

Climate change a proven case

We can't afford luxury of debate anymore; use your vote on Monday to make changes

Two weeks ago I began a discussion about climate change, and why most people are still not convinced that taking immediate, serious action — especially in terms of a carbon tax or cap and trade program — is the way to proceed. I also looked at some of the extreme weather events that have taken place in 2010 and how they reflect what to anticipate in a warming world.

As you are probably aware, the



Drew Monkman
OUR CHANGING SEASONS

first half of 2010 was — at a global level — the warmest ever recorded.

As for the period from January to September, the global combined land and ocean surface temperature was tied with 1998 as the warmest January-September period on record.

In Peterborough, the mean (average) temperature for September mirrored the global trend.

The average temperature for the month was 19.55 C, a full 6 C warmer than the 1971 to 2000 average of 14.6 C. September's average high was 26.1 C, while the average low was 13 C. These are much warmer than the long-term averages of 20.1 C and 9 C.

Today, I'd like to present some recent research findings that underscore the vulnerability of both nature and human society to climate change.

Turtles at Risk (Oct. 10, 2010): Research carried out by Mariana Fuentes of Australia's James Cook University has found that turtles are particularly vulnerable to the effects of climate change. These effects include decreases in hatching success, loss of nesting areas, and overheated beaches. The temperature of the beach sand actually determines the gender of the hatchlings - warmer sand produces more females while cooler sand produces more males.

According to Fuentes, under current conditions the nesting grounds are already producing more females. Therefore, a warmer climate may significantly alter the sex ratio of turtle offspring. This could be disastrous to their future reproductive success. Her research looked at green, hawksbill and flatback turtles in the northern Great Barrier Reef and Torres Strait.

Global Declines of Shellfish (Oct. 3, 2010) The acidification of the Earth's oceans due to rising levels of carbon dioxide (CO2) may be contributing to a global decline of clams, scallops and other shellfish.

Stony Brook University scientists suspect that a more acidic ocean is interfering with the development of shellfish larvae.

The researchers reported that larvae grown at approximately pre-industrial CO2 concentrations of 250 parts per million had higher survival rates, grew faster and had thicker and more robust shells than those grown at the modern CO2 concentration levels of about 390 parts per million. When the researchers grew larvae at CO2 concentrations projected to occur later this century, they developed malformed and eroded shells.

A few of the many other calcifying organisms impacted by

ocean acidification include coral reefs, echinoderms (e.g. starfish, sea urchins), and pteropods (sea snails, sea slugs).

Bee pollination decline (Sept. 7, 2010) A 17-year study in a pristine mountain environment in Colorado has found a 50% decline in bee pollination, and suggests climate change may be to blame.

James Thomson, a University of Toronto ecologist, has been carrying out a study of glacier lilies in the Rocky Mountains of Colorado, which rely on bumble-bee queens for pollination.

The lack of bee pollination was especially pronounced in the spring, leading Thomson to suspect it might be caused by the plants blooming earlier and earlier in the year, before the bumble bee queens become active after their winter hibernation.

This is sobering news because it suggests that pollination is vulnerable even in environments free of human disturbance.

Climate Change and Immigration (July 26, 2010): According to a study by researchers at Princeton University warming climate could see millions of adult Mexicans migrate to the US as rising temperatures cause a drop in crop yields.

For every 10% of lost crop yields in Mexico, another 2% of Mexicans are likely to leave their country, the study says.

The research draws a clear connection between climate change and immigration — two heavily debated issues in the US.

Bird Declines in Dutch Woods (Dec. 21, 2009) Researchers at the University of Groningen in

the Netherlands have found that every species of insect-eating migratory birds that winter in Africa and breed in Dutch woodlands have suffered steady population declines since 1984.

Nightingales and wood warblers have seen the most dramatic declines. Woodland birds have evolved to lay their eggs so they will hatch when there are lots of caterpillars available for their young to eat. But, due to climate change, spring is starting progressively earlier in the Netherlands. On average, trees are in leaf two weeks earlier than 25 years ago.

