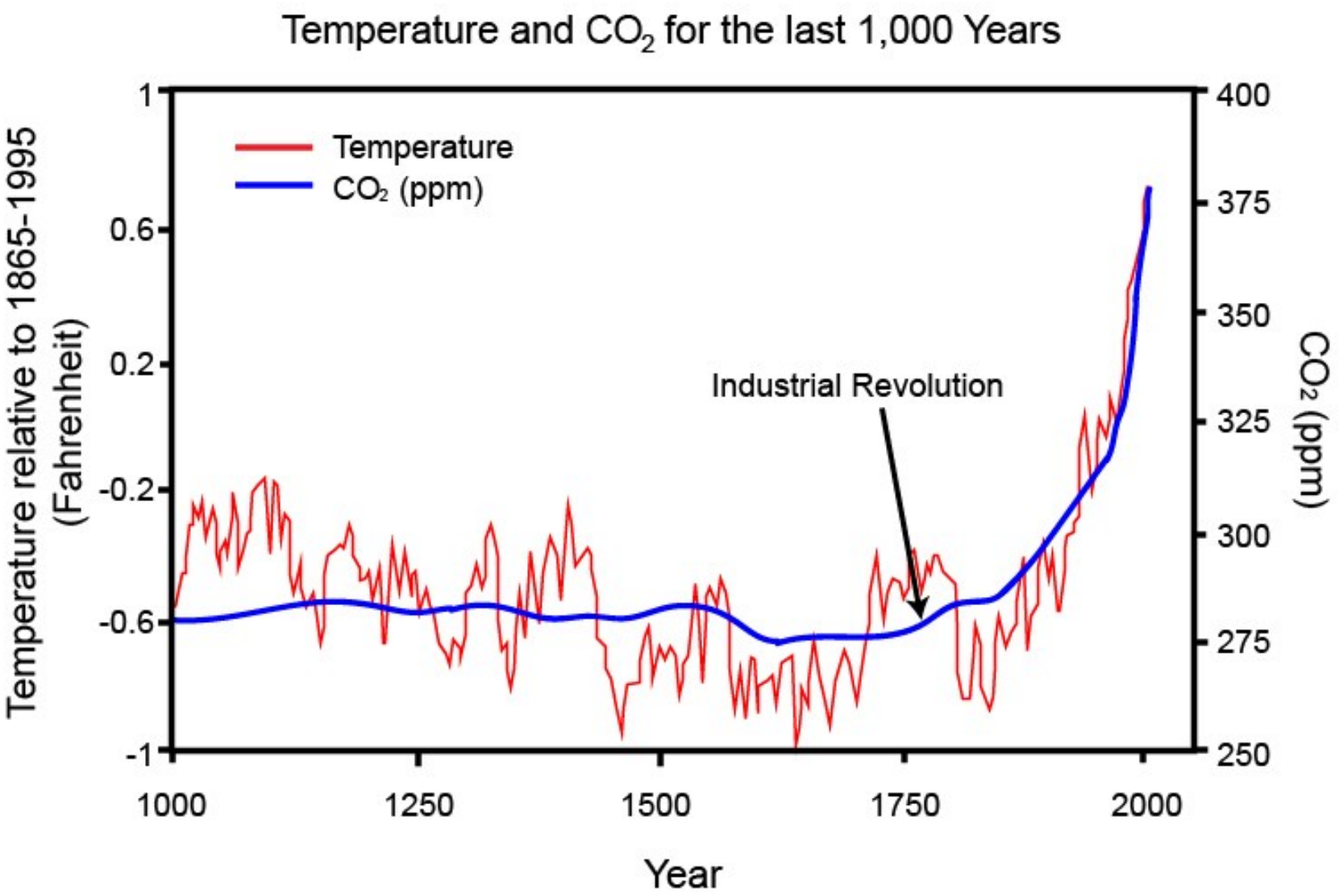
Energías Renovables: Impactos sobre la fauna

M.Ferrer
EBD-CSIC

CONAMA Junio 2021


Temperature and CO_2 for the last 1,000 Years
Temperature
CO_2 (ppm)
Industrial Revolution
Temperature relative to 1865-1995 (Fahrenheit)
CO_2 (ppm)
Year
1
0.6
0.2
-0.2
-0.6
-1
400
375
350
325
300
275
250
1000
1250
1500
1750
2000

