

BIRDS AND TRANSMISSION LINES

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In July 1995, George Holland and I were contracted by Manitoba Hydro to conduct raptor surveys along an electrical transmission line. Power outages had been reported from transmission lines 3 and 55 between Oakville and Hwy 14, near Winkler and Morden. The outages were believed to be due to raptor strikes, with reports of hawks being electrocuted. The 81-kilometre stretch along Hwys 13 and 3, which parallels the line, is largely devoted to agricultural use, interspersed with several urban areas, the largest of which is Carman. Our task was to census all bird species, paying particular attention to raptors, within a one-kilometre margin of the line right of way (ROW), and to relate all species to the habitat in which they were found. The level of detail of the field investigations make this the most comprehensive study of its kind in Canada.

The first few weeks of surveying included the time-consuming task of numbering the 822 wood poles and steel towers on the line, as well as recording the specific habitat from pole to pole. All crops, woodlots, shelterbelts, marsh and riparian habitat, and urban areas were noted, along with the corresponding structure number.

The most efficient method by which to gather our information was to walk the ROW, and this we did in a "leap-frog" fashion, so as to cover a greater distance in a given day. The surveys were carried out for an

18-week period from late July to mid-November. We covered the route over three days each week throughout this time. Weather permitting, we worked on consecutive days, but when there were heavy summer rains, or as in November, strong winds reducing visibility, we were forced to postpone the surveys.

Armed with binoculars and clipboards, we usually walked along the line, often in very dense, tall growth, and recorded every bird seen or heard within one kilometre of the ROW. Notes were taken of all birds perched on the structures and wires of the surveyed line as well as on all visible distribution and feeder lines. A few weeks into the study, we began recording the time of day when birds were found perched. It appeared that between 7:00 and 9:00 a.m., fewer birds were perched on the wires. We observed that many individual birds, and indeed, some large flocks, attempted to land on live wires during this time, only to pull away at the last second. Often they would then fly to the ground wire or ignore the wires entirely. It was at such times, when power usage was thought to be high, that the towers could be felt vibrating and a loud humming sound could be heard. We suspected that a vibration on the live wires discouraged the birds from perching; however, more data is required before we can fully understand this interesting phenomenon. Interestingly, we found that some species appeared to have a greater tolerance for this vibration. Mourning Doves, for example, were seen perched on live wires at peak times

of power use far more frequently than any other species, including those which were equally or even more abundant in the area.

Of particular interest to Manitoba Hydro was the occurrence of raptors in the area and their use of structures. Fourteen species of raptors, including two owls, were recorded during the four-month study. Of the 528 individuals, 403 (76%) were Red-tailed Hawks. This is not surprising given that Red-tails are by far the most common hawk in southern Manitoba (Cleveland *et al.* 1988, Cuthbert *et al.* 1990), where they nest across the prairies in wood bluffs (Godfrey 1986). Agricultural land, particularly when cropped, provides excellent habitat for some hawks like Red-tailed, Ferruginous and Swainson's and Northern Harriers, where they soar over the fields in search of prey. Fall migration brought a sharp increase in Red-tailed Hawk sightings in our survey area, with over 70 individuals counted on 11 October, between Carman and Hwy. 14. Most of these birds were hunting, flying low over harvested fields, but many were perched on transmission line structures. The majority of the raptors were recorded in the southern one-third of the survey area. We believe there are many factors contributing to this; however, two major explanations come to mind. Far more woodlots, shelterbelts and creeks are found south of Carman, providing more suitable habitat for nesting raptors. During migration, a larger percentage of raptors continued to be seen in the southern portion of the line, we believe due to the proximity of the Pembina Hills. The Pembina Valley and surrounding hills are a known spring migratory route, and perhaps to a lesser extent, a fall migration route, though fall migration

tends to be more widely spread, not following such narrow corridors.

We also recorded 41 American Kestrels, most of which chose the wires for perches. Northern Harriers were relatively common, due to the suitable habitat, and like all the raptors, their numbers increased during migration. None were seen perched on poles, towers or wires. Several Swainson's and Rough-legged Hawks were recorded in September and October, respectively, and we were rewarded with two Peregrine Falcons and three Ferruginous Hawk sightings, one of which, on 11 October, was the second latest record for Manitoba (K. DeSmet, pers. comm.). Unfortunately, one of the Ferruginous Hawks was an electrocuted specimen, found at the base of a steel tower on 30 August. We later learned that it was an immature female bird banded in 7 July at Kauder, just east of Melita, by Ken DeSmet. Ferruginous Hawks are a vulnerable grassland species, making this a particularly devastating loss.

Three other hawks were found at the base of structures, apparent victims of electrocution. Two were adult Red-tails and one, an immature Red-tail. Photographs were taken, showing the badly burned flight and tail feathers. Ironically, one of the adult Red-tails was found at the base of the same tower as the dead Ferruginous Hawk, a mere 19 days later. All electrocutions occurred at steel towers with short insulators holding the wires above the cross members; an apparent risk factor to perching raptors.

