TRADITIONAL SEAFOODS OF VANCOUVER ISLAND FIRST NATIONS

BALANCING HEALTH BENEFITS WITH POLLUTION RISKS

Caught in the crossfire: environmental contaminants in Pacific food webs and implications for coastal First Nations

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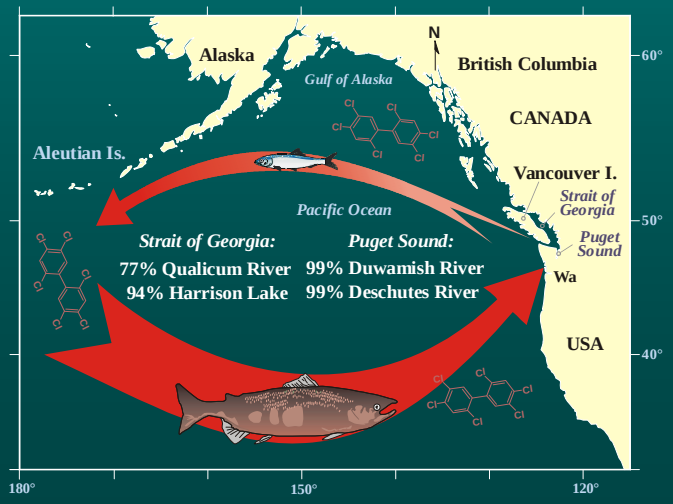
IOS

Persistent organic pollutants (POPs) in the NE Pacific

"British Columbia's killer whales are the most PCB-contaminated marine mammals in the world…" (Ross et al, Marine Pollution Bulletin, 2000)

- Harbour seals reveal Puget Sound to be a local PCB hotspot (Ross et al, Environ Toxicol Chem 2004)

- Salmon are importing POPs from the open Pacific Ocean (Cullon et al, Environ Toxicol Chem 2004; Ewald 1998; Krummel et al 2006)



“Is it safe to eat traditional seafoods…?”

-Letter from association of Vancouver Island First Nations to Health Canada, Fisheries and Oceans Canada, and Indian and Northern Affairs (2005)

The ocean has provided food for humans for 90,000 years

- Coastal peoples around the world have relied on fishing, whaling and intertidal invertebrate harvesting for food, social and cultural practices.

Aboriginal Peoples of coastal British Columbia are intricately linked to the Pacific Ocean

- 70,000 aboriginal persons (First Nations) live in ~120 communities on the coast;
- There is a >10,000 year history of living ‘off the ocean’ and its bountiful supply of foods;
- This tradition continues today, but there have been major social, cultural, health, and lifestyle changes since European and Asian contact in the 18th,19th and 20th centuries.

Our collaborative project: "Is it safe to eat seafood?"

- How contaminated are traditional seafoods? (measure PCBs, PBDEs, pesticides and metals in selected species)
- How important are traditional seafoods? (conduct survey-based interviews with 300 First Nations individuals in 5 communities)
- Is it safe to eat these seafoods? (conduct risk assessment with Health Canada nutritionists combining steps 1 and 2 above)

