

Acting on Climate Change: **Extending the Dialogue Among Canadians**

A collection of texts in response to
Acting on Climate Change:
Solutions from Canadian Scholars,
a consensus document released in March 2015





United Nations
Organization for Education,
Science and Culture
Organisation des Nations
Unies pour l'éducation, la
science et la culture



Fundy Biosphere Reserve
Réserve de la biosphère
de Fundy

ABOUT THE ORGANIZATION

FUNDY BIOSPHERE RESERVE

MEGAN DE GRAAF

In September 2007, the Fundy Biosphere Reserve (FBR) was given UNESCO designation as a World Biosphere Reserve. The FBR is an area of over 430 000 hectares of the Upper Bay of Fundy coast, New Brunswick, stretching from St. Martins to the Tantramar Marsh, near Sackville, and inland to Moncton. It is a community-based initiative comprised of individuals and representatives of various stakeholder groups, organizations and local communities. It works to deliver projects that focus on conserving nature and culture, promoting sustainable economic development, and fostering capacity building.

Megan de Graaf is a Forest Ecologist, Executive Director of the Fundy Biosphere Reserve, and passionate supporter of sustainable rural living.

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A MATURE ACADIAN FOREST HARDWOOD STAND IN
THE CALEDONIA HIGHLANDS OF THE FUNDY BIOSPHERE RESERVE.

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Local Climate Change Knowledge

Solutions for Adaptation and Education in the Fundy Biosphere Reserve

Identifying the Issues

Four years ago, we realized there was an urgent need to develop the capacity of our communities in the face of a rapidly changing climate. Since then, we have been delivering projects in the FBR that are aimed to increase communities' and students' capacity to understand, react to, and adapt to climate change. As with solutions put forward in *Acting on Climate Change: Solutions from Canadian Scholars*, our projects emphasize realistic, on-the-ground activities to transition the communities of the FBR to a more resilient and low-carbon state.

Climate Change in Atlantic Canada Videos

As an example of such a project, in 2011 we began to gather local climate change knowledge by interviewing local climate knowledge-holders (e.g. beekeepers, farmers, snowplough drivers, fishers, gardeners, First Nations elders) and academic researchers. The project also included some climate data (such as temperature highs and lows, snow fall and melt dates, number of drought days,

and rain event amounts and duration) analysis to explain trends in our weather.

The project rapidly evolved into an exciting collaboration between the FBR and Dr. Ian Mauro, who is also a member of Sustainable Canada Dialogues¹. Working with Mauro's team, a year's worth of video footage was carefully assembled into seven short documentary films, which aim to increase awareness about the real world experiences of coastal communities throughout Atlantic Canada; how they are on the front lines of climate change and responding to it².

The Whitney Journals

Since 2011, the FBR has been collecting and analyzing citizen-sourced climate data such as family weather diaries, crop records, lighthouse logbooks, and wildlife records.

¹ Dr. Mauro was then the Canada Research Chair in Human Dimensions of Environmental Change at Mount Allison University. He is now with the University of Winnipeg.

² All the films, and related content, can be viewed on the project's website: <http://www.climatechangeatlantic.com>.

The *Climate Change Proxy Materials* project encourages people to become “citizen scientists” by regularly recording nature observations and sharing them with the FBR for analysis, thereby providing communities with knowledge of the effects of climate change at a local level.

The FBR wanted to incorporate the most interesting and relevant results from these data sources into short videos. A first video, *The Whitney Journals*³, was launched in June 2013. The video explores nature observations collected by the Sussex-based Whitney family for nearly 40 years and the analysis of these observations as chronicling the effects of climate change on their local environment.

For example, according to the Whitneys’ records, since the early 1970s the frost-free growing season is now 25 days longer, the breeding season for spring peepers has expanded an extra 29 days, robins are appearing a full one month earlier in the spring, and lilacs are showing a seven-day advance in their growing season.

Receiving much praise, *The Whitney Journals* was part of an exhibit at the Royal Ontario Museum and secured peer validation through the Phoenix Award by the New Brunswick Environmental Network.

Incorporating Local Climate Knowledge into Education Curricula

Students in New Brunswick classrooms tend to learn about complex or major scientific events in the context of other dynamic countries or ecosystems. We’ve thus adapted *The Whitney Journals* film, along with the seven Climate Change in Atlantic Canada videos, to be used in middle and high school classrooms to give students an opportunity

to learn about climate change from locals with decades of first-hand experience.

