

# London as a Pollinator Sanctuary

Submitted by ACE Working Group on Plight of Pollinators

## I. Problem: Pollinators are under siege

Pollinators are in the local, national and international limelight. Why? Pollinators face many challenges in our urban- and agricultural-dominated landscapes including habitat loss, loss of food sources, disease and pesticides, with many of these factors acting in concert. Recent studies have shown that several pollinator populations including those of wild and honey bees have drastically declined<sup>1,2,3</sup>. In the province of Ontario, honey bee winter mortality has significantly increased over the last few years<sup>4</sup>. Here in Middlesex County, our local beekeepers are dealing with high honeybee losses as well<sup>5</sup>. The use of neonicotinoid pesticides is now suspected of being a major contributing cause to the declines<sup>6</sup>. Many agencies of government including Health Canada and Agriculture Canada are studying the issue. The province of Ontario is now considering a severe restriction in the use of neonicotinoid pesticides<sup>7</sup>.

Societal responses to these drastic pollinator declines range from expanding pollinator habitat to bans and moratoriums of the pesticides that have been linked to pollinator deaths. *What could an urban area like the City of London do to address this great challenge?*

## II. Solution: Make London a Pollinator Sanctuary

### What would this Pollinator Sanctuary mean?

It would mean that the City of London would be identified as a Pollinator Sanctuary in its Official Plan - The London Plan - and policies, by-laws and programs would support this designation. In a sea of agricultural lands, urban areas can act as a refuge, or as an eco-sensitive zone, to protect pollinators. Sanctuaries are often the only hope we have of stopping many threatened species from becoming extinct.<sup>8,9,10</sup>

### Pollination 101:

#### What is Pollination?

Pollination is the movement of pollen within a flower or from one flower to another by animals and/or the wind. This transfer of pollen leads to fertilization, and to successful seed and food production for humans and other animals.<sup>19,20</sup>



Photo: Gabor Sass

#### What are Pollinators?

Pollinators are the animals that pollinate over 90% of all flowering plants<sup>21</sup>, and primarily include bees, flies, butterflies, moths, and other insects<sup>19</sup>. Their activities are necessary for the production of apples, pears, cucumbers, melons, berries, and many other kinds of produce<sup>22</sup>. The Pollination Guelph website states that “One out of every three bites of food you eat is a direct result of pollination.”<sup>19</sup>

### **Why are urban environments potential havens for pollinators?**

Agricultural land is often a feast or famine environment for pollinators - but even if it's a feast, many times it is a poisonous feast. When a mono-crop such as canola is in flower, pollinators will feast but there is little food left for them once the bloom is over.<sup>11</sup> Monocultures, for most of the year, are food deserts for pollinators.<sup>11</sup> Moreover, virtually all corn, soy, wheat, and canola seeds planted in Canada are pretreated with neonicotinoids.<sup>12,13</sup>

Neonicotinoids are neurotoxins that act upon the nervous system of insects.<sup>14</sup> These pesticides can poison pollinators directly, but even low-level exposure can lead to compromised immune systems and impaired foraging.<sup>15</sup> The widespread use of glyphosate herbicides (e.g. Round-up) kills milkweed and other wild forage plants favoured by pollinators, and is being held responsible for the crash in Monarch butterfly population.<sup>16</sup> Other agricultural practices may disrupt wild bee habitat. Heavy tillage, for example, is a serious problem for the two-thirds of native bees that nest underground.<sup>11</sup>

On the other hand, cities contain a variety of nesting and forage sites: public and private gardens, meadows, riparian areas and nature reserves. There is often a greater diversity and abundance of flowering plants in cities. Also, there is forage over a longer period of time because gardeners love plants that extend the bloom season.<sup>10,17</sup> The provincial ban on pesticides for cosmetic purposes applies mostly to urban areas, resulting in a reduced pesticide exposure for pollinators (Note: Nursery plants sold through garden centres may still be treated with neonicotinoids, offering a poisonous environment for urban pollinators<sup>18, 25</sup>). Size of sanctuary is important too, since pollinators can fly one to two kilometers in their search for food.

### **III. Actions: Policy, by-laws, guidelines, stewardship**

The City of London has been very supportive of pollinators. Within our parks, the naturalized areas have expanded and the use of chemicals has been greatly reduced. The City has supported and funded other pollinator-friendly initiatives such as the Friends of the Coves Butterfly Garden, the Adopt a Garden project, the Carolinian Food Forest, and the Community Gardens. The City's own website offers good information about pollinator gardens under 'Property matters and taxes'<sup>23</sup>.