We partnered with five coastal First Nations on Vancouver Island

Quatsino

Weiwaikum

Ahousaht

Snuneymuxw

Pacheedaht

We selected four ‘sentinel’ species to sample for analysis at each community

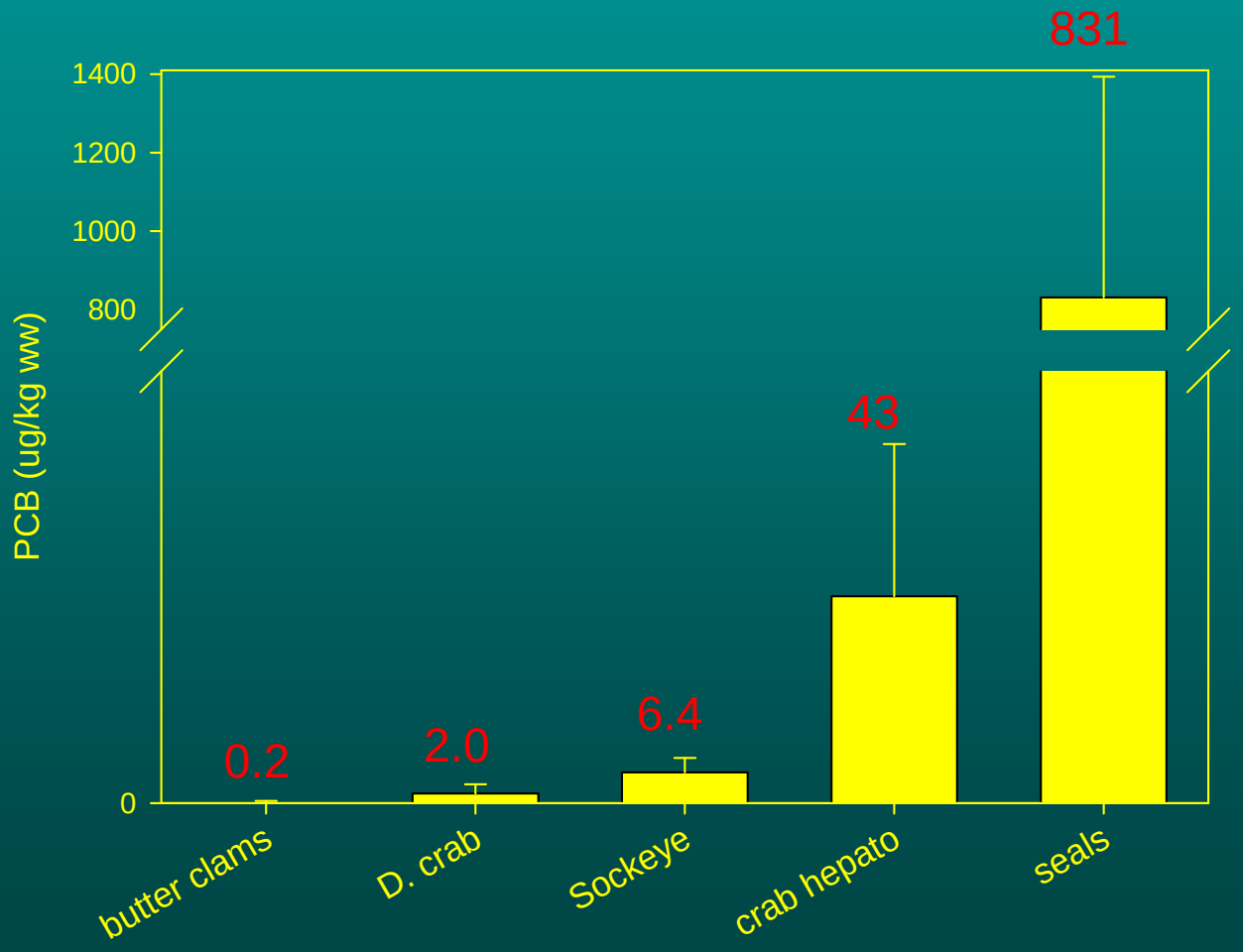
Harbour Seals

