

ARE PESTICIDES A FACTOR IN BIRD DECLINES?

Executive Summary

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Is the practice of feeding wild birds in our backyards jeopardizing future populations of some bird species? Backyard bird feeding can help migratory birds get energy needs met on stopovers as they travel to their breeding grounds, but what do we know about how production of bird food affects birds in areas where the food is grown. One of the most popular purchased bird foods, sunflower seeds, are primarily grown in the Prairie Avifaunal Biome with the use of pesticides, some which are highly toxic to birds.

The most significant declines in the U.S. have occurred in populations of grassland and wetland bird species within the Prairie Avifaunal Biome. Nearly all native grasslands have been lost due to land conversion, habitat degradation and fragmentation. Conversion of tall grass prairie into agricultural or urban use has reduced this critical bird habitat to less than 1% (Rich 2004). Six of the 9 endemic species are declining nationwide (Samson and Knopf 1996).

Three flyway zones cross the Great Prairies where migratory birds, including Neotropical migrants dependent on grassland and wetland habitats, breed. It is within this grassland biome, that many Arctic species winter and nearly 40% of the species on the Partners in Flight (PIF) continental Watch List breed (Rich et al. 2004).

Many of these migrants use sunflower fields to nest and forage in the spring when pesticides are applied and energy needs are high. Eighty-one bird species have been found to use sunflower fields in the spring (Kenyon 1996;

Knutsen 1998; SDOU 1991). Twenty-five of these species have exhibited longterm declining trends (Sauer et al. 1997). Half of these 25 bird species are more than 50% granivorous. These seed eating birds, which include many passerines, have been found to be highly susceptible to exposure (Gamble et al. 2004).

Insecticides and herbicides permitted for use on sunflower fields have been shown to affect bird survival and reproduction at sublethal levels. Many of these pesticides, organophosphates, chlorpyrifos and methyl parathion and carbamates carbaryl and carorofuran, have been implicated in numerous bird kills as well (Fleishi et al. 2004). Determination of lethal and sublethal effects is focused on acetylcholinesterase inhibition, and is used in the regulatory process to determine organophosphates and carbamates toxicity.

However, recent research has found that some of these pesticides have noncholinergic pathways that produce neurotoxic effects at much lower doses. For example, a noncholinergic component of the organophosphate chlorpyrifos was found at doses below the threshold for observable toxicity or for inhibition of fetal brain cholinesterase (Meyer et al. 2003).

Other recent research by Anaway et al. (2005) found transgenerational effects (decreased spermatogenic capacity, male infertility and abnormal pregnancy outcomes in the female) were produced by pesticide exposure during late embryonic or early postnatal periods. Further, according to Colborn (2004) some hormones are known to operate at parts per trillion and parts per billion. Equivalent exposure to endocrine disrupting chemicals in the environment is

equal or higher indicating the extreme vulnerability of developmental organisms to chemical perturbation (Colborn 2004).

Some herbicides used in sunflower production regulate growth in plants, such as glyphosate (Roundup, Rodeo) and dinitroanilines (pendimethalin, trifluralin, ethalfluralin), and have been shown to cause endocrine disruption in mammals. These herbicides are applied to nearly 100% of sunflower fields and often to surrounding wetlands to destroy cattail roosting areas for blackbirds. Herbicide effects on birds and other mammals continue to be poorly understood (Lydy et al. 2004).

Drift of these chemicals in air, water and soil can contaminate areas far from where they are applied. Exposure to harmful insecticides and herbicides is one more stressor that may tip the scale against the survival of birds in Prairie Avifaunal Biome and beyond. Use of pesticides that are potentially lethal to birds should be restricted as part of the efforts required to reverse population declines in farmland and grassland birds Mineau et al. (in press). Populations sinks, where reproduction does not compensate for mortality, may already be occurring on conventionally farmed sunflower fields and other prairie croplands (Mineau et al. in press). Regulatory agencies must be pressured to withdraw pesticides that are known to harm birds.

On April 27, 2005, the Supreme Court ruled that citizens damaged by pesticides can rightfully sue companies of these toxic products, stating that federal pesticide law does not offer adequate protection from manufacturers of poisonous substances (Bates et al. v. Dow AgroSciences 2005). Clearly the

federal government is not protecting humans, mammals or birds from toxic pesticides. The Environmental Protection Agency must be pressured to revamp the regulatory process and require manufacturers to withdraw the most toxic chemicals from the marketplace. Legislators must be pressured to pass more stringent rules to monitor pesticide use and provide incentives for farmers to reduce or eliminate their use.

The fifty million plus bird watchers in the United States must break their silence if they want to insure future healthy population of birds at their backyard feeders. Their voice could have a profound affect on the registration, reregistration and use of these toxic pesticides. By supporting sustainable agriculture, eliminating pesticide use on their own lawns and purchasing organically grown seed for their backyard feeders, birders can become true advocates for declining bird species.