Power poles and towers provide convenient perches for many raptors, from which they keep a keen eye for prey; however, these perches

can sometimes become a death trap for birds when landing or taking off. Should any part of the bird come in contact with one live wire no harm is done, but contacting a live wire and any part of a steel tower simultaneously, will result in electrocution. The large wingspans of many raptors, like *buteos*, eagles and larger owls, make electrical structures perilous perches. Many steel towers in a section of the line north of Elm Creek had been equipped with either Bird-be-gones (BBG) or metal triangles on their cross members. The pointy, finger-like projections on the BBGs make perching unappealing, as does the triangle that spans the cross member. One or more of these devices, appropriately placed on cross members supporting live wires, deterred raptors from landing there. We recorded no hawks perched on these devices, though they were observed to perch elsewhere on the towers; no electrocuted hawks were found at the base of towers armed with BBGs or triangles.

During the course of the surveys, we found many avian fatalities, though only four were apparent electrocutions. Obvious road-killed birds were not included in our research, but 31 birds were found dead under the line. The migration period produced the greatest occurrence of bird-wire collisions. Rails were particularly vulnerable; as we found five dead Soras and two dead Virginia Rails. Two dead Common Nighthawks were found, one with a severed wing, and four Barn Swallows, as well as many other species. In total 35 birds of 22 species were recorded as power line-related mortalities. It is likely that we only recovered a percentage of dead birds along the line. Though we began our work at sunrise every morning, scavenging animals, such as fox, skunks, and fe-

ral cats prowl before the light of day and are adept at learning where to find food.

During the four-month study, we recorded birds of 148 species, some of which we found pleasantly surprising. Abundant summer species were Savannah Sparrow, Red-winged and Brewer's Blackbirds, Mourning Dove, and Cliff and Barn Swallows. Rock Doves, House Sparrows and European Starlings, as expected, were abundant in urban areas and at farm homesteads. Commonly seen summer species were Red-tailed Hawk, Eastern, and to a lesser extent, Western Kingbirds, Blue Jay, Black-billed Magpie, American Crow, House Wren, Cedar Waxwing, Clay-colored, Vesper and Song Sparrows, Western Meadowlark, and American Goldfinch.

During fall migration, we were amazed at the abundance of some species. American Golden Plover was a species we expected to see in small numbers, due to their preference for feeding in ploughed fields; we never expected to see them in the large, concentrated flocks we found. They began to appear in mid-September, numbering in the tens and twenties, but by 27 September, we counted an unprecedented 900 in a harvested bean field, south of Jordan, only to be surpassed on 11 October with over 1,200 feeding in a harvested canola field, also south of Jordan. Wave after wave of these graceful fliers maneuvered in unison over the field, in the acrobatic flight perfected by shorebirds. It was an awe-inspiring sight!

Snow Geese were abundant migrants from mid-September to early October. There were days when their honking calls could be heard almost continuously as they



TV tower kills

J.B. Gollup

passed overhead. We counted flocks ranging in size from 10 birds up to 6,000. Some smaller groups flew low enough to afford us convincing looks

at accompanying Ross' Geese, six in total.

As autumn progressed, numbers

of American Pipits and Lapland Longspurs also increased, with American Pipits peaking in early October. We counted over 1,600 of them between 25 September and 18 October, many flocks numbering in the hundreds, as was the case with Lapland Longspurs.

On 31 October, we watched in wonder as flock upon flock of Mallards criss-crossed the sky. We estimated over 65,000 individuals, many of which were feeding in nearby stubble fields. It seemed as if every Mallard in Manitoba chose that day to migrate, right along our survey route. Interestingly, the next day yielded an early winter, bringing a heavy snowfall.

The whole project proved to be a learning curve for both George and me. Identifying grain crops, especially in their early growth, was sometimes challenging. It was important that we not only record bird occurrence and mortality, but develop a keen understanding of the effects of power lines on avian life, and examine all contributing factors to current and related problems. We gathered and analyzed a vast amount of data from our field work, and developed several hypotheses and recommendations pertinent to the project. In our raw data, one can find information that would be of value not only to Manitoba Hydro, but also to other naturalists and to the Department of Agriculture. As an example, we recorded the occurrence of Leafy Spurge (*Euphorbia esula*) along the route, finding it around poles, in ditches and even invading woodlots, and provided this information to the Department of Agriculture in Carman to assist them in their endeavour to

eradicate this invasive, noxious weed.

Over the course of the survey, we watched summer fade to autumn, then winter, leaving fewer and fewer birds in this progression of seasons. We began the surveys in the sweltering 30°C days of July and August, protected by sun screen and Tilley hats. We watched young crops grow and flourish; flax fields turning from a heavenly blue to the deep russet of ripeness. We saw stunning prairie sunrises and the approach of fierce electrical storms. We patiently sat out several torrential downpours in the comfort of our car, and relished the freshness across the terrain after such displays. We witnessed the harvest, fascinating for a city-dweller like myself, and felt the cold bite in the shifting winds as autumn progressed. Before long, our rich, growing prairie had progressed into a quiet and barren place, covered with an early winter's snow. We look upon "our line" with a fondness perhaps difficult for others to understand, but this project was far more than a job; it was a wonderful opportunity for learning and enjoying a beautiful prairie landscape in all its richness. We continued working on this project from March to July 1996, and collected a considerable amount of further data.

Literature Cited

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