



# Features for Bird & Bat Monitoring

AT METEOROLOGICAL TOWERS  
ON & OFFSHORE

DTBIRD® SYSTEM

OCTOBER 2014



**dtbird**<sup>®</sup>  
BIRD & BAT PROTECTION

# Features for Bird and Bat Monitoring at Meteorological Towers On&Offshore

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**DTBird®** system is a very powerful tool for Bird and Bat Monitoring in Meteorological (Met) Towers On&Offshore.

**DTBird®** is a **self-working system** that detects birds and bats in real time, and performs real time actions, like the automatic **Stop of a wind turbine (WTG)** or the emission of **Warning and Dissuasion sounds** to birds flying in collision risk areas.

**DTBird®** virtual operation of Dissuasion Module and Stop Control Module according to bird and bat activity detected in the **Met Tower**, will provide accurate data of **DTBird®** actions once the wind farm is in operation, including the maximum loss of electricity productions due to **DTBird®** Stop Control Module.



DTBird® has 4 modules available for birds and 2 for bats with the following features for Met Towers:



### Detection

Automatic and real-time detection of birds by high resolution image analysis.



### Collision Control

Video recording with sound of high collision risk bird flights, including bird collisions with Met Towers (mast and tensor cables), and injured birds that fly away.



### Dissuasion

Emission of Warning and Dissuasion sounds adjusted to birds collision risk with the Met Tower. Virtual operation of Dissuasion Module for a future WTG located in the Met Tower site.



### Stop Control

Virtual operation of Bird Stop Control Module for a future WTG located in the Met Tower site.



### Bat Detection

Automatic and real-time detection of bats by ultrasound detectors.



### Bat Stop Control

Virtual operation of Bat Stop Control Module for a future WTG located in the Met Tower site.

Videos of every bird flight, bat sonograms, environmental data, Met Tower data, DTDBird® Dissuasion Module actions (if required) and virtual operation of DTDBird® Dissuasion and Stop Control Modules for a WTG locate in the site, are recorded and uploaded daily to an on-line Data Analysis Platform (DAP), available to the Client through Internet. The DAT provides Automatic Service reports.

First installation of DTDBird® in a WTG was set up in March 2009 in Spain, and currently is operating in France, Greece, Italy, Poland, Spain, Switzerland, Norway and US (Montana), in on & offshore projects.



# Bird Monitoring

## Features

- ✦ **Detection sensors:** 4 HD Cameras.
- ✦ **Surveillance area:** 360° around every WTG.
- ✦ **Detection distance:** DTBird® configuration for flyways maximum detection distances 400 to 50 m to the Met Tower, depending on species size. Further distances are available under request.
- ✦ **Daily service period:** Continuous monitoring during daylight (light > 50 lux).
- ✦ **Bird Detectability:** > 80 %.\*\*
- ✦ **FP/day** (video with no bird): < 1,5 FP, yearly average.

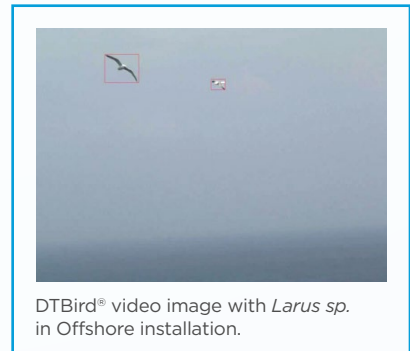
## Observations:

\* Environmental variables include, at least: temperature, rain, wind speed, wind direction and light.

\*\* DTBird® detectability reported by the [Norwegian Institute for Nature Research](#), NINA in December 2012 for all bird species, in an area where the most frequent species are eagles, was 86 – 96% of all birds in a radius of 150 m to the wind turbine and 76 – 92% in a radius of 300 m. DTBird® detectability has been improved since 2012.

## Recorded Data

- ✦ Video and sound recordings of every flight.
- ✦ Flight time data (init time and total length) and environmental data\*.
- ✦ Virtual operation of DTBird® Dissuasion and Stop Control Modules.
- ✦ Species/group identification from video recordings.
- ✦ Optional cotinuous **Day & Night** recording (light > 0,05 lux).