Dungeness Crab

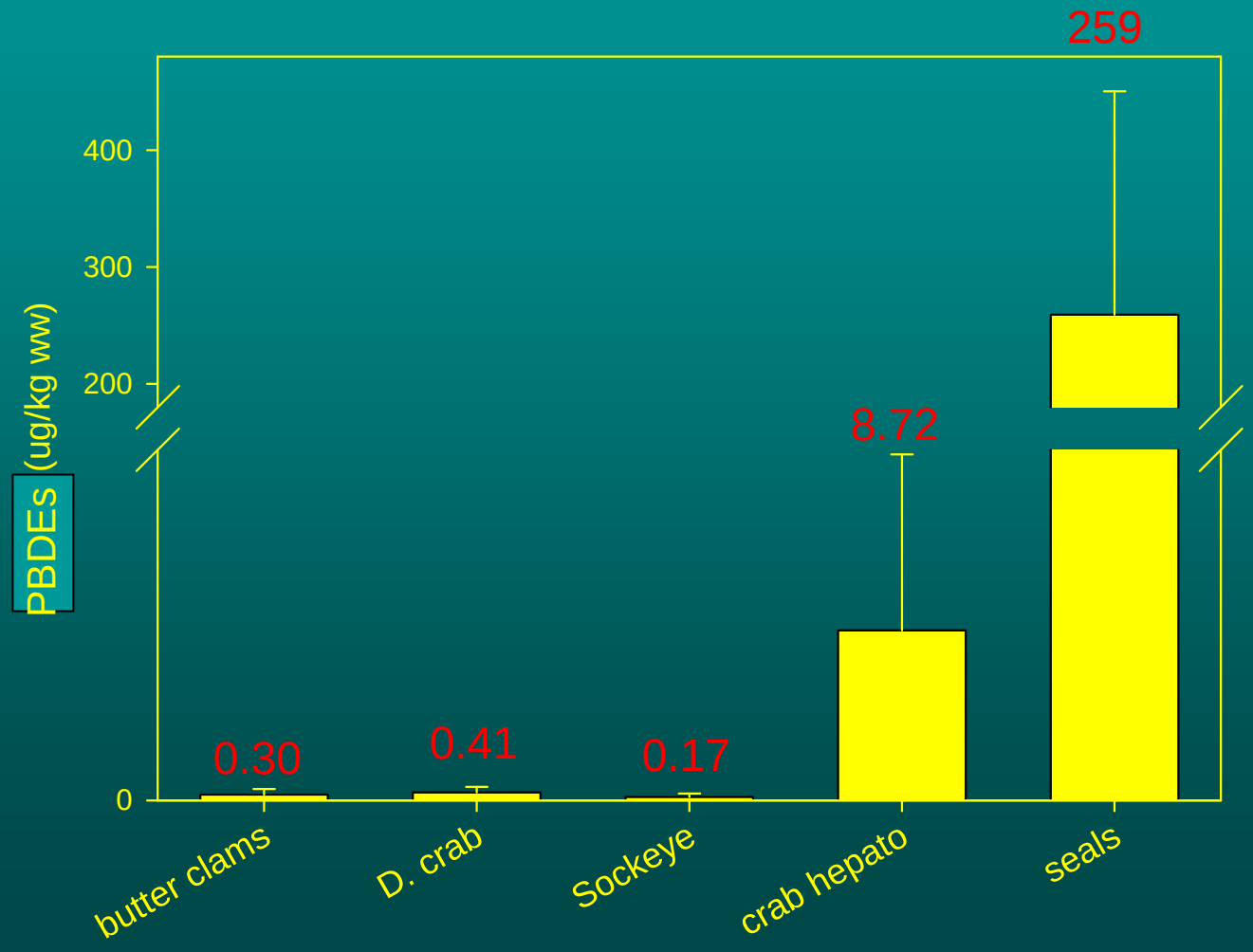
Sockeye Salmon

Butter Clams

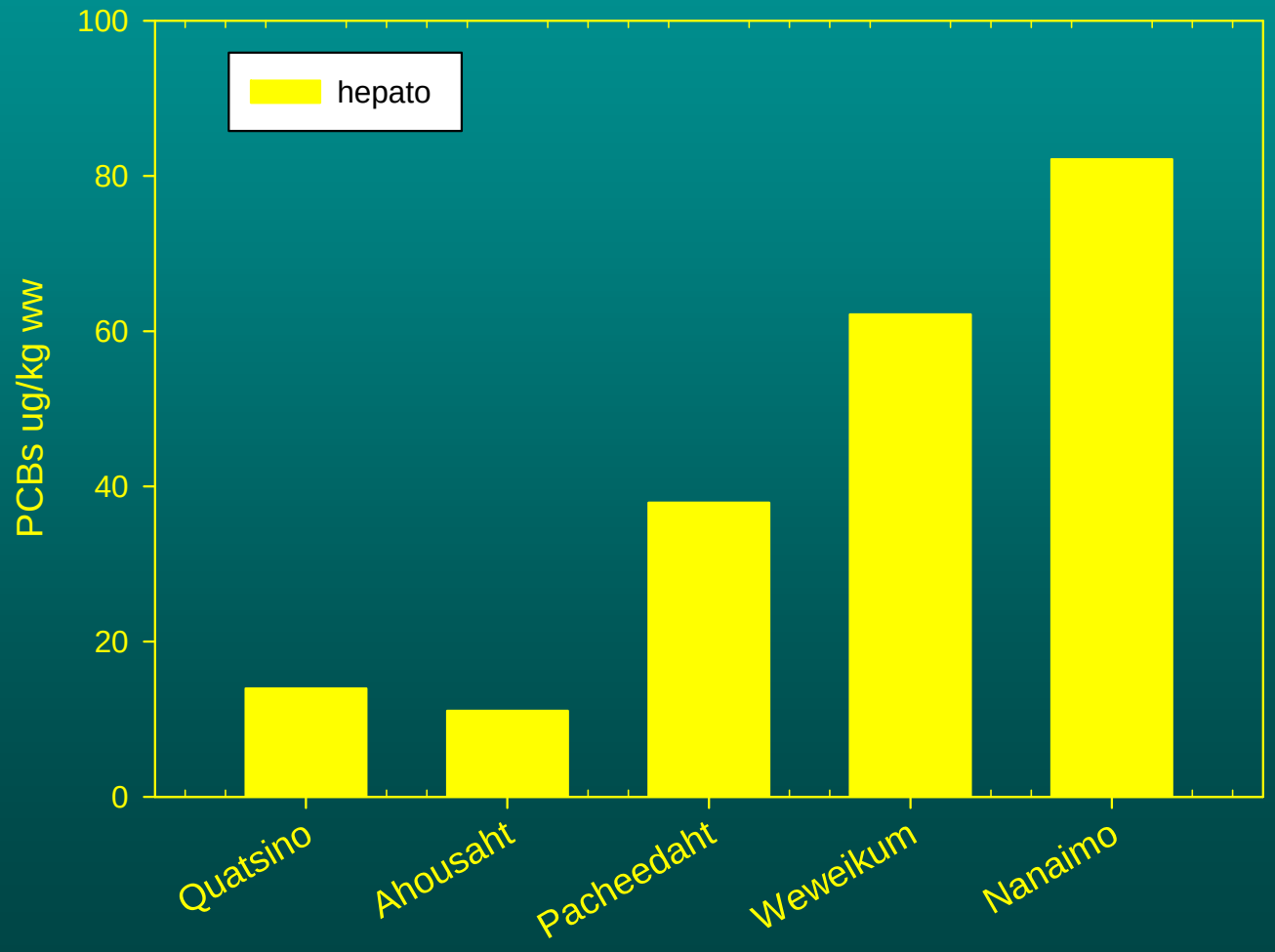
Banned PCBs are present in all traditional foods, but higher concentrations are found at the top of the food web



