RISK ANALYSIS OF HIGH-VOLTAGE POWER LINES IN BELGIUM TO MAP BIRD COLLISION-PRONE SPANS

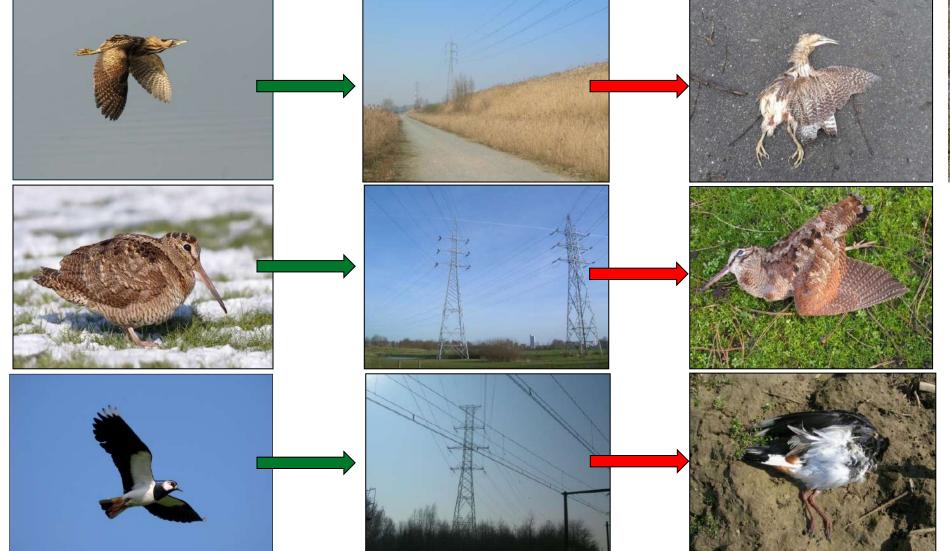

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Collision risk landscape
(overall risk score)

- 4 - 20
- 21 - 40
- 41 - 60
- 61 - 80
- 81 - 100
- 101 - 120
- 121 - 140
- 141 - 160

Source; Natagora / Natuurpunt / INBO. Period: 2008-2009 to 2017-2018

Overall risk score
by power-line segment

- 0 - 10
- 11 - 20
- 21 - 30
- 31 - 40
- 41 - 50
- 51 - 60
- 61 - 70
- 71 - 80
- 81 - 90
- 91 - 100
- 101 - 110
- 111 - 120
- 121 - 130

Source; Natagora / Natuurpunt / INBO. Period: 2008-2009 to 2017-2018

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HOW DID IT ALL START?

The 'Oudenaarde'-case
Period: 1/12/2013 - 16/01/2014
Dead/injured birds: **65**

TSO's AND NGO's: 1+1 = 3

WATERBIRD WINTERING SITES
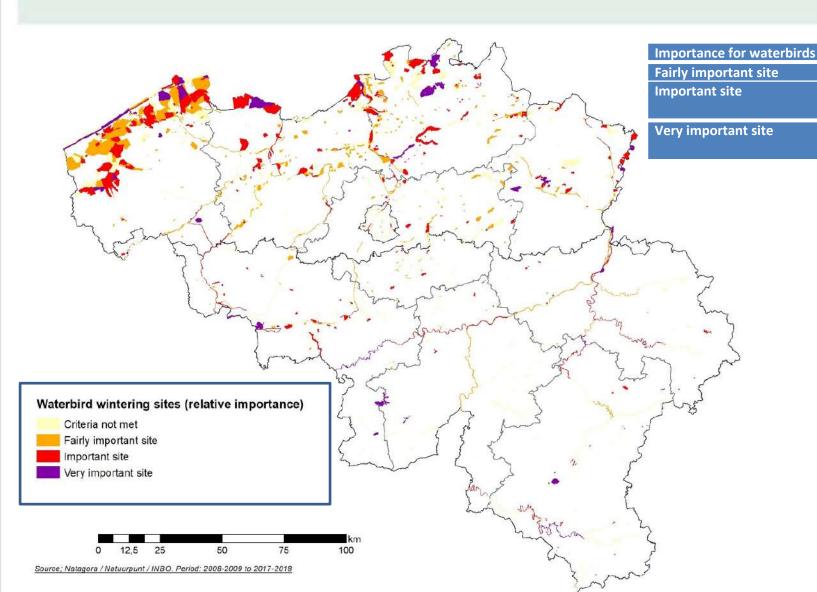
Importance for waterbirds	Criterion
Fairly important site	Regularly 100-1,000 waterbirds
Important site	Regularly more than 1,000 waterbirds or at least 2% of the regional wintering population of at least one species
Very important site	Regularly at least 15% of the regional wintering population of at least one species

