

May 1st, 1:30 PM - 3:00 PM

A First Nation history and approach to acidification in Burrard Inlet

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Konovsky, John and Morin, Jesse, "A First Nation history and approach to acidification in Burrard Inlet" (2014). *Salish Sea Ecosystem Conference*. 177.

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TSLEIL-WAUTUTH NATION

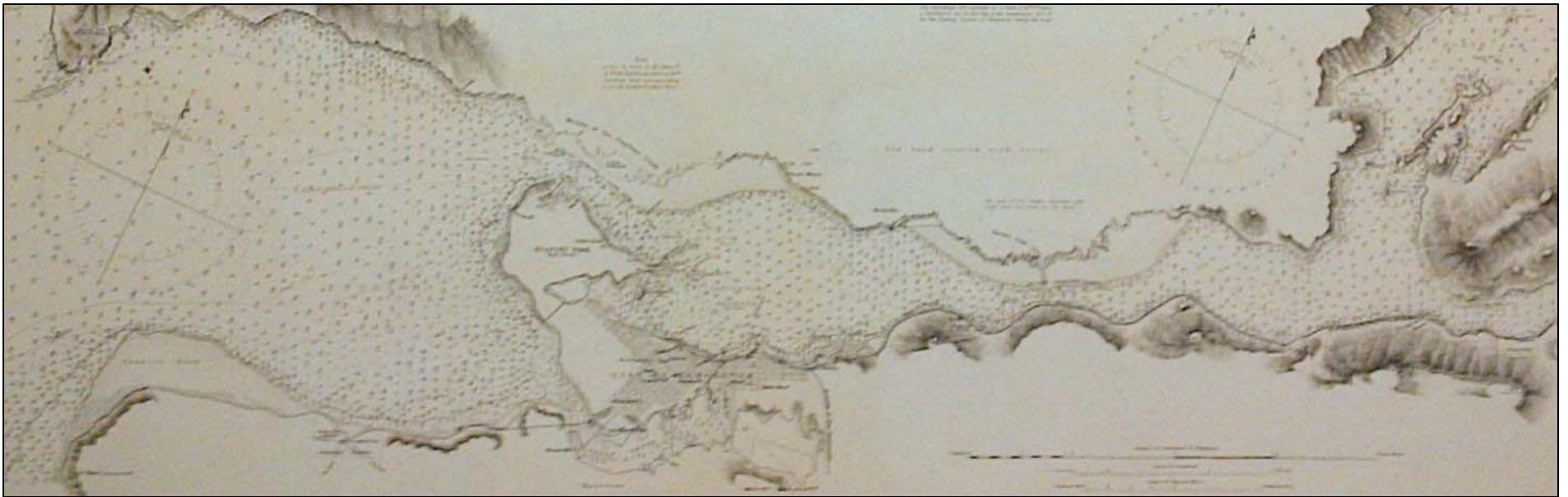
PEOPLE *of the* INLET

A First Nation History and Approach to Acidification in Burrard Inlet

John Konovsky, *Biologist*

Jesse Morin, *Consulting Archaeologist*

1891 Burrard Inlet Chart



Core Territory of the Tsleil-Waututh Nation

st Nation Climate Change Concerns

Water Resources
Land Flooding
Coastal Erosion



Acidic water blamed for scallop die-off

RANDY SHORE

VANCOUVER SUN

Ten million scallops that have died in the waters near Qualicum Beach due to rising ocean acidity are the latest victims in a series of marine die-offs that have plagued the West Coast

for 10 years.

Human-caused carbon dioxide emissions in the atmosphere are being absorbed by the ocean and may have pushed local waters through a "tipping point" of acidity beyond which shellfish cannot survive, according to Chris Harley, a marine ecologist at the

University of B.C.

Rising ocean acidity is a global phenomenon, made worse by higher natural acidity in local waters, Harley said.

"I've seen pH measured down to about 7.2, so this is very much within the realm of possibility, though unfortunate and extreme," he said. "We

are in a hot spot in the Pacific Northwest."

The lower the pH, the higher the acidity. Local waters are typically a much-less-acidic 8.2.

High acidity interferes with the ability of baby scallops to form a protective shell, forcing them to expend more energy and making them more

vulnerable to predators and infection.

"When the pH goes down, it's a lot harder to build that shell and we've seen that in a lot of other species in the lab," said Harley. "It interferes with everything they do, their basic physiology is affected."

Nanaimo-based Island

Scallops has shut down its processing plant and laid off 10 people, almost one third of its workforce. The company is a marine hatchery and scallop producer with more than 500 hectares in production.

