



# SEAI Seminars on Wind Energy Research Energy Show - RDS - April 6th

## Ireland's Contribution to the WREN Collaboration

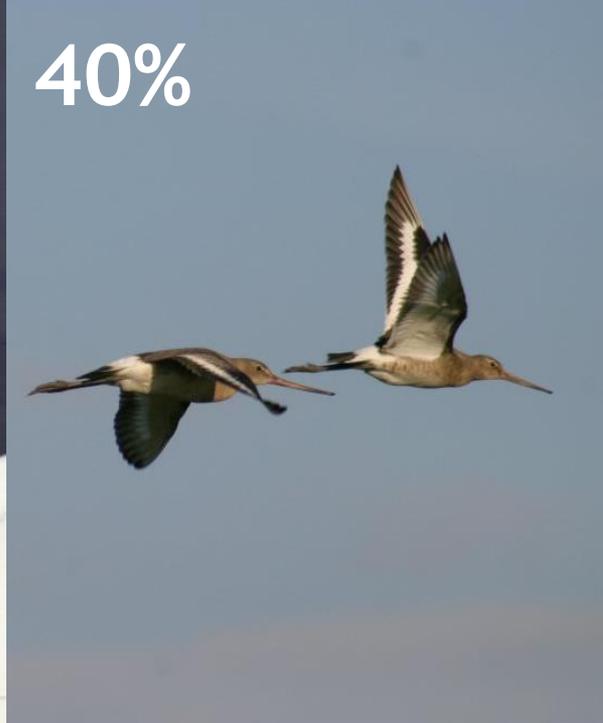
Sinéad Cummins, BirdWatch Ireland





# Global & Local effects





# Birds of conservation concern in Ireland 2014 –2019

Red list species (high conservation concern)



## Breeding

Barn owl  
Black-headed gull  
Black-necked grebe  
Common scoter  
Comcrake  
Golden eagle  
Grey partridge  
Grey wagtail  
Herring gull  
Leach's petrel  
Meadow pipit  
Nightjar  
Quail  
Red grouse  
Red-necked phalarope

