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To: House Natural Resources Committee

From: Margaret Fowle, Audubon Vermont

Re: Information about birds and pesticides to the Vermont House Natural Resources Committee

Date: April 7, 2021

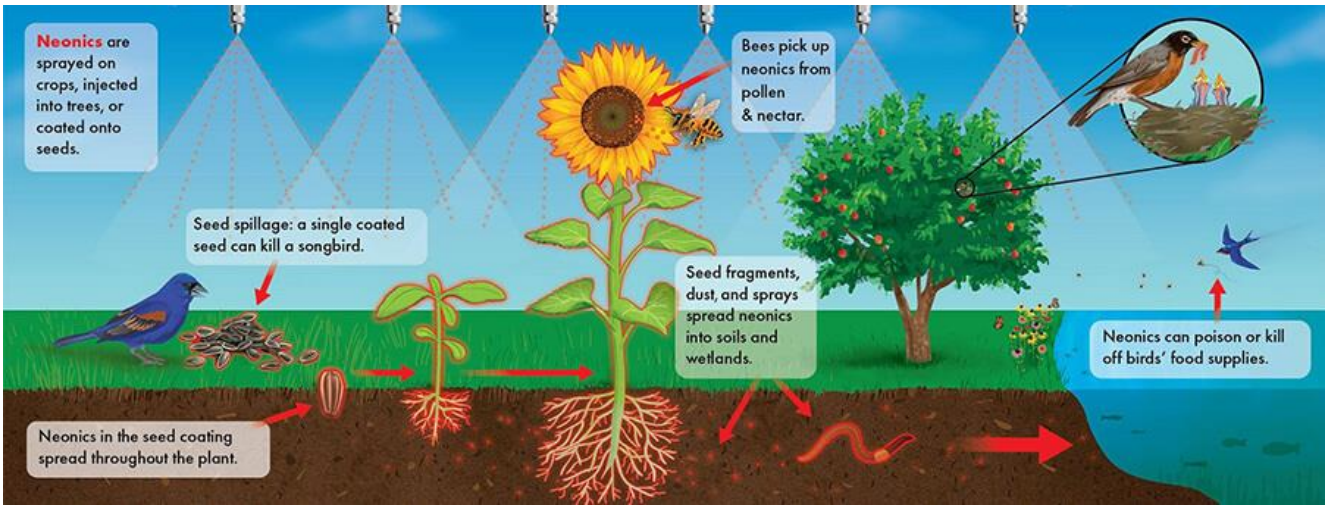
- Bird population declines we've observed:
  - Cornell Report of more than three billion birds gone: #BringBirdsBack (3billionbirds.org)
    - Exact cause of the bird declines is unknown, but there appear to be direct links to:
      - Habitat loss in both breeding and wintering grounds
      - Agricultural practices, including runoff into waterways and intensified grassland management
      - Predation by domestic cats
      - Building collisions
      - Use of chemical pesticides, especially insecticides
        - Study in Germany documented an 82% in the biomass of flying insects over the past 25 years.
          - More than 75 percent decline over 27 years in total flying insect biomass in protected areas (plos.org)
  - Vermont Breeding Bird Atlas & other studies: declines in aerial insectivores include:
    - Chimney Swift - -25% change from first Atlas in VT
    - Common Nighthawk – 91% decrease from first Atlas in VT
    - Purple Martin – 62% decrease from first Atlas in VT
    - Tree Swallow – declines noted in Breeding Bird Survey:
      - Getting to the root of long-term tree swallow declines -- ScienceDaily
    - Eastern Meadowlark (eats seeds and insects) – 55% decrease from first Atlas in VT

- Bird population declines we predict:
  - Scientists are beginning to get a handle on the effects of the changing climate, as shown in Audubon's report: Survival by Degrees: 389 Bird Species on the Brink | Audubon

        - The report predicts the effects of different warming scenarios on North American bird species, and determines the species that are most at risk of extinction (nearly 400 species in the most extreme warming scenario)

- Pesticide effects on birds
    - Neonicotinoids were first introduced in the 1990's, now widely used mostly as seed dressings
        - Water soluble, can be taken up by plants (1.6-20%); the rest remains in the soil; most goes into the larger environment, as they can leach from the soil if water is available
            - Plants take up chemical and make them resistant to herbivorous insects
            - Many studies show negative effects on bumblebees and honeybees
    - Persistence of neonicotinoids in soil, water and wild plants is of potentially serious concern. If these pesticides are able to move into habitats surrounding agricultural fields, the range of organisms that they could affect is much greater than simply crop-visiting invertebrates. If these pesticides last for extended periods in the wider environment, then neonicotinoid exposure may be chronic, rather than an acute exposure associated with the sowing of treated seeds
        - The widespread contamination of water systems with levels of neonicotinoids known to be harmful to sensitive aquatic invertebrates. This is now a chronic global problem, likely to be impacting significantly on aquatic insect abundance and on food availability for their predators, including fish, birds and amphibians.
    - Lethal and sub-lethal effects on birds that eat seeds
        - House sparrows were unable to fly after ingesting treated seeds
        - Appetite suppressant for White-crowned Sparrows – become disoriented and lose weight A neonicotinoid insecticide reduces fueling and delays migration in songbirds | Science (sciencemag.org)
            - This has implications for bird migration, as the depleted fat reserves and delayed/altered routes may affect the timing of breeding and/or replenishing fat reserves.
        - Reduction in food availability for insectivores
            - Aquatic insects, which are a critical food source for aerial insectivores — swifts, swallows, and other insect-eating birds that are now in decline. Study found that levels of these chemicals in many surface and ground waters are enough to kill the aquatic invertebrate life on which insect-eating species depend, including birds such as the Common Nighthawk and Purple Martin.
            - Netherlands – increases in bird populations on farms negatively affected by the concentration of one of the neonicotinoids

Graphic from [Neonics and Birds | American Bird Conservancy (abcbirds.org)]



Other Resources:

- [The environmental risks of neonicotinoid pesticides: a review of the evidence post 2013 (springer.com)]
- [Huge decline in songbirds linked to neonicotinoids (nationalgeographic.com)]
- [What you need to know about neonicotinoids and the EU - Insights From Our Labs to Yours (covance.com)] – discusses a bit about the restrictions of pesticides in Europe vs. US
- [Spatiotemporal Patterns in Nest Box Occupancy by Tree Swallows Across North America (bowdoin.edu)]