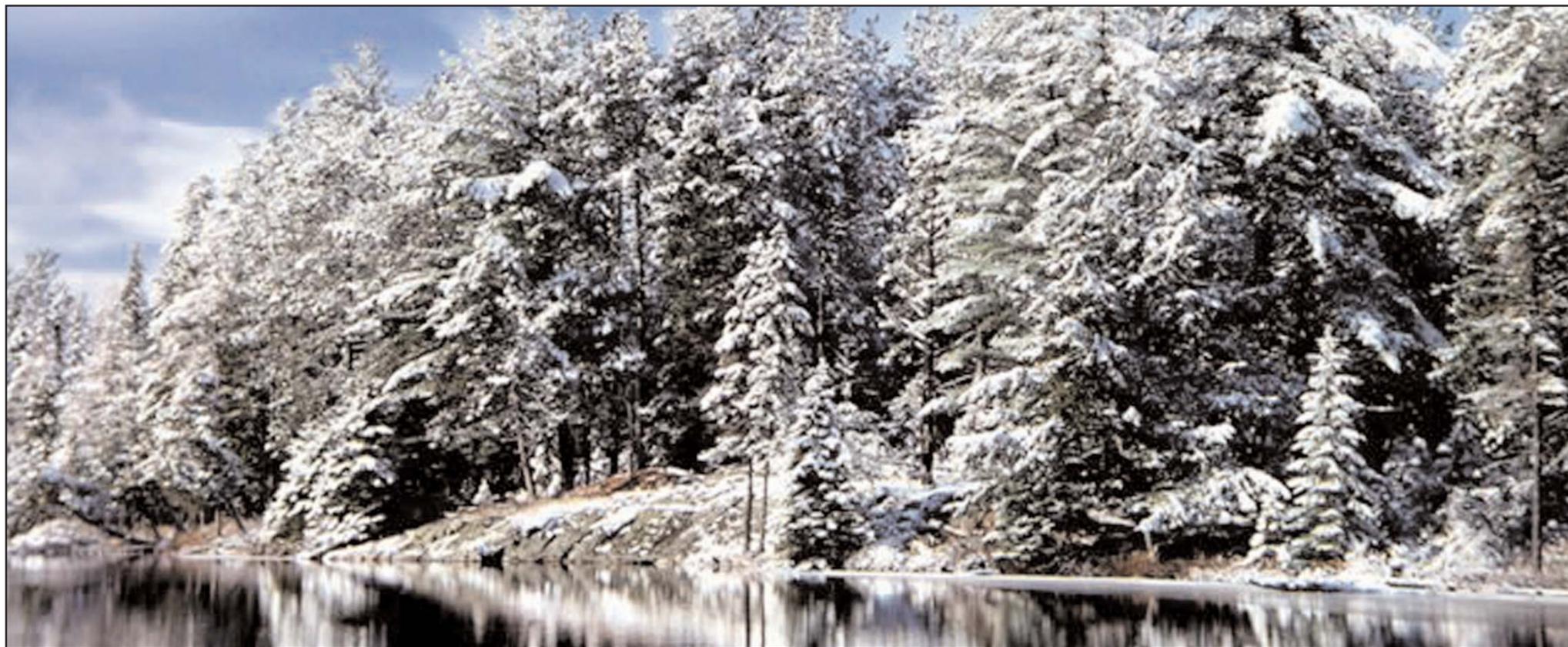


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LIVING



Terry Carpenter, special to The Examiner

Scenes like this may become less common as climate change shortens winter in the Kawarthas.

Climate change, Part I

Anticipating and observing the passage of the seasons used to be a fairly predictable affair. The same natural events would happen more or less at the same time from one year to the next. Mid-December would bring the annual freeze-up of our lakes and usually snow that would be here to stay. Mid-April was the time of ice-out and the start of the frog choruses. July brought us the scent of milkweed blossoms and September the first frosts. In other words, the mileposts of the changing seasons occurred on a dependable timetable. More and more, however, the typical cycle of events is being turned on its ear.



OUR CHANGING SEASONS
Drew Monkman

To even the casual observer, this winter has been anything but predictable. According to David Philips of Environment Canada, the rain and mild temperature we have been seeing since early December may indeed become the norm for winter weather in a mere 20 years from now.

The bizarre, almost eerie weather has not gone unnoticed by plants and animals, either. A turkey vulture that should have been somewhere down in Central America was seen soaring over Peterborough last week, and moths were observed flying about near Buckhorn. A little further afield, forsythia bushes were already in bloom in Washington, D.C. while there were reports of hummingbirds still lingering in parts of New England.

On the Peterborough Christmas Bird Count, a record 63 different varieties of birds were tallied. A number of these were species that should have been long gone by the mid-December count date. Song sparrows, swamp sparrows, a hermit thrush, and even a Baltimore oriole were among the many surprises. And the Peterborough bird count is not alone. Over the past five to 10 years, increasing numbers of tropical migrants such as warblers have been turning up on Christmas bird counts throughout eastern North America. These are birds that were almost never seen before at this time of year.