## Breeding (continued)

Ring ouzel  
Twite  
Whinchat  
White-tailed eagle  
Woodcock  
Yellowhammer

## Passage

Balearic shearwater  
Sooty shearwater

## Wintering

Bewick's swan  
Goldeneye  
Long-tailed duck

## Wintering (continued)

Pintail  
Pochard  
Shoveler  
Tufted duck  
Velvet scoter  
Wigeon

## Breeding and wintering

Curlew  
Dunlin  
Golden plover  
Lapwing  
Redshank



# Move to carbon neutral electricity generation





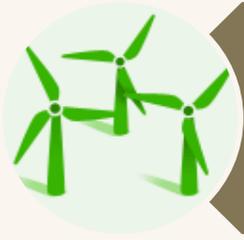
# Energy



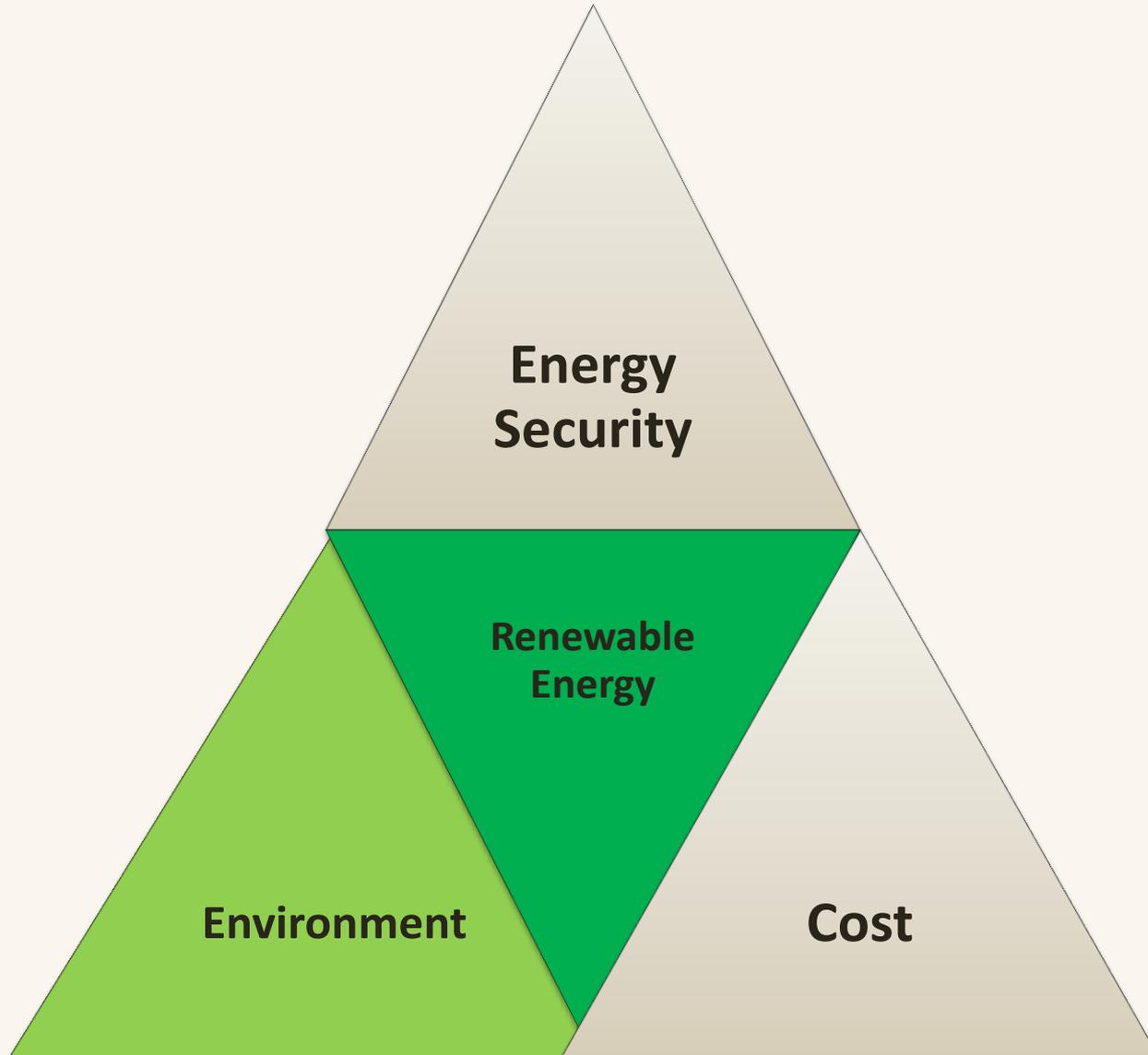


