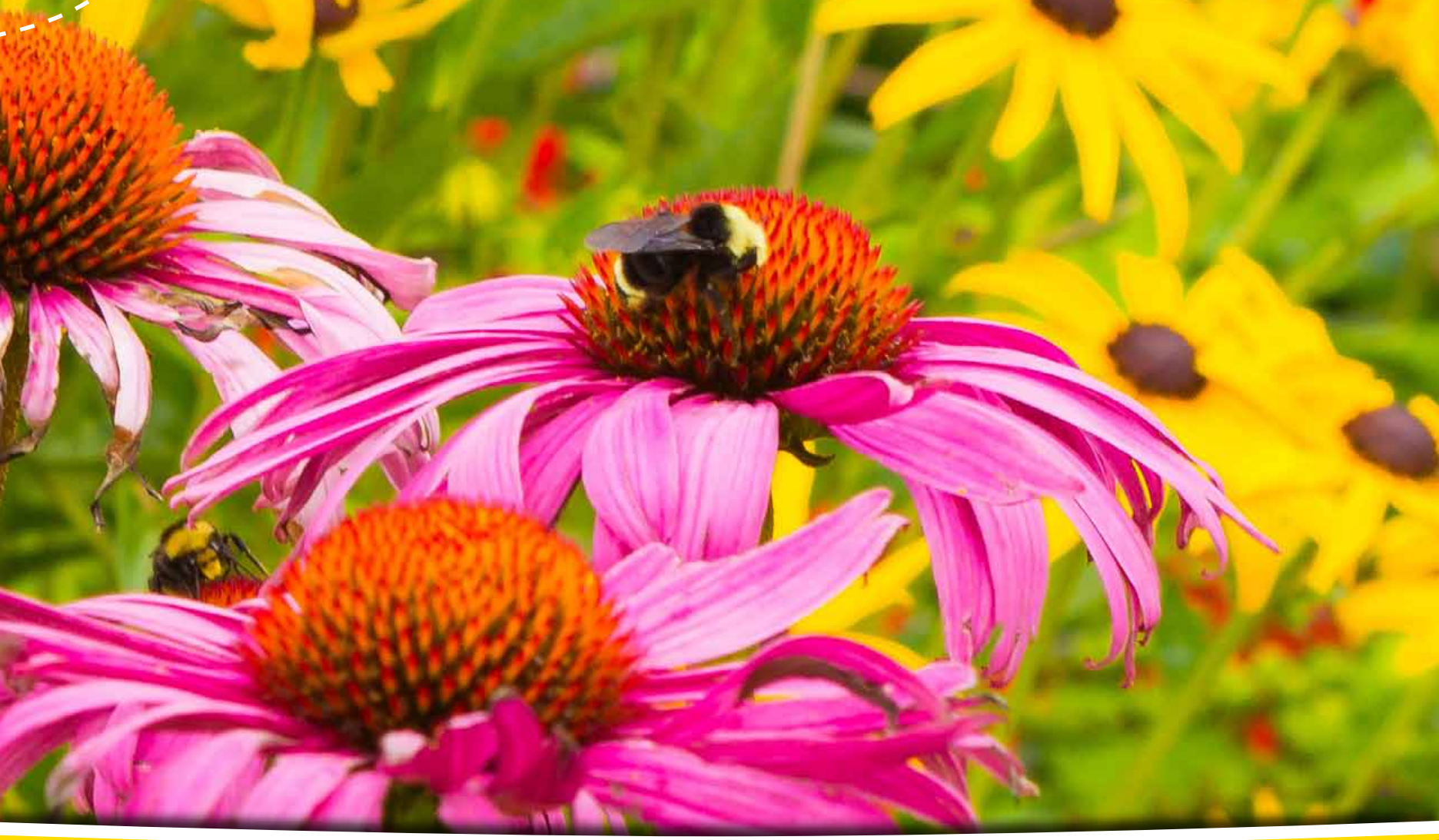




Save the Bees



Time for a Ban on Bee-Killing Pesticides



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The flat-leaved vanilla orchid (*Vanilla planifolia*) is a beautiful pale yellow-green flower with a striking trumpet-shaped blossom and a sweet smell. Its claim to fame is that it produces vanilla – the most expensive spice in the world after saffron. Originally found only in Mexico, vanilla is now cultivated around the world. But initial attempts to produce this spice outside of Mexico were a total failure.