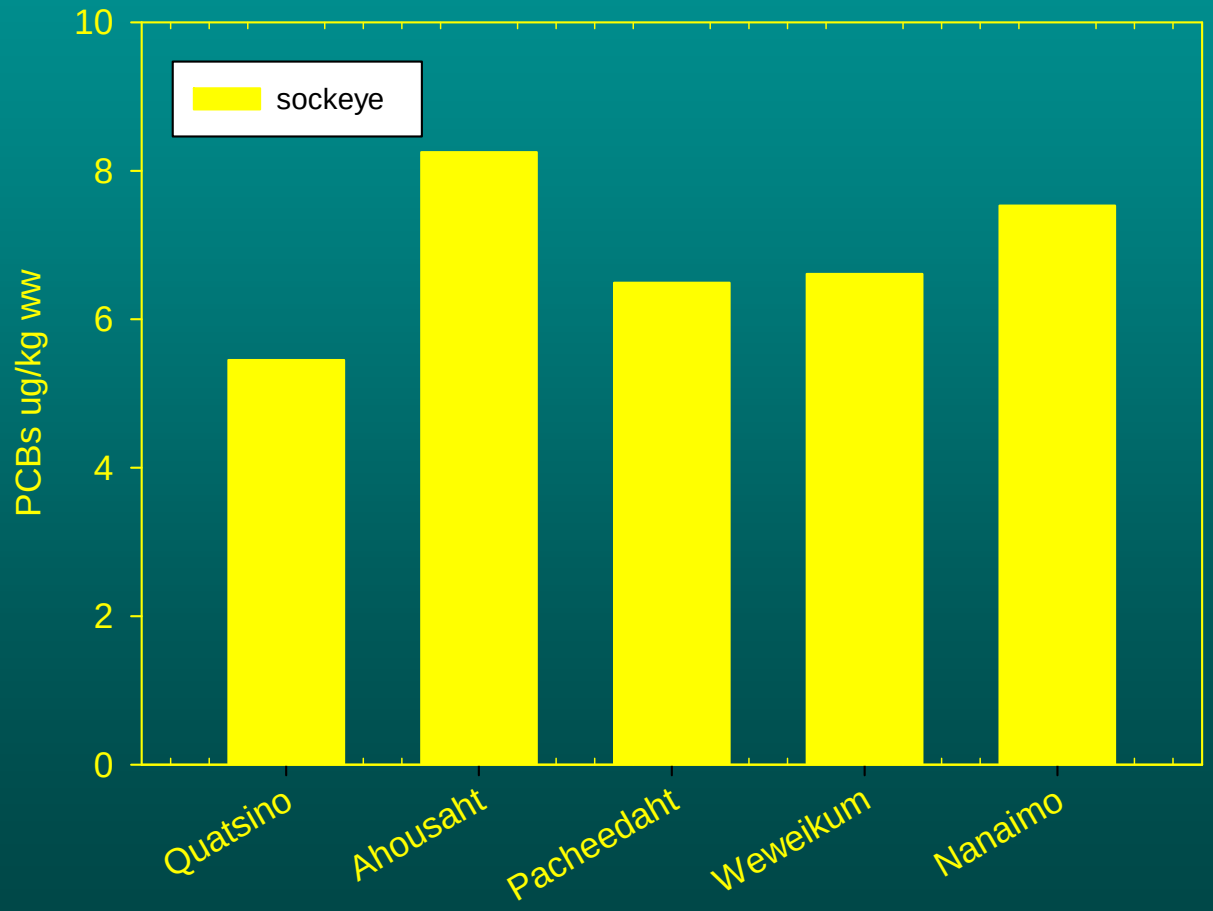
Currently used PBDEs are also present in traditional foods



PCBs in crab were lowest on the more remote west coast of Vancouver Island, and higher near urban areas



PCBs are uniformally low in sockeye salmon



How important are traditional seafoods to coastal First Nations?

- Interview-based dietary surveys conducted with over 300 individuals in five communities;