- CLIMATE CHANGE SPEED: 0.42 Km/year ACCORDING JULY ISOTHERMS

- BETWEN 10 AND 25 TIMES FASTER THAN IN THE LAST GLACIATION

We NEED renewable energies

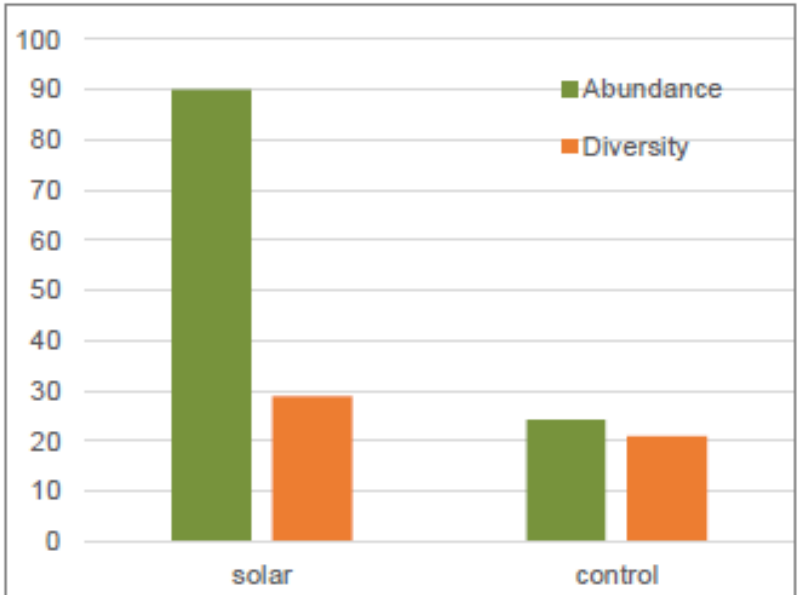


Figure 5.2: Overall Comparison of Solar and Control Plot Invertebrate Diversity and Abundance

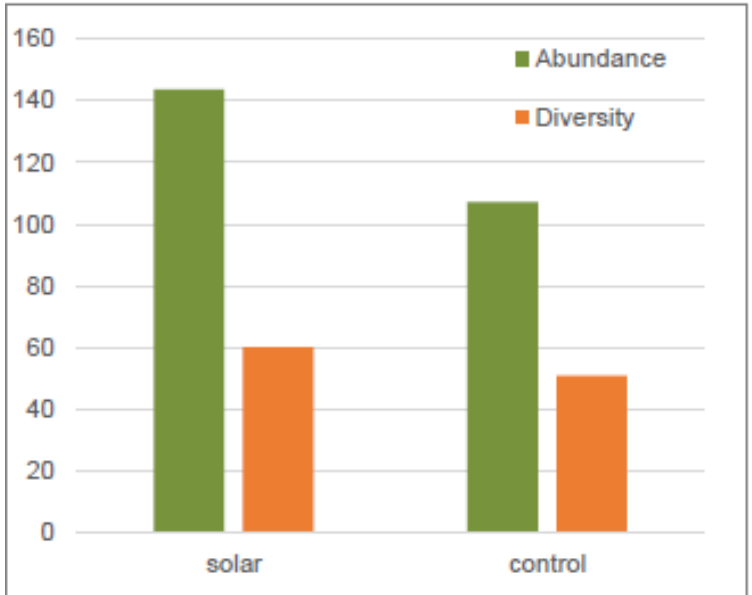


Figure 5.3: Overall Comparison of Solar and Control Plot Bird Diversity and Abundance

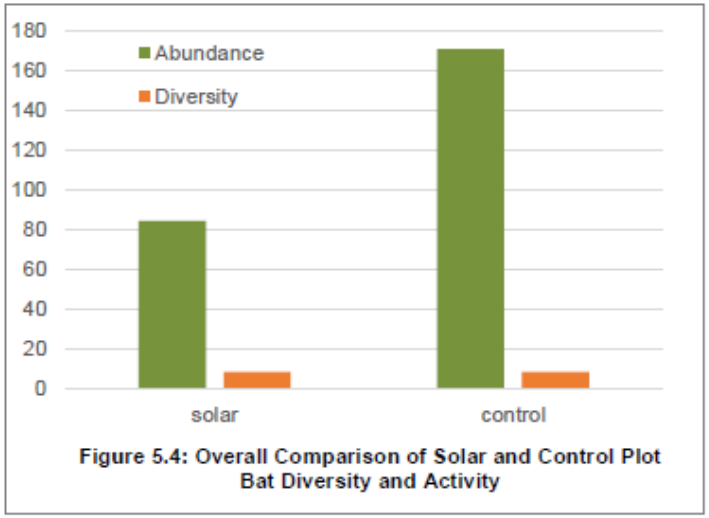


Figure 5.4: Overall Comparison of Solar and Control Plot Bat Diversity and Activity

