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LIVING

Pointing a finger at pesticides

Current research unveils dire warnings of effects on birds and pollinators

This week, I would once again like to provide summaries of recent research findings and news that should be of interest to anyone concerned about what is happening with bird and pollinator populations.



DREW MONKMAN

OUR CHANGING SEASONS

PESTICIDES AND GRASSLAND BIRD DECLINES

A study led by a preeminent Canadian toxicologist identifies acutely toxic pesticides as the most likely leading cause of the widespread decline in grassland bird numbers in the United States. This finding challenges the widely-held assumption that loss of habitat is the primary cause of those population declines. The scientific assessment, which looked at data over a 23-year period – from 1980 to 2003 – was published on Feb. 20, 2013 in PLOS One, an online peer-reviewed scientific journal. The study was conducted by Dr. Pierre Mineau, recently retired from Environment Canada, and Mélanie Whiteside of Health Canada. It looked at five potential causes of grassland bird declines besides lethal pesticide risk: change in cropped pasture such as hay or alfalfa production, farming intensity or the proportion of agricultural land that is actively cropped, herbicide use, overall insecticide use, and change in permanent pasture and rangeland.

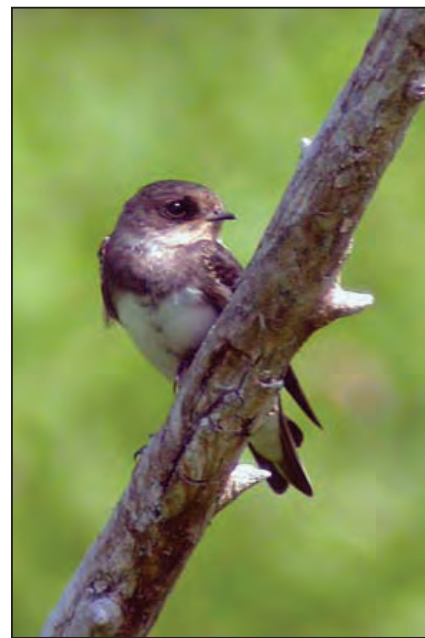
“What this study suggests is that we need to start paying a lot more attention to the use of pesticides if we want to reverse, halt or simply slow the very significant downward trend in grassland bird populations. Our study put the spotlight on acutely toxic insecticides used in our cropland starting after the Second World War and persisting to this day – albeit at a lower level. The data suggest that loss of birds in agricultural fields is more than an unfortunate consequence of pest control; it may drive bird populations to local extinction,” Mineau said. Many grassland bird species have undergone range contractions or population declines in recent decades. In fact, analyses of North American birds indicate that these birds are declining faster than birds from other types of habitat. Habitat protection has long been considered a central pillar in efforts to stem the decline of grassland bird species, such as the Horned Lark, the Bobolink and the Upland Sandpiper. Most grassland species are still relatively common in the Kawarthas.

The researchers focused on the extent to which lethal pesticides, such as organophosphate and carbamate insecticides, are responsible for the decline in grassland bird populations. The study found that these pesticides were nearly four times more likely to be associated with population declines than the next most likely contributor, changes in cropped pasture. The current study relies on pesticide data from the 1980s and early 1990s, a time when organophosphates such as diazinon and chlorpyrifos, and carbamates such as carbofuran and methomyl, were still largely in vogue. Since that time, a new class of insecticides, the neonicoti-



Wikimedia photo

Crop sprayers like this one pump out the type of pesticides that scientists warn are decimating bird and insect populations.



KARL EGRESSY photo

Among the threatened species are the bank swallow, horned lark and honey bee.



KARL EGRESSY photo

noids, have soared to the top of global pesticide markets. Unfortunately, as we will see in the next news item, birds and other organisms are not faring much better under the new pesticide regime, either.

UNDERESTIMATING TOXICITY OF NEONICOTINOIDS

Earlier this spring, the American Bird Conservancy (ABC) called for a ban on the use of nicotine-like chemicals called neonicotinoids as seed treatments, pending an independent review of the products' effects on birds, terrestrial and aquatic invertebrates, and other wildlife. Neonicotinoids are now the world's most widely used class of insecticides. Clothianidin and imidacloprid are two of the most commonly used neonicotinoid pesticides. “It is clear that these chemicals have the potential to affect entire food chains. The environmental persistence of the neonicotinoids, their propensity for

runoff and for groundwater infiltration, and their cumulative and largely irreversible mode of action in invertebrates raise significant environmental concerns,” said Cynthia Palmer, co-author of the report and Pesticides Program Manager for ABC, one of the leading bird conservation organizations in the U.S.