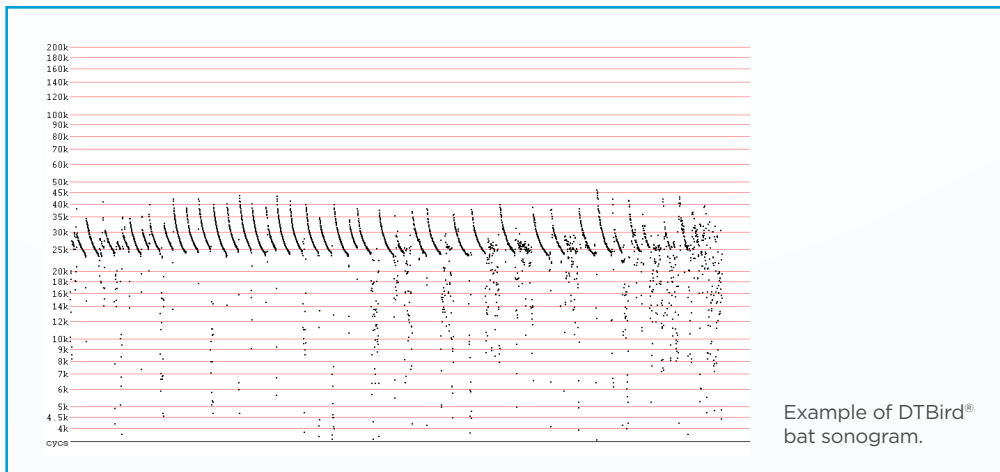
# Bat Monitoring

## Features

- ✦ **Dissuasion units:** 2 Ultrasound Bat Detectors.
- ✦ **Surveillance distance:** Depending on the bat species, from a few meters to 100 m to each bat detector, that will be installed at the rotor swept height of the wind farm project.
- ✦ **Service period:** Whole night (starting 30 min before sunset and ending 30 min after sunrises) in bat activity periods.

## Recorded Data

- ✦ Bat sonogram of every bat call.
- ✦ Flight time data (init time) and environmental data\*.
- ✦ Virtual operation of DTBird® Bat Stop Control Module.
- ✦ Species/genus identification from bat sonograms.



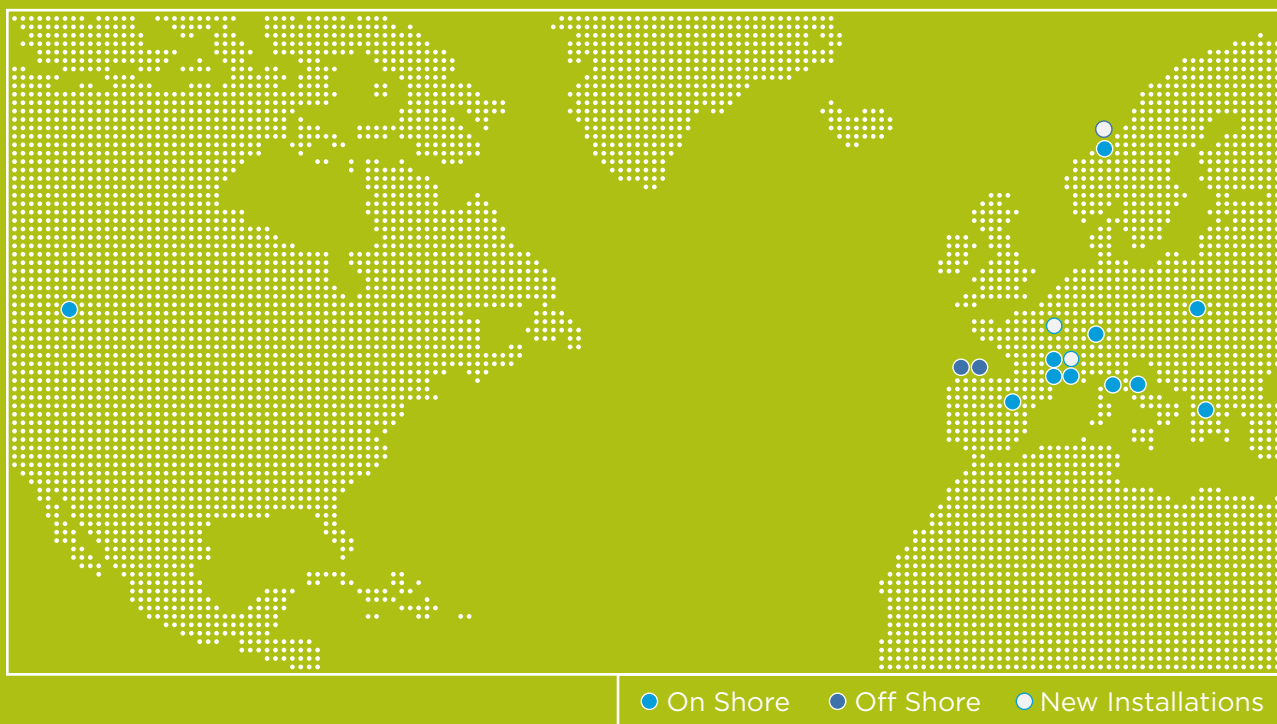
## Observations:

- \* Environmental variables include, at least: temperature, rain, wind speed and wind direction.



# DTBird®

## Worldwide Presence



44 DTBird® units are operating in 12 wind farms distributed in 8 countries:

- ✚ France
- ✚ Greece
- ✚ Italy
- ✚ Norway
- ✚ Poland
- ✚ Spain
- ✚ Switzerland
- ✚ US (Montana)

Currently 9 DTBird® units are being installed in France and Norway.