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ENTANGLEMENT THREATENS OSPREYS AT SASKATCHEWAN NESTS

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KEY WORDS: *Osprey*; Pandion haliaetus; *baler twine*; *entanglement*; *nesting*.

In the late 1980s, Ospreys (*Pandion haliaetus*) began nesting atop wooden power poles along the 138 kV Saskatchewan Power Corporation (SPC) Brada-Glaslyn power line, which had been installed in 1975, as close as 1 km to the eastern shore of Murray Lake, Saskatchewan. The large wooden crossbars on which each Osprey nest was built, medial to (and hence between) the two active power transmission lines, ranged from 11.5–22 m aboveground (Houston and Scott 2001). About the same time, with increasing mechanization, most farmers switched to using much larger, heavier round bales of hay, wrapped 24 times with a total of 115 m of 3 mm orange propylene baler twine. Segments of this twine, with a knot strength of 50 kg, are both ubiquitous and persistent in the grazing pastures and adjacent fields seeded to grains.

A farmer's usual practice, before feeding a bale to his ranging beef cattle, is to cut each of 24 twine loops once, leaving spread about the area 24 segments of twine 4.7 m in length. Pieces of twine are later carried to the nest by adult Ospreys, seemingly part of the species' penchant for collecting extraneous material (Bent 1937, Poole et al. 2002). The twine is often in the nest cup itself, but is always present among the most superficial sticks that form the main part of the nest around the circumference of the nest cup.

METHODS

Each June and July, one of us (FS) flew along a 20-km segment of the power line nearest Murray Lake to determine whether eggs or half-grown nestlings were present in each Osprey nest. Five July ground visits were made for banding young, 1999–2004 (Table 1).

RESULTS

During 5 yr of close observation, the nests on the power line have had above-average productivity of 2.41 young per successful nest. Thirty-one of 32 nests contained young of nearly uniform age at banding time.

Nine of 77 young (11.7%) were seriously entangled in baler twine: a total of four, in separate nests, had one leg seriously entangled, prohibiting movement; each was cut free. At three nests, twine encircled both legs of one young, but in one of the three it also encircled the base of one wing. All three young were cut free. At another nest, the smaller of two young was completely entangled, neck, body, wings, and legs, in a wad of baler twine. Its neck was pulled down and kinked against its right leg, preventing it from eating; it was emaciated and just half the size of its sibling. It presumably had been in this situation for 10 d or more. Another young was entangled so severely that the many strands of twine had cut through skin and muscle down to bone of the left femur; the open wound already showed some evidence of infection. For the last two we felt the prognosis was guarded at best, but had no opportunity for follow-up. Additionally, one deserted nest had a desiccated adult hanging by its neck from a long strand of baler twine about 2 m below the nest (Fig. 1).

DISCUSSION

Osprey nests on relatively new power poles in Saskatchewan had greater than average productivity than was found in our 28-yr productivity study of 237 Osprey nests, 1975–2002, in lakes in the mixed forest area at Loon Lake, 130 km to the north-northwest of the power poles (C.S. Houston, F. Scott, and R. Tether unpubl. data). Those on the power poles raised 2.41 versus 1.95 young per successful nest at banding age at Loon Lake. Those on power poles (31 of 32 nests) showed a more synchronous hatch.

However, during five pole-climbing visits in 6 yr we observed nine nestlings entangled among 77 nestlings at 32 nests on power poles. Blem et al. (2002) reported that Ospreys in western Montana ''always incorporated twine in nests near agricultural fields,'' and on 17 occasions at 260 nests, nestlings became entangled in the twine. Blem and colleagues rescued nestlings at 12 nests; presumably each would have died without intervention. At five other nests, nestling mortality had resulted from twine entanglement prior to their arrival. Our experience, in a beef-cattle pasture area, is similar to theirs.

Can anything be done to mitigate the baler twine problem in Osprey nests? Because the twine is so durable, baler twine will for years to come be carried to those Osprey nests that are adjacent to pastures. Blem et al.(2002) suggested that farmers could help reduce risks to Ospreys by collecting unused twine or by cutting twine into shorter pieces. Because baling twine causes mortality among nestling Ospreys in the Creston valley of British Columbia,

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Table 1. Osprey nests and young on Brada-Glaslyn 138 kV power line.

YEAR DATES	1999 8 JULY	2000 20 JULY	2001 16 JULY	2002 22 JULY	2004 18 JULY	TOTAL
Pairs with young from air	3	11	10	10	9	43
Poles climbed	4	11	9	9	6	39
Pairs present, young disappeared		3	1			4
Nests with young banded	2	7	8	9	6	32
Number young banded	6	15	22	18	16	77
Number of young entwined	0	2	4	2	1	9
Percent of young entwined	0	13%	18%	11%	6%	11.7%

Cyril Colonel (Preston 2004), has initiated an active volunteer program among adjacent fellow farmers, 4H Clubs, and the local riding club, to pick up twine lying around farmyards, horse corrals and pastures. Colonel emphasizes that young calves can choke to death by ingesting twine, and that damage to farm machinery can cost thousands of dollars. He describes also the financial benefits to a change: the large, round bales take up more space in a hay barn than the formerly-used, smaller rectangular bales and they require a much larger forklift. The most cogent argument against the large bales is their risk to human life and health; in Saskatchewan, eight farmers were killed and 37 hospitalized, 1990–2003, when crushed by heavy round bales that weighed 300–500 kg (Saskatchewan Agricultural Injury Surveillance Program; L. Hagel pers. comm.).

In Saskatchewan, mitigation may prove difficult. Time-consuming efforts to pick up twine segments could reduce but never clear any pasture of the ubiquitous lengths of twine. It is doubtful that many farmers could be persuaded to spend time cutting pieces of twine into smaller segments.

The problem is caused by what appears to be an intermediate stage in baler twine usage. In the 1970s, smaller, rectangular bales, measuring about 1 m in length, 0.45 m in width and 0.32 m in height, were the standard, with two strings of slightly heavier twine which did not twist or tangle easily. But no Osprey nests were nearby at that time.

Figure 1. Desiccated dead adult Osprey, strangled at its nest by baler twine around its neck. Photograph by Ken McComas.

In the future, the expected long-term increased use of even higher grades of mechanization may offer hope. A few farmers with large pastures have begun to switch to even more expensive balers that produce rectangular bales $1.2 \times 1.2 \times 2.4$ m, that are less likely to roll off a truck or loader. Heavier, more rigid, expensive, 5-mm-diameter twine, with a knot strength of 200 kg, is used on these bales, which are easier to store, stack, and transport. This heavier twine has not yet been seen in an Osprey nest and if a piece were brought to a nest, its width and rigidity should prevent entanglement. Other farmers have purchased baling machines that continue to produce round bales, but encase the bales in a continuous, more protective web mesh, or in an impervious plastic sheet. All three of these methods avoid use of problem 3 mm twine and thus are harmless for Ospreys, but involve greater expense for the farmer.

ENREDOS AMENAZAN A *PANDION HALIAETUS* EN NIDOS EN SASKATCHEWAN

RESUMEN.—La expansión de rango reciente de *Pandion haliaetus* hacia áreas agrícolas en Saskatchewan ha estado acompañada por enredos en cuerdas de enfardar con riesgo de muerte en 9 de 77 polluelos de *Pandion haliaetus* y la estrangulación fatal de un adulto. Estos nidos están construidos sobre barras de madera en los postes que llevan una línea de electricidad de 235 kV cerca de un lago con gran abundancia de peces.

[Traducción del equipo editorial]

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