Bird surveys at windfarms in the Eastern Cape, South Africa

Vincent Parker

Parker V 2023. Bird surveys at windfarms in the Eastern Cape, South Africa. Biodiversity Observations 13: 206–213.

23 August 2023

DOI: 10.15641/bo.1409

Ornithology

Bird surveys at windfarms in the Eastern Cape, South Africa

*Vincent Parker**

**vinparker@yahoo.com*

Abstract

Bird surveys were conducted at four windfarm sites and four control sites in the Eastern Cape, South Africa. Numbers of the Blue Crane *Grus paradisea* decreased at three out of four windfarm sites after commencement of windfarm activities and did not decrease at any of the control sites. Numbers for several bird species of the fynbos and grassland tended to increase at windfarm sites after commencement of windfarm activities, and did not increase at the control sites.

Introduction

The introduction of windfarms as a renewable energy source has been accompanied by concerns about the possible negative effects on bird populations in the vicinity of the windfarms. The St Francis Bay bird club undertook a long term monitoring exercise in order to detect and report on changes in the abundance of bird species at and around the windfarms.

Methods

Since 2011, the St Francis Bay Bird Club has carried out regular bird surveys at four windfarm sites (Tsitsikamma, Jeffreys Bay, Gibson Bay and Kouga) as well at four control sites (Banna-ba-Phifu, Oyster Bay, Tsitsikamma West and Ubuntu) (Figure 1 and 2) in the coastal region of the Eastern Cape, South Africa, between Jeffreys Bay in the east and Plettenberg Bay in the west. The control sites are proposed windfarm sites where no windfarm activity occurred during the study period.

Surveys were conducted by groups of two or more observers by vehicle on roads around the perimeter of the sites, with observers dismounting from time to time to scan the surroundings. Except in the case of Jeffreys Bay, observers were not permitted to enter the windfarm sites. At Jeffreys Bay, initial surveys were done around the perimeter, and later surveys were done on roads traversing the site (after permission to enter the site was granted). The surveys were conducted once every six weeks at each of the sites. At least 70 surveys were conducted at each site. Data on bird mortalities due to

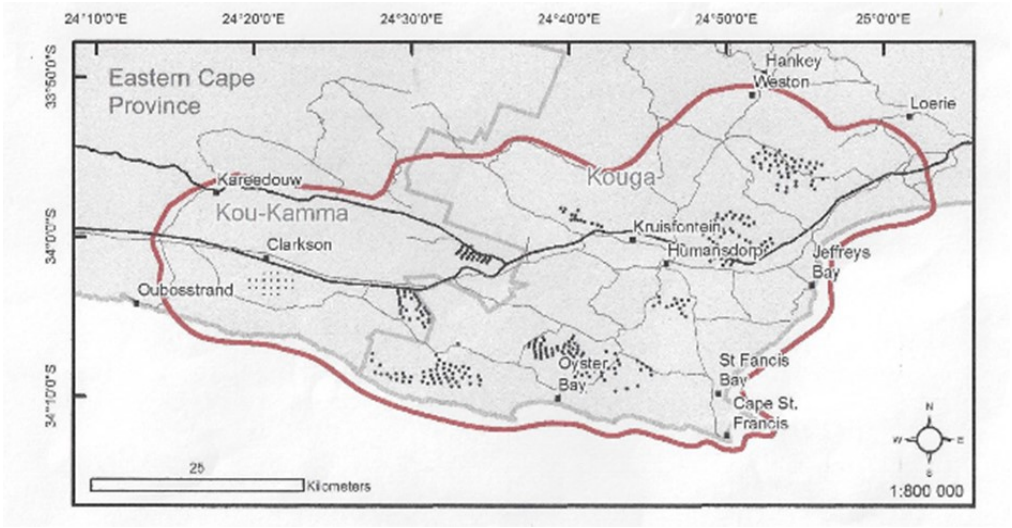

Figure 1: The study area. The stippling indicates the locations of the windfarms and proposed windfarms (control sites).