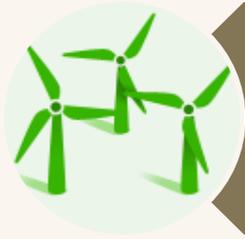
# Low Carbon Energy





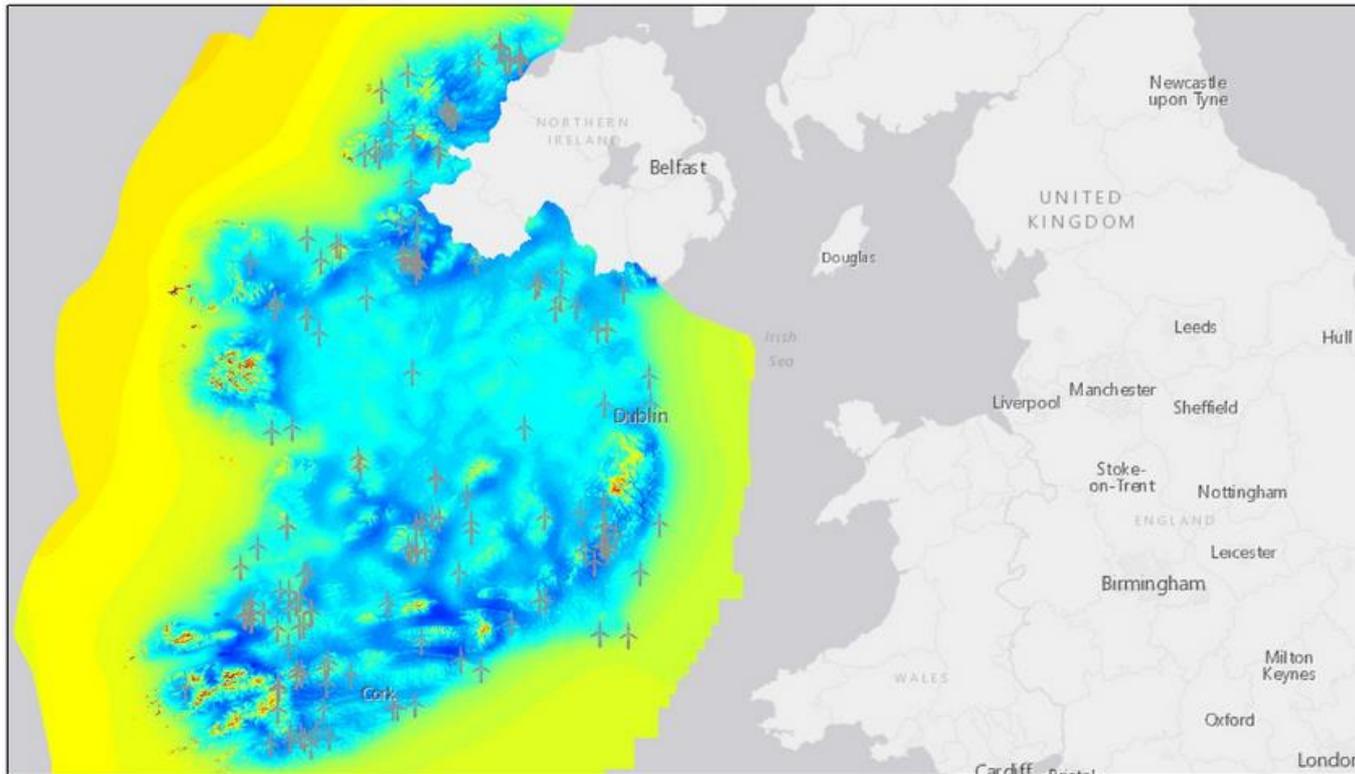
# Energy Policy





# Wind Atlas

Wind Mapping System - windspeeds up to 100m



September 25, 2015

 Wind Farms

1:4,622,324  
0 37.5 75 150 mi  
0 62.5 125 250 km  
Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community



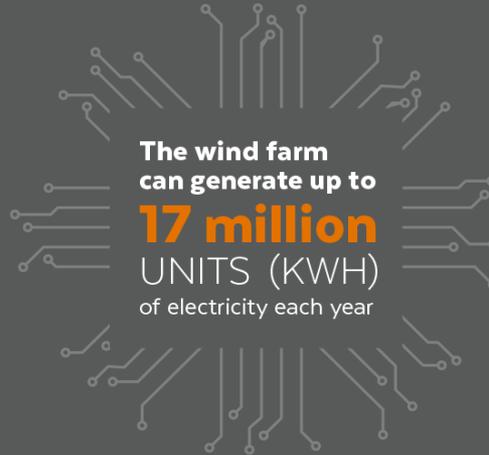
# Wind Energy Generation in Ireland

## Bellacorick Wind Farm

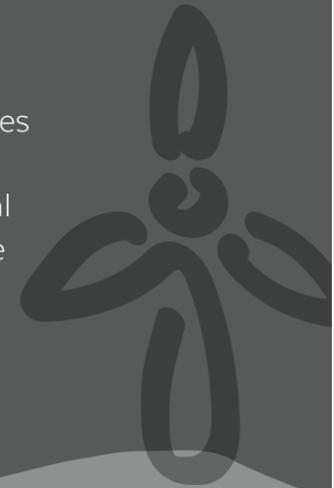
**Bellacorick has been operating for over 20 years**