Climate change certainly seems to have arrived, or, at the very least, is giving us a sneak preview of things to come. How will a changing climate affect the Kawarthas? A

The erosion of the quality of the winter experience is eating away at our sense of place and our feeling of where we belong

large number of studies carried out in recent years is beginning to provide a window into what the future has in store. To some extent, the degree of change will depend on how well the world does at lowering emissions of greenhouse gases such as carbon dioxide. A low emissions scenario would be one in which the world shifts to less fossil fuel-intensive industries and introduces clean, more efficient technologies. This would result in greenhouse gases peaking by about mid-century and then declining. Under this scenario, the climate-related changes would be less severe. However, whether we are looking at continued high emissions or a lowering of emissions, climatic change will be quite substantial.

The Union of Concerned Scientists is probably the world's leading science-based nonprofit organization working for a healthier environment. UCS combines independent scientific research and citizen action to develop innovative, practical solutions to environmental problems. According to research the organization has published on climate change in the Great Lakes region, average temperatures in southern Ontario are expected to rise this century from 4 to 8 degrees Celsius in summer and 3 to 7 degrees Celsius in winter. Nighttime temperatures are expected to warm more than daytime temperatures. As winter temperatures rise, more precipitation will fall as rain, and will cut the length of the winter snow season by up to half. Extreme summer heat, too, will be more common, as will the frequency of droughts and severe wind events.

Although little change in annual average precipitation is expected, seasonal shifts are likely to occur. Winter and spring rains will increase in number and intensity, possibly resulting in more flooding. The frequency of heavy rainstorms, both day-long and multi-day, is also projected to increase. However, the higher temperatures will also lead to greater evaporation, lower lake levels and generally drier conditions, especially in the summer and fall. This trend is already being seen. Evaporation in winter will also increase as a result of declining ice cover.

Under a high-greenhouse-gas scenario, we

can expect summer to arrive up to three weeks earlier in the spring and stay three weeks later in the fall. This would mean a growing season that would be up to six weeks longer. A low-emissions scenario would see summer arriving one to one and a half weeks earlier and continuing two weeks longer into the fall.

Like the call of the spring peeper and the return of the robin, the blooming of certain flowers and the opening of leaf buds on trees are popular harbingers of spring. They are also important indicators of a changing climate. The date at which blooming or leaf-out occurs within a given plant species is directly related to the amount of warmth — days of warm temperature — that the plant has accumulated over the winter and spring. By tracking the dates at which certain species bloom or produce leaves, we can get a good idea of how rapidly the climate is warming.

Already, many species of flowers and trees in northeastern North America are blooming four to eight days earlier than the historical average. In one study, plants at Harvard University's Arnold Arboretum flowered an average of eight days earlier from 1980 to 2002 than between 1900 and 1920. The dates at which various species of trees came into leaf was seen to advance by two days per decade from 1960 to 2001. The same trends have been seen in Europe, where a far broader range of species has been tracked over a much longer period of time.

The earlier spring emergence of flowers and leaves will probably have a major impact on our fauna as well, since events that used to occur at the same time will no longer do so. If, for example, leaf-out and insect cycles (which respond to regional temperature changes) get too far out of sync with the migration cycles of birds (many of which winter in the tropics and head north as a result of changes in length of day), the results will be potentially disastrous.

An elegant synchronicity of events occurs every spring. As the green canopy of leaves develops overhead, countless caterpillars and other insects emerge to feast on the verdant bounty laid out before them. And, right on cue, hundreds of millions of birds pour

into Canada to partake of this insect banquet. As the birds quickly get down to the task of finding mates, building nests and laying eggs, the insects will provide food not only for the adults, but more importantly for the nestlings. If, as many biologists are predicting, peak insect activity occurs before migrants from the tropics return, far less food will be available to feed the young, and nesting success will fall drastically. This phenomenon has already been observed in some studies carried out in Europe.

Climate, of course, makes up a very significant part of our "sense of place." A changing climate will therefore affect the very character of the Kawarthas. For those of us with a strong sense of how "things used to be," we may soon feel like we are living down in Pennsylvania in a climate we no longer recognize as ours. We have already had a taste this winter of how a drastic change in the usual weather affects us emotionally. Even if we don't particularly like winter, most people would still admit that it constitutes a big part of how we see ourselves as Canadians and, particularly, how we relate to the region where we live. Whether your attachment to winter is through hunting deer in November with a powdering of snow on the ground, cross-country skiing at Haultain, skating on the canal below the Liftlock, snowmobiling at the cottage, snowboarding at Devil's Elbow or simply enjoying the beauty of the snow-covered landscape, winter connects us to the Kawarthas. However, the ongoing erosion of the quality of the winter experience is eating away at this sense of place and even to our feeling of where we belong.

Next week, I will look at how climate change is expected to impact on our forests, lakes, wetlands and wildlife.

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