Waterbird wintering sites (relative importance)

- Criteria not met
- Fairly important site
- Important site
- Very important site

ROOSTS OF SENSITIVE SPECIES

Very important roosts (red)

Important roosts (orange)

Fairly important roosts (yellow)

Source; Natagora / Natuurpunt / INBO. Period: 2008-2009 to 2017-2018

km

0   12,5   25   50   75   100

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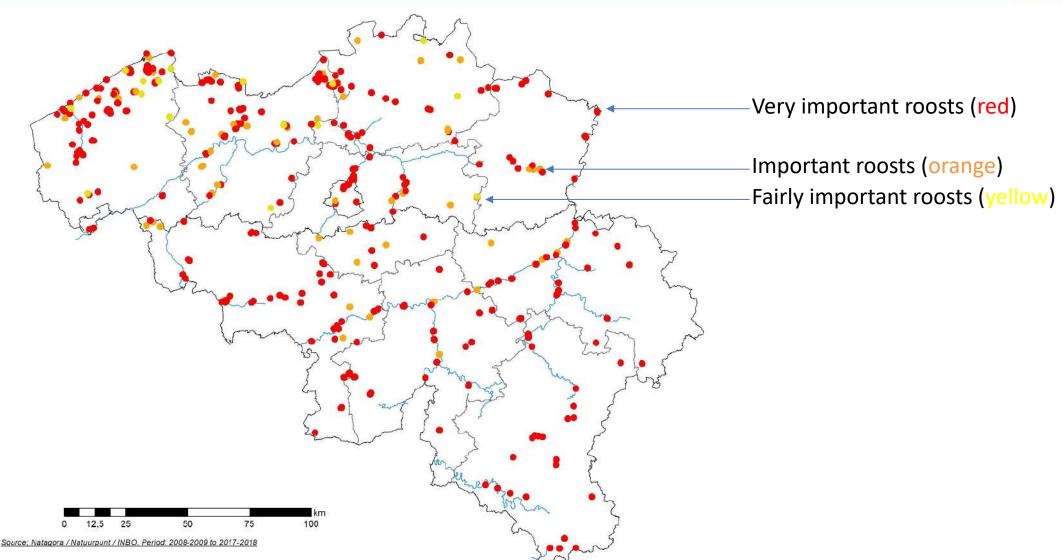
BREEDING COLONIES OF SENSITIVE SPECIES

| English name	scientific name	included in the risk map?	sensitivity to collisions	conservation relevance
Great Cormorant	*Phalacrocorax carbo*	yes	high	low
Grey Heron	*Ardea cinerea*	yes	high	low
Eurasian Spoonbill	*Platalea leucorodia*	yes	high	high
Mediterranean Gull	*Larus melanocephalus*	yes	high	high
Black-headed Gull	*Larus ridibundus*	yes	high	high
Common Gull	*Larus canus*	yes	high	high
Lesser Black-backed Gull	*Larus fuscus*	yes	high	low
Herring Gull	*Larus argentatus*	yes	high	low
Sandwich Tern	*Sterna sandvicensis*	yes	high	high
Common Tern	*Sterna hirundo*	yes	high	high
Little Tern	*Sterna albifrons*	yes	high	high
Sand Martin	*Riparia riparia*	no	low	high
Rook	*Corvus frugilegus*	no	low	low
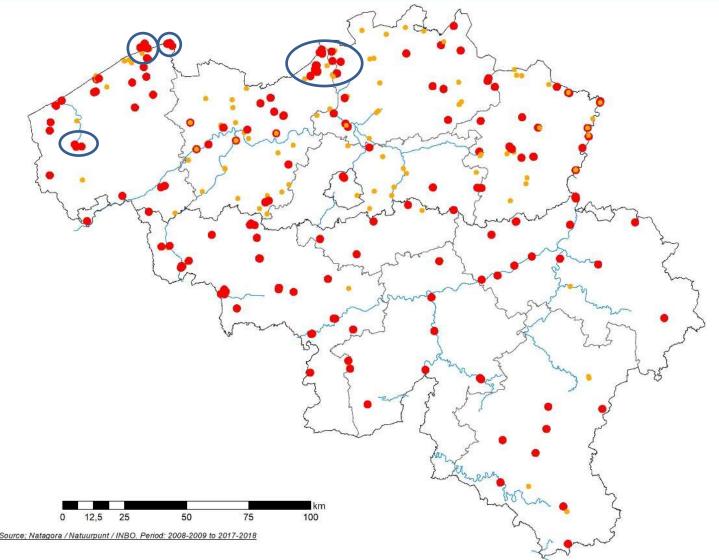
BREEDING COLONIES OF COLLISION SENSITIVE SPECIES

