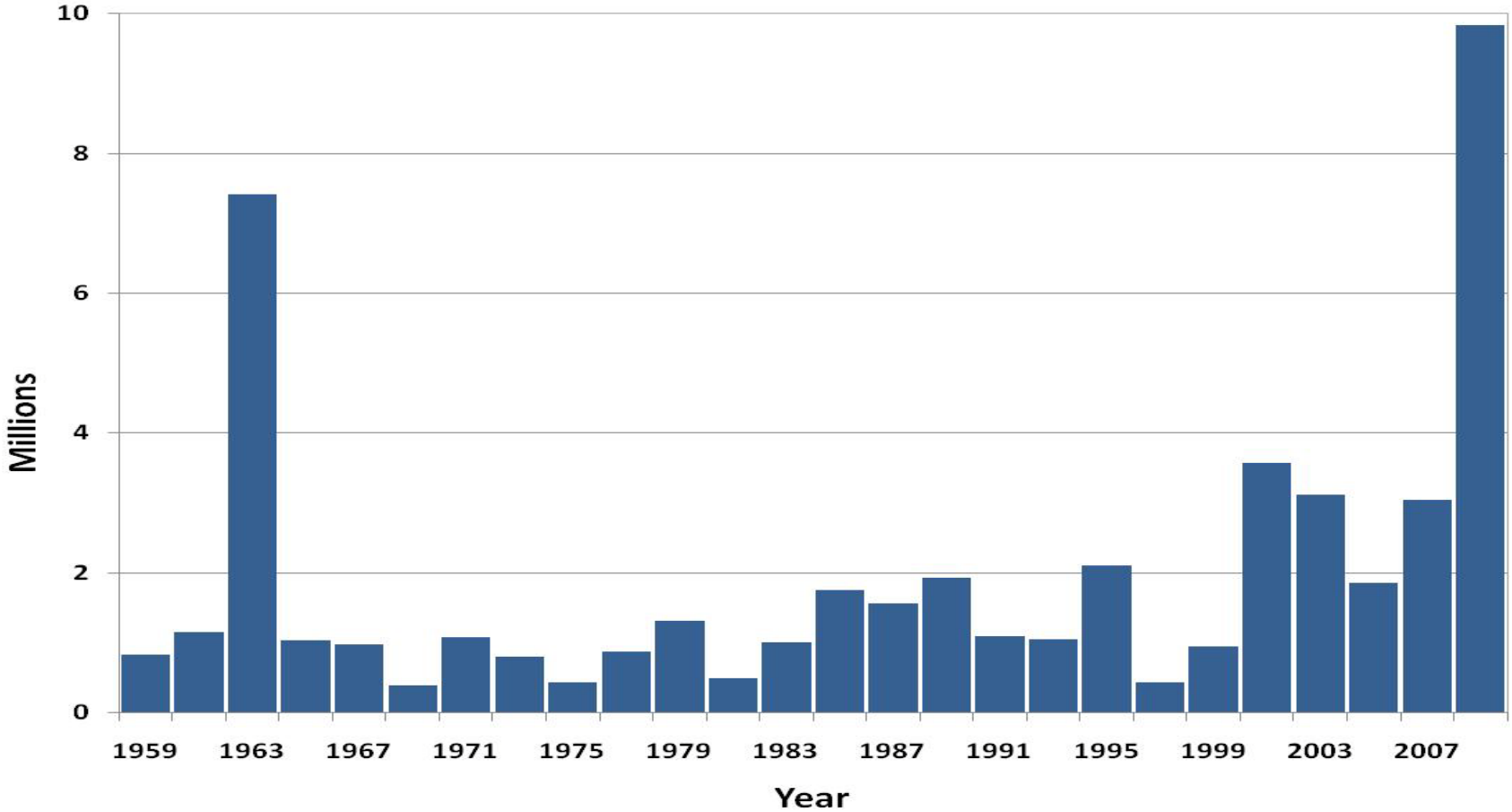


Abundances of other Puget Sound salmon

- Puget Sound sockeye
  - 2 populations – Lake Washington and Baker Lake
  - Total runsizes range from 40,000 – 500,000+
  - Total abundance down in recent years
  - Small in comparison to Fraser River returns
  - June–July migration, earlier timed than most Fraser populations

