White Storks *Ciconia ciconia* in the Western Cape, South Africa: Historical Review of Breeding

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Article

White Storks *Ciconia ciconia* in the Western Cape, South Africa: Historical Review of Breeding

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Abstract

The White Stork *Ciconia ciconia* is one of possibly 11 long-distance migrants from the Palearctic and Nearctic regions which have bred since 1800 in the southern hemisphere, at or near the southern limit of their migrations. The White Stork has been recorded as initiating breeding in four localities in the Western Cape, South Africa, over a period of half a century. It is likely that 400 fledglings were produced. The largest number of nests in a single year was most likely to have been seven in 2002. In 2025, one pair was confirmed breeding. Of the 11 species that have probably bred in the southern hemisphere, four had established breeding populations in 2026. Recommendations are made for research in the event of a new discovery of a northern hemisphere species breeding in the southern hemisphere.

Keywords: bird migration; hemisphere switching; monitoring recommendations

1. Introduction

The White Stork *Ciconia ciconia* is an iconic bird species. It has a close association with people, because most nests in Eurasia are in towns and villages. From an ornithological perspective, this species was the first to demonstrate migration between the hemispheres; a juvenile ringed at Hăghig, Covasna County, Romania, in Hungary on 10 July 1908 was recovered on 30 January 1909 in the Himeville district of KwaZulu-Natal, South Africa. A huge amount of research resources has been directed at the White Stork. It is one of the few species that has had international conferences dedicated to it. An International White Stork Census has been organized since 1934, and on a decadal time scale since 1974. The eighth census took place in 2024.

Given this iconic status, both in the public space and in ornithological research, it is astonishing that so little attention has been afforded it in South Africa, even more so since it was the second long-distance migrant from the northern hemisphere to be recorded breeding in the southern hemisphere, out of a probable total of 11 species (Table 1).

Table 1. Palearctic and Nearctic bird species, mostly regarded as long-distance migrants, which have been recorded breeding in the southern hemisphere since 1800. Ordered by date of first confirmed breeding record.

Species	Year of first record of breeding, and country	Status summary	References
European Bee-eater *Merops apiaster*	Confirmed, 1855 South Africa	Established	Layard 1867
White Stork *Ciconia ciconia*	Confirmed, 1933 South Africa	One breeding pair left in 2025	Roberts 1941a, Underhill & Ramay 2025, this paper

 doi:10.20944/preprints202603.2209.v1

Western Osprey *Pandion haliaetus*	Confirmed, 1933/34 and 1963 South Africa. Other suspected records, South Africa	Erratic	Dean & Tarboton 1983
Glossy Ibis *Plegadis falcinellus*	Confirmed, 1950 South Africa	Established	Underhill 2019
Common Buzzard *Buteo buteo*	Suspected, early 1960s, South Africa. Subsequently confirmed, with caveats, South Africa	Needs further investigation	Broekhuysen 1963, Gwynn 2014
Booted Eagle *Hieraaetus pennatus*	Suspected, 1800s South Africa. Confirmed, 1973 South Africa	Established	Martin & Martin 1974, Brooke et al. 1980
Sandwich Tern *Thalasseus sandvicensis*	Suspected, 2002 South Africa. Suspected, 2014 Namibia.	Unknown	Hockey et al. 2005, Sherley et al. 2011, Kemper 2015
Leach's Storm Petrel *Oceanodroma leucorhoa*	Probably, 1980 New Zealand; confirmed. Confirmed, 1995 South Africa	Established for a short period in South Africa; unknown elsewhere	Underhill 2024
Barn Swallow *Sterna hirundo*	Confirmed, 1980 Argentina	Established	Martinez 1983, Garcia-Perez et al. 2013, Winkler et al. 2017
Cliff Swallow *Petrochelidon pyrrhonota*	Confirmed, 2015 Argentina	Established	Areta et al. 2021
Common House Martin *Delichon urbicum*	Almost confirmed, 1892, South Africa. Confirmed, 1928 Namibia.	Erratic	Stark & Sclater 1901, Randall 2013

This paper provides a review of breeding of the White Stork in the Western Cape, South Africa; in reality, it is a review of the breeding of the species in the southern hemisphere. It follows an analysis of the occurrence of this species in the Western Cape during the 20th century (Underhill 2025). Movements and migration of White Stork fledglings were dealt with by Underhill et al. (in prep.).