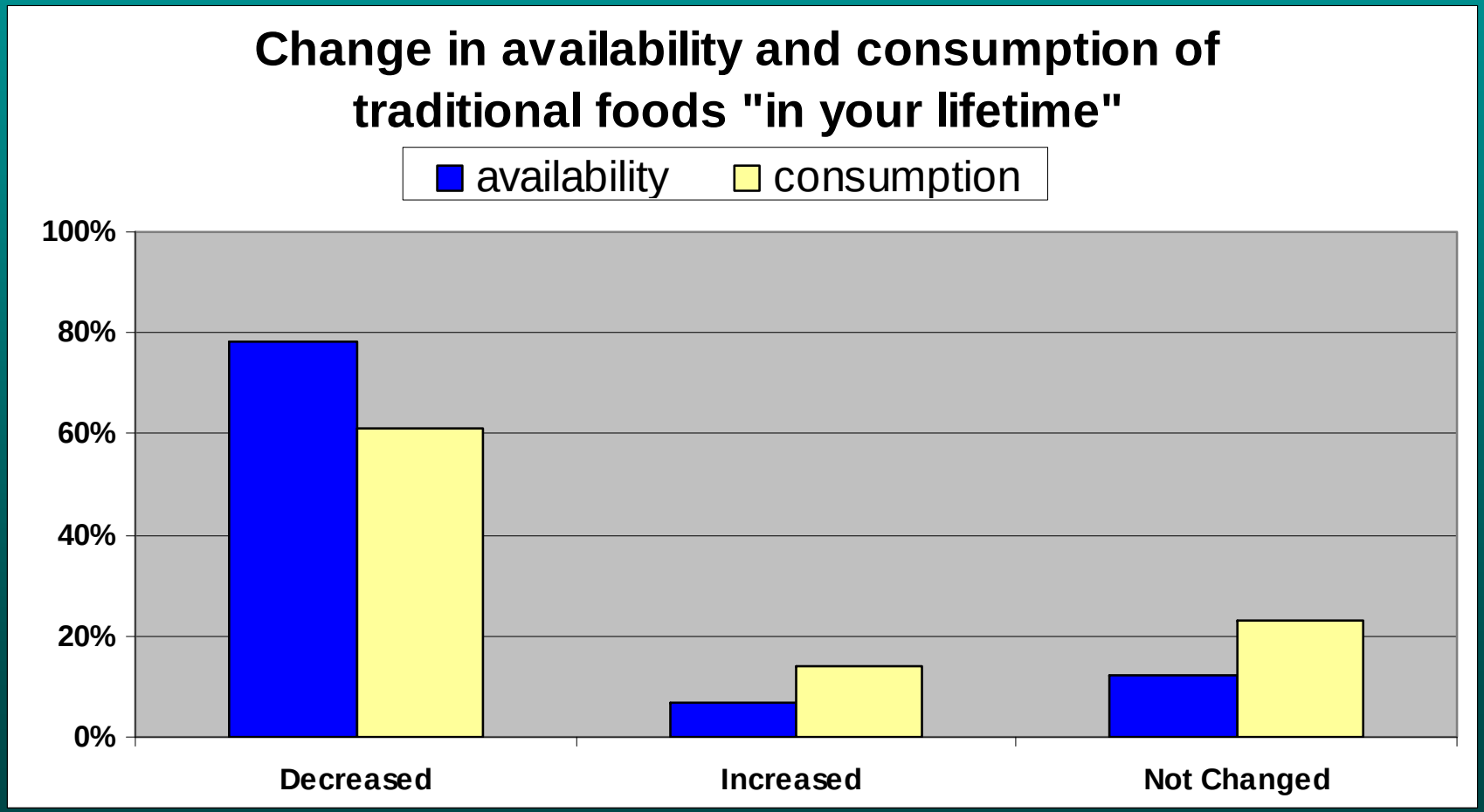
- 12-page survey was comprehensive: 1.5 hrs;

- First Nations graduate student + local First Nations representative conducted the interviews;

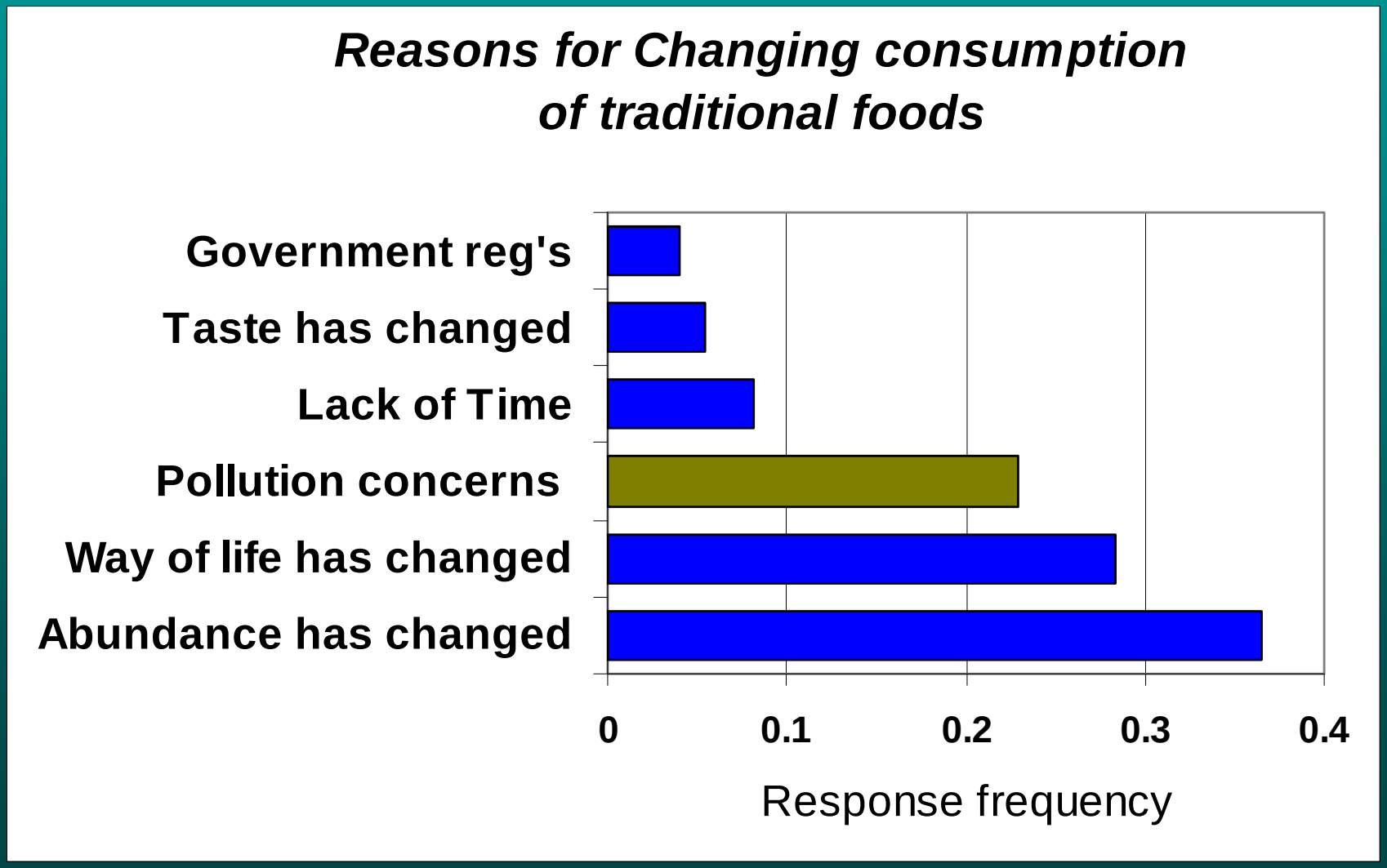
- Results form the basis for a risk-benefit assessment;