Why?

The answer lies in the fact that only a tiny handful of bees native to Central America are capable of navigating the orchid's pistil and stamen to pollinate this fragrant flower.

The shape of a flower can determine which bees will collect nectar from it. A short-tongued bee gathers nectar from shallow flowers, while long-tongued bees prefer deeper flowers. Some short-tongued bees have found a way to gather nectar from deep flowers – they simply bite a small hole in the side of the flower to access the nectar.

Because these bees do not exist outside of the region, the production of vanilla elsewhere in the world relies on time-consuming hand-pollination.¹

These Central American bees are not the only bees that are “niche” pollinators. **Canada has over 970 species of native bees, many of which specialize in pollinating particular food crops such as blueberries, pumpkins and cranberries.**² For instance, honey bees – which were actually introduced to North America from Europe in the 17th century – are inefficient pollinators of tomato and eggplant flowers. As a result, that task is left to native bee species such as carpenter bees and Morrison's bumble bees.

The importance of bees to our natural world cannot be overstated. One out of every three bites of food we eat exists because of pollinators. Bees pollinate almost 75 per cent of the vegetables,

nuts and fruit grown in North America including apples, flaxseed, peaches, strawberries, carrots, pepper, avocado and almonds.

Life as we know it simply would not exist without bees, which is why their decline is so worrying! For the last 20 years, the number of honey bees and wild pollinators has been plummeting in North America and across the world. **Increasingly, a dangerous class of pesticides known as neonicotinoids, or neonics, has been implicated in this frightening decline.**

Read this paper to:

- ◆ Understand why neonic pesticides are both dangerous and unnecessary
- ◆ Find out what you can do to help bees in your backyard
- ◆ Learn what Ontario and other jurisdictions are doing to safeguard bees from neonics

Protecting bees from dangerous neonic pesticides is not only the right thing to do – it is absolutely essential for the future of our environment and our agricultural system.

Did You Know?

Most native bees in Canada are solitary and live for just a year. Canada's most common native bees are the sweat bee and the mining bee.³



Photo top: Bumble bees (Chris Bidleman), above: Barn swallow and American bumble bee (Robert McCaw).



The Danger of Neonicotinoid Pesticides

Nonicotinoids are a class of pesticides that are extremely toxic to honey bees, wild pollinators and other beneficial insects. **Neonics are potent neurotoxins and can paralyze and kill bees, even in very small doses.** These pesticides can also cause serious sub-lethal impacts, including loss of homing ability, reduced resistance to disease, impaired memory and learning and poorer breeding success.⁴

Introduced in the 1990s, neonics are now the most widely used class of pesticides in the world.⁵ They are used on a broad variety of crops, including canola, cherries, potatoes, blueberries, tomatoes, corn and soybeans.

Known as “systemic pesticides,” neonics are absorbed into the tissues of the plant including leaves, stems, nectar and even pollen. Though they’re also applied by sprays and ground treatment, the most common application is through seed treatments of crops such as corn and soybean.

Regardless of the level of pest infestation in their fields, farmers are encouraged to plant with seeds pre-treated with neonics. **In Ontario, almost 100 per cent of the corn seeds and 60 per cent of the**

soybean seeds planted in 2014 were pre-treated with neonics.⁶

Studies show that over 90 per cent of neonics end up in the soil and the wider environment, where they can persist for years. In the Canadian prairies, pothole wetlands now show high levels of neonic contamination.⁷ In agricultural areas, dandelions – which are an important early source of nectar and pollen for bees – also show contamination.⁸ A recent study from the Netherlands found that declines in insectivore bird species, such as swallows, corresponded with areas of concentrated neonicotinoid use.⁹

Implicated in massive bee die-offs across the world, neonics have also packed a hard punch in Canada. In the spring of 2012 and 2013, hundreds of millions of honey bee deaths in Canada were linked to neonic-treated corn and soy seeds that were planted in nearby fields. After an investigation into the deaths revealed neonic residue on 70 per cent of the bees tested, Health Canada stated that **“current agricultural practices related to the use of neonicotinoid treated corn and soybean seed are not sustainable.”**¹⁰



“Once the corn started to get planted our bees died by the millions...”

