

Investigations of Bird Collisions in 2 Wind Farms

Ferenc JÁNOSKA

University of West Hungary, Faculty of Forestry
Institute of Wildlife Management and Vertebrate Zoology
H-9400 Sopron, Ady E. u. 5., Hungary
e-mail: janoska@emk.nyme.hu

Introduction

Wind energy is now recognized as the fastest growing energy technology in the world. Wind farms are sited in exposed areas to ensure high average wind speeds to maximize energy capture. Such locations often comprise some of the most important and sensitive habitats, so there is a need to ensure that potentially damaging effects are avoided or, if not possible, minimized or mitigated.

However, concerns have been raised about the possible environmental impact of these turbines on birds, especially after endangered raptors were observed being injured and killed after flying into wind turbines in California. Beside raptors migrating songbirds are also considered at risk because they are known to fly into human-made structures (e.g. office towers, TV/microwave towers) causing, on occasion, mass kills of thousands of individuals. Some large bird species (e.g. Bustard, Storks, and Geese) are also endangered or disturbed by wind power supplies, too (SCHREIBER 2001, WINKELMAN 1994).

What kind of risks do wind turbines pose to birds?

- Bird collisions;
- Change of migration routes and local flight paths;
- Direct habitat loss and disturbance.

Problems in Hungary:

- we have no enough information from Hungarian situations, because we have no many wind farms, so we have no relevant investigations
- adaptation of the results of foreign investigations is questionable
- the detection of the killed small birds is difficult
- we have no information about the attitude of our most important species against wind turbines / e.g. Saker (*Falco cherrug*), Imperial Eagle (*Aquila heliaca*)

It is very important, careful sighting studies, pre-construction avian researches to make in all places, where occurrence of migratory birds is frequent.

Material and methods

We investigated on two wind farm places the flying patterns and feeding attitude of birds, especially geese species. Between November 2010 and November 2011 in 2 two-week periods we visited the researched places and checked up the flying altitude, the flying direction and the feeding places of birds. We investigated the bird collisions, caused by wind turbines in this two wind farms, too.

Preliminary results

We analyzed the flying patterns and the distances from wind turbines of many bird species. In our figures we can show preliminary results of our works with some interesting species.