Figure 2: Wind turbines at one of the operational windfarms.

collision with the wind turbines are kept by the windfarm managements. Those data were not available to this study. The data accumulated during the period 2011 to 2020 were analysed. For windfarm sites, the average numbers of birds counted per visit for each species after commencement of windfarm activities were compared to the average number counted before commencement. For control sites, the average numbers counted for the second half of the study period were compared to the average numbers for the first half.

Results and Conclusions

In general, no differences between the outcomes for windfarm sites compared to control sites that were consistent across all sites emerged. However some trends emerge which if not conclusive, at least indicate a need for further investigation. In Table 1, the outcomes for species of conservation concern (Red Data species listed in Taylor et al. (2015)) are summarised. Table 1 indicates for which sites the average numbers for each species showed an increase or decrease over the study period, or was essentially stable. The numbers of Blue Cranes *Grus paradisea* decreased at three out of four windfarm sites after commencement of windfarm activities and did not decrease at any of the control sites. For the other species in this group, trends in abundance were not consistently different for windfarm sites compared to control sites.

Table 2 lists those species for which the outcomes are different between control and windfarm sites across most but not all sites. With the exception of the Blue Crane (Table 1), the differences overwhelmingly indicate an increase in average numbers counted. What is also striking is that these are predominantly species of grassland or fynbos (African Stonechat *Saxicola torquatus*, Bokmakierie *Telophorus zeylonus*, Cape Canary *Serinus canicollis*, Cape Grassbird *Sphenoeacus afer*, Cape Longclaw *Macronyx capensis*, Grey-backed Cisticola *Cisticola subruficapilla*, Karoo Prinia *Prinia maculosa*, Neddicky *Cisticolae fulvicapilla*, White Stork *Ciconia ciconia* and Yellow Bishop *Euplectes capensis*).

Biodiversity in grassland and fynbos habitats is dependent on a suitable regime of grazing by livestock or game animals and periodic burning. A change in the observed numbers of grassland and fynbos bird species which is not observed at control sites in the same region might be expected to reflect a change in land management, particularly changes in grazing pressure or burning frequency. That does not seem to be the case here.

The owners of the land on which windfarms were developed retained ownership of the land while wind turbines were constructed and came into operation, and continue to use the land surrounding the turbines as before, predominantly for grazing livestock. It is therefore unknown if and why there was any change in land use management across the windfarm properties subsequent to the commencement of windfarm operations, and there is no ready explanation for why the average numbers counted for some fynbos and grassland species increased at the windfarm sites and not at the control sites. For those species that were observed only occasionally at one or more of the sites, the

Table 1: Changes in the average number counted per visit for species of conservation concern (Red Data species).

Key	
n/a	The species was not regularly reported at the site
O	There was little change in the average count (no more than 10% difference)
+	An increase of more than 10% in average count
-	A decrease of more than 10% in average count

Species	**Control Sites**				**Windfarm Sites**			
	Banna-ba-Phifu	Oyster Bay	Tsitsikamma West	Ubuntu	Tsitsikamma	Jeffreys Bay	Gibson Bay	Kouga
African Marsh Harrier	**+**	**+**	**-**	**-**	**n/a**	**n/a**	**-**	**-**
Black Harrier	**n/a**	**n/a**	**n/a**	**-**	**n/a**	**+**	**-**	**n/a**
Black-winged Lapwing	**+**	**+**	**-**	**n/a**	**+**	**n/a**	**-**	**-**
Blue Crane	**O**	**O**	**n/a**	**+**	**-**	**-**	**-**	**+**
Denham's Bustard	**-**	**+**	**+**	**-**	**O**	**+**	**O**	**-**
Jackal Buzzard	**-**	**+**	**-**	**-**	**+**	**+**	**-**	**+**
White-bellied Bustard	**+**	**O**	**n/a**	**-**	**n/a**	**n/a**	**n/a**	**+**

Table 2: Species showing differences in trends of average numbers counted for windfarm sites compared to control sites.