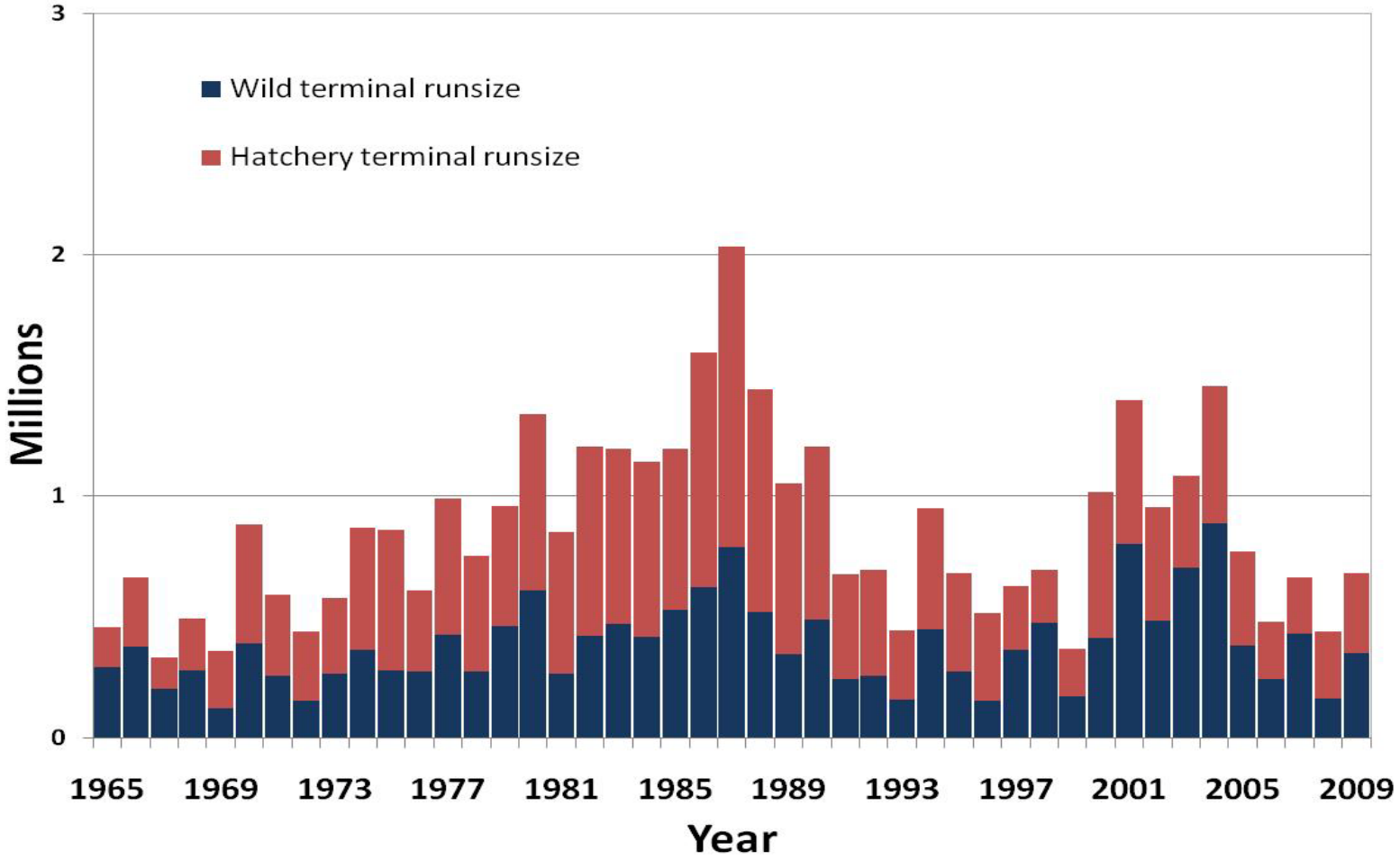
Abundances of other Puget Sound salmon

- Puget Sound pink salmon
  - Odd-year returns, mid-July through mid-September migration
  - Long-term average <2,000,000 runsize
  - Since 2001 average >4,000,000 runsize



Abundances of other Puget Sound salmon

- Puget Sound coho
  - Mid-August – October migration
  - Average terminal runsize ~900,000 (Does not include pre-terminal catch)



Southern BC & Puget Sound salmon

- Migration timing and relative abundances in inside waters
  - Sockeye and pink salmon migration overlaps heavily with Chinook migration
  - Sockeye and pink abundances are variable, but they are usually the numerically dominant species migrating in the July to mid-September period
  - Coho may be dominant for a brief period in late September in some years, depending on strength and overlap timing of pink and chum runs
  - Chum dominant from late September through the end of their migration

Southern BC & Puget Sound salmon

- General abundance trends across the region
  - Chum salmon
    - Long-term increase, with variability
    - Recent year declines, but still near long-term average abundance
  - Pink salmon
    - Larger than average abundances since 2001
  - Sockeye salmon
    - General decline, with the exception of the 2010 Fraser return
  - Coho salmon
    - Generally in lower abundance

Southern BC & Puget Sound salmon

- Modeling of the effects of prey abundance on killer whale fecundity and survival has focused on Chinook abundances, due to the frequency of Chinook in diet samples
- Regional abundance data are available for other salmonid species in various forms, although not in the coast-wide model formats available for Chinook
- Do abundances of other salmon species affect whale fecundity or survival?
  - Analysis using BC Inner South Coast chum abundances showed no significant correlations (Ford et al. 2005)
  - Other existing or future analyses?
- This presentation focused on salmon returning to inside waters during summer and fall months, but prey abundances in other times and places could be an important factor

The End

More recognizable to diet researchers?