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Wednesday, 18 November 2015
17:00 - 18:30 Cumulative impacts on birds

ENVIRONMENTAL
IMPACTS & SOCIAL
ACCEPTANCE



Room: Montmartre

In this session presentations on actual effects of onshore and offshore wind turbines on birds will be presented.

Learning objectives

- New detection techniques on bird collisions
- Cumulative impacts on different bird species
- Mitigation techniques




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Presenter's biography

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Mr Rioperez is Partner and CEO of Liquen, the Company that has developed and commercialize DTBird® and DTBat® Systems. He has a Degree in Environmental Biology and 15 years' experience in Environmental Impact Assessment of Wind Farms. He has participated in more than 100 Wildlife Monitoring Studies of Wind Farms. Since 2005, he is in charge of the Development and Commercialization of DTBird® and DTBat® Systems, technological solutions to monitor birds and bats, and to reduce their mortality at wind farms.

Abstract

Automatic emission of sound to avoid bird collisions with Wind Turbines. From biological concepts to current performance.

Introduction

The conflict between birds and wind farms was discovered decades ago, but wind farms continue expanding and wind turbine size is growing exponentially, but up to date, no effective mitigation technology has been generally implanted. Meantime, the real or expected risk of new wind farms on birds has become a red line for new wind energy developments.

Approach

New emerging technology to monitor and to protect birds at wind turbines appeared in 2009: DTBird is a self-working system that detects flying birds in real time through image analysis, and performs real time actions, like the automatic Stop of a wind turbine or the emission of Warning and Dissuasion sound to birds flying in collision risk areas. Videos and data are recorded and uploaded daily to an on line Data Analysis Platform. Currently 55 DTBird units are installed in 16 wind farms of 9 countries, and this kind of technology is demanded by a growing number of Country's Environmental Administrations.

Main body of abstract

A compilation of data recorded by DTBird systems installed around the world in 2014 and 2015 are presented: Species detected, range/mean values of flights/day/WTG, total number flights/year/WTG, daily profile of flights, number warning/dissuasion signals activated, number and length of Stops. DTBird capabilities have been recently tested during Autumn 2014 in Calandawind wind turbine (Switzerland), model Vestas 3MW with tower height of 119 m, and rotor diameter of 112 m. The study was coordinated by Interwind AG, and financed by the Swiss Federal Offices of Energy and Environment. The evaluation of efficiency has been tested by the Swiss Ornithological Institute and by DTBird Team. For the evaluation of DTBird Dissuasion Module, the Experimental Design scheduled to Mute/Emit the Warning/Dissuasion Sounds in a weekly basis. DTBird Detection Module provided the following data about bird activity in the vicinity of the wind turbine: - 4,1 bird flights/day, with video and audio records of every flight (total: 274 bird flights detected, and 423 birds in the flights).- Solitary birds in 79% of the flights (range 1-30 birds) and no large migratory flocks (>10 birds).- Flights Composition: Corvids 15%, Raptors 3%, Medium size birds 61%, Others 21%. - 0 collisions within the 274 bird flights detected. For the evaluation of DTBird Dissuasion Module, the Experimental Design schedules to Mute/Emit the Warning/Dissuasion Sounds in a weekly basis.

Conclusion

The results of the evaluation of the Dissuasion Module by DTBird Team are presented, including:- Reduction of the number of collision risk flights: No flight at the Rotor Swept Area (RSA) height has reached <25 m to the moving blades when sounds have been Emitted, but when the sounds have been Muted, 8 flights have reached <25m to the moving blades in 30 days of standardized operation.- Higher number of bird reactions when flying at the RSA height and <50 m to the moving blades: when sounds have been Emitted, there have been visible reaction in 60% of the flights (8/13 flights), but no reaction has been observed when the sounds have been Muted (0/14 flights).- Higher proportion of bird reactions associated to the sounds Emitted: when sounds have been Emitted, there have been 38 reactions observed, and 82% have occurred after sound trigger. However, with the sounds Muted, there have been only 15 reactions observed, and only 47% occurred after sound trigger.- Shorter duration of the flights that reach the RSA height with the blades moving: when sounds have been Emitted the mean flight duration has been 5,4 s, however, with the sounds Muted, the mean flight duration has been 17,8 s.

Learning objectives

All the indicators analyzed point out that DTBird real time Warning/Dissuasion sounds are effective to mitigate bird collision risk, and performance improvements can be done when considering in advance wind turbine dimensions and target species.