There are 21 wind turbines at Bellacorick, with a total installed capacity of

**6.45MW**



20 of the turbines are rated at 300KW nominal output, and one at 450KW



## Mountlucas Wind Farm

**28 turbines generate 84MW of energy, enough to power 45,000 homes per year**

It displaces **125,000 tonnes** greenhouse gases every year

**7km of public walkway/cycleway**  
Part of the site is a local amenity.

Guided tours of the facility can be booked.





# Environmental sustainability & protection





# Sustainability

- Implement Best Practice
  - Ensure windfarms are sited appropriately
  - Avoid potential threats to vulnerable species & habitats
- 
- Indicative advice or planning (appropriate spatial planning tools)
  - Clear and good quality EIA standards
  - Tackling cumulative impacts



## Ireland's Task Participation in the IEA (International Energy Agency)

- Wind, ocean, bioenergy, social acceptance and smartgrid.
- SEAI provides funding for representatives to attend and report on IEA meetings.
- Task 34 – Concerned with environmental effects of wind energy





## WREN – Working together to Resolve Environmental Effects of Wind Energy

SEAI /alternate attend and report on IEA meetings

- Help coordinate Task meetings in Ireland
- Compile information on related national programmes and studies commissioned by SEAI
- Assist in dissemination of task work programme and outcomes



## SEAI supported projects

- Bat Interactions with Inshore Wind Farms in Ireland
- Wind Power Projects, soil erosion, nutrients release and greenhouse gas emission from peat catchment
- Bird Sensitivity Map for Wind Energy Developments in Ireland



## Bat fatalities at Wind Farms

- In the late 1990s in the U.S. the first reports of fatalities
- Research since in the U.S. and mainland Europe
  - Fatalities caused by collision - Direct killing of bats through impact with turbine blades
  - The potentially lethal effects of air turbulence behind turbines causing barotrauma in bats?\*

\*Further research is needed to conclusively discount barotrauma as a significant cause of turbine related deaths



# Bat Interactions with Onshore Wind Farms in Ireland

Úna Nealon, PhD Candidate

Centre for Irish Bat Research,  
University College Dublin

2012 field study supported by SEAI



## Bat Interactions with Onshore Wind Farms in Ireland

- In 2012, no available data on bat activity or fatalities at windfarms in Ireland
- UCD-led research at wind energy facilities in Ireland.
- Collection of Bat acoustic data
- Most frequently encountered species:  
Common pipistrelle *P. pipistrellus*,  
Soprano pipistrelle *P. Pygmaeus* and  
Leisler's bat *N. leisleri*
- No evidence of difference in bat activity at wind farms versus other sites (testing for avoidance/attraction)



# Wind Energy & Birds

- Impacts on birds
- Collision risk
- Habitat loss or habitat change
- Displacement/ disturbance
- Barrier effects



