Test case to study collision fatalities of bats in wind farms in Flanders

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Introduction
In 2014 and 2016, the first known collision fatalities of bats in wind farms in Flanders (Belgium) were found by chance. But there is a knowledge gap about the actual impact in Flanders.

Objectives & questions
- Gain experience in searching for collision fatalities and measuring bat activity with bat detectors in wind farms.
- Bat mortality in Flemish wind farms is a general phenomenon?
- Bat mortality in wind farms is in relation with theoretical sensitivity classes 0-3 from an INBO ‘bats & wind farm sensitivity map’ for Flanders, based on landscape features?

Materials and methods
Searching for collision fatalities in July – October 2017
- 18 turbines (3 per sensitivity class + 6 extra in class 0).
- per turbine, min. 6+6 search visits in summer + autumn by one person walking in search lines under the turbine.
- search interval of approx. every 3-4 days per turbine.

Bat detector measurements in July – October 2017
- 1 automated bat detector (SM4BAT-FS) at ground level.
  • selection of 4 turbines (1 per sensitivity class 0-3).
  • 7+7 nights per turbine (summer + autumn).
- test with automated bat detector in nacelle of 1 turbine.

Results
Only 7 collision fatalities were found, but also at turbines with a theoretical low risk (open landscape). The actual number will be higher (corrections for search efficiency, scavenging and search area were not possible to calculate in this test case). Almost all fatalities were found on substrate with no vegetation, where carcass detection chance is relatively the best.

All collision events happened at times with relatively low wind speeds (< 6 m/s at nacelle height of the turbines).

Bat activity at ground level (bat detectors) was only partially related with the classes of the Flemish sensitivity map. A report with more detailed analysis is in progress.

Plans for the future
We hope to start more extensive research, including the use of search dogs and remote detection systems to get better estimates of the impact of wind farms on bats in Flanders.

An update of the ‘bats & wind farm sensitivity map’ for Flanders is planned, including real presence data (hibernation sites, colonies, modelling with observations).