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Harbour of Zeebrugge: large breeding colonies of gulls and terns

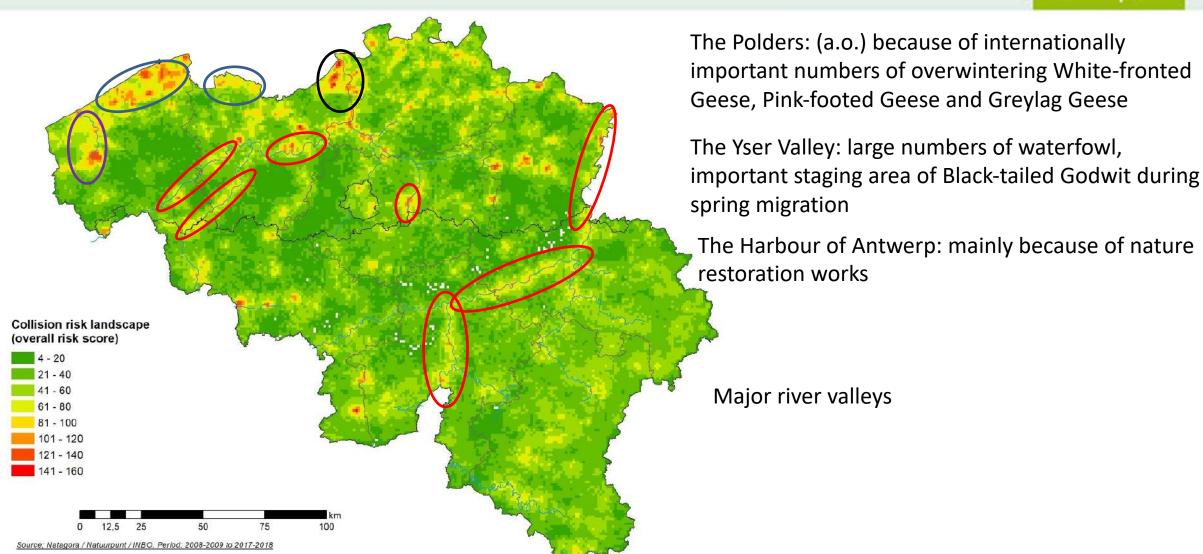**Het Zwin:** large breeding colonies of gulls and terns

The Yser Valley: (a.o.) breeding colonies of Grey Heron and Eurasian Spoonbill

Harbour-area of Antwerp: (a.o.) breeding colonies of Eurasian Spoonbill and Mediterranean Gulls

km
0   12,5   25   50   75   100

Source; Natagora / Natuurpunt / INBO. Period: 2008-2009 to 2017-2018

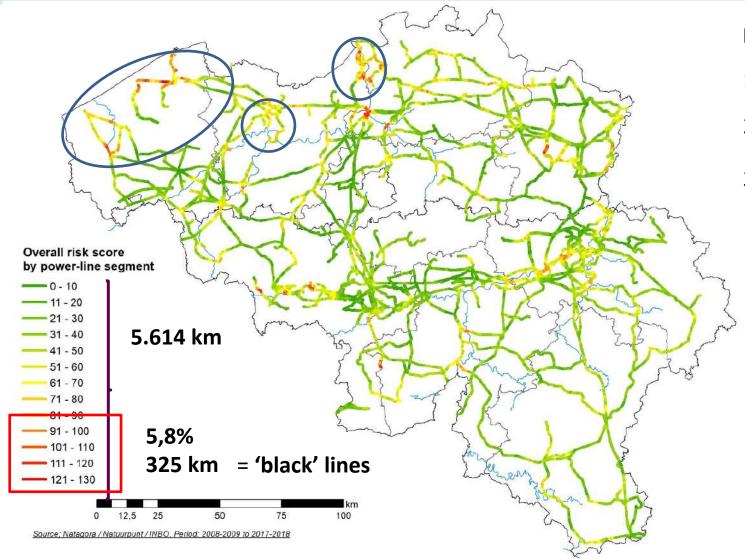| Bird layer considered	Distance of a high-voltage line to a considered area				
	Inside	< 1 km	1 to 3 km	3 to 5 km	> 5 km
Waterbird roost	25, if very important 20, if important	14	9	4	0
Waterbird colony	25, if very important 20, if important	14	9	4	0
Important waterbird site	30, if very important 25 if important 20, if fairly important	14	9	4	0
Rare breeding bird area	10 for an area with one rare species 20 for an area with two or three rare species 25 for an area with four or five rare species 30 for an area with more than five species				
Migration corridor	8, if a power line pylon is inside, 12 for a coastal corridor				
Plover staging area	5 for each of the three species, when presence cut-off is reached				
Widespread breeding bird	4 for each species, when presence cut-off is reached				
Woodcock area	4 if Woodcock is predicted to be present by the spatial models				
Geese foraging area	5 in the areas of occurrence defined by the spatial models				