Photos clockwise from top: Dead bees (Maja Dumat), Untreated (yellow) and treated (pink) corn seeds (Creative Commons), Ontario beekeeper Dave Schuit lost 37 million bees in 2013 after nearby fields were planted with neonic-treated corn seed (Creative Commons).

Teaspoon of Death

One teaspoon of the potent neonic pesticide clothianidin is enough to deliver a lethal dose to 1.25 billion honey bees. “It would kill half of them, and leave the others feeling very unwell,” says University of Sussex Professor and bee expert David Goulson.¹¹

It is extremely troubling that up to 200,000 litres of pesticides containing neonics are estimated to be used yearly in Canada.¹²

Good News: People Are Taking Action to Defend Bees



Sometimes good news is hard to find. But as word has spread about the deadly impacts of neonics, people across the world have paid attention and taken action.

In the winter of 2013, after sustained bee kills and widespread public concern, the European Union announced restrictions on three of the most toxic types of neonicotinoids. **The two-year moratorium came after a six-month study by the European Food Safety Authority, which found that neonicotinoids pose “an unacceptable risk” to bees.**¹³

People across North America have also demanded action. In Vancouver, BC the municipal park board recently announced they would no longer buy ornamental plants treated with neonics. In 2014, the cities of Seattle and Spokane, Washington followed the lead of Eugene, Oregon and banned the use of neonics on all municipal property. The US National Forest Service announced that in 2016 they will ban neonic use in National Wildlife Refuges, due to impacts on pollinators.¹⁴

However, the most important development to protect Canada’s bees occurred in Ontario. In November 2014, after years of troubling honey bee deaths – including a catastrophic honey bee loss of 58 per cent in the winter of 2013/14 – Ontario announced a concrete plan to substantially reduce neonic usage. It was the first plan of its kind in North America.

The target of the Ontario Pollinator Health Action Plan is impressive. **The provincial government proposes to reduce the number of acres planted with neonic-treated corn and soybean seed by 80 per cent by 2017.**¹⁵ As mentioned, almost 100 per cent of corn seeds and 60 per cent of soybeans planted in Ontario were treated with neonics. These crops alone cover almost five million acres in Ontario. The Ontario government is also looking at the role that disease, climate change and habitat loss play in bee declines.



Photos above: Wildflowers in BC (Michael Wheatley), Natural honey from BC Buzz Honey Corp. (Kristin Henry).

left: Wilderness Committee staff promote bee health at horticulture trade show (Aimee MacDonald).



“A single ‘Poncho’ [neonic-treated] corn kernel (at 1.25 mg/kernel): contains enough active ingredient to kill hundreds of thousands of honey bees...”¹⁶

- Dr. Christian Krupke, Assoc. Professor, Dept. of Entomology, Purdue University



Photo: American bumble bee (Robert McCaw).



Neonics: Little Benefit, Huge Risks

In 2014, the US Environmental Protection Agency (EPA) announced the results of a comprehensive review on the use of neonics on soybean crops. The conclusions were startling.

Neonics did not increase crop yield (the amount of soybean produced). This was a stunning revelation because pesticide corporations, like Syngenta and Bayer, promote the use of their product based on killing "pest" insects and increasing crop yield.

"EPA concludes that these seed treatments provide little or no overall benefits to soybean production in

most situations. Published data indicate that in most cases there is no difference in soybean yield when soybean seed was treated with neonicotinoids versus not receiving any insect control treatment."¹⁷

Other North American studies have shown similar results with corn crops. Neonic-treated seeds resulted in "no statistical difference" in crop output when compared to untreated seeds.¹⁸ In Europe, where neonicotinoid use is currently prohibited, farmers have also seen excellent yields of sunflower and maize crops sown without neonics in 2014.¹⁹

DDT was one of the first chemicals in widespread use as a pesticide. The severe dangers it posed to food safety, wildlife and human health were documented by Rachel Carson in her groundbreaking 1962 book, *Silent Spring*. DDT was banned for agricultural uses worldwide in 2001.²⁰ Astoundingly, by volume neonic pesticides can be up to 10,000 times as powerful as DDT.²¹



Photos: Monarch butterfly (Robert McCaw), Fruit and vegetables (Sue Fox).