- this study, combined with our earlier work with the Victoria-area Sencoten First Nation (Mos et al 2002), provides much needed information on traditional food consumption in coastal British Columbia.

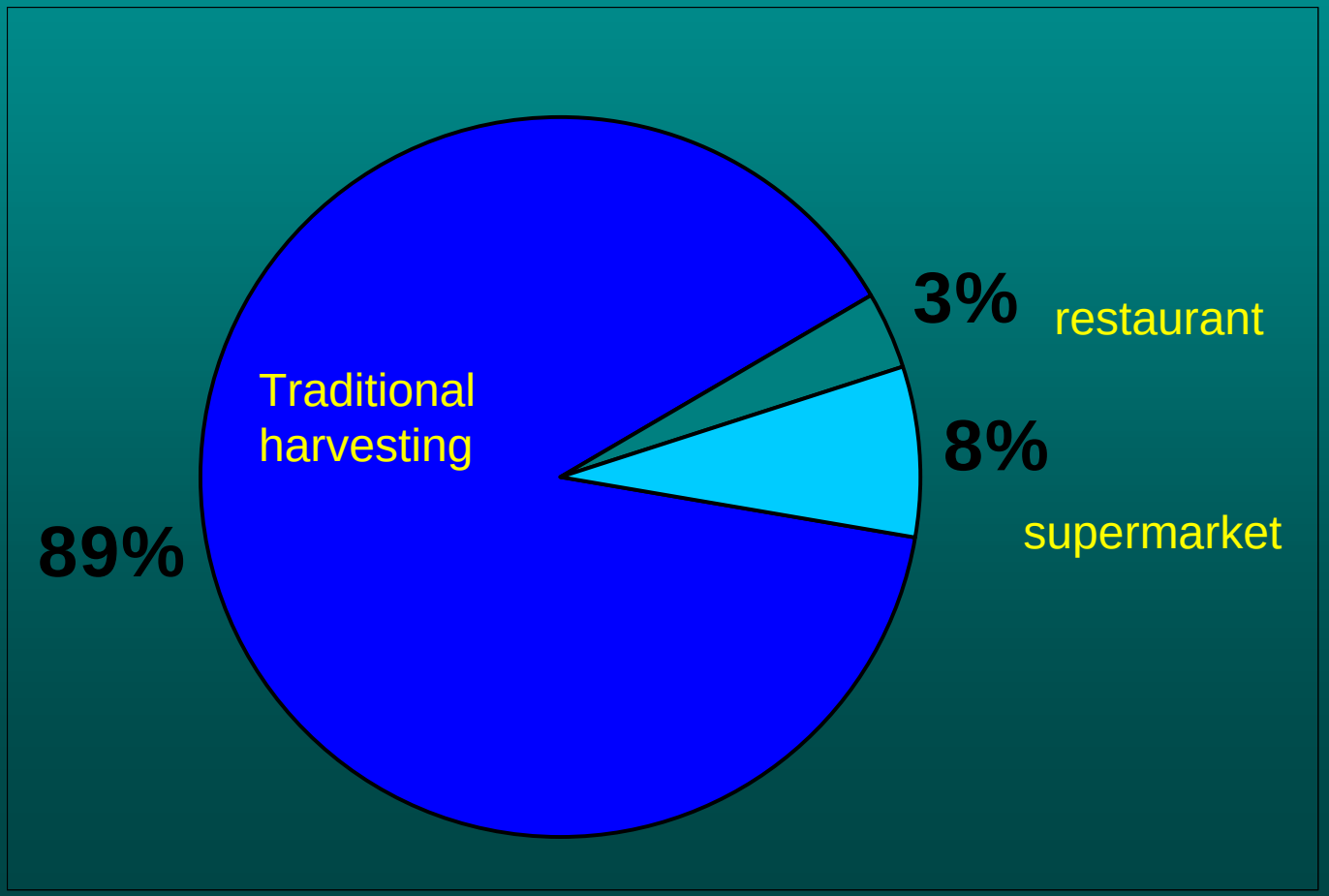
The majority of respondents feel that availability and consumption of seafoods have changed