COLLISION RISK LANDSCAPE

The Polders: (a.o.) because of internationally important numbers of overwintering White-fronted Geese, Pink-footed Geese and Greylag Geese

The Yser Valley: large numbers of waterfowl, important staging area of Black-tailed Godwit during spring migration

The Harbour of Antwerp: mainly because of nature restoration works

Major river valleys

Collision risk landscape
(overall risk score)

- 4 - 20
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OVERALL RISK SCORE BY POWER LINE SEGMENT

PRIORITIES

1. Polders

2. Harbour-area of Antwerp

3. Harbour-area of Ghent

Overall risk score by power-line segment

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5.614 km

5,8%

325 km   = 'black' lines

0   12,5   25   50   75   100   km

Source: Natagora / Natuurpunt / INBO. Period: 2008-2009 to 2017-2018

COLLECTING DATA BY VOLUNTEERS
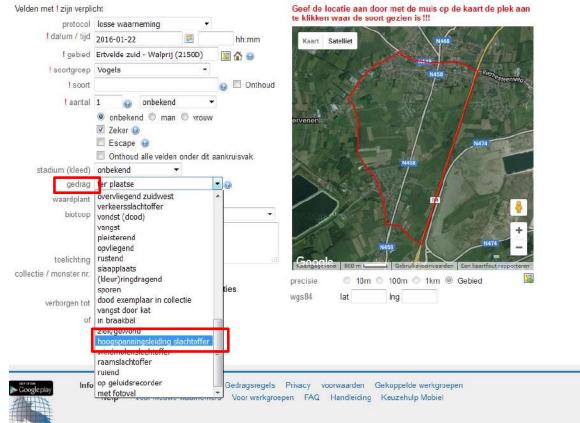
TOTAL: 673 COLLISION VICTIMS SUBMITTED (period: 8 July 2015 - 1 July 2022)

English name	scientific name	inds.	%
Black-headed Gull	*Chroicocephalus ridibundus*	92	13,6%
Feral Pigeon	*Columba livia forma domestica*	77	11,4%
Wood Pigeon	*Columba palumbus*	45	6,6%
White Stork	*Ciconia ciconia*	33	4,9%
Herring Gull	*Larus argentatus*	30	4,4%
Mute Swan	*Cygnus olor*	27	4,0%
Common Gull	*Larus canus*	19	2,8%
Grey Heron	*Ardea cinerea*	18	2,6%
Woodcock	*Scolopax rusticola*	16	2,3%
Northern Lapwing	*Vanellus vanellus*	16	2,35%

ELECTROCUTIONS

TIP OF THE ICEBERG:
- **26 White Storks** (*Ciconia ciconia*)
- **1 Red Kite** (*Milvus milvus*)
- **2 Common Buzzard** (*Buteo buteo*)
- **4 Peregrine Falcons** (*Falco peregrinus*)
- **1 Barn Owl** (*Tyto alba*)
- **11 Eagle Owls** (*Bubo bubo*)

(dataset until 30 April 2022) (n=53)

ALL ON MIDDLE AND/OR LOW VOLTAGE LINES!