Key	
n/a	The species was not regularly reported at the site
O	There was little change in the average count (no more than 10% difference)
+	An increase of more than 10% in average count
-	A decrease of more than 10% in average count

Species	Control Sites				Windfarm Sites			
	Banna-ba-Phifu	Oyster Bay	Tsitsikamma West	Ubuntu	Tsitsikamma	Jeffreys Bay	Gibson Bay	Kouga
African Stonechat	-	+	-	-	+	+	+	+
Bar-throated Apalis	-	-	-	+	O	n/a	o	+
Black-headed Heron	-	+	-	-	+	+	o	o
Bokmakierie	-	-	-	o	+	-	+	+
Cape Canary	-	+	-	-	+	+	-	+
Cape Grassbird	-	-	-	-	+	+	-	+
Cape Longclaw	-	-	-	-	+	+	-	-
Fiscal Flycatcher	-	+	-	+	+	n/a	+	+
Fork-tailed Drongo	+	-	-	+	+	+	+	o
Grey-backed Cisticola	-	-	n/a	-	+	+	-	+
Karoo Prinia	-	-	-	+	-	+	o	+
Levaillant's Cisticola	n/a	-	-	n/a	+	-	o	+
Neddicky	-	-	-	-	+	+	-	-
White stork	-	+	-	+	+	+	o	+
White-necked Raven	-	+	-	+	+	+	+	+
Yellow Bishop	o	+	-	-	+	+	+	+

Table 3: Changes in average numbers counted per visit across windfarm and control sites for selected species.

Key	
n/a	The species was not regularly reported at the site
O	There was little change in the average count (no more than 10% difference)
+	An increase of more than 10% in average count
-	A decrease of more than 10% in average count

Species	Control Sites				Windfarm Sites			
	Banna-ba-Phifu	Oyster Bay	Tsitsikamma West	Ubuntu	Tsitsikamma	Jeffreys Bay	Gibson Bay	Kouga
African Hoopoe	O	-	-	+	O	+	O	-
African Stonechat	-	+	-	-	+	+	+	+
Amur Falcon	-	n/a	-	+	-	+	n/a	+
Bar-throated Apalis	-	-	-	+	O	n/a	O	+
Black Saw-wing	-	+	-	-	-	n/a	+	-
Black-collared Barbet	-	-	-	O	+	-	O	-
Black-headed Heron	-	+	-	-	+	+	O	O
Black-headed Oriole	+	+	-	n/a	-	n/a	-	+
Blacksmith Lapwing	+	+	-	-	-	-	-	+
Bokmakierie	-	-	-	O	+	-	+	+
Brimstone Canary	-	+	-	-	n/a	+	+	-
Brown-headed Kingfisher	n/a	n/a	-	n/a	+	n/a	-	+
Brown-throated Martin	+	-	O	-	-	+	+	-
Burchell's Coucal	n/a	n/a	-	n/a	n/a	n/a	n/a	O
Cape Batis	n/a	n/a	-	n/a	O	n/a	-	n/a
Cape Bulbul	-	+	-	+	+	-	+	+

Table 3: Changes in average numbers counted per visit across windfarm and control sites for selected species (continued).

Key	
n/a	The species was not regularly reported at the site
O	There was little change in the average count (no more than 10% difference)
+	An increase of more than 10% in average count
-	A decrease of more than 10% in average count

Species	Control Sites				Windfarm Sites			
	Banna-ba-Phifu	Oyster Bay	Tsitsikamma West	Ubuntu	Tsitsikamma	Jeffries Bay	Gibson Bay	Kouga
Cape Canary	-	+	-	-	+	+	-	+
Cape Clapper Lark	n/a	-	n/a	O	n/a	n/a	n/a	O
Cape Crow	O	+	-	+	O	+	O	+
Cape Grassbird	-	-	-	-	+	+	-	+
Cape Longclaw	-	-	-	-	+	+	-	-
Cape Robin-chat	+	+	-	-	+	+	-	+
Cape Starling	-	-	-	+	n/a	-	-	n/a
Cape Sugarbird	n/a	n/a	-	n/a	n/a	n/a	n/a	+
Cape TurtleDove	+	-	-	+	O	+	-	+
Cape Wagtail	+	O	-	-	+	-	O	+
Cape Weaver	+	+	-	+	+	+	O	+
Cape White-eye	+	n/a	-	-	O	+	-	+
Common Fiscal	O	+	-	O	O	+	+	+
Common Quail	O	-	+	n/a	n/a	n/a	-	+
Common Waxbill	-	+	-	-	n/a	-	-	+
Crowned Lapwing	+	+	-	+	+	+	-	+
Fiscal Flycatcher	-	+	-	+	+	n/a	+	+

Table 3: Changes in average numbers counted per visit across windfarm and control sites for selected species (continued).