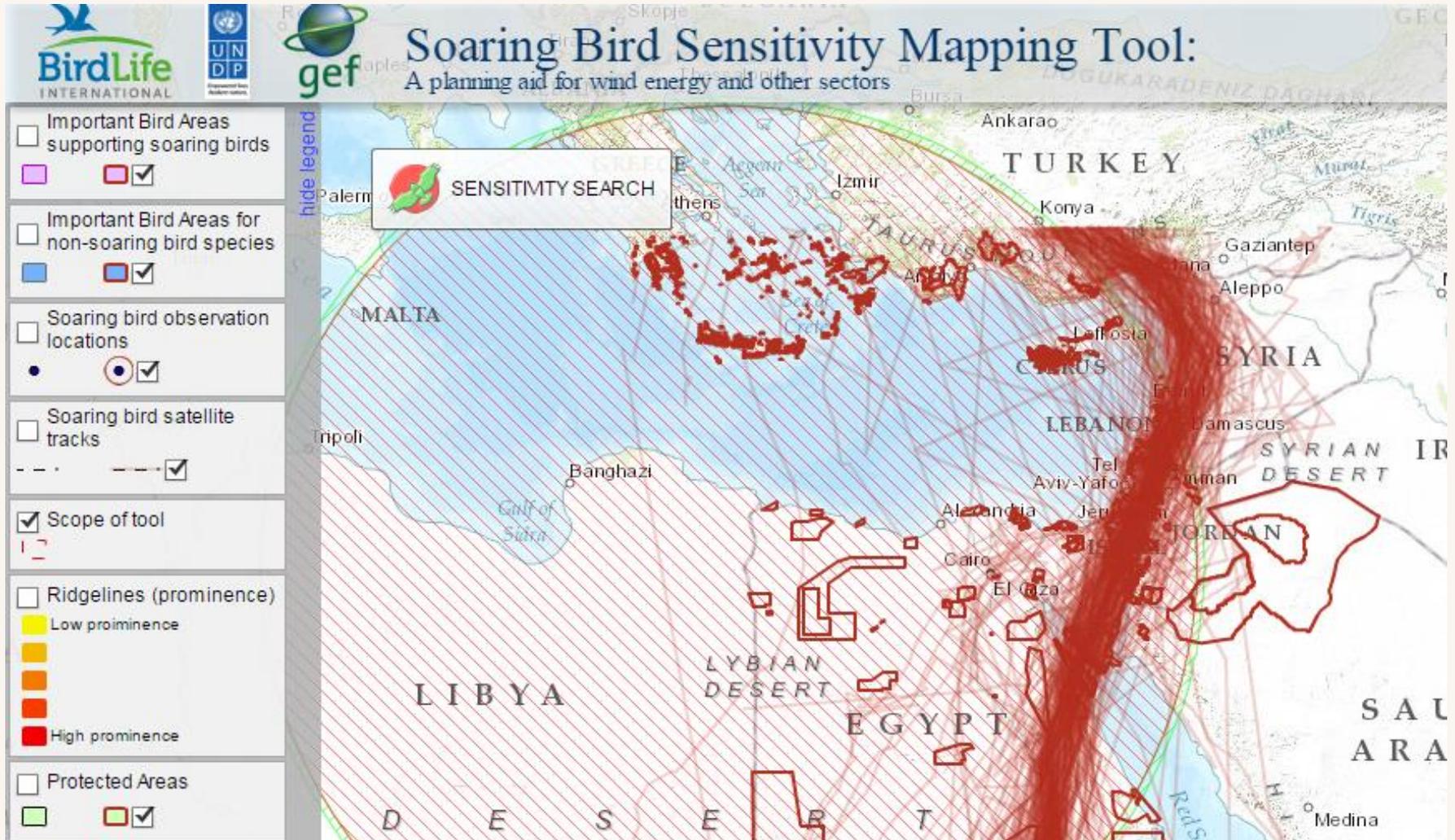
# Bird Sensitivity Mapping

- A means to achieving our renewable energy targets without adversely impacting on our obligations under the European Union's Nature Directives
- Measured spatial indication of where protected species are likely to be perturbed by change
- Does not create no-go areas
- Not indicative of species presence/absence
- Uses existing data
- Scientific-basis for scoring sensitivity





