

## **GoNorth! Fennoscandia 2008**

Module 4: Flora & Fauna: Climate Change - Chat #11

Tuesday, April 22, 2008

### **Welcome to the SECOND chat on the topic of Climate Change!**

Background: Carbon dioxide levels rise. Mercury climbs. Oceans warm. Coral reefs bleach. Glaciers melt. Sea levels rise. Sea ice thins. Permafrost thaws. Migration times vary. Lakes shrink. Snowpack declines. Ice shelves collapse. Wildfires increase. Droughts linger. Winter gets soft. Mountain streams run dry. Flowers get bigger. Trees turn green sooner. Exotic species invade. Cloud forests dry. Spring comes earlier. Fall leaves later.

Global warming or climate change? The National Academies explains that "The phrase climate change is growing in preferred use to global warming because it helps convey that there are changes in addition to rising temperatures." On the other hand, many prefer to continue using the term global warming, to convey a state of urgency. When GoNorth! team member Mille Porsild was asked to become a Climate Witness for the World Wildlife Fund (WWF) in the United Kingdom, Matthew Davis, the climate change campaign director, explained that politicians and the people on the street in the UK are not relating to the term climate change, that they are not considering it a problem of their own! The name later chosen for the WWF campaign was Climate Chaos. This term acknowledges that the continuation of increased carbon dioxide levels at current rates will lead to dramatic environmental and climatic change on a global scale-and that we do not know exactly what this will mean, beyond that it will leave the global environmental balance in a state of chaos.

WWF's Climate Chaos campaign has been very successful so far, in large part because of an instrumental push from former Prime Minister Tony Blair to call for global action at the G8 meetings and in national government actions. As Blair has said, "I want to concentrate on what I believe to be the world's greatest environmental challenge: climate change."

Some questions to possibly open the chat with or discuss prior to the LIVE chat!

List at least three suggestions that might help reduce the emission of greenhouse gases.

Do you believe climate change is a serious environmental problem? Why, or why not?

What are the world's nations doing to prevent or reduce climate change? Is enough being done?

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### **About our Speaker: Dr Terry Callaghan**

Terry Callaghan is the Director of the Royal Swedish Academy of Sciences' Abisko Scientific Research Station. He is also the recipient of the 2007 Nobel Peace Prize for his work with the IPCC for their research and efforts to educate people about man-made climate change.

His research focuses on relationships between the arctic environment and the ecology of arctic plants and animals including ecosystem processes. The research has two components: seeking to understand mechanisms of survival and adaptation to arctic environments, and assessing the responses of organisms and ecosystems to changing environmental conditions such as climate, UV-B radiation and atmospheric CO<sub>2</sub> concentrations.

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**GoNorth! Education Basecamp:** Good Morning Everyone! We're having trouble getting a hold of Dr Callaghan at the moment... please feel free to submit a question for him just like you would during the chat. If we don't get a hold of him shortly, I will plan to collect the questions, email them to him, and then post the answers both in the Q & A for week 11 and also in the Module 4 Chat Transcripts.

We submitted the following questions to Dr Callaghan and what follows are the great answers that he provided.

**Mr Kroeger6th MPS:** Did you know this is what you wanted to do when you were a student or is this something that evolved out of learning about other things?

**GoNorth! Expert:** I wanted a job outside in the natural environment or in farming since I was a child and grew up in a very dirty, crowded and polluted city (Manchester, UK). When I went to University, I became very interested in ecology but thought there would be no job in it. Fortunately, however, a job came up in the sub Antarctic and Arctic and I became a doctor in polar ecology. That was 41 years ago. However, when I started my work I was trying to understand how polar plants and animals coped with harsh environments: now I try to understand how they will cope with better environments that might allow migrants from temperate regions to out-compete them.

**Mr Dimmer 8<sup>th</sup> Steffen:** How did you become the Director of the Research Station and how did you get involved in the AICA video we saw about the 10 key findings?

**GoNorth! Expert:** I worked at the Abisko Station for 20 years with my friend, the last Director. Together, we built up a lot of research and experiments. When he retired, it was natural for me to take over, even though I was an Englishman working in Sweden. As for the film, I was involved in ACIA a lot. I lead one large chapter, and helped with 3 more. Also, I had the job of helping to make sure all the chapters did what they promised and I even drew many of the schematic figures. Because I was involved in so much of the ACIA reports, I was asked to take part in the film. (It was not because of my good looks!!!)

**Madison, Karrina Team Freja:** What is the best thing to do to help the environment?

**GoNorth! Expert:** There are several things: respect it (and love it); remember that the environment and its resources need to be protected, remember that you are not alone in wanting to use the environment and its resources and that if we are all wasteful, our resources will be used up and our environment will be polluted and destroyed.

**Bonnie Team Lightning:** What is the most dramatic way climate change will affect Sapmi?

**GoNorth! Expert:** There could be many dramatic impacts - not all harmful, but I guess you want to know the most harmful. For me, it would be to change the landscape from forest-tundra (an open area of scattered, small birch trees with open heathlands) into a closed evergreen forest. This is what is predicted. This change would make it almost impossible for the Sami to herd reindeer. Maybe they could farm them intensively like cows, but they would not be able to wander in the wilderness and have their close bond with nature and the land. If these ties are damaged, then their identity and culture would suffer as the nomads would become "townies".

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**Kari Team Lightning:** What do you think is the biggest change the earth has seen from Climate Change?

**GoNorth! Expert:** There are many dramatic changes and it is tough to select just one, so here are two: loss of much of the area that glaciers occupied even only 30 years ago. On some tropical mountains, glaciers will disappear completely very soon. The next dramatic change is the loss of sea ice in the Arctic Ocean during summer. It has been declining rapidly every year for about 30 years but last year it beat all records. Soon we may be able to sail from UK to Japan in summer via the Arctic Ocean.

