Interview with Jason Mcnamee - Haida Salmon Restoration Corporation
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Sciences Po Paris, 2014
Date: March 14, 2014.

1. In the Haida Salmon Restoration Corporation website, you show the following quote by Robert Swan: "The greatest threat to our planet is the belief that someone else will save it." Can you explain to us how this explains the mission the Corporation has?

Having gone through this process in 2008, the more research you do for climate change and ocean change, you consider action vs inaction; the more you go into this topic, the more you realize no substance is really occurring. It sounds provocative, but that's the truth. I've been to the UNFCCC, we're all there for the same reason which is to find a global solution. We're ignoring the ocean - being 70% of the planet, it buffers all the CO2 that cleans the atmosphere now, they are becoming acid.

The oceans determine rainfall, you don't have enough data on the oceans, on what's happening there. If you take a step back, and you look at Haida people, they've been in the same location for almost a thousand years, it's at the confluence of two separate spots of ocean, its well known for its fishery, but it's 2m above sea level. Their main source of protein - the salmon - is diminishing in quality and they've also watched their reserve lands being eroded. How to expect the Government of Canada is going to do something, they're clearly not. No one has done anything of any significance to resolve this. That's the reason for that quote, they have responsibilities to their children and their town's future and societies to do something.

2. Can you tell us more about how you got involved in this project and your expertise?

I am not what you might expect, I come from the prairies in the middle of Canada, my degrees are in biology and geomorphology, I spent over a decade working as a professional geologist in BC. I specialized in large scale mapping and ecosystems mapping, watershed restoration projects, and I started focusing on restoration project; I worked for over 5 years in Haida Gwaii from 1998 to 2003, we spent millions of dollars restoring salmon streams and forced watershed.

After 4 years, no fish were really coming back and so I asked the obvious questions to the department of fisheries and oceans where are the fish? You know, the ocean conditions, predators… It's ok to say you don't know. They don't know where baby salmons go once they leave the river, it's really unknown. So that's again how I started really focusing on it, we don't have this basic information, how can we make reasonable decisions about commercial fishing. I got really involved through this watershed restoration work and secondly this project was drying up because ecosystems restoration work is not profitable work, it's all tax paid by the taxpayers, there is no business model out there. A way to make a profit and not cause net

negative environmental effects. I always wondered how they shouldn't be a profitable way to restore and enhance the environment, but there isn't any. The only path to profit that I am aware of is the carbon market.

In 2007, all the money had run out to do the watershed restoration work, the government of BC had an offshore oil and gas commission and drilled the straits between haida and the mainland and we got to know about carbon credits and eventually in 2007, we were introduced to Russ George who told me about OIF and how it works. I did all the research which is very clear ever since John Martin did the experiment and found what was the missing ingredient.

It's very clear that every time iron goes into the ocean we have a resulted plankton bloom. It really made sense with the fact that the salmon weren't coming back, and planktons are disappearing. So if you have less plankton, less salmon (like grass and cows). The usual suspect is overfishing. In 2009 the river had a run that was catastrophic, the federal government called the judicial enquiry.

In 2010, all the salmon experts in BC, Washington met in vancouver hoping for a salmon run to occur and none predicted it. They have no idea what causes a large salmon run. In 2008, two years prior to this large run, a volcano blew up in the Aleutian island and dusted the entire gulf of Alaska with iron-rich dust causing the largest plankton bloom ever seen from space. There is no conclusive evidence for the causal link, but it makes sense.

3. Can you tell us more about what the Iron Hypothesis is all about or as you call it, the "Micro Nutrient Replenishment"? How does it relate to ocean iron fertilization and geoengineering?

The iron hypothesis was proved by Jim Martin in the late eighties. You have to understand the globe characterized by 72% of ocean, where there are plankton blooms. Those blooms are small parts of the ocean, they are found in shallow water, where there are currents from deep water, close to shore because rocks are iron rich. For instance, the mid-Atlantic is quite rich in plankton because of the Sahara desert.

But the rest of the ocean is high nutrient (lots of phosphorus to grow plants) low chlorophyll like parts of the ocean in the Antarctic. In fact, there are limited number of plants. What John Martin determined was the missing ingredient, the mineral micronutrient: iron. You need these very few parts per trillion of iron to change the conditions of the ocean from lifeless to full of life thriving part of the ocean. A fingerprint has more iron. This is the heart of the Iron hypothesis.

Iron, as a mineral micronutrient, is a sort of vitamin, this idea takes away somehow a bad connotation we have of fertilization in the oceans. When we think of fertilisation in the oceans, we all know that's bad. The shallow part of the oceans where there are always plankton blooms is much different from the deep open ocean (95%) which is where we are working.