# Bird Sensitivity Mapping





## Bird Sensitivity Mapping for Wind Energy Developments in Ireland

- Information at an **early stage of the planning process**
- A tool for **national planning authorities** to assist their strategic planning
- Contributes useful overview information to **EIAs** to complement data collection for specific sites
- Provides **agencies** with a tool to assist them in ensuring adequate environmental safeguards for renewable energy projects they fund



# Bird Sensitivity Mapping for Wind Energy Developments in Ireland

<http://maps.biodiversityireland.ie/#/Home>



Potentially prompted to download Microsoft Silverlight (free and tiny)

**Welcome**  
National Biodiversity Data Centre Mapping System

Biodiversity Maps provides access to high quality information on Ireland's biological diversity. Use the system to find out what is known about the different species that occur in Ireland, where our protected and threatened species occur, and who is recording biodiversity. Also, find out what is known about the biodiversity of your locality.

The National Biodiversity Data Centre endeavours to provide high quality information through this data portal. Should you spot any error in the data please notify us so that we can correct it. Email [info@biodiversityireland.ie](mailto:info@biodiversityireland.ie).

**Species Search**  
Search for a species in the mapping system

Species Name:

Search Using  
 Available Species  Full Dictionary

**Species Designation Browser**  
Browse the database by species designation lists

- Invasive Species
- Protected Species
- Threatened Species

**Browse the Database**  
Select an option below to browse the mapping system database

- Browse Species
- Browse Data Sets**
- Browse Data Providers

**Statistics Results**  
View the current status of the mapping system database below

Species records: **3,108,953**  
Species: **14,309**  
Data Sets: **104**  
Last updated: **24 November 2014**

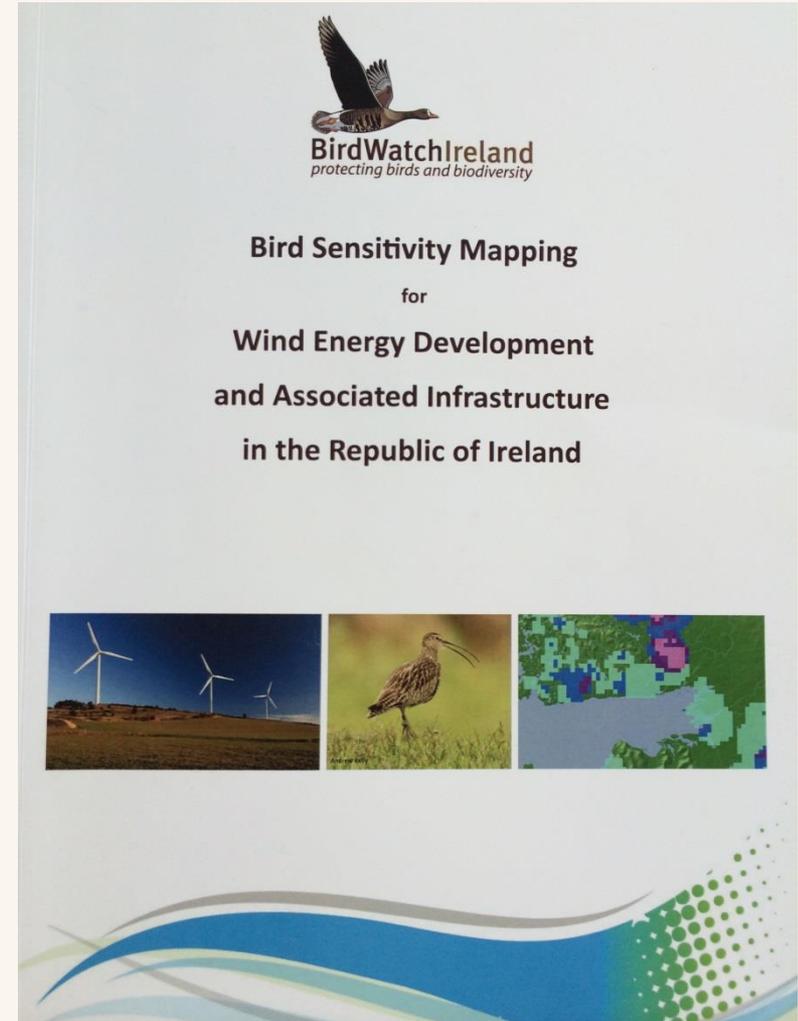
**Go to live maps**



# Bird Sensitivity Mapping for Wind Energy Developments in Ireland

- Detailed guidance document Requirement for mapping
  - Existing research
  - Detailed methodology
  - Species-level guidance