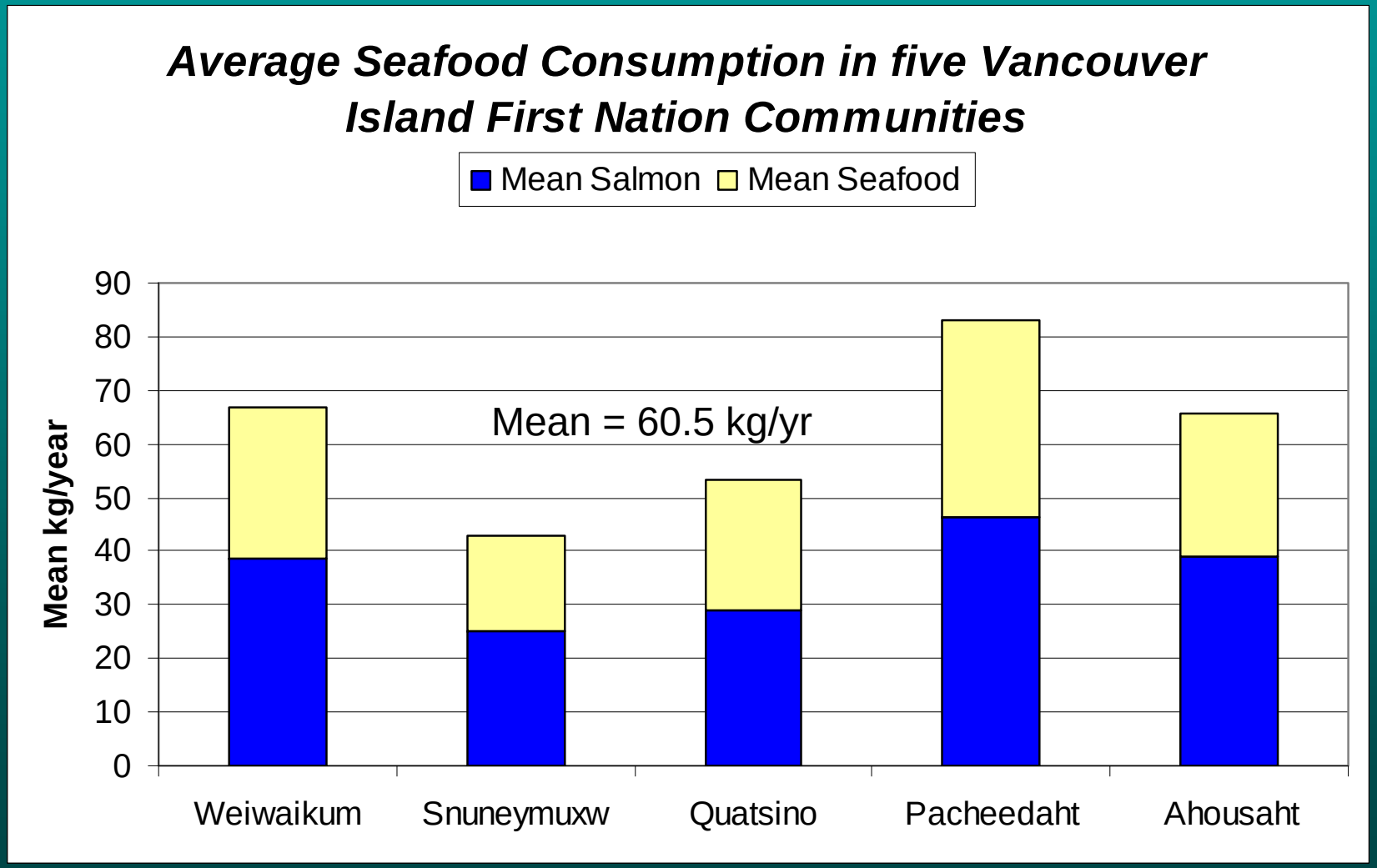
Pollution was cited by 25% of respondents as the reason for the decrease in their consumption of traditional foods



Despite ready access to supermarkets, local harvesting in coastal waters was important



Heavy seafood consumption, with salmon being very important



Traditional foods are very important to aboriginal peoples in Canada

Consumer group	Annual intake aquatic foods (kg)	Annual intake of PCBs (ug/kg bw)	Reference
Average Canadian	4.4	2.9	Conacher 1993
Mohawk FN (Quebec)	8.4	10	Chan 1999
Sencoten FN, (Saanich BC)	24.5	?	Mos 2004
Heiltsuk FN (Bella Bella)	56.8	?	Our study 2007
5 Vancouver I. FN	60.5	?	Our study 2007
Inuit, Arctic QC	109.5	110	Dewailly 1994; Ayotte 1995

Risk assessment is now being conducted by a graduate student, UNBC and HC;