“A single corn kernel coated with a neonicotinoid can kill a songbird,” Palmer said. “Even a tiny grain of wheat or canola treated with the oldest neonicotinoid – called imidacloprid – can fatally poison a bird. And as little as 1/10th of a neonicotinoid-coated corn seed per day during egg-laying season is all that is needed to affect reproduction.”

The gravity of the situation became even clearer in late April when the European Commission slapped a two-year ban on neonicotinoids. These pesticides are suspected to be one of the leading causes of colony collapse dis-



Wikimedia photo

order in Honey Bees. The EC action will restrict the use of three major neonicotinoids on seeds and plants attractive to bees, as well as grains, beginning Dec. 1. Studies suggest that the nicotine-like compounds disrupt bees' navigation systems and leave them unable to learn, while weakening their immune system. In late June, an estimated 50,000 bumblebees were found dead or dying in a shopping mall parking lot in Wilsonville, Oregon. Authorities confirmed that the massive bee die-off was caused by the use of a neonicotinoid pesticide, dinotefuran, on nearby trees.

Closer to home, the Ontario Beekeepers Association has requested that regulators immediately reassess the bee safety of all neonicotinoid pesticide products and suspend all conditional registrations until we understand how to manage the risks posed by these products to Honey Bees and other pollinators. Canadian govern-

ment scientists have found evidence that neonicotinoid pesticides were linked to mass bee deaths during the spring corn planting in Ontario and Quebec in 2012. Bee colonies in the Peterborough area suffered serious die-offs this past winter, as well.

STATE OF THE WORLD'S BIRDS

Canada recently hosted one of the world's largest gatherings of conservation leaders. The 2013 BirdLife International World Congress took place in Ottawa from June 19-22. Conservationists, politicians, and businesspeople from more than 120 countries attended, including special guests Margaret Atwood and Graeme Gibson. Participants discussed global threats to biodiversity and the environment, and shared expertise and innovative solutions.

The third edition of the “State of the World's Birds” report was launched at the Congress. The report explains that bird populations and overall ecosystem health are declining around the world. It finds a total of 1,313 bird species are threatened worldwide many because of multiple factors. The issues range from invasive species to climate change and especially to the rise of industrial-scale agriculture.

According to the report, the clearing of virgin forest for palm oil plantations in Southeast Asia (e.g., the illegal wildfires of recent weeks on Sumatra which have caused thick clouds of haze in Malaysia and Singapore) as well as the intensification of farming in Europe and elsewhere, are examples of how modern agriculture is transforming the planet and making it much less friendly to birds. The pattern is also apparent in Canada, where grassland birds have been among the hardest hit. Birds that depend on flying insects are also faring poorly. The once-abundant Barn Swallow, an iconic species across rural Canada and cottage country, has sustained a shocking 70% to 80% loss in population in the past 40 years.

But there is good news: conservation works. For example, birds of prey and waterfowl are on the rebound in Canada due to conservation efforts and a reduction of contaminants in the environment, such as the chemical DDT. Red-tailed Hawks are even nesting in Jackson Park in Peterborough!

ANOTHER AERIAL INSECTIVORE AT RISK

At its spring meeting held in Winnipeg from April 28 to May 3, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assessed the Bank Swallow as a Threatened species. Having declined by as much as 98% since 1970, the Bank Swallow joins several other formerly common and widespread species of aerial insectivores that COSEWIC has recently assessed as being at risk – Barn Swallow, Eastern Whip-poor-will, Common Nighthawk, Chimney Swift, Eastern Wood-Pewee, and Olive-sided Flycatcher. Bank Swallows, which nest in burrows dug into exposed sand or soil banks, are still fairly common in Peterborough County. Watch for them around sand pits and quarries.

Drew Monkman is a retired Peterborough teacher and author of Nature's Year: Changing Seasons in Central and Eastern Ontario. He can be reached at dmonkman1@cogeco.ca. Visit his website and see past columns at www.drewmonkman.com