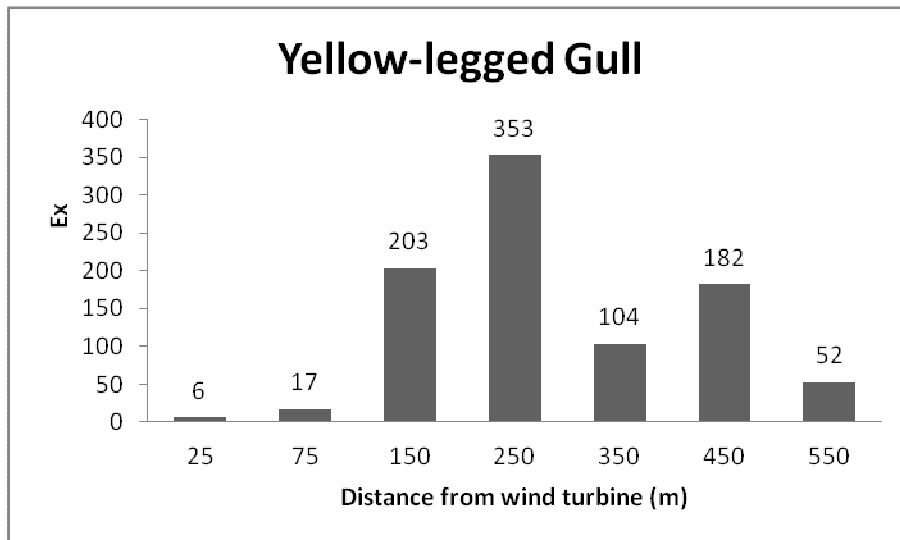


Figure 1: Distance of Yellow-legged Gull (*Larus cachinnans*) from wind turbines

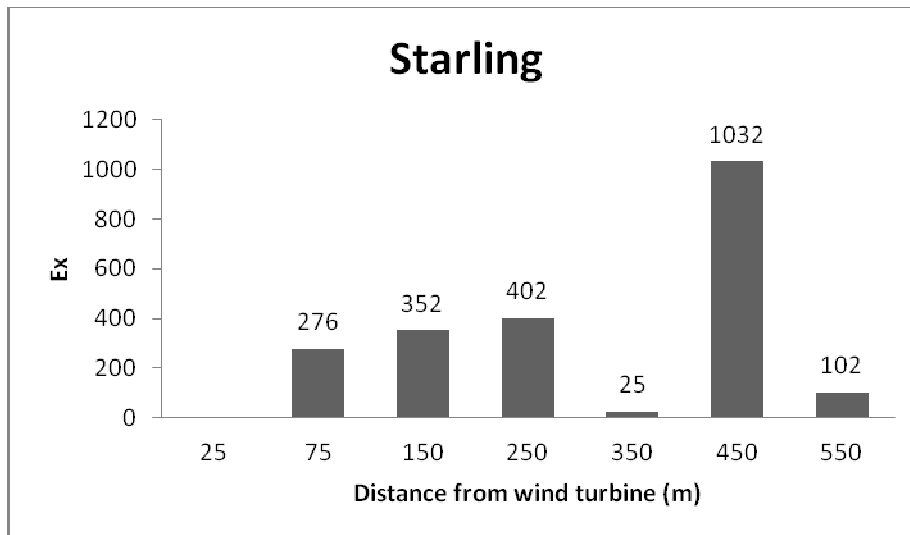


Figure 2: Distance of Starling (*Sturnus vulgaris*) from wind turbines

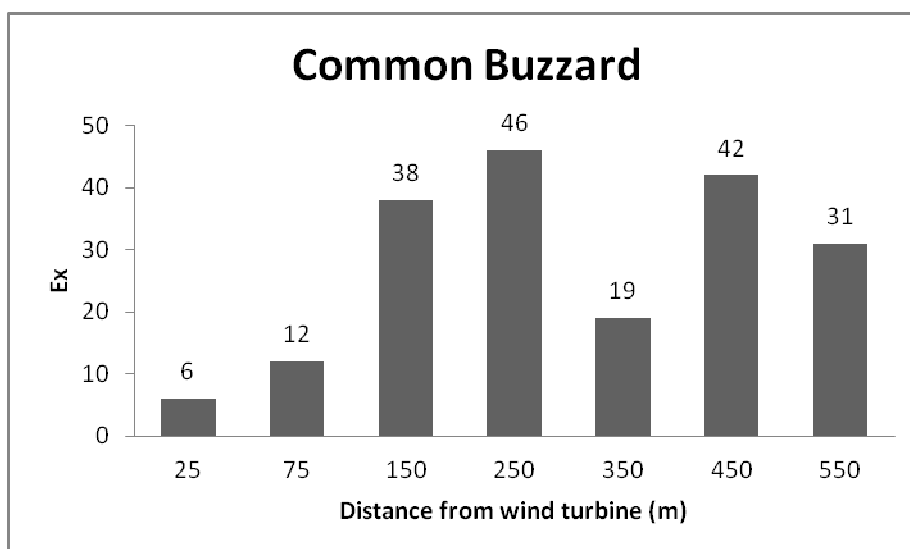


Figure 3: Distance of Common Buzzard (*Buteo buteo*) from wind turbines

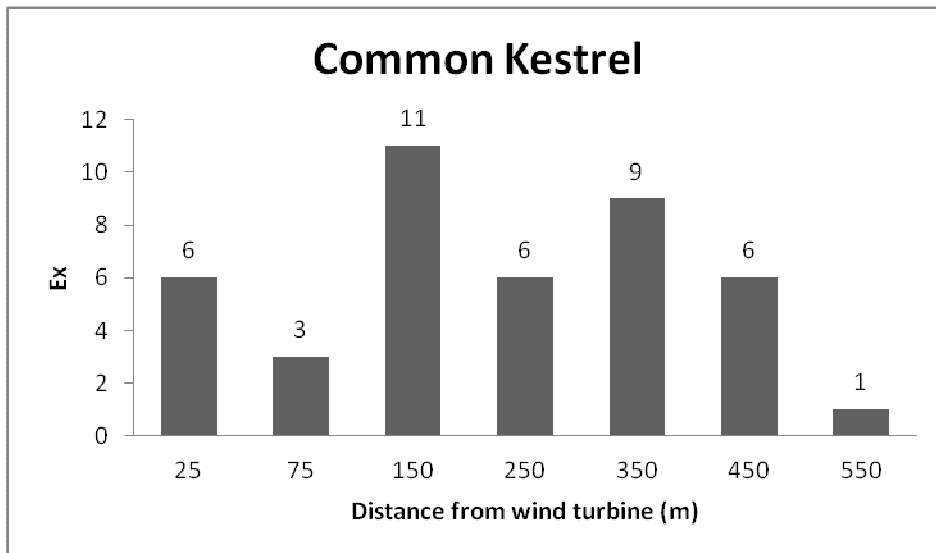


Figure 4: Distance of Common Kestrel (*Falco tinnunculus*) from wind turbines

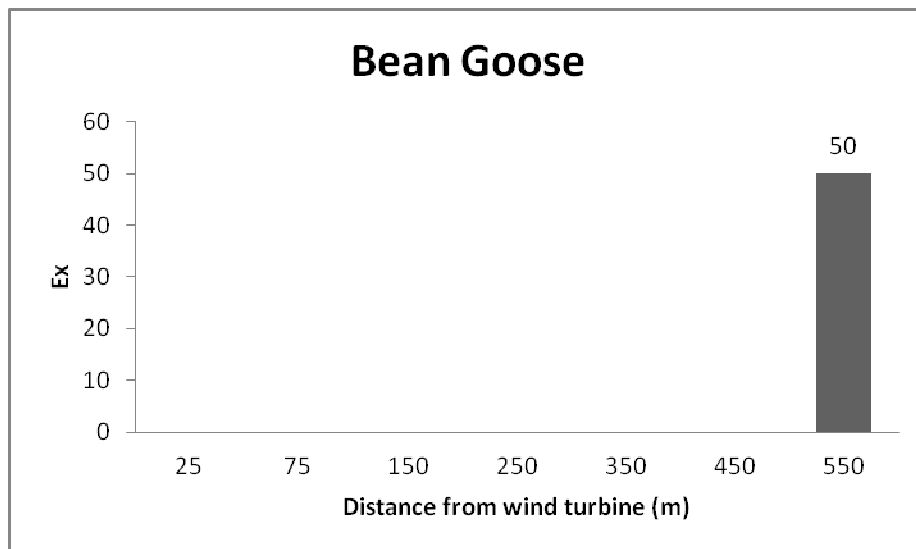


Figure 5: Distance of Bean Goose (*Anser fabalis*) from wind turbines

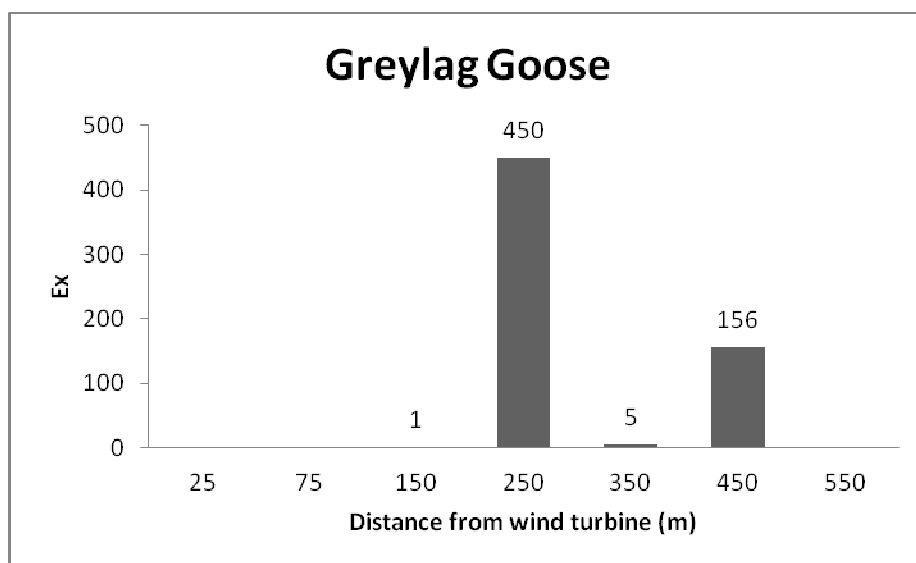


Figure 5: Distance of Greylag Goose (*Anser anser*) from wind turbines

We found that raptors, Common Buzzard (*Buteo buteo*) and Common Kestrel (*Falco tinnunculus*), gull species, especially Yellow-legged Gull (*Larus cachinnans*) and Starling (*Sturnus vulgaris*) occurred in high numbers within the wind farm area. Conversely, goose species occurred lower numbers than expected in the wind farm area. However, the causes of changes in distribution are unknown, and could be due to any one or a combination of the presence of wind turbines, and changes in food distribution.

These studies show that the scale of disturbance caused by wind farms varies greatly. This variation is likely to depend on a wide range of factors including seasonal and diurnal patterns of use by birds, location with respect to important habitats, availability of alternative habitats and perhaps also turbine and wind farm specifications (HOOVER ET AL. 2001, BERGEN 2002).

These information's served as basis for nature conservancy to bring a verdict in the enabling process.

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