4. How do you define geoengineering (GE)? What is the idea that in fact in a way, we are all geoengineers?

With respect of GE, GE is a large scale alteration of our planet, you can talk about the ecosystem, the climate system, the ocean system. The initial definition was provided by Daniel Keith and it was based in two continent scale manipulation of the Earth's environment. By definition, our project doesn't mean that sort of term, or something we thought being geoengineering. There is no path to profit that doesn't have a net negative environmental effect, our lifestyle contributes to GE.

5. In 2012, you carried out an iron fertilization experiment off the coast of Haida Gwaii. Can you give us a general overview in terms of the intention, the process and the results obtained?

Over the last 100 years, the citizens of Old Massett have seen their primary food stock shrink in numbers in a big way, and troubles their fishing industry. As they were looking for answers and to make the change, we formed the company to determine if in fact that was a method that would be able to restore fisheries in that area, and at the same time be able to sequestrate the carbon. If we conduct this experiment, which are the environmental net benefits or harms?

We took example of the volcano that had the largest plankton bloom ever seen from space, as a result no negative effects were measured, no one was there to measure if there were negative effects. As far as our project was concerned, people have warned against deep water deoxygenation, harmful algae bloom, etc. We should have seen those effects after the bloom caused by the volcano. In 2008, if those negative effects were true, we should have seen fisheries disseminated for instance. In fact, we didn't and we did see the largest salmon run ever, without negative effect.

6. Apparently, the article that began the controversy was published by The Guardian in October 2012 <u>entitled</u> "World's biggest geoengineering experiment 'violates' UN rules." The experiment is highly mediatized, why did it become a controversy?

My first answer: I don't know. I suspect it has to do with many different things. You can surf the web and it's clear that the ETC group is at the heart of this. They have been following Russ George for a long time and they broke the news. The first three days of hitting the news cycle, the ETC group was interviewed on CBC, CTV… They were all over, ready for us, and we weren't.

If you look at our response, we were blown away, surprised. The opposite report could have been equally as true, stating that an indigenous company was doing an amazing project. It could have been the other way. The controversy stems from the fact that they were support from green organisations and that's how the controversy started, it wasn't ultimately helped by our response.

7. Holly Buck of Cornell University wrote a report last month called "Village Science Meets Global Discourse: The Haida Salmon Restoration Corporation's Ocean Iron Fertilization Experiment" says something quite interesting about how this experiment was framed. Buck says that whereas the media framed it as a geoengineering experiment, your organization considered it more as a "village project." Can you explain to us why you consider your experiment not to be geoengineering and why it is not a large scale intervention, as has been claimed by the media?

We certainly come a long way in how to deal with the media and with people in general. Once we separated our way from Russ George, we decided to be as open and honest as possible. If you look at the facts,our work and our motivations, we are proud of our project! We are happy to work with regulators and eventually do it again. We hope to continue to do so, the best way to move forward is to have frank and open discussion. About Holly Buck, it's a good example: she came to us as a PHD student and found our work very interesting. We started working together, and the result of the article is the most factually report we can find.

We do not consider our project GE but it is the next logical step the humanity has to take concerning stewardship. We need to understand the oceans, the largest part of the planet, the buffer of CO2. We have to collect data, understand, share an open data platform. We want to make our data publicly available and we are still negotiating with the other shareholders on how to make that.

8. What do you mean when you refer to "sound science" to develop solutions to restore ocean health? In that light, is there such a thing as science that is not "sound"?

Sound science is based on actual measurements and knowledge. I don't believe you can go and talk about topic like this area of the ocean and make a whole bunch of assumptions based on

not enough data. The key is to have measurements, this is what we are missing the most, on the world's largest ecosystem. There are regulations for tuna, salmon, or other species, but we don't have enough data on their behavior. This is where sound sciences comes, we need to get data to make real informed decisions.

9. In may of 2013, the company announced the removal of Russ George as director. Can you explain why this happened and why John Disney was promoted as the incoming CEO of the company as a result and finally, how the direction of your organization has changed ever since? Can you also tell us why you are in a legal situation with him and what claims you have made?

This whole thing started in 2004 when we were running out of money to make the watershed restoration project. We were informed about carbon credits possibilities so we found Russ George for this matter. He began to work on a tree restoration project with old masset; I wasn't involved but it looked like a good project. In 2008, I began to understand OIF , Russ George worked with Planktos so we formed the company together. For a number of reasons in May 2013 we fired him as a director and officer of the company. Unfortunately, these are our inside issues, we weren't able to fire him in a manner we wanted to do so, he is actually still director and shareholder.

10. You wrote an article on the adoption of a blue carbon credit programme. Can you talk to us about the issue of ocean governance and the fact that there is little scientific data on the state of the ocean which is not enough for us to make informed decisions about our future?

I am not an expert in ocean governance, I've been dealing with it. The problem and one of the fears of the ETC group has of our project, is that we were working on the deep open ocean. The deep open ocean is in the ocean commons, outside the exclusive economic zones, approximately 200 miles from shore, which is again 98% of the ocean. It belongs to all the countries in common. A landlocked country owns it as much as Canada or Japan. That is the crisis of the commons, nobody is really in charge. Who regulates it and how you regulate these parts of the ocean? This is a sticky subject.