An early way to compare PCBs in traditional seafoods:

1 kg harbour seal blubber…

= 19 kg Dungeness crab hepatopancreas

= 130 kg sockeye salmon

= 416 kg Dungeness crab meat

= 4,155 kg of butter clams

We taught, we learned and we engaged at the community level

Our project combined, science, Traditional Ecological Knowledge, art, music, games, harvesting, meals, recipes and children

Healthy oceans = healthy peoples

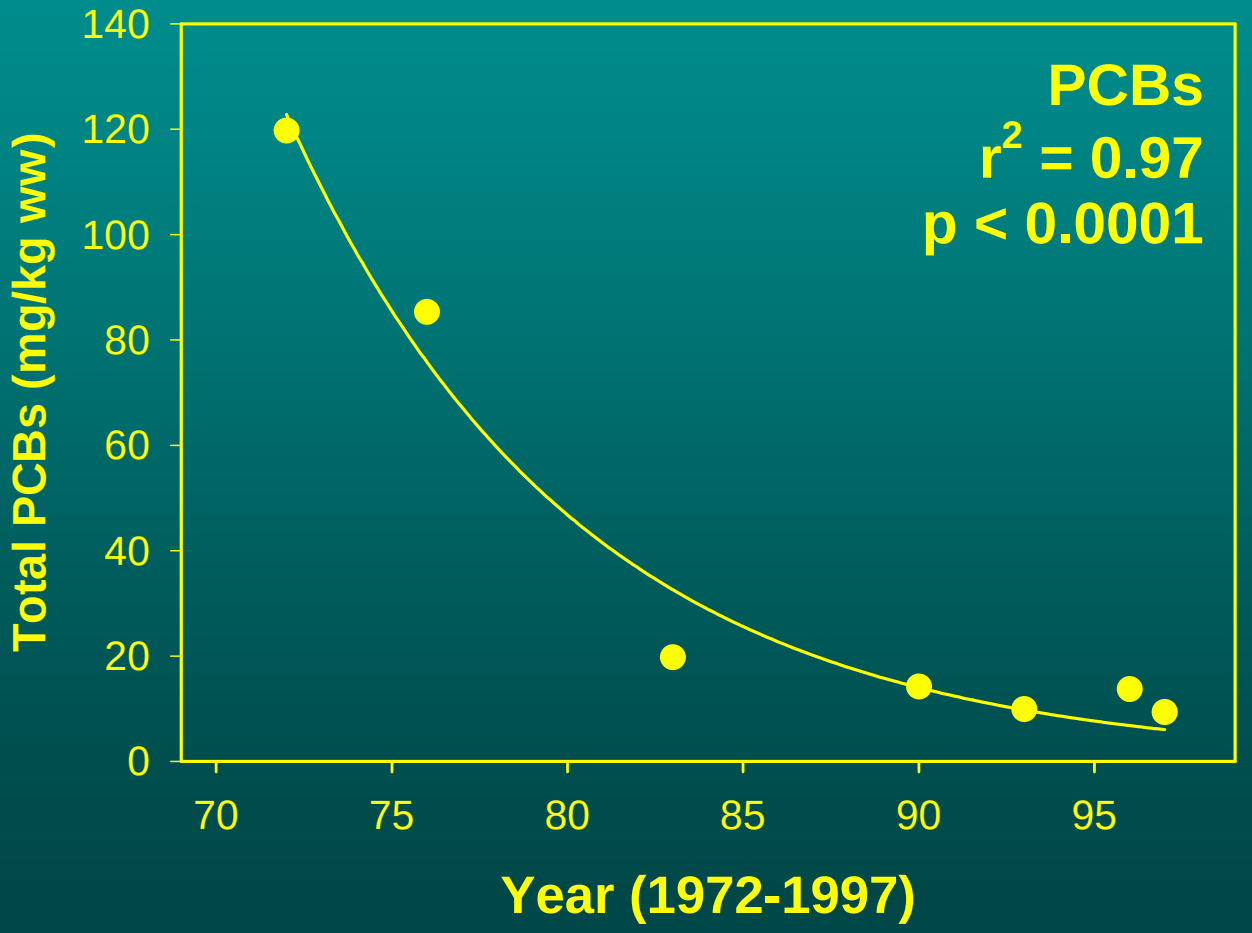
Thank you.

Many thanks to those that make this possible:

- Elders and community members
- Quatsino, Wewaikum, Ahousaht and Pacheedaht First Nations
- Loraine Littlefield and Snuneymuxw First Nation
- Pam Morrison, Karen Fediuk, Laurie Chan
- Zoltan Fabian, Constantine Tikhonov
- National First Nations Environmental Contaminants Programme (HC)
- Fisheries and Oceans Canada (Institute of Ocean Sciences)
- Vancouver Island Region Wildlife Management Society
- Vancouver Island University

Photo credits: Nancy Turner, Mark Kiemiehl, Graeme Ellis, and Peter S. Ross

Regulations can help:
PCB concentrations declined in harbour seals after they were banned in North America



(Calambokidis et al. 2005)

PBDEs are currently used, and levels in seals and fish are doubling every 3.5 years