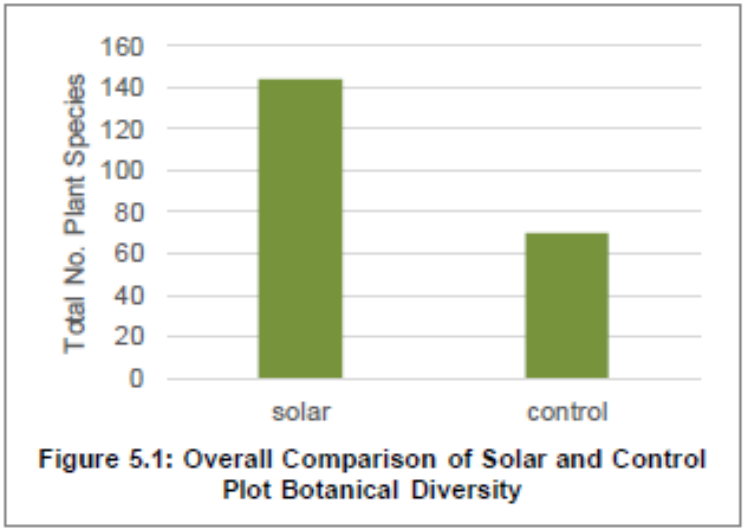


Figure 5.1: Overall Comparison of Solar and Control Plot Botanical Diversity

Las plantas fotovoltaicas pueden tener un impacto negativo en la biodiversidad pero también positivo. Faltan estudios básico para elegir bien nuevos emplazamientos, mitigar los efectos negativos y potenciar los positivos.

Necesitamos estudios bien diseñados como los diseños BACI (before-after-control-impact), y debemos tenerlos rápido, antes de que se termine de producir una implantación masiva


3.2M114

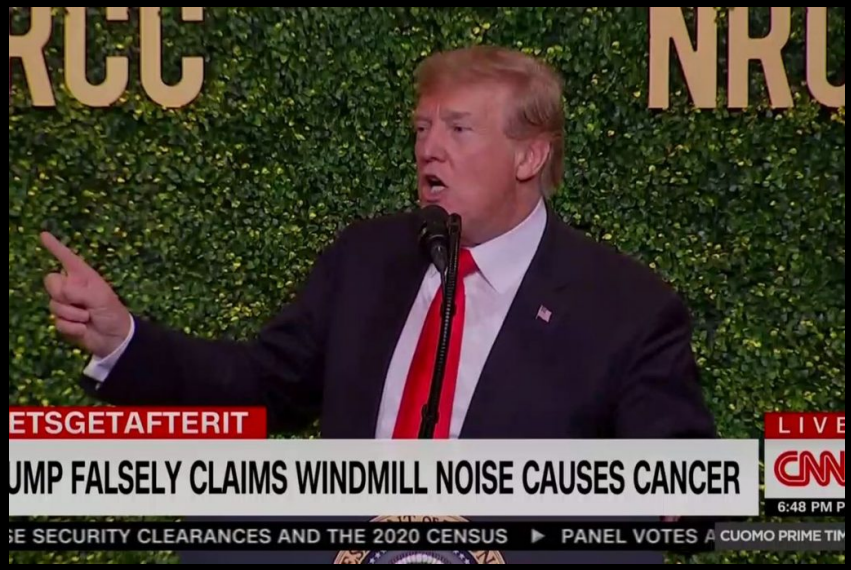
Conservationist groups interested in birds said:


They're Not Green
A Documentary by Nettie Peña

Oil and gas industries, suddenly interested in the environment, said:

"You want to see a bird graveyard?" he asked. "You just go. Take a look. A bird graveyard. Go under a windmill someday. You'll see more birds than you've ever seen ever in your life."

By the way, wind turbines also causes cancer……..



Conservationist groups,
interested in the fight against
Climatic change,
said:

IN A NUMBER | What birds really need to worry about

Donald Trump criticized the wind-power industry this past week for killing birds. A far bigger threat is real estate developers and their tall buildings.

"Wind turbines are way at the end of the list of threats to birds compared to fossil fuel development, oil pits, coal mining – and collisions with buildings," said Nicolas Gonzalez, an Audubon Society spokesman.

599 million

The number of birds killed annually in the U.S. when they fly into windows, trailing only loss of habitat and cats as the top causes of bird deaths, according to the National Audubon Society.

234,000

The number of bird deaths caused by wind turbines.