Species	Control Sites				Windfarm Sites			
	Banna-ba-Phifu	Oyster Bay	Tsitsikamma West	Ubuntu	Tsitsikamma	Jeffreys Bay	Gibson Bay	Kouga
Fork-tailed Drongo	+	-	-	+	+	+	+	O
Greater Double-collared Sunbird	-	+	-	O	O	-	-	-
Grey-backed Cisticola	-	-	n/a	-	+	+	-	+
Helmeted Guineafowl	+	-	+	-	n/a	-	+	-
Karoo Prinia	-	-	-	+	-	+	O	+
Levaillant Cisticola	n/a	-	-	n/a	+	-	O	+
Little Rush-warbler	n/a	n/a	-	n/a	n/a	n/a	-	+
Little Swift	-	n/a	n/a	n/a	n/a	n/a	n/a	-
Malachite Sunbird	n/a	+	-	O	n/a	-	-	+
Neddicky	-	-	-	-	+	+	-	-
Olive Bush-shrike	-	n/a	O	n/a	n/a	n/a	+	n/a
Pintailed Whydah	+	+	-	-	O	O	+	+
Red-billed Teal	+	-	-	-	+	-	O	+
Red-eyed Dove	O	+	-	O	+	-	+	+
Red-necked Spurfowl	-	-	-	n/a	-	n/a	+	-
Red-winged Starling	+	-	-	n/a	-	n/a	-	-
Reed Cormorant	O	+	-	n/a	-	-	+	+
Rock Martin	-	+	-	-	+	O	-	-
Rufous-naped Lark	+	+	-	O	+	+	+	-
Sombre Greenbul	+	+	-	+	O	-	+	+
Southern Boubou	+	-	-	+	+	n/a	+	O
Southern Red Bishop	-	-	-	n/a	n/a	n/a	-	+
Speckled Mousebird	-	n/a	-	-	n/a	n/a	+	-
Speckled Pigeon	+	+	O	-	-	+	-	+
Terrestrial Brownbul	+	n/a	+	n/a	n/a	n/a	-	n/a
White stork	-	+	-	+	+	+	O	+
Whitebreasted Cormorant	+	n/a	+	n/a	n/a	n/a	+	n/a
White-necked Raven	-	+	-	+	+	+	+	+
Yellow Bishop	O	+	-	-	+	+	+	+

data are insufficient for analysis. Table 3 summarises the results for species which were observed regularly at least one of the windfarm and one of the control sites. The most striking result here is that numbers counted of Cape Starling *Lamprotornis nitens* declined across three out of four control sites as well as the two windfarm sites where they were present. The detailed data summaries for each site can be obtained from the author.

Acknowledgements

The bird surveys were co-ordinated by Maggie Langlands and carried out by members of the St Francis Bay Bird Club.

References

Taylor MR, Peacock F, Wanless RM (eds) 2015. The Eskom Red Data Book of Birds of South Africa, Lesotho and Swaziland. BirdLife South Africa. Johannesburg, South Africa.

Paper edited by Megan Loftie-Eaton
Biodiversity and Development Institute

Biodiversity Observations

The scope of Biodiversity Observations includes papers describing observations about biodiversity in general, including animals, plants, algae and fungi. This includes observations of behaviour, breeding and flowering patterns, distributions and range extensions, foraging, food, movement, measurements, habitat and colouration/plumage variations. Biotic interactions such as pollination, fruit dispersal, herbivory and predation fall within the scope, as well as the use of indigenous and exotic species by humans. Observations of naturalised plants and animals will also be considered. Biodiversity Observations will also publish a variety of other interesting or relevant biodiversity material: reports of projects and conferences, annotated checklists for a site or region, specialist bibliographies, book reviews and any other appropriate material. Further details and guidelines to authors are on the journal website (https://journals.uct.ac.za/index.php/BO/).

ISSN 2959-3441

Editor: LG Underhill