[http://www.birdwatchireland.ie/portals/0/POLICY/Guidance\\_document.pdf](http://www.birdwatchireland.ie/portals/0/POLICY/Guidance_document.pdf)



Layer List

Layer Visibility

- Site Selection Database (Polygon)
- DECC Wind Farm Edit Layer
- Windfarms
- Access Database
- Utilities
- Aviation
- Contours
- Bird Sensitivity To Wind Farms
  - Bird\_Sensitivity\_To\_Wind\_Energy\_
  - 0.000000 - 14.790000
  - 14.790001 - 23.500000
  - 23.500001 - 45.500000
  - 45.500001 - 62.900000
  - 62.900001 - 116.900000
- Natural Heritage Data
- Other Constraints
- RES Mesoscale @80m
- Counties





# WREN

## BirdWatch Ireland's participation

- Conference & Workshop on **Wind energy and Wildlife impacts** Berlin 2015
- Webinar August 2015
- Wren 'In-Person' Meetings – Autumn 2015, Spring 2015
  
- WREN - White papers, WREN Hub,
- Tethys <http://tethys.pnnl.gov/>





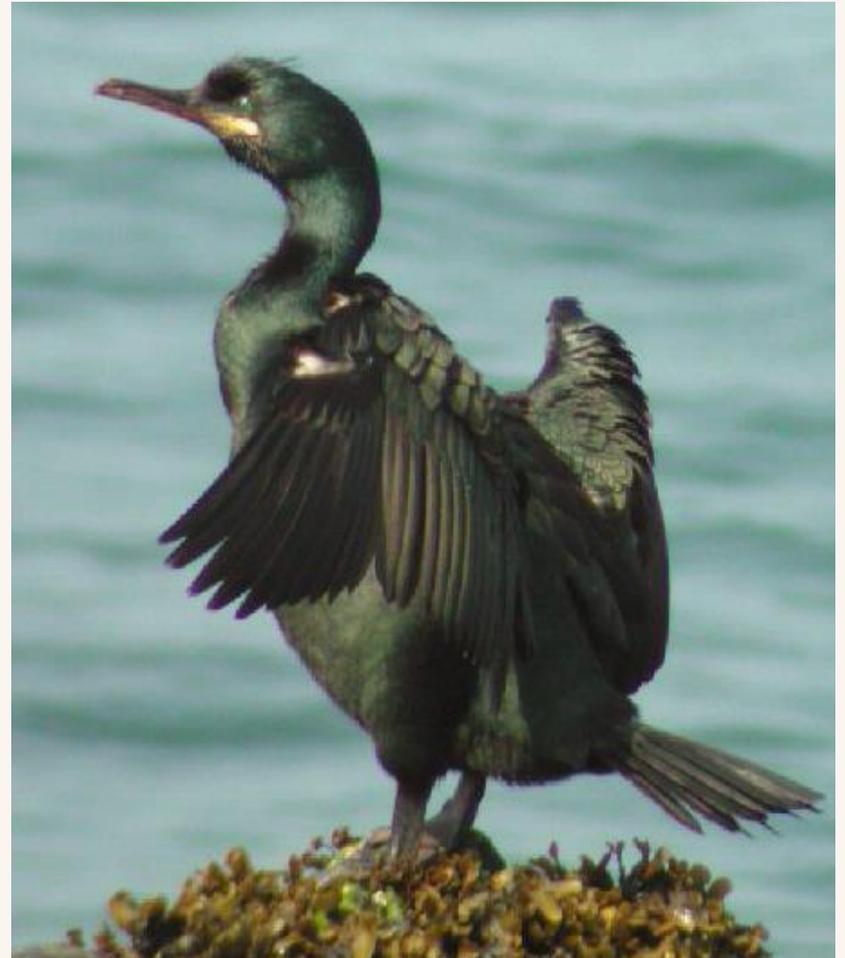
## Upcoming research projects – SEAI funded