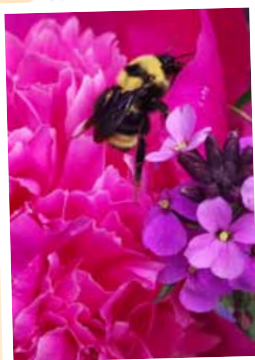


Photo: Bumble bee (Gwen Barlee).

All the science is not done, but everything that I have before me ... suggests to me that **this is the biggest threat to the structure and ecological integrity of the ecosystem that I have ever encountered in my life, bigger than DDT.**

Ontario Environmental Commissioner Gord Miller on the impact of neonicotinoids²²

Neonicotinoids – The New DDT

In the summer of 2014, scientists announced the results of the Worldwide Integrated Assessment (WIA) review of neonicotinoids, and another systemic pesticide called Fipronil. The review confirmed many people's worst fears. Not only were the pesticides confirmed to be highly toxic to bees, worms, butterflies and birds, but the impacts went even further. Based on the review, the scientists with the WIA said the use of these pesticides was **"predicted to result in substantial impacts on biodiversity and ecosystem functioning,"** and could jeopardize food security. The review, conducted by 50 independent scientists, analyzed over 800 articles and is the most comprehensive literature review of neonics ever done.²³

Where Have All the Bees Gone?

During a typical winter, beekeepers (or "apiculturists") may expect to lose up to 15 per cent of their honey bees. This loss is considered acceptable, according to the Canadian Association of Professional Apiculturists (CAPA).

But for the last eight years, since CAPA began keeping records, honey bee colony overwintering losses in Canada have jumped – averaging 26.5 per cent a year.²⁴ In the US the mortality of honey bee colonies has been even higher, averaging 30 per cent between 2007 and 2014.²⁵

While the unprecedented loss of honey bees is very concerning, the decline in pollinators is not limited to domesticated bees. In many areas, wild bee population numbers are also plummeting.

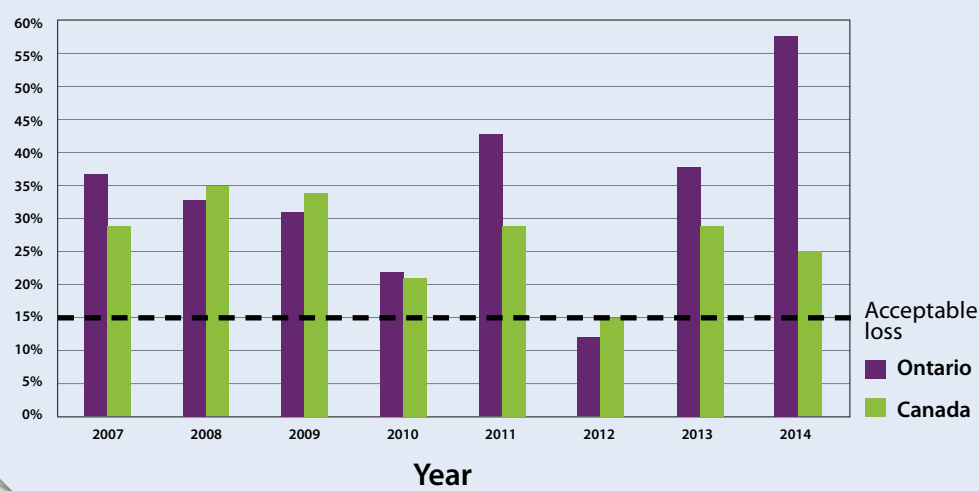
One recent study found troubling patterns in four native bumble bee species: the yellow-banded, Western, rusty-patched and American bumble bees. The research showed that over the last two decades, these previously common bumble bees displayed marked declines in both numbers and occupied habitat.

The once common rusty-patched bumble bee experienced a shocking 96 per cent decline.²⁶ In Canada, only three individual rusty-patched bumble bees have been found over the last ten years – all within Pinery Provincial Park in Ontario.²⁷



Photos above: Bee hives (Rainer Stropek), Honey bee hive (Bug Lady/City Farmer), Dead bumble bee (Creative Commons).

Winter Honey Bee Losses in Ontario & Canada



(Source: Canadian Association of Professional Apiculturists).

Colony Collapse Disorder

Colony collapse disorder (CCD) is a term introduced by scientists in 2006 to describe the mass disappearance of honey bees in a colony. It can be caused by a variety of stressors that lead worker bees to suddenly abandon the colony, which stops the hive from functioning.