—Bloomberg News

And, at the end….

FOSTER CHURCH/2008

RSPB to have its own turbine.

In the middle of the fight, applied ecologists trying to find a solution that allows birds and turbines share the wind

And Now?

1) We need to mitigate mortality caused by poorly placed turbines.

2) We have to change our methods of evaluating potential risk in new facilities.

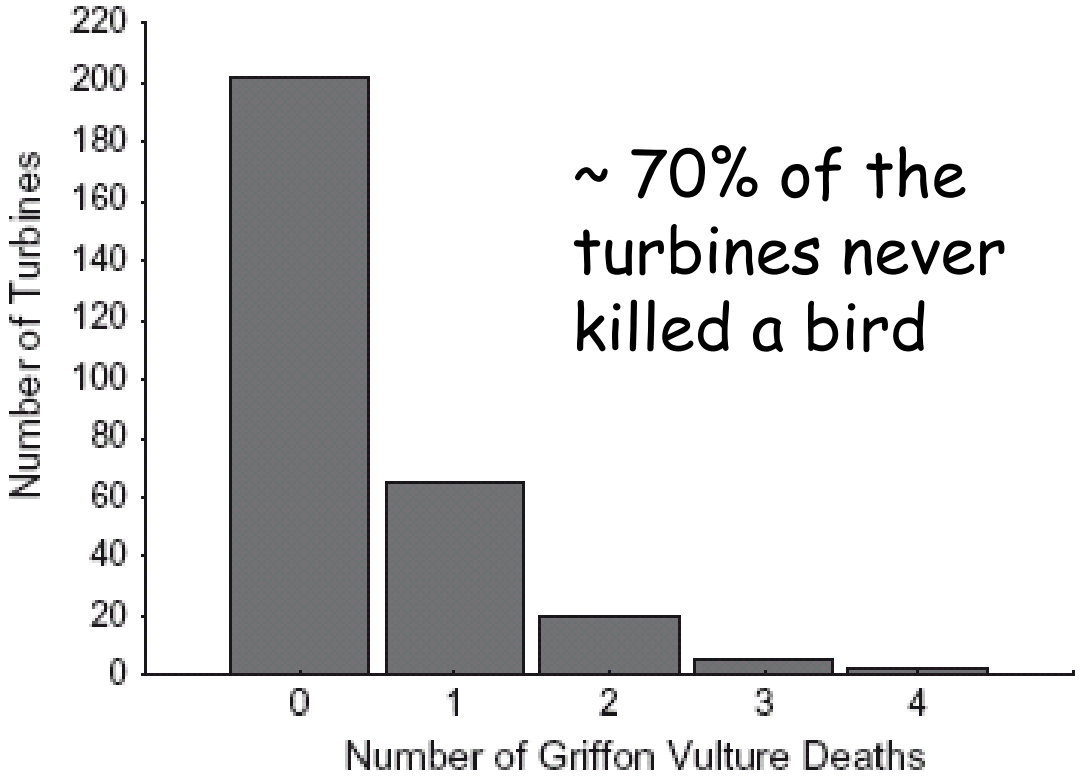


Fig. 1. Distribution of the number of dead griffon vultures per turbine. There are more than 200 turbines without griffon vulture fatality and less than 10 turbines cause four fatalities.

