

1. A research team is looking in the murky shallows of Roberts Bank to study how juvenile salmon are moving there and using the Fraser R estuary. There is a big hole in terms of what salmon are doing and this research is because Port Man is proposing a \$2 Billion container expansion plan. The Pacific Coast Consortium (Expansion) Foundation is funded by Pacific Salmon Foundation, Marine Environmental Observation, Prediction & Response network & Pacific Institute for Climate Change. Early seine results showed the juvenile salmon closer to the shoreline but recently they've been showing up more often farther offshore. All species are identified, sized & counted & habitat noted. The area between the causeway & the port & ferry terminal has more sedges due to sedimenting by the port & protection from the Fraser River's muddy plume. One theory is that the causeway may <sup>play</sup> act as a barrier to the movement of juvenile salmon forcing them to move out deeper & saltier water before they're ready. They have also repeatedly documented what appears to be streams of coal dust on the water surface at Westshore Terminal. It has been reported to Co. vice president with a photo but he declined to address it & said the Co. has spent millions on environmental upgrades over the years, uses mobile air monitoring units & publishes air quality results well below regulatory limits - very little coal seepage from Westshore to claim. This research is part of 5 yr Salish Sea Marine Survival Project.

2. What is permafrost - it's a very ground that remains at or below 0 C (32 F) for at least 2 consecutive years & often indefinitely. It occurs where summers are not warm enough to thaw the surface and this includes our north Arctic region. It's home to many species Arctic hare, Arctic fox, caribou & quizzies. It also stores lots of carbon the release of which propels climate change. How carbon got there. In temperate climates dead organic material (plants & animals) decays & breaks down by bacteria which releases carbon into atmosphere, but in the cold Arctic material freezes & locks up the carbon. This build up of

carbon has been going on for 1000's of yrs and is now becoming  
 toxic till 1990's shallow permafrost has been warmed  
 considerably & as it thaws and the earth softens the impact  
 on northern communities is significant even in town  
 in Inuvik the Fire Station sunk into the ground & they  
 were considering relocating the town. These changes will  
 be challenging for Northerners especially the <sup>for</sup> traditional  
 food sources, also moving <sup>on</sup> the land will be more  
 difficult - the ice roads will break down these routes  
 are very necessary as they provide the links between  
 communities. Also fresh exceptions flood turning them  
 into wetlands for places where there were plentiful  
 species like caribou are harder to find so food security  
 is at risk. Impacts of thawing permafrost are compounded  
 during the summer growing period as the plants take  
 in carbon or reducing it in the air & as such, acts as a  
 carbon sink but as this climate change progresses  
 and the growing season is longer so more carbon is taken  
 in however the thawing of permafrost organic material  
 that's been frozen would begin to slowly releasing methane  
 this is a potent greenhouse gas trapping heat 20x as effectively  
 as CO<sub>2</sub>. A warming bubble could lead us into a positive  
 feedback loop where methane released from the  
 thawing increases global temp which in turn causes  
 more permafrost to melt & more methane to be released  
 & so on until we lead into a full fledged climate change  
 become unstoppable. There is still some discussion  
 as to the severity of this permafrost problem - not some think  
 this sentiment aren't proven - as the warming of the arctic  
 will cause more above ground biomass to be stored  
 & where the carbon balance will ultimately lie is a bit  
 uncertain & that's where there is room for hope and  
 pessimists are hoping that the feedbacks from melting  
 won't be as bad as we think. Scientists <sup>are</sup> ~~are~~ working  
 at this <sup>now</sup> ~~that~~ over the last decades, especially good scientists,  
 doesn't keep ~~attract~~ <sup>com</sup> most <sup>of</sup> their works and funding  
 has been cut. They are hoping this new grant will  
 restore that so we need to remind our MLAs of this  
 priority!

BC Auditor General's office wants to investigate grizzly bear management in the province, BC Wildlife is happy about that. They would like to see frequent existence of the pop as well as studies on cumulative impact on the species. There was a private member's bill in 2015 saying people should be harvesting edible portions of grizzly carcasses from the field but they don't expect that to carry any weight as the motivation to kill grizzlies is done for sport & sometimes for profit. The purpose of the audit is to see if Ministry of Environ & Ministry of Forest & Land Natural Resources are effectively managing grizzly bear pop. of BC. About 37% of BC is closed to grizzly hunting. The province has created 3 grizzly management areas on the Queen Bear landscape totaling 1.16 M H. 470,000 H of which were previously open for hunting. The grizzly bear hunting is carefully monitored thro: limited hunts for residents & a quota for guide outfitters. The province estimates the current grizzly bear population 15,000 with an average 292 bears killed annually in the past 5 yrs by licensed bear hunters just under 2% annually of total pop. The reason for the report investigation the grizzly management is that different incremental <sup>groups</sup> & specifications have seen the publication of a peer-reviewed journal PLOS ONE which has analyzed 35 yrs of grizzly bear mortality data in the province. It suggests the govt is failing to keep kills below its upper target for bears killed by human and that govt limits on bear mortality are regularly exceeded in management areas throughout BC due to the trophy hunt. The hunt was opened in 2015 so they question the so called science-based hunt. Grizzlies have been eliminated by 1870 in their original habitat because of human impacts on habitat & other pressures. Data on where & when how many grizzlies are shot in province should be clear & available to everyone.