For years, people have suspected a connection between neonicotinoids and colony collapse disorder. But in 2014 this link was strengthened when scientists at Harvard University found that two types of neonicotinoids

– imidacloprid and clothianidin – appeared to "significantly harm honey bee colonies over the winter, particularly during colder winters." In two separate studies, the research group found "a link between low doses of imidacloprid and Colony Collapse Disorder (CCD)."

Alex Lu, an associate professor of environmental exposure biology and the lead author of the study said, **"We demonstrated again in this study that neonicotinoids are highly likely to be responsible for triggering CCD in honey bee hives that were healthy prior to the arrival of winter."**²⁸



Pesticide Companies: Putting Profits Before Bee Health

Developing and selling neonicotinoids is a multi-billion dollar business. As more and more independent research has proven the harmful impacts of these products, pesticide companies are working overtime to protect their profits.

Two of the biggest players, **Syngenta** and **Bayer**, are suing the European Commission for introducing a two-year moratorium on neonicotinoids.²⁹ CropLife Canada, a lobby group that represents Bayer, Syngenta and other pesticide manufacturers, is already running expensive full-page ads opposing the Ontario government's initiative to protect bees and reduce neonic use.³⁰



syngenta

Standing Up for Bees

In September of 2014, something remarkable happened. **Two honey producers in Ontario sued Bayer CropScience and Syngenta Canada for \$400 million for producing bee-killing pesticides.**

The lawsuit, on behalf of all Canadian beekeepers, was launched to "stop the use of the neonicotinoids to stop the harm to the bees and the beekeepers."³¹

The case hasn't gone to court yet, but we are keeping our fingers crossed that honey producers, beekeepers, bees and wild pollinators will claim victory in this David versus Goliath fight.



Photos above: Pesticide protest outside European Parliament (Creative Commons), Promoting neonic ban in Vancouver, BC (Aimee MacDonald).

Summary

Bees face a wide variety of challenges. Disappearing meadows, loss of habitat, climate change, disease, mites and pesticides are all factors that threaten the health of our bees and wild pollinators. But it is neonicotinoids that have been repeatedly implicated in the deaths of billions of bees. Year after year, this

has emerged as one of the greatest concerns.

How can we still be using a pesticide so toxic that just a teaspoon can kill hundreds of millions of bees?

If we value bees, food security and the natural world we must ban neonicotinoids – just as we banned DDT years ago.

TAKE ACTION!



HELPING BEES IS AS EASY AS 1, 2, 3

- 1. Plant a bee-friendly garden.** Plant flowers that are attractive to bees! Allium, butterfly bush, comfrey, foxglove and globe artichoke are just a few of the less common flowers that are wildly attractive to bees. Visit our webpage – WildernessCommittee.org/SaveTheBees – to learn more.
- 2. Don't buy plants contaminated with neonicotinoids.** Research has shown that up to 50 per cent of ornamental plants sold in Canada are contaminated with bee-killing neonicotinoids.³² When you go to a store to buy bedding plants, make sure you receive a **guarantee** that the plants you buy have not been treated with neonics. **If the retailer can't make that guarantee, don't buy the plant.** No one wants to plant a garden that will harm bees.
- 3. Take action.** Please take a moment to write to the Prime Minister of Canada and ask him to protect Canada's bees and wild pollinators by enacting a complete nation-wide ban on bee-killing neonicotinoid pesticides. If you have already contacted the Prime Minister (thank you!) please get three of your friends or family to take action.



Photo: Bee-friendly garden (Gwen Barlee).

GIVE BEES A FIGHTING CHANCE!

CONTACT INFORMATION:

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Ottawa, ON, K1A 0A2

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The Wilderness Committee is Canada's largest membership-based wilderness preservation organization.