This means that caterpillars that eat the young leaves are also appearing two weeks earlier. The researchers believe that African migrants have not been able to adapt their spring migration arrival time sufficiently to take advantage of the earlier appearance of the caterpillars.

In other words, by the time their eggs hatch, there is no longer sufficient food available for their young, hence the declines in population.

Marsh birds that winter in Africa, however, have not declined.

This is because insects remain abundant in marshes all spring and summer long. Resident birds in Dutch woods do not show a decline, either.

They appear to be able to lay their eggs earlier.

Increasingly severe climate-related events such as those we're seeing this year, along with the mountain of climate change research findings that are being made public almost every day, should be enough to shake us

from our lethargy and make us demand aggressive action on the part of politicians.

When did we start not believing the findings of science?

Do we truly think that scientists somehow have their own agenda and are not telling us the truth? You can't simply have an "opinion" about the reality of human-induced climate change.

Opinions such as "what we're experiencing is just normal climate variability" really count for nothing when it comes to this subject.

Data and evidence are all that matter.

At some point, we need to recognize that the proof is in.

The scientific research has been supported by strong, clear evidence — both in the lab and in what is being observed in the field.

The vast majority of scientists accept that the scientific case for climate change has already been made. In July, scientists from around the world provided even more evidence of global warming."

A comprehensive review of key climate indicators confirms the world is warming and the past decade was the warmest on record," the annual State of the Climate report declares. Compiled by more than 300 scientists from 48 countries, the report said its analysis of 10 indicators that are "clearly and directly related to surface temperatures, all tell the same story: Global warming is undeniable."

We can't afford the luxury of wasting more time debating.

Dr. John Smol, a biology professor at Queen's University who

has won more than 25 research and teaching awards since 1990, wrote recently: "If you believe, for example, the medical science that links smoking tobacco to lung disease, then I would argue that the science linking greenhouse gas emissions and global warming is equally strong."

Many of us reading this article may indeed be gone by the time the very worst impacts of climate change are felt.

However, if you're a parent or grand-parent, how can you justify leaving them a legacy of inaction — of not using the power of our votes to elect politicians who are committed to aggressive action? Even in economic terms, there will be a huge cost to pay by pursuing "business as usual," by using delaying tactics, and not beginning aggressive action.

There is now a consensus among scientists that if the worst impacts of climate change are to be avoided, the planet cannot go above 2C of warming.

Because the degree of warming depends on the total amount of CO2 in the atmosphere, we will hit the 2C tipping point in 40 years — that is, if today's emissions stay the same.

Unfortunately, they continue to go up every year.

Many economists would argue that if we are to stay within a capitalist system, emissions have to be priced, and eventually the price has to become so high that emissions essentially stop altogether.

This is the only viable way to stabilize the planet's climate systems.

A CO2 concentration of 350

parts per million (ppm) in the atmosphere is what leading scientists agree is safe for humanity. So far in 2010, the average monthly concentration for atmospheric CO2 (Mauna Loa Observatory in Hawaii) is about 389 ppm. In 2009, it was 387.35 ppm.

Since the 1958 start of precision CO2 measurements in the atmosphere, the annual mean concentration of CO2 has only increased from one year to the next.

There have been no decreases.

We have a personal obligation right now to find out where our candidates for elected office stand on the question of climate change and what they'd be willing to do at the municipal and county levels to address this problem.

Keep their answers in mind when you cast your vote Monday.

Drew Monkman is a Peterborough teacher and author of Nature's Year in the Kawarthas. He can be reached at dmonkman1@cogeco.ca. Visit his website and see past columns at www.drewmonkman.com.

Karl Eggressy is a Guelph nature photographer. To see more of his work and to contact him, go to www.keggressy.com.



Ray Saitz
ONLINE

Will return next week



A Hawksbill turtle

Special to The Examiner