**Declaring London a Pollinator Sanctuary is an opportunity for the City to bring together its positive actions and develop a high level directive or goal.** This designation would raise the environmental reputation of London regionally as well as nationally as only a few cities (like Gloucester, England<sup>24</sup>) have taken this important step in the protection of pollinators. The pollinator sanctuary concept is already supported by many of the goals of the Official Plan listed under Natural Heritage, Urban Forest, and Parks and Recreation, Food System and Green City.

**There are further actions the city can take in order to help the plight of pollinators. Here are our recommendations:**

**Recommendation 1:** Identify London as a Pollinator Sanctuary in the City's Official Plan.

**Recommendation 2:** Include explicit language throughout the London Plan that reference the importance of creating suitable habitat for pollinators on private and public lands as well as reducing pesticide pressures.

**Recommendation 3:** Modify City bylaws concerning property standards, streets, trees and parks to reflect the city's proposed status as a Pollinator Sanctuary.

**Recommendation 4:** Create a Natural Heritage Master Plan which should have an extensive section not just on protecting but also on restoring and creating pollinator habitat across the city.

**Recommendation 5:** Provide and/or expand more forage and habitat areas in the city, through less mowing and allowing wild flowers and grasses to flourish (in park lands, boulevards, backyards, and rooftops) and support the creation of natural corridors and meadows between forage areas. Plant more native and other plants that support the health of pollinators, such as milkweed.

**Recommendation 6:** Collaborate with the City's many organization and business contacts to encourage planting and development of biodiverse areas on their properties, with special emphasis on native plants.

**Recommendation 7:** The City of London can ensure that plants used in its own gardens are purchased from local suppliers who are not using neonicotinoid insecticides. The City can encourage or require its affiliated schools, libraries and community centres to use locally grown, neonicotinoid-free plants.

**Recommendation 8:** Leading by example, London will encourage community organizations, businesses, and institutes of higher education to plant diverse, locally grown, neonicotinoid free plants.

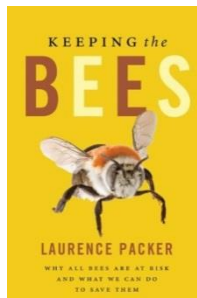
**Recommendation 9:** Inform and encourage gardeners to purchase organic seedlings (?) or grow their plants from untreated seeds for their vegetable and flower gardens. Encourage garden centers that do not use treated seeds to publicize this advantage.

**Recommendation 10:** Encourage further collaboration between City staff, neighbouring conservation authorities, municipalities and agricultural associations to develop programs which encourage plant diversity and native plants as well as the creation of corridors for pollinator movement.

## Sources and resources for further information:

### Websites

- Pollination Guelph <[pollinator.ca/guelph](http://pollinator.ca/guelph)>
- Friends of the Earth Canada <[foecanada.org](http://foecanada.org)>
- Ontario Beekeepers Association <[ontariobee.com](http://ontariobee.com)>
- The Xerces Society <[xerces.org](http://xerces.org)>
- The Food and Agriculture Organization <[fao.org](http://fao.org)>
- Yale Environment 360 <[e360.yale.edu](http://e360.yale.edu)>