DEDICATED SEARCHES

Monitoring of 'black' lines
- on a regular interval
- during the winter halfyear
- before and after bird deterrent
  devices were put up

RESULTS

TOTAL: 888 COLLISION VICTIMS SUBMITTED (period: 8 July 2015 - 1 July 2022)

English name	scientific name	inds.	%
Wood Pigeon	*Columba palumbus*	228	25,6%
Feral Pigeon	*Columba livia forma domestica*	83	9,3%
Black-headed Gull	*Chroicocephalus ridibundus*	79	8,8%
Northern Lapwing	*Vanellus vanellus*	49	5,5%
Common Gull	*Larus canus*	46	5,1%
Greylag Goose	*Anser anser*	29	3,2%
Mallard	*Anas platyrhynchos*	28	3,1%
Eurasian Teal	*Anas crecca*	21	2,3%
Eurasian Coot	*Fulica atra*	20	2,2%
Herring Gull	*Larus argentatus*	19	2,1%

THE NOORDSCHOTE CASE

BIRDS MIGRATING AT NIGHT

BEFORE AND AFTER

Reduction of 73% -95%

English name	scientific name	2018	2021
Unidentified species	Aves spec.	30	
Northern Lapwing	Vanellus vanellus	18	
Common Starling	Sturnus vulgaris	7	1
Common Pheasant	Phasianus colchicus	7	
Wood Pigeon	Columba palumbus	6	1
Eurasian Coot	Fulica atra	4	2
Common Gull	Larus canus	5	
Duck, Goose, Swan spec.	Anatidae spec.	4	
Fieldfare	Turdus pilaris	4	
Eurasian Teal	Anas crecca	3	1
Black-headed Gull	Chroicocephalus ridibundus	3	
Herring Gull	Larus argentatus	3	
Redwing	Turdus iliacus	2	
Common Moorhen	Gallinula chloropus	2	
Common Snipe	Gallinago gallinago	2	
Mallard	Anas platyrhynchos	2	
Song Thrush	Turdus philomelos	2	
Grey Heron	Ardea cinerea	1	
Jack Snipe	Lymnocryptes minimus	1	
Golder Plover	Pluvialis apricaria	1	
Eurasian Jackdaw	Coloeus monedula	1	
Ruff	Calidris pugnax	1	
Pink-footed Goose	Anser brachyrhynchus	1	
Eurasian Sparrowhawk	Acciputer nisus	1	
Feral Pigeon	Columba livia forma domestica		1
Tundra Bean Goose	Anser serrirostris	1	
Common Redshank	Tringa totatus	1	
TOTAL		113	6

POSITIVE PRESS COVERAGE

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national television news   **: 6**

press release by BELGA   : 5

regional television news   : 10

newspapers   : 42

news websites   : 65

positive reactions from NGO-members

positive reactions from Elia

Elia's actionplan in line with Sustainable Development Goals of the United Nations

One of the many goals:
- Equip bird deterrent devices on **200 km** of the most dangerous 'black' lines **by 2030**

Regio Lo-Reninge

Project tegen vogelsterfte aan hoogspanningslijn in Noordschote succes: "Van 113 naar 6 dode vogels"

Aan de hoogspanningslijn in Noordschote, hangen sinds kort vogelkrullen, die de lijn beter zichtbaarder maken voor vogels. Het project om het aantal dode vogels terug te dringen, is een succes. "Voor sommige soorten is het aantal dode vogels met 95 procent verminderd", zegt Natuurpunt.

A an de hoogspanningslijn in Noordschote, een deelgemeente van Lo-Reninge, hangen sinds kort vogelkrullen. Die zijn bedoeld om de hoogspanningslijn zichtbaarder te maken voor de vogels, waardoor ze er minder zouden tegen vliegen en dan ook sterven.

"Het project is een groot succes", vertelt Dominique Verbelen van Natuurpunt. "We hebben die lijn onderzocht voor er vogelkrullen hingen. Toen waren er 113 vogels die ertegen vlogen. Nadat de hoogspanningslijn bebakend was, waren er nog maar 6. Afhankelijk van de soort vogel gaat het om een daling van 75 tot 95 procent dodelijke slachtoffers.

Hoogspanningsnetbeheerder Elia belooft nu om de komende 10 jaar bijna 200 kilometer hoogspanningslijn in Vlaanderen van vogelkrullen te voorzien om de vogelsterfte te verminderen.

ACT NOW

FOR A SUSTAINABLE WORLD

TAKE AWAY MESSAGES

1) A good **collaboration** between **TSO's** and **NGO's** is **essential** to avoid a lot of bird casualties.

2) **Recent datasets** on the **occurence of birds** are **essential** for sensitivity mapping.

3) **Volunteers** are of key importance to collect such data.

4) A user-friendly **dataplatform** is a very cost efficient means to collect data on power line victims.

5) A good **risk-atlas** is a **very useful tool** to help TSO's, both to plan new power lines and to decide which existing power lines have to be equipped first with bird-deterrent devices.

6) The number of 'black' lines is often only a **small %** of the total grid.

7) We have to **reach out** to **DSO's** as well (electrocutions).

8) If partners have a **mutual trust** in one another, they can make a real **difference**.