**Canadian Geography 1202 Unit 1: Systems Thinking Name:**

**Arctic melting: definitely not a good thing**

Paul

[Paul Smith](http://www.thetelegram.com/Author-Paul-Smith/6112/1)

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The data is pretty much in and we are certain that salmon returns for 2012 were way down from the previous two years, 2011 and 2010. That’s no surprise to anglers, although many were blaming low and warm water conditions for the lackadaisical response of salmon to our fur and feather offerings.

No doubt, we were partly correct in our optimistic midstream assessments. Cool water running at decent levels is always best for salmon angling.

Summer 2012 was one of the hottest and driest that I’ve ever witnessed in my 50 plus years. Labrador felt like Florida. I measured the Pinware’s typically cool water one sunny July afternoon and was shocked as the mercury shot to 23 C. Make no wonder the salmon were lethargic and slow to attack my Blue Charms. Luckily it rained that night and things cooled down a bit.

We anglers are known for seeing the world through rose-coloured glasses. Actually most of us use amber to better see our flies, but a more optimistic bunch of people you will never find focused on a common goal.

We have to be that way; if you want certainty in recreation you’d be better advised to take up golf or soccer. The ball will always be there, and is certainly less prone to moodiness and sulking.

Salmon have a mind of their own. But this summer we had the double whammy. Not only were the angling conditions super poor, but the numbers of fish were way down. We reasoned through are rosy lenses that the fish were out in the bays waiting for rain.

We angled in hope that our beloved salmon would come rushing into their natal rivers with the August rains. There were no August rains. Finally, in September, it poured, but the fish were not there. For reasons that elude both anglers and scholars, their numbers are down. We are disappointed.

In a recent news release, the Atlantic Salmon Federation announced that salmon numbers in most Canadian rivers are seriously down. In Newfoundland, river returns declined by an average of 25 to 30 per cent from 2011, with some individual rivers down by around 50 per cent. But remember, 2011 was a bumper year. There is still hope.

The mystery that nobody has a concrete answer to is the reason. What we do know for sure is that salmon are disappearing in the ocean in numbers greater than ever before. That’s why, in the absence of a commercial harvest, runs of salmon are a fraction of what they were in the ’50s and ’60s.

We need to figure out how to sustain salmon into the future and retain and revitalize a sport dear to our hearts. Will our grandchildren enjoy the privilege of battling wild salmon with rod and reel?

There are easy speculative answers: the seals are eating all the salmon and illegal netting by foreign countries is wiping out our stocks. These sorts of obvious responses often have an element of truth, but real reasons are often more complex. Most often, there’s a bunch of factors influencing the population dynamic at the same time. Nature is mysterious, entangled, and multifarious. Even airplanes rarely crash for one reason alone.

I read about something recently that got me wondering about dire consequences for salmon. The ocean is changing and, for the most part, the world is sitting on its duff. Scientists have been investigating acidification in the ocean and the effect that it is or might be having on life in the ocean. This research started in tropical parts of the world where coral reefs are being threatened by increasing acidity of ocean water.

The ocean absorbs carbon dioxide from the air — that’s the byproduct of us burning fossil fuels with reckless abandon, and through a chemical reaction becoming more acidic. Acid not only dissolves coral, but also is deadly to oysters, crabs, shrimp and plankton. Acidity threatens the very foundation of the ocean’s food chain.

For the past couple of summers, expeditions have investigated acidification of Arctic waters. That’s hitting pretty close to home for Atlantic salmon. Salmon feed on the stuff that acid kills.

The whole problem stems from global warming and CO2 emissions. When the Arctic Ocean kept most of its ice cover throughout the summer, there was no problem. The water could not absorb CO2 through the ice. This is changing at an absolutely alarming rate, actually 50 per cent faster than scientists predicted. There has been a melt record in the Arctic for each and every one of the past six years. This is obviously very bad for whales, seals, walruses, polar bears and, who knows, maybe even salmon.

Nowadays the Arctic waters are in contact all summer long with the atmosphere, and sucking in acid causing CO2 like never before. While shipping companies and oil exploration groups are clapping for joy, the very base of the ocean food chain may be under attack. Warming Arctic waters will drive the polar bear to extinction while opening up new avenues for money-making resource entrepreneurs.

I’m on the polar bear’s side. I’m not sure about our government. During a recent trip to the north, Prime Minister Stephen Harper confirmed that sovereignty and resource extraction are his government’s priorities. He didn’t say anything about polar bears or seal hunters.

The coldness of Arctic water makes the region even more vulnerable to acidification. That’s because cold liquids absorb gases much more efficiently than warmer ones.

That why warm beer goes flat so quickly. Arctic water is typically at zero degrees all summer long.

Losing the Arctic Ocean’s ice cover is like medieval armies going to battle without shields. The arrows will stick deep into unprotected chest cavities. Ice protects the vitals of the Arctic ecosystem.  I’m afraid we are opening a Pandora’s Box here, setting in motion a chain of environmental catastrophes that we will have no control over.

 Our fisheries here in Newfoundland depend on cold, nutrient-rich water flowing from the north. Those nutrients and tiny organisms, the foundation of the North Atlantic’s food chain, might be at risk.

Salmon and many other fish may suffer, or might be already suffering from the effects of Arctic melting.

We need to support any measures possible to reverse this warming trend. I expect economic minded resource developers and those with an environmental conscience might find themselves at odds.

I’m no expert on marine ecosystems, but I really think us outdoor people should be thinking about stuff like this.

*Paul Smith, a native of Spaniard’s Bay, fishes and wanders the outdoors at every opportunity. He can be contacted at* [*flyfishtherock@hotmail.com.*](mailto:flyfishtherock@hotmail.com)

**Assignment: Answer the following questions and submit at the end of class.**

1. Explain how salmon are influenced by water temperatures and water levels.
2. Describe the change in Atlantic salmon numbers from 2011 to 2012?
3. What are two general reasons offered for the decline in salmon numbers in the ocean?
4. Explain what is meant by “ocean acidification” and how this occurs.
5. Discuss the impact ocean acidification is having on the ocean ecosystem.