REFERENCES

- "Orchid Overview". Pollinator Partnership. <http://bit.ly/17By9y2>
- "Native Pollinators and Agriculture in Canada". Ministry of Agriculture, 2014. <http://bit.ly/1zLvjxY>
- Ibid.
- "Existing Scientific Evidence of the Effects of Neonic Pesticides on Bees". EU Env't, Public Health & Food Safety Authority, Dec. 2012. <http://bit.ly/17JjWAA>
- Simon-Delso, N. et al. "Systemic pesticides: trends, uses, mode of action and metabolites". Env'tal Science & Pollution Research, Jan. 2015. <http://bit.ly/1DeR7De>
- "Pollinator Health Discussion Paper". Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA), Nov. 2014. <http://bit.ly/1LNMGw>
- Leo, Geoff. "Pesticide 'contaminating' Prairie wetlands: scientist". CBC News, Jan. 6, 2014. <http://bit.ly/1COylyx>
- Krupke, Christian. "Neonicotinoid seed treatments: Efficacy and non-target effects" (PowerPoint). Purdue University, Dec. 18, 2013. <http://bit.ly/1Ev9F6B>
- Hallman, Caspar A. et al. "Declines in insectivorous birds associated with high neonicotinoid concentrations". Nature, Jul 17, 2014. <http://bit.ly/1wldLr5>
- "Evaluation of Canadian Bee Mortalities in 2013 Related to Neonicotinoid Pesticides". Health Canada, Sept. 26, 2013. <http://bit.ly/1Fz9pSa>
- Goulson, David. "Are crops being devastated without neonicotinoid protection?" University of Sussex, Oct. 6, 2014. <http://bit.ly/18qt7FD>
- Health Canada Inquiry into Use of Neonicotinoid Pesticides. Nov. 2013. <http://bit.ly/1FZ9o4> (p. 17)
- Carrington, Damian. "Bee-harming pesticides banned in Europe". The Guardian, Apr. 29, 2013. <http://bit.ly/1LNpyr9>
- Whitman, Maryann. "Use of Controversial Pesticides Banned in Nat'l Wildlife Refuges". Wild Ones Journal, Jul. 2014. <http://bit.ly/1zLjwwo>
- See citation 6.
- Krupke, Christian. "Neonicotinoid seed treatments: Efficacy and non-target effects" (PowerPoint). Purdue University, Dec. 18, 2013. <http://bit.ly/1Ev9F6B>
- "Benefits of Neonicotinoid Seed Treatments to Soybean Production". US EPA, Oct. 2014. <http://1.usa.gov/1DvfkY1>
- Arnason, Robert. "No yield benefit from neonicotinoids: scientist". Producer, May 10, 2013. <http://bit.ly/1MVMHck>
- "Crop Monitoring in Europe". European Commission, Dec. 15, 2014. <http://bit.ly/1DvF50t>
- "The DDT Story". Pesticide Action Network. <http://bit.ly/1zLjQwb>
- Monbiot, George. "Neonicotinoids are the new DDT...". The Guardian, Aug. 5, 2013. <http://bit.ly/14cLZsr>
- "Pesticides linked to bee deaths pose 'massive' ecological threat, watchdog warns". CTV News, Oct. 7, 2014. <http://bit.ly/1DX8AUJ>
- "Conclusions of the WIA on the risks of neonicotinoids...". Task Force on Systemic Pesticides, Jun. 2014. <http://bit.ly/1Ax2byc>
- "CAPA Statement on Honey Bee Wintering Losses in Canada (2014)". CAPA, Jul. 2014. <http://bit.ly/1LL023W>
- "Colony Loss 2013-2014". Bee Informed, May 2014. <http://bit.ly/1GxYuZQ>
- Stokstad, Erik. "Bumblebee Decline Confirmed Across US". Science Magazine, Jan. 4, 2011. <http://bit.ly/1MVOePz>
- "Rusty-Patched Bumblebee". Wildlife Preservation Canada. <http://bit.ly/1C0C3hi>
- "Study strengthens link between neonicotinoids and collapse of honey bee colonies". Harvard School of Public Health, May 9, 2014. <http://bit.ly/1Ax3QDY>
- Zara, Christopher. "Bayer CropScience Fights Europe's Pesticide Ban". International Business Times, Sept. 9, 2013. <http://bit.ly/1zLjOrv>
- Porter, Catherine. "Safety of neonicotinoids for bees and other creatures unclear". Feb. 6, 2015. <http://on.thestar.com/1aqsRre>
- "Canadian beekeepers sue Bayer and Syngenta over neonic pesticides". CBC News, Sept. 3, 2014. <http://bit.ly/1JByDkZ>
- "Gardeners Beware 2014". Friends of the Earth Canada, Jun. 25, 2014. <http://bit.ly/1Ax47GT>

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