### OEDU Prototype Fund

- Scoping phase for a Bird Sensitivity Map for offshore
- Informed by deployment of tracking technology on seabirds and coastal waterbirds on Ireland's East Coast
- Starting April 2016

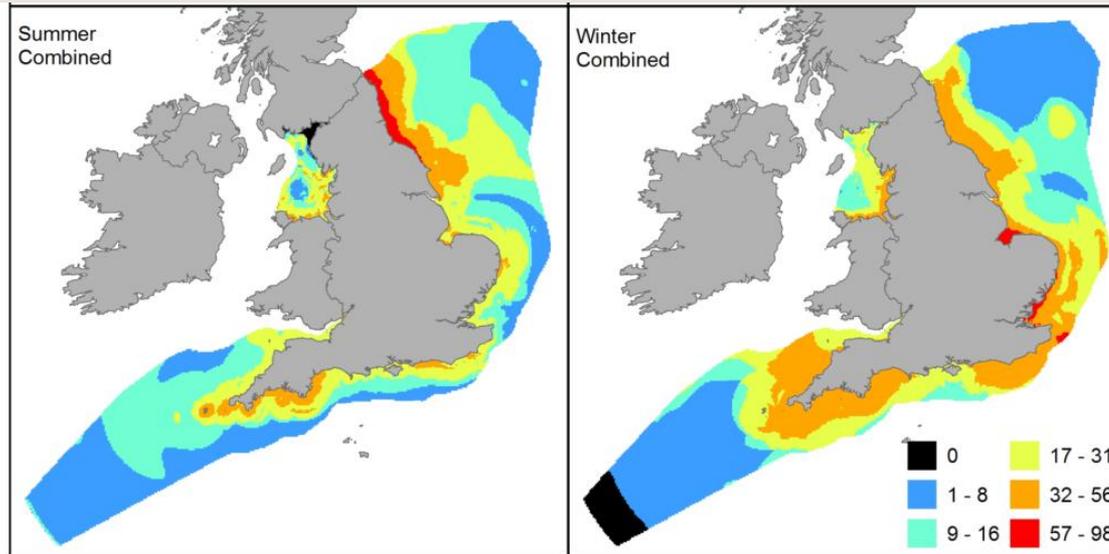


# Birds in the offshore





# Wind Farm Sensitivity Map



**Figure 6. Wind farm sensitivity maps from SeaMaST.** The maps were produced by using highest densities from either the boat or aerial density predictions where the CV was less than 0.3 and excluding predictions with CVs higher than 0.5. The natural log of the density (plus one) was then multiplied by each species wind farm collision sensitivity or displacement score and the resulting value summed across species in each 3 km×3 km grid cell. Note where neither dataset had predicted densities with CVs <0.5 the resulting score is exactly zero and highlights areas where across all species coverage and model fits were poor. Summer and winter maps use the same scale.  
doi:10.1371/journal.pone.0106366.g006

English

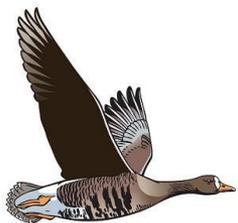
\* Bradbury, G. et al., 2014. Mapping Seabird Sensitivity to Offshore Wind Farms. *PLoS ONE*, 9(9)





# Thank You

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**BirdWatchIreland**  
*protecting birds and biodiversity*