2. Methods

In this paper, the seasons are austral, so that "summer" refers to the period from about November to March, and "winter" to May to August. The Western Cape has a mediterranean climate, so that most rain falls during the winter period, and little in summer.

The review was compiled in part from the literature, and in part it uses records compiled by the late Jan H Hofmeyr (Schmidt 2014), and by myself. We approached people whom we knew had personal experience of breeding White Storks in the Western Cape. In cases where people had died,

 doi:10.20944/preprints202603.2209.v1

we attempted to contact family members for information. In order not to misrepresent some of the historical accounts by paraphrasing them, I have, where appropriate quoted the original texts. This retains the original nuances of the authors.

All ringing, retrap and recovery records were downloaded from the Safring database (https://safring.ringing.africa/dataset/80, 5 February 2026). The file contained 1,928 records, structured in such a way that it includes the ringing details of each White Stork ringed in South Africa, and, for each recovery or retrap of a White Stork, contains two records, the ringing details and the finding details. The file was reduced to 100 records of White Storks ringed with SAFRING age code 1 (de Beer et al. 2000), indicating that they were ringed as nestlings.

3. Results

Near the start of the twentieth century, Stark & Sclater (1906) wrote: "No properly substantiated instance of White Stork breeding in South Africa is known, though Mrs Barbour and Mr Seebohm both give unconfirmed rumours on the subject. Major Sparrow, too, writes to me that in the upper part of Natal, where the bird is common in November and December, he has been told of the existence of nests of the species, though he has never found one himself." Although couched in the polite language of the era, it is clear that Stark & Sclater (1906) considered the White Stork to be a non-breeding migrant to South Africa.

3.1. Oudtshoorn; c. 1933 to 1941

The first confirmed White Stork nest in South Africa was found by Dr Austin Roberts on 18 November 1940 (Roberts 1941a, Table 1). Its discovery was totally unexpected: "When driving along the main road between Calitzdorp and Oudtshoorn on the 18th November 1940, we saw a nest of a White Stork on a high dead tree close to the house of Mr. I.H. Ballot, on the farm Welbedacht, and stopped to investigate. One of the parent birds was standing on the nest, shading the three young ones from the sun. Mr. Ballot informed me that the same pair had nested there for at least seven years, as long as he had occupied the farm, and had remained all through the winter; but the young birds had always departed for the winter until the previous year, when they had remained with the parents. So far as I am aware, this is the first definite record of this species breeding south of the Equator" (Roberts 1941a). This account suggests that 1933 was the year of the first record of the breeding of White Storks in South Africa. Roberts (1941b) provided three photographs showing the context of this nest; the dead tree was possibly a pine tree, and the nest was c. 10 m above the ground. It collapsed in November 1941, and the five nestlings in it at the time were killed (Roberts 1942). Although a tree close to the original nest was killed and stripped, the storks never bred at this site again.

3.2. Zimbabwe; Misleading Report

Priest (1942) was adamant that White Storks had been recorded breeding on several occasions in Zimbabwe. For example: "In 1939, a nest of this bird was found with eggs in it, on top of the Wedza Mountains, and photographed. Another pair bred in the Banket District, another at Sinoia, and I feel sure that if more Rhodesians joined the S.A.O.S. or wrote about these birds in local papers, a widespread report of their nesting activities here would emerge." Priest's (1942) paper was, unusually, followed by a page of comments by the editor (R Bigalke) politely casting doubt on the observations, and designed to engender suspicion of their veracity. Bigalke's editorial comment suggests that it was likely that the nests reported by Priest (1942) were in fact those of Black Storks *Ciconia nigra*. There were no subsequent communications from Captain Cecil Priest defending his claim. His report was formally disposed of by Smithers et al. 1957: "no evidence is forthcoming to substantiate the assertions (Priest) that it breeds within the Territory". The breeding of White Storks has not been