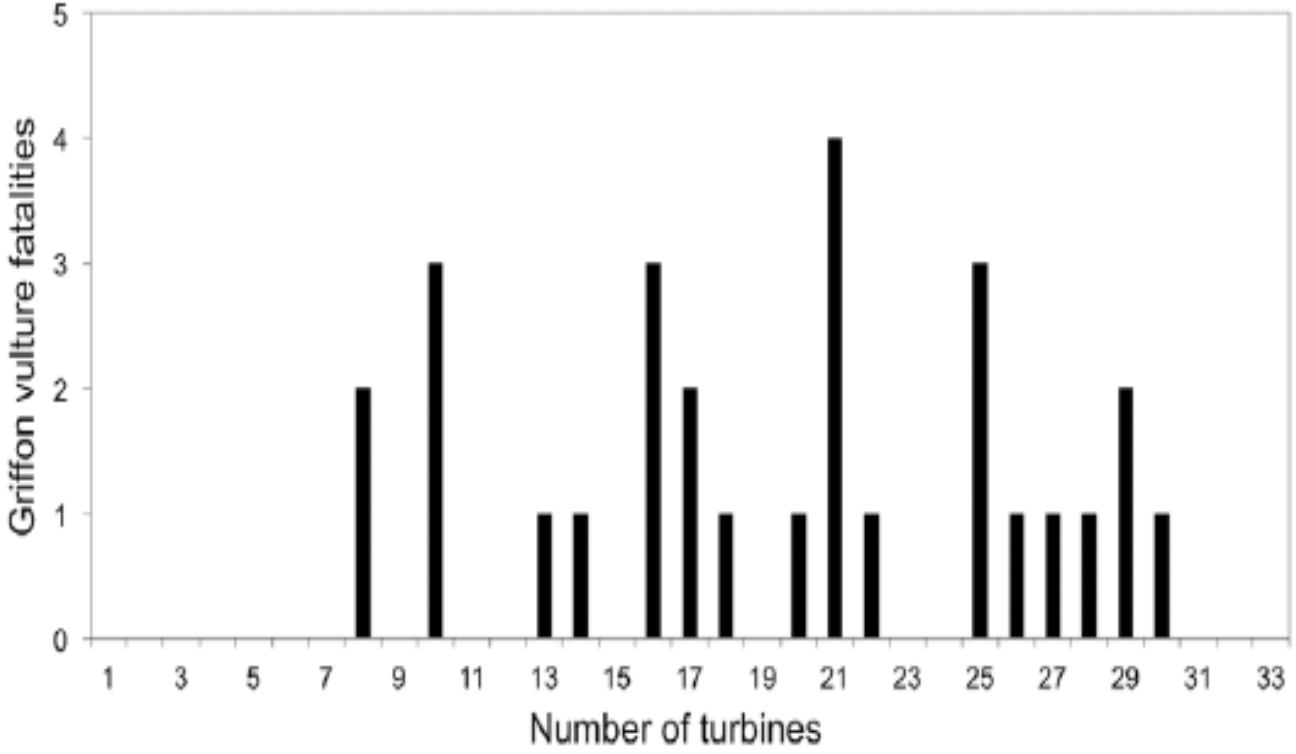
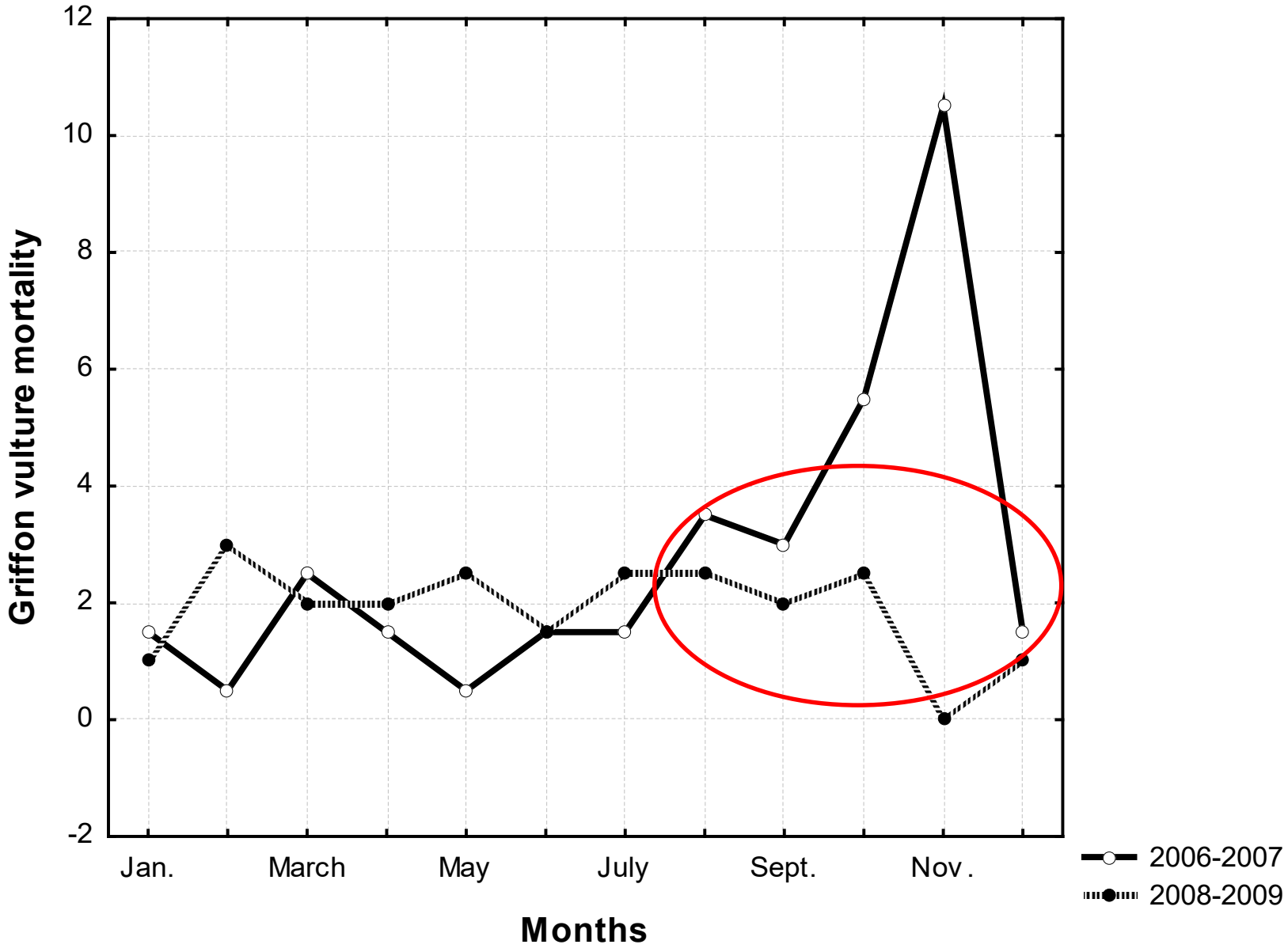


