Neonicotinoids are Harming the Birds and the Bees

Neonicotinoids, a class of pesticide linked to the decline of bee populations worldwide, have also been linked to declining bird populations. Researchers from the University of Saskeccthwan exposed a population of migrating white-crowned sparrows to imidacloprid (a neonicotinoid manufactured by Bayer). Birds given the highest dosage lost significant percentages of their body weight and necessary fat storage with hours of exposure. The same group of birds also deviated from usual eating patterns, and many of the sparrows took an extra 3.5 days to continue their migration. This is a big deal for bird populations. According to Christy Morrissey, an ecotoxicologist at the University of Saskatchewan and a co-author of the study,

> *There is a major systematic population decline in farmland birds, and these commonly-used pesticides are an identifying mechanism.”*

What It Means

Migration is a critical and dangerous time in a bird’s life. There are increased numbers of predators, and timing migration correctly is crucial to successful reproduction. Birds that arrive later than the others will arrive to find that many mates and quality nesting spots have already been chosen. Neonicotinoid exposure caused many birds to delay their migration by an extra 3.5 days, more than enough to negatively affect migrating bird populations. How is the insecticide doing that?

This study found that birds exposed to imidacloprid stopped eating and lost up to six percent of their overall body weight

and about seventeen percent of their fat reserves. The stored fat is especially important for migration, as it provides the energy necessary for long migrations. The research team in charge of this study previously reported on the detrimental effects of imidacloprid on birds in 2017, where the birds experienced weight loss and disorientation. Four of the birds in that study died within 24 hours of receiving their last dose of the pesticide, with researchers euthanizing two due to breathing difficulties and foaming at the crop (a pocket in the throat where birds temporarily store food).

Unpleasant, Yet Unsurprising

The majority of research and concern surrounding neonicotinoids has dealt with bees. The European Union voted to ban these types of pesticides with the exception of use in covered greenhouses in order to protect bee populations. Major Canadian cities like Montreal and Vancouver have also banned the insecticide. Bees exposed to neonicotinoids are reported to have more difficulties surviving the winter, maintaining their hive and larvae, experienced problems reproducing, and have compromised immune systems, among other issues.

A 2019 study also found that bees exposed to imidaclopridexperienced flight difficulties for bees in a controlled environment. Like this recent study on birds, researchers found that the bees experienced disruptions in the usual flight patterns. Whereas the birds waited until they were more able to complete their migration, the bees in the study from Imperial College London exhibited hyperactive behaviors for the first portion of their flight which then dropped off, resulting in shorter flights. Daniel Kenna is the first author of the study,

> *Neonicotinoids are similar to nicotine in the way they stimulate neurons, and so a 'rush' or hyperactive burst of activity does make sense…However, our results suggest there*

> *may be a cost to this initial rapid flight, potentially through increased energy expenditure or a lack of motivation, in the form of reduced flight endurance.”*

Regulating these Pesticides

Neonicotinoids are one of the widely used groups of pesticides in the world. In the U.S., they’ve been sprayed on up to 95% of corn and canola, as well as other crops like soybeans, cotton, sorghum, sugar beets, cereal grains, rice, nuts, wine grapes, and assorted fruits and vegetables. These chemicals have been proven to disrupt bee and bird populations, crucial parts of a working ecosystem. In 2017, the rusty patched bumblebee became the first bee on the U.S. Fish and Wildlife Service’s (FWS) endangered species list, but little else has changed in the U.S. In fact, things are likely to get worse.

The previous administration’s FWS announced plans to phase out neonicotinoid usage by January of 2016. The Trump administration reversed that ban in 2018. The Environmental Protection Agency’s approval of sulfoxaflor, another pesticide shown to harm bee populations, confirms that this administration is unconcerned with the damage these insecticides do to our necessary pollinators.

Sources:

- *Decline of migrating birds could be partly due to pesticides* – New Scientist
- *A Widespread Pesticide Causes Weight Loss and Delayed Migration in Songbirds* – Audubon
- *Common pesticide makes migrating birds anorexic* – Science
- *Two Widely Used Pesticides Found to Disorient and Sicken Migrating Songbirds* – Audubon
- *Bees Exposed to Neonicotinoid Pesticide Become Hyperactive Before Crashing Out, Reducing their Ability*

to Forage – Newsweek

- *Trump administration sued over controversial rollback of insecticide ban* – The New Food Economy
- *Trump administration to approve pesticide that may harm bees* – The Guardian