The goal was to create resources that teachers can use, with lesson plans, to foster environmental awareness and scientific literacy among their students. We’re currently planning a campaign to disseminate these materials as widely as possible throughout schools in the province, and eventually throughout the Maritimes⁴.

Resilient Forest Corridors

Since 2013, the FBR has shifted its climate change work to focus on conservation and ensuring forest health in our region. Through our *Climate Change Resilient Forest Corridors Project*, we completed an analysis of which native tree species have the most chance to prosper under changing climatic conditions over the next 100 years, as well as those that will merely persevere, and which could even decline. We have identified eight “winners” under the changing climate: Black Cherry, Red Maple, Eastern Hemlock, Sugar Maple, Red Oak, White Pine, Ironwood, and American Beech.

As the climate changes and less-resilient species begin to decline and disappear, the Acadian Forest composition in southern New Brunswick (as well as throughout the Maritimes) will also change. This means that the forest as we know it today will later contain fewer boreal species, and probably more of these “winners”. The forest will need help from residents of the region, notably in managing forests, to encourage these resilient species.

3 <https://www.youtube.com/watch?v=hG5DDNmUIXQ>

4 The videos and associated lesson plans are available through the project website <http://www.climatechangeatlantic.com> (go to the Education tab, password is climateeducation).

To that end, in the summer of 2014, we planted 2 500 climate resilient trees in key areas in the reserve to create forest corridors between the region's protected areas. These corridors will allow wildlife to pass through more easily and also ensure that the forests continue to thrive as the climate changes. We also hosted free outdoor workshops encouraging communities and local landowners to plant resilient tree species on their own land.

We also created a public pamphlet and a technical report, as well as a series of highly informative maps that depict the projected forest stand composition, projected distributions of tree species that will persevere or proliferate, and forest corridors for wildlife migration⁵.

Future Avenues of Solution-Building

For the coming years, we have identified two important areas in which to work on climate change adaptation, mitigation and education in the FBR. First, we know that our communities are largely under-prepared for the various effects of climate change. We will begin working with individual communities in the FBR to develop climate change action plans,

or at least to incorporate climate change adaptation and mitigation in their Integrated Community Sustainability Plans (ICSPs), and to stage outreach events to the general public. These ICSPs will include plans for adapting to climate change (e.g. standards for constructing or renovating homes in flood-risk areas, raising roads, dykes, and other infrastructure along the coast, using ecosystem-based adaptation methods, etc.) and mitigating the effects of climate change (e.g. including goals for reducing corporate greenhouse gas (GHG) emissions by a target date, reducing community emissions, decreasing per cent of energy use from non-renewable sources, etc.). We have also begun participating in a large multi-organization project aimed at developing tools for, and collating data on, ecosystem-based climate change adaptation planning.

Second, communities in the FBR are facing a whole host of challenges associated with the effects of climate change on water – coastal erosion, sea level rise, storm surges, more frequent and more intense weather events, inland flooding, etc. We will play a linking role among the different communities and organizations in the FBR, to facilitate greater climate change adaptation planning with regards to the critical issue of water.

⁵ All of these materials are available on our website: <http://www.fundy-biosphere.ca/en/home/forests-of-the-future.html>.



ABOUT THE INITIATIVE

SUSTAINABLE CANADA DIALOGUES

This contribution is part of a collection of texts, *Acting on Climate Change: Extending the Dialogue Among Canadians*, stemming from interactions between Sustainable Canada Dialogues, an initiative of the UNESCO-McGill Chair for Dialogues on Sustainability, and business associations, First Nations, non-governmental organizations, labour groups, institutions, organizations and private citizens.

Sustainable Canada Dialogues is a voluntary initiative that mobilizes over 60 researchers from every province in Canada, representing disciplines across engineering, sciences and social sciences. We are motivated by a shared view that putting options on the table will stimulate action and is long overdue in Canada.

Together, the contributions enrich the scope of possible solutions and show that Canada is brimming with ideas, possibilities and the will to act. The views expressed in *Acting on Climate Change: Extending the Dialogue Among Canadians* are those of the contributors, and are not necessarily endorsed by Sustainable Canada Dialogues.

We thank all contributors for engaging in this dialogue with us to help reach a collective vision of desired pathways to our futures.

FOR MORE INFORMATION, VISIT OUR WEBSITE

sustainablecanadadialogues.ca/en/scd/acting-on-climate-change