Figure 3. Distribution of the number of griffon vulture fatalities per turbine. The fatalities tend to be concentrated at certain turbines.
doi:10.1371/journal.pone.0048092.g003


Acumulate reduction in Griffon vulture mortality
100
90
80
70
60
50
40
30
20
10
0
Percent of stopped turbines


12
10
8
6
4
2
0
-2
Griffon vulture mortality
Jan.
March
May
July
Sept.
Nov.
Months
2006-2007
2008-2009

- Since 2008, we've been using a selective stop program to stop turbines when vultures were observed nearby.

- The mortality rate from griffon vulture was reduced by 65%, with only a reduction in total wind farm energy production by 0.07% per year.

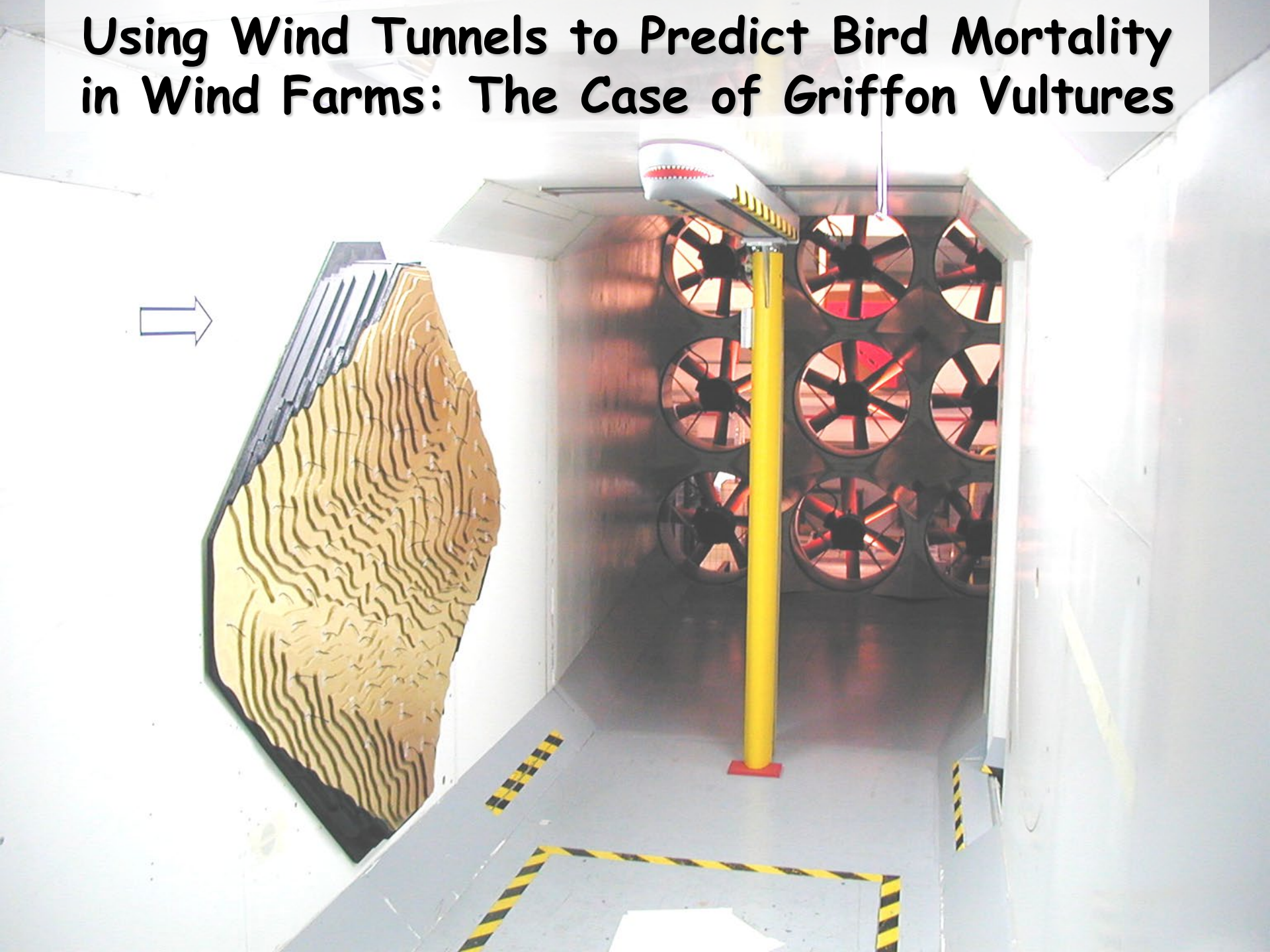
- The use of selective stop techniques in turbines with the highest mortality rates mitigates the impacts of wind farms on birds with minimal effect on energy production.

