

To the Editor:

This is an article form a series of monthly columns by Environmental Law Specialist Dianne Saxe, one of the top 25 environmental lawyers in the world, and Ms. Jackie Campbell. These articles are available for publishing at no charge, provided Dr. Saxe and Ms. Campbell are cited as the authors. Dr. Saxe can be contacted at (416) 962-5882 or admin@envirolaw.com. For more information, visit <http://envirolaw.com>.



News Article

Climate change and our gardens

As passionate gardeners, we keep wondering how the changing climate is affecting our gardens. (We last wrote about climate change in this space [during the heat of summer](#) in 2010.) We therefore noticed when the U.S. Department of Agriculture (USDA) [updated its plant hardiness zone map](#) on January 25, 2012. Throughout much of the U.S., the map is a half-zone (5 degrees Fahrenheit) warmer than its 1990 predecessor.

Gardeners rely on plant hardiness zone maps (“PHM”), which set out the different climate zones where specific trees, shrubs and flowers are likely to survive. The new U.S. map includes 13 zones (up from 11). At least in part, [this change results](#) from data being collected at many more weather stations than the predecessor map (1990), and over a longer, more current time period (i.e., 30 years, from 1976 to 2005 as opposed to the original 13 years). As in the past, the map was developed using the coldest annual temperature at various locations. As well, more sophisticated methods were used, including calculations that considered factors like elevation changes, proximity to large bodies of water and terrain position. Map users can locate more relevant data for their zones by entering their postal codes. The 1990 map included Canada and Mexico; the 2012 version, alas, does not.

The USDA notes that [changes in climate](#) are generally determined based on average temperatures over a 50 to 100 year period (not just the coldest days of the year). They caution that changes in zones do not accurately reflect whether global warming has occurred. [Others disagree](#), arguing that the map reflects warming trend and the “new normal”.

The U.S. Environmental Protection Agency (EPA) compared hardiness zone maps from 1990 and 2006 (the latter prepared by the Arbor Day Foundation). Over that 16 year period, the [hardiness zones in the continental U.S.](#) (excluding Alaska) shifted northward,

because of warmer winter temperatures. Large areas of some states warmed by at least one hardiness zone, reflecting a significant increase in average low temperatures. A few small areas, mainly in the western U.S., have become cooler by one or two hardiness zones. As well, the last spring frost occurs earlier, and the first autumn frosts are later. Thus, the average growing season has increased by approximately 2 weeks since 1900; this increase has been particularly significant since 1980.

The U.S. EPA [estimates that climate change](#) will bring higher temperatures and a longer growing season in cool regions, which could permit farmers to diversify their crops and perhaps see multiple harvests each season. Some areas may become too hot for traditional crops to grow. Climate change will alter regional biodiversity. For example, invasive plants will move into new areas, harming native plants, and animals will move from their current locations to seek their preferred sources of food. Already, some bird species have shifted their wintering grounds up to 400 miles northward. As well, allergy seasons may arrive earlier and last longer.

(In contrast to the hardiness zone maps, which are based on coldest temperatures, the American Horticultural Society recognizes that plants are now often coded according to heat tolerance. The Society publishes a [plant heat zone map](#) that divides the U.S. into 12 zones and provides the average number of days every year that a region has temperatures over 86 degrees Fahrenheit (30 degrees Celsius). The map was published in 1997 and appears not to have been updated.)

In Canada, plant hardiness [maps are based](#) on the average climate conditions in each region, as well as several on other variables like minimum and maximum temperatures, the duration of the frost-free period, amount of rain in the summer, snow cover, and wind speed. The original hardiness zone maps were developed in the 1960's. In 2000, Canada introduced its [new plant hardiness zone map](#), which is based on "more recent" data (from 1961 to 1990), and on improved climate prediction models.

Natural Resources Canada wants the [public to participate](#) in making hardiness zone mapping more accurate, by submitting data about which plants survive at their locations. This includes identifying plants, their precise geographical location, and, where known, details such as how long the species has been at the location, sun/shade exposure, winter protection, soil type and how the plant performs at the location. They want to develop and map a climate profile for every plant species; ultimately, these profiles should indicate the range where each species will grow.

It is frustrating to try and interpret broad climate trends in the context of our own piece of turf. It's harder to know when to plant what. Warmer hardiness zones and longer growing seasons can be good news for some plants, but the uncertain winters and lack of snow cover can devastate others. I guess we'll have to keep experimenting, and remember to be flexible!

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