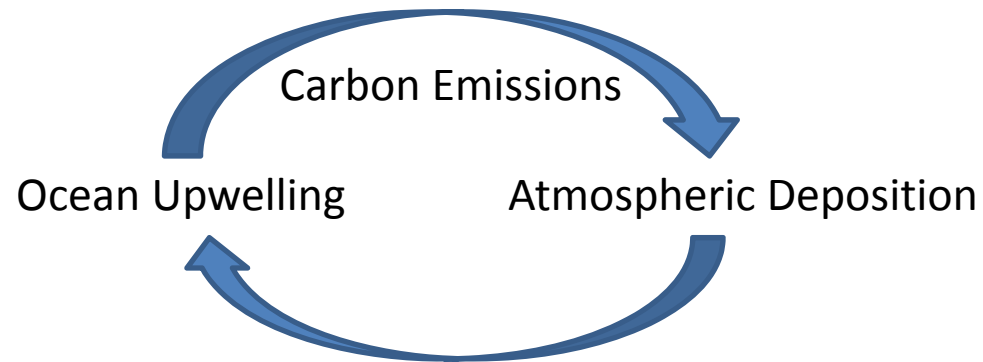
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Vancouver Sun Newspaper, 2014/02/26



Select Causes of Acidification

Climate Change

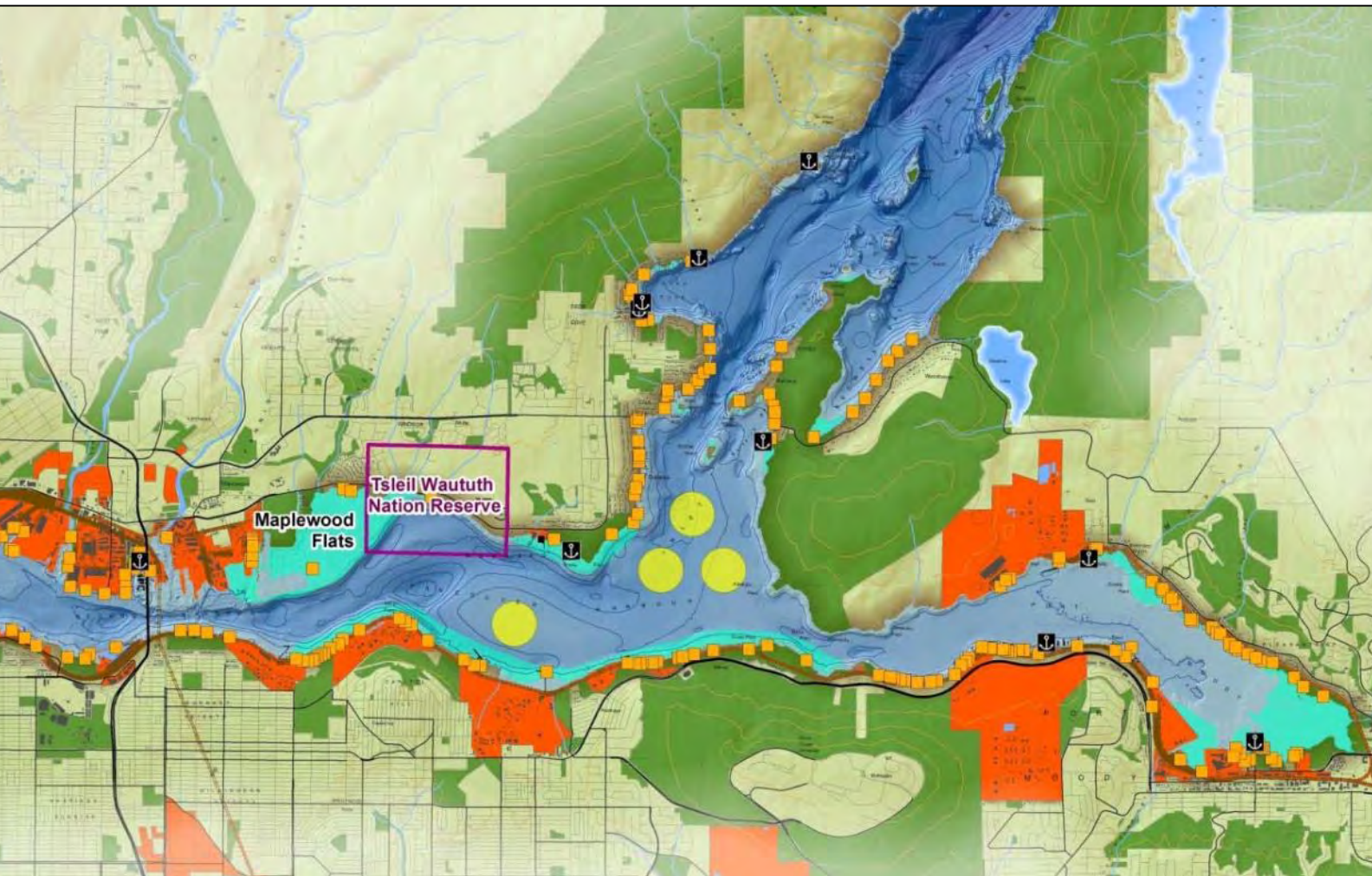


Stormwater, Wastewater & Industrial Discharges

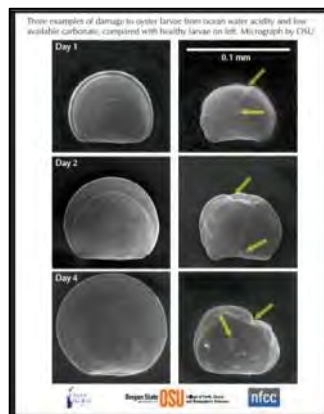
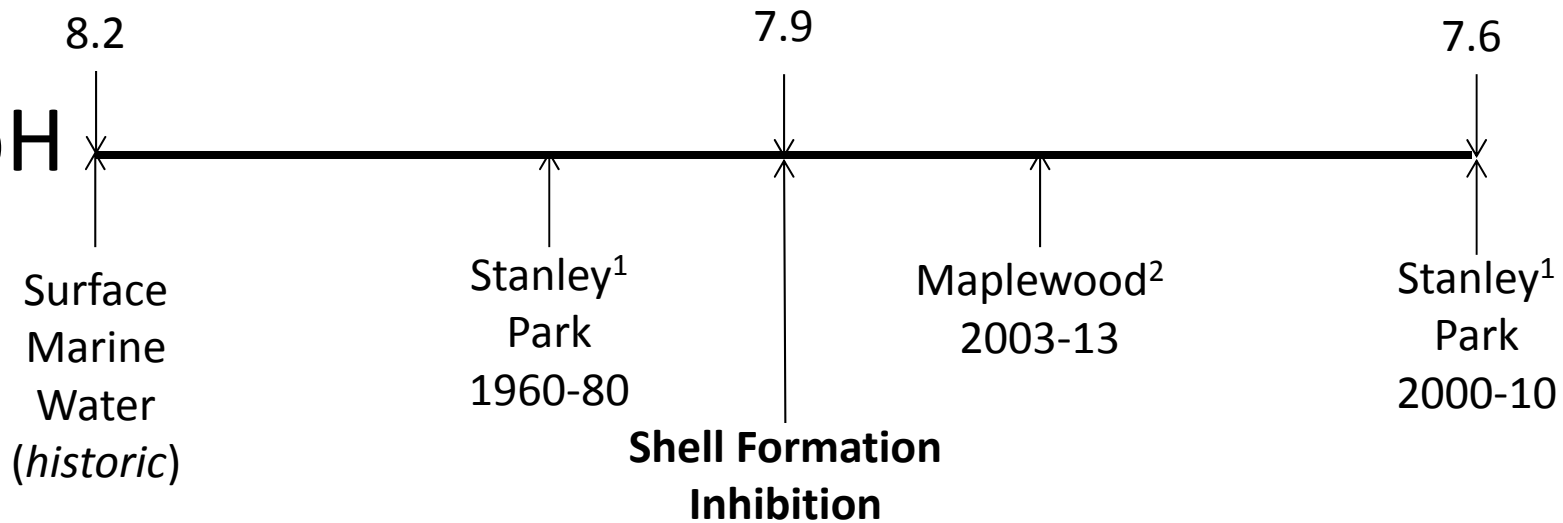
Excess nutrients leading to algae blooms & CO₂ release at death



Eastern Burrard Inlet: sources of acidification



Burrard Inlet Acidification Trend



Acidification in Burrard Inlet Well Underway by 1980...



Maplewood Flats

Common Burrard Inlet Bivalve Species¹

Butter clam



- Soft-shelled clam



Littleneck clam



- Varnish clam



Cockle



- Oyster

- Olympia, then Pacific



Burrard Inlet

Bivalve Species¹ Relative Abundance

Species Abundance	Archaeological Record	2013-14	Relative pH Sensitivity
Soft-shelled Clam		1	Low
Varnish Clam		2	
Butter Clam	1	3	High
Littleneck Clam	2	4	
Cockle	3	5	High
Oyster	Locally abundant ²	Rare ³	Extreme

First Nation Solutions

Reduction of carbon footprint

Control or treatment of stormwater, wastewater & industrial discharges, especially **nutrient removal**

Local restoration —based on Washington’s Blue Ribbon Panel



Photo courtesy of Shelly Solomon

Increased public education & acceptance

*“When the tide was out,
the table was set”...thank you*