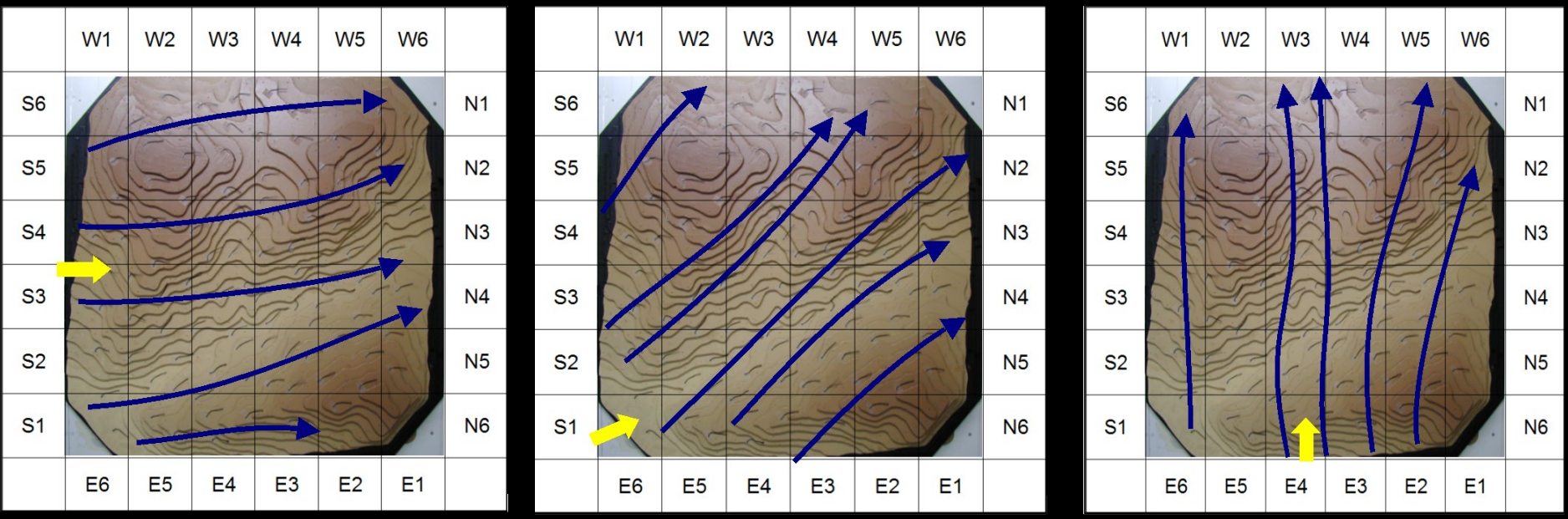
And Now?

1) We need to mitigate mortality caused by poorly placed turbines.

2) We have to change our methods of evaluating potential risk in new facilities.