We are working on governance. The international maritime organization brings countries together to define how we work on the deep open ocean, also the global ocean commission - part of UNESCO - are probably the most switched on with respect with how to do it. Until we get the ocean as a real player at the table of the UN and in other governments we always avoid the problem of the commons. We don't put enough value to deep open ocean, because we

don't go there. We have such little data for this part of the ocean, it's a hard place to work.

11. In 2013, your first academic publication was presented at Oceans 2013 conference in San Diego. The paper "Initial Investigation of the North East Pacific Salmon Feeding Waters with Slocum Gliders." Can you tell us what data you obtained as a result and what conclusions were presented?

The paper is written based on our results using these electric slocum gliders, a glider is an autonomous underwater vehicle it looks like a torpedo with wings and a tail, it doesn't have an engine. Basically inside that missile is full of batteries, of scientific instruments and a little track to change the altitude. The paper is a discussion of results of the findings from our three glider missions.

12. NASA satellite data. This online article from the NASA Giovanni visualizations website shows an analysis of chlorophyll of the plankton bloom in 2012. The author, James Acker, makes some observations of ocean biology including an abundance of cocolithophores (phytoplankton), and whether the plankton bloom was unusual for this area. Can you summarise for us what the data visualisation means?

It is a visualization of the plankton bloom based on the satellite measurements, as the satellite goes around the world, it can miss a few things so it interpolates to build a model. This is how you build this particular bloom. A paper published on data visualization by a group in Maine echoes the findings of NASA plankton biologists.

13. In a CBC Radio interview, you respond that you want to make your results as public as possible. What would you tell the public to read in order to get informed on the science behind OIF?

The global Intergovernmental Oceanographic Commission (IOC) of the UNESCO published a scientific synthesis for policymakers in 2010, one of the best documents with respect to the policy issues. Also an interesting paper by Victor Smetacek about the effect of commercial whaling on plankton biomass in the arctic, another the next generation of OIF experiments where he recommends what you be done. They are papers the general public can look at.

14. What is the idea of a Haida Ocean Center of Excellence?

It doesn't exist yet, a sort of a university facility for ocean graphic research. Where we can run glider missions and starting collecting data. We don't know the oceans dynamics, we need more

data, this is the purpose of the Center.

15. Tell us more about your Twitter account. You started it around two months after the 2012 experiment was done. You have interacted, posted pictures of the deployment of the experiment underway, shared articles, created ongoing updates on your work and even shared personal moments. Can you tell us more about your personal commitment or dedication to your work and how fruitful the interactions through Twitter have been, how you raise awareness on the issue or how even some criticism has also come across?

I think we are evolving as a species. The way people do business is evolving. Not publishing raw data, is unhelpful. Publishing raw data, that sort of openness, is a requirement if we go further into controversial areas. We need transparency.

16. What do you think of Dan of CLIMOS? Do you have similar goals? Do you have knowledge of other people that are developing similar goals?

I never met anybody from Climos, I thought from their website the content was quite good. But I don't know if they exist anymore.

17. You participated in the COP 19 in Poland. Who were you able to talk to about your project?

I was there for official and non-official purpose. I couldn't talk about my entire project but I talked about education, governance, and climate change. One of the topics was gender. The number of delegates there are 30% female. They are impacted more by climate change. I spoke with different nations of the Warsaw summit, and a lot of them were very interested in our work.

18. What is the final message you would like to convey to our audience?

We must collect real data, we must have open and and honest conversations, there are going to be 10 billion people on the planet by 2050, how are they going to eat? There are going to be new coal fired plants are on the way. The thought that we can actually curb carbon emissions is not realistic given these situations. We need to have real conversations. Right now we have high over the sky conversations: you have the green group, the government, the industries, but they are not real conversations. We need to start talking about the future and our children. The key word is stewardship. To be stewards of our environment, we need to have real data, how to pay

for real data and how to come to these solutions. My message is open data and stewardship.

19. What do you think of ETC Group and the like?

Jim Thomas and I share a lot of the same goals. When I look at ETC Group or Greenpeace what I see is that they are naive. They think someone else is going to do it and governments are going to come together and will come up to this grand and great solution. It is not going to happen until we have real, open conversation. Jim Thomas' deal is that they want to increase small farmers around the world. It is nice and a good idea. But if you have a million small new farmers, how is that not geoengineering?

20. Any final comments you would like to add?

Environment Canada permits under permit on the City of Victoria, BC, to put 32 billion liters of raw sewage into the ocean every year. The city of Montreal dumps 3 billion liters of raw sewage into the same seaway everyday under permit. There is such an incongruency there. But, we have to fight these battles.