

Questions from Webinar Participants:

- 1. When you compare birds killed as a result of having feeders vs birds saved from having access to feeders (especially in winter), is there a big discrepancy? Where is the greatest benefit?**

This is a great question and unfortunately not one that there is a really good answer to. Obviously food in the winter is a major limiting resources. However, we really do not have good survival estimates of birds that use feeders in the winter versus those that rely on natural foods.

- 2. Did the window collision studies account for searcher efficiency?**

As each person looked once per day we assume their ability was equal. That being said everybody's house was different and some houses would have harder plants to search etc so this could be a factor that leads to lower estimates than you might expect.

- 3. How can these estimates of birds killed by windows be improved moving forward? Will increased research in migration routes help?**

There definitely are some seasonality differences in window collisions, primarily related to migration through cities. Many of the species of concern that collide with windows happen only during migration so from the perspective of dealing with night-time collisions which relate to windows, light, and tall buildings there are times of the year when we can take concrete action (turn off downtown lights) that would help a lot.

- 4. Have you considered or accounted for the cumulative indirect effects like pesticides effecting health and navigation of songbirds...e.g. the work of researchers like Dr. Christy Morrissey.**

A very important point. This was NOT part of the incidental take reporting series but many papers have been written on the topic. Christy's work will be very challenging because the morality is sub-lethal mostly and involves estimating how much productivity is lost because of reduced food. Spraying events with lethal chemicals have been examined and are a significant risk which is part of the reasons for the shift to neonicotinoids like Christy studies. However, these have additional effects much like DDT that were unexpected and require much more careful application.

- 5. What effect is the increased population of invasive house sparrows having effect on native bird species**

Debated. HOSP arrived in NA from Europe. But they actually are not native to Europe either and come from the Mongolian step. They are more aggressive than several other sparrows that can live in urban areas (Chipping Sparrow) and there have been studies correlating patterns of CHSP vs HOSP but the science was pretty weak as far as I know.

- 6. Do you have an estimate of nest failure due to indirect disturbance (e.g. if a tree/area/structure is flagged off, but machines are still operating around it and birds abandon a nest due to noise/presence of workers)?**

All of the companies that do this are supposed to check on the nest so there are estimates in consultant reports. However, very little is published on this.

7. I was just wondering if there was any talk or discussion on windmills and their effects as well for reference compared to other industries.

Yes wind turbines were part of the report series (<https://www.ace-eco.org/vol8/iss2/art10/>). While they can and do kill birds, a key reason they are low currently is we do not have a lot of them. However as their numbers grow they will become an increasing issue that we need to manage. Here we have the issue of “windfarms” vs what? Certainly relative to other sources of incidental take windfarms will become more and more of an issue. People (i.e. Trump) often compare windmill kills to tailings ponds and say “see windmills kill more”. When doing that comparison it may be valid. But windmills will not result in 50-100 year time horizons wholesale shifts in the vegetation conditions birds need while climate change partially caused by oil and gas development very well might.

8. Does proximity to wildlife areas in urban areas (river valley or trees areas) represent a higher priority for window film applications etc

Yes, there was evidence that the amount of vegetation around a house was an important predictor. IT was more local to your yard but there is strong spatial patterns where yards with a lot of trees often have neighbours with a lot of trees. Many of the people we found who had big issues often had houses that backed onto river valleys/ trees. Not a foregone conclusion that all such houses are an issue but is a risk factor.

9. Not a question but a comment. It would interesting but difficult to also incorporate one's indirect impact to birds globally, because our indirect effects do not stop at the provincial border. For example, many of our breeding birds here migrate to southern climates where habitat is being cleared for things like coffee and fruit. An Albertan's demand for these products is could make someone's indirect bird kill much higher!

Absolutely. I envision this talk/ paper as a work in progress as I learn more over my career. Actually quantifying all of the ways we impact our natural world as individuals and a society is a challenging thing to do with scientific rigour but is something we really need to do in order to make informed decisions.