Using Wind Tunnels to Predict Bird Mortality in Wind Farms: The Case of Griffon Vultures





No statistical differences were detected between the observed flight trajectories of griffon vultures and the wind passages observed in our wind tunnel model

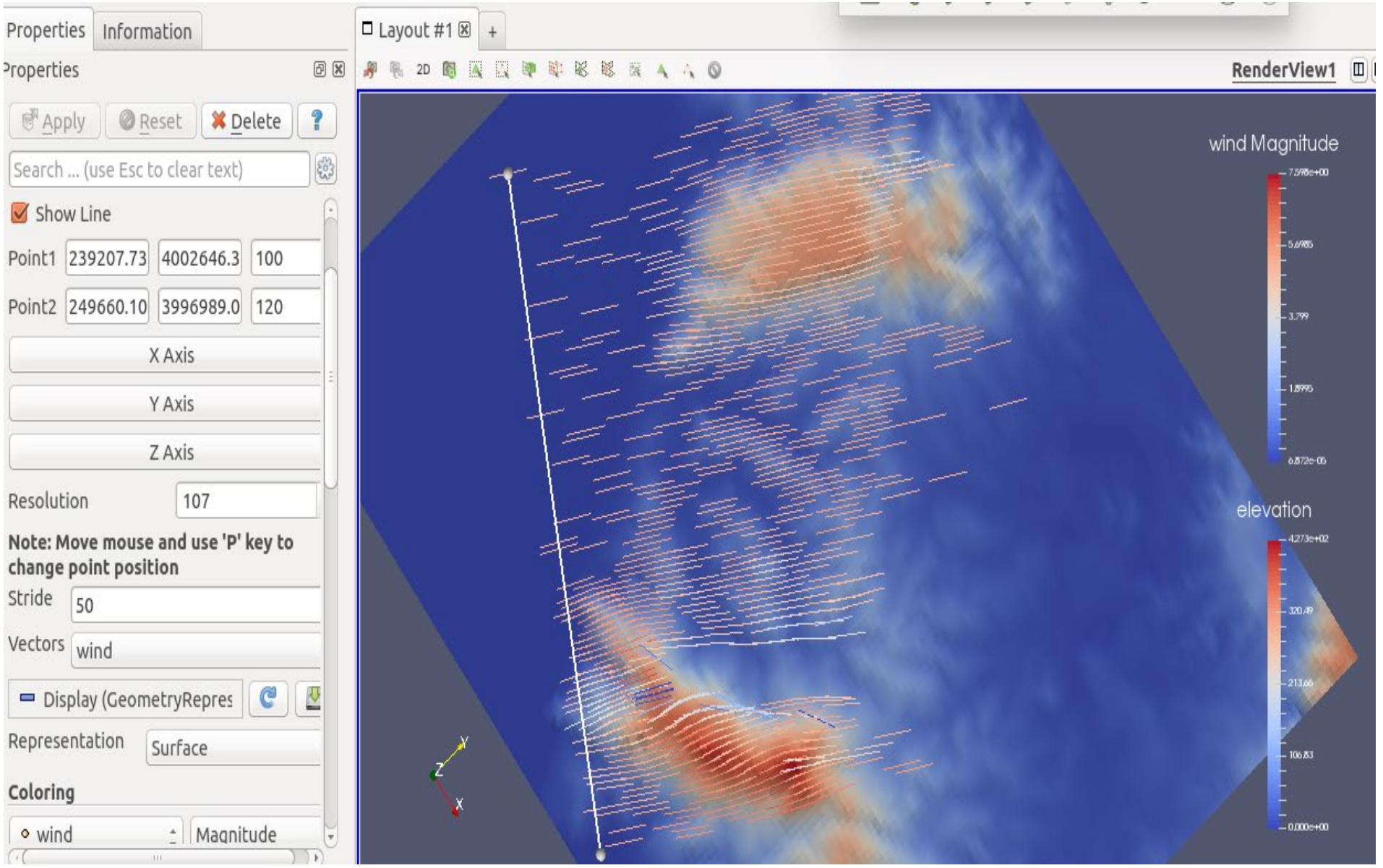
Table 4. Number of griffon vultures flying during field observations with Eastern winds and relative presence of wind currents observed in the aerodynamic model.

Cell	Field observations	Relative aerodynamic model
S4	1	0
S5	5	0
S6/W1	1	0
W2	94	20
W3	120	20
W4	90	20
W5	95	20
W6/N1	0	0
N2	74	20
N3	6	0
TOTAL	486	100

We indicate the cells where vultures left the study area.
doi:10.1371/journal.pone.0048092.t004

A significant correlation was found between dead vultures and predicted proportion of vultures crossing each turbine according to the aerodynamic model (rs = 0.840, n= 6. P= 0.036).

Ensayo V-45 (100 m)



Thank you for your attention