**C.R.E.S. Team Freja:** The cost of gasoline has been increasing here in the US. Does this surprise you?

**GoNorth! Expert:** Yes, it surprises me because it means that there has been a change in attitude towards climate change and use of fossil fuels. However, I guess it is still very cheap compared with many countries around the world and we need to make it so expensive that a realistic alternative will be found.

**Mkalia Team Fuji:** What is your inspiration to educate people and help the planet?

**GoNorth! Expert:** My inspiration to help the planet comes from my love of its beauty (from deserts to forests, wetlands to ice fields), from my understanding of the need for my generation to pass on a planet to your generation in which some of the problems that our ancestors caused have been fixed, and to help people to understand that resources should be used sparingly and without pollution, otherwise there will be conflicts among nations. My inspiration to educate comes from wanting to share my passions with others as well as to try to solve or at least reduce problems. Also, it's fun! - I learn a lot by teaching.

**C.R.E.S. Team Freja:** What have you done personally to help the environment?

**GoNorth! Expert:** My greatest contributions are my work. As well as working in the Arctic, I have worked in the deserts of the Sudan where some of the world's poorest people live. There I helped to develop a technology to grow forests in the desert. Within the Arctic, I believe that the ACIA process as well as the IPCC have changed public and political attitudes towards climate change. In my private life, I have a small farm in a beautiful part of England and I protect this environment. I use renewable energy, plant trees and build wildlife refuges such as ponds.

**CRES:** Do you think that if we don't change now, our lives will change forever?

**GoNorth! Expert:** The only thing I can guarantee is there will be change in your lives. Darwin said that it is not the strongest that survives, nor the most intelligent, but that which is most responsive to change. Even if we stopped all carbon emissions tomorrow, sea level would still rise for many hundreds of years and temperatures would increase for many tens of years. However, if we don't act now, these changes will be far greater. For a young student like yourself, you should not be frightened of the changes - you will have to live with them and you will make the best of them: that's what mankind does. However, you need to help all you can to reduce the changes and learn all you can about likely future changes so that you can learn how to live happily with them.

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**CRES Team Fuji Mkaila:** Why did you win the Nobel Peace Prize?

**GoNorth! Expert:** I did not personally win the Prize - it was awarded to the IPCC for their services to mankind. They have identified the problem of climate change and its causes and they have done their best to predict future changes and alert the people and politicians of the world so they can act to reduce the changes and learn to live with them. I contributed to IPCC from the beginning (20 years ago) so I am a part of the award together with several hundred other scientists around the world. What is special, is that our science lead to a peace prize which means that science is best used to help people not just to explore new knowledge.

**Abby Team Lightning:** What was the highest and lowest temperature you have had at the Research Station?

**GoNorth! Expert:** I do not have all the records in front of me, but from memory it was about +31 degrees C and - 39 degrees C. However, Abisko is a little warmer than it should be because it is close to the North Atlantic Ocean where the ocean current called the Gulf Stream brings warm water from the tropics that warms the air .

**TW:** How long is global warming supposed to last

**GoNorth! Expert:** That is a really tough question and I guess nobody knows. Over really long time scales (hundreds of thousands and millions of years) the Earth is cooling slowly and this will not stop. But on shorter time scales (hundreds of years) polluting the atmosphere will increase warming. So long as pollution increases, the planet should warm. However, in several hundred years time, there is likely to be a point when all the ice and snow has gone and the rate of warming gets slower. However, throughout your life you are likely to see some effects of global warming, particularly in sea level rise.

**CRES:** Do you think that going to ethanol is the best solution? If so, why or why not.

**GoNorth! Expert:** I think we need very many different solutions. Ethanol could be one but I would like to see more electric cars and solar energy particularly in hot countries. What is most needed is not a particular type of clean energy, but a change in political, public and commercial attitudes such as don't drive if you really don't need to; don't drive an empty car - share it; don't have an engine size bigger than you need; etc etc.

**Pete at Burroughs:** Are there plans of how to apply what is learned to the issue? For example: is the goal to help failing species survive ?

**GoNorth! Expert:** There are two types of plan: mitigation and adaptation. Mitigation is a series of plans aimed at reducing the cause of climate change. These plans are relevant to those countries which are the largest contributors to climate change and which can make a difference. Adaptation consists of a series of plans of how to live with climate change. We will not solve all the climate change issues suddenly and we will need to live with some. For example, the people of Bangladesh will need somewhere else to live when sea level rises. Where can they go? How do they adapt? In terms of species, yes, we need to understand which are threatened and we need to learn if and how we can protect them. The bad news is that conservation as a science needs to be reinvented because it has always been a practice to protect species and habitats from human disturbance. We really don't know how to protect species and habitats from climate change!

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**CRES:** Given the push for alternative fuels here in the USA and corn being in the forefront we are now seeing that we can't grow our way out of this problem and in fact may be driving up food prices and setting up a chain reaction felt throughout the world with food supply. Are there better alternatives that we could make better use of? Is there a concern that what is happening with corn a sort of backlash towards alternative fuels, at least in the USA will develop?

**GoNorth! Expert:** This is another tough question and one in which geography is important. I don't think any one alternative fuel is the answer and the problems you mentions are an example of why I think that. In the US, the problem could be particularly bad as the grain growing area is likely to move up to the Canadian border with dry lands to the South. The Canadians on the other hand, might see an increase in grain growing areas and productive forests as might Russia. Therefore this particular problem might be worst for the US. Again, though, I think we need many solutions to the problem and most importantly, a change in public attitude.

### **Thank You**

From all of us at Team GoNorth!, Thank You for joining us today! Join us again next week on Friday May 02nd at 1PM CST for our final chat on the topic of Climate Chaos.