### Sources

1. Tylianakis, J. 2013. The Global Plight of Pollinators. *Science*, 339: 1532-1533.
2. Burkle, L.A., Marlin, J.C. and Knight, T.M. 2013. Plant-pollinator interactions over 120 years: Loss of species, co-occurrence and function. *Science*, 339: 1611-1615.
3. Garibaldi, L.A., Steffan-Dewenter, I., Winfree, R., Aizen, M.A., Bommarco, R., Cunningham, S.A. et al. 2013. Wild pollinators enhance fruit set of crops regardless of honey bee abundance. *Science*, 339: 1608-1611.
4. Hildebrandt, A. 2013. Huge honey bee losses across Canada dash hopes of upturn. CBC News. <http://www.cbc.ca/news/canada/huge-honey-bee-losses-across-canada-dash-hopes-of-upturn-1.1699198>
5. Personal communication, Bob Crowhurst, President of Middlesex, Oxford, Elgin Beekeepers' Association, phone: 519-666-1670.
6. Hallmann, C.A. Ruud P.B. Foppen, van Turnhout, C. Hans de Kroon and Eelke Jongejans. 2014. Declines in insectivorous birds are associated with high neonicotinoid concentrations. *Nature* doi:10.1038/nature13531.
7. Noakes, S. 2014. Ontario looking to restrict use of bee-killing pesticides. CBC News. <http://www.cbc.ca/news/business/ontario-looking-to-restrict-use-of-bee-killing-pesticides-1.2698957>
8. Wikipedia, [http://en.wikipedia.org/wiki/Sanctuary#Plant\\_sanctuary](http://en.wikipedia.org/wiki/Sanctuary#Plant_sanctuary), accessed May 2014.
9. Packer L. 2010. *Keeping the bees: why all bees are at risk and what we can do to save them*, HarperCollins, Canada, 272p.
10. Morelle, R. August 2, 2011. Cities could be the key to saving pollinating insects. In: *BBC News*, <http://www.bbc.com/news/science-environment-14309007>, quote from Professor Jane Memmott, University of Bristol, accessed May 2014.
11. DeVore, B. December 19, 2012. Pollinators in Peril. In: *Land Stewardship Project*, <http://landstewardshipproject.org/posts/356>, accessed May 2014.
12. Krupke, C. December 18, 2013. *Neonicotinoid seed treatments: Efficacy and non-target effects*. In: 2013 Indiana Certified Crop Adviser Program Conference, Indianapolis, [http://www.indianacca.org/abstract\\_papers/papers/abstract\\_156.pdf](http://www.indianacca.org/abstract_papers/papers/abstract_156.pdf), accessed May 2014.
13. Page 2 of Stevens, S. and Jenkins, P. March 2014. *Heavy Costs: Weighing the Value of Neonicotinoid Insecticides in Agriculture*, Center for Food Safety, 24p, [http://www.centerforfoodsafety.org/files/neonic-efficacy\\_digital\\_29226.pdf](http://www.centerforfoodsafety.org/files/neonic-efficacy_digital_29226.pdf), accessed May 2014.
14. Chan, S. August 2013. 10 Facts About Neonicotinoids in Ontario. In: *Farms at Work*, [http://farmsatwork.ca/sites/default/files/FAW%20Factsheet%20neonic\\_web\\_e2.pdf](http://farmsatwork.ca/sites/default/files/FAW%20Factsheet%20neonic_web_e2.pdf), accessed May 2014.
15. Mason, R et al 2013. Immune suppression by neonicotinoid insecticides at the root of global wildlife declines. *Journal of Environmental Immunology and Toxicology* 1(1): 3-12.
16. Conniff, R. April 1, 2013. Tracking the causes of sharp decline of the Monarch butterfly. In: Yale Environment 360, [http://e360.yale.edu/feature/tracking\\_the\\_causes\\_of\\_sharp\\_decline\\_of\\_the\\_monarch\\_butterfly/2634/](http://e360.yale.edu/feature/tracking_the_causes_of_sharp_decline_of_the_monarch_butterfly/2634/), accessed May 2014.
17. Black, R. January 20, 2010. Bee decline linked to falling biodiversity. In: *BBC News*, <http://news.bbc.co.uk/2/hi/science/nature/8467746.stm>, accessed May 2014.
18. CBC NEWS. 2014. Home Depot to label plants exposed to bee-killing pesticide. <http://www.cbc.ca/news/business/home-depot-to-label-plants-exposed-to-bee-killing-pesticide-1.2701353>
19. Pollination Guelph, <http://www.pollinationguelph.ca/>
20. Royal Horticultural Society, <http://rhs.org.uk/science/conservation-biodiversity/wildlife/encourage-wildlife-to-your-garden/plants-for-pollinators>, accessed May 2014.
21. Engel E.C. and Irwin R.E. 2003. Linking Pollinator visitation rate and pollen receipt. *American Journal of Botany* 90 (11): 1612-1618. Percentages can differ, see section on biodiversity of the Food and Agriculture Organization of the United Nations, <http://www.fao.org/biodiversity/components/pollinators/en/>, accessed May 2014.
22. Pollinator Partnership, [http://pollinator.org/list\\_of\\_pollinated\\_food.htm](http://pollinator.org/list_of_pollinated_food.htm), accessed May 2014.
23. <http://www.london.ca/residents/Property-Matters/Lawns-Gardens/Pages/default.aspx>
24. <http://www.bbc.com/news/uk-england-gloucestershire-14191108>
25. **Gardeners Beware 2014** Friends of the Earth and Pesticide Research Institute. June 25/14.