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Increases in synchrony among Central Coast salmon populations in British Columbia over the last 60 years

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Increases in synchrony among central coast salmon populations in BC over the last 60 years

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B. Connors, K. Connors, J. Reynolds
Salmon Watersheds Program

1. Collate and expand baseline scientific information
2. Assess status of salmon populations and their habitats
3. Make information broadly available

www.salmonexplorer.ca
Pacific Salmon Diversity in BC

450+ Conservation Units in BC and the Yukon

Conservation Unit (CU) = genetically, geographically, and ecologically distinct groups of wild salmon

Estimated ~9,000 salmon stocks in BC and the Yukon

sockeye
pink
Chinook
coho
chum
Portfolio effects and salmon

Increased Diversity → Decreased Synchrony → Greater Stability

Anderson et al. 2015
Portfolio effects and salmon

Redrawn from Schindler et al. 2010
Future development

Proposed Industrial Infrastructure
- LNG Terminals
- Pacific Northern Gas Looping Project
- Pacific Trails Pipeline Project
- Northern Gateway Pipeline Project
- Coastal Gaslink Pipeline Project
- Westcoast Connector Gas Transmission Project
- Prince Rupert Gas Transmission Project
- Power Lines
- Water Licenses
- Mineral Mines
- Coal Mines
- Wind Power Tenure Applications
- Skeena River Watershed

British Columbia

Dixon Entrance
Hecate Strait
Questions

1) How has the abundance of salmon changed across the north and central coast?
2) Do changes in synchrony explain observed changes in abundance?
Data sources
Questions

1) How has the abundance of salmon changed across the north and central coast?

2) Do changes in synchrony explain observed changes in abundance?
Coho - Central Coast

- Hecate Strait Main
- Douglas Channel
- Brim-Wahoo
- Mussel-Kynoch

Relative abundance

Return year

Coho - Central Coast

- BC Dean
- Northern Streams
- Rivers
- Smith

Return year
ABUNDANCE
Questions

1) How has the abundance of salmon changed across the north and central coast?

2) Do changes in synchrony explain observed changes in abundance?
Comparison with Salish Sea

Salish Sea Chinook salmon exhibit weaker coherence in early marine survival trends than coastal populations.

Declining patterns of Pacific Northwest steelhead trout (Oncorhynchus mykiss) adult abundance and smolt survival in the ocean.

Coherent population dynamics associated with sockeye salmon juvenile life history strategies.

Cameron Freshwater, Brian J. Burke, Mark D. Scheuerell, Sue C.H. Grant, Marc Trudel, and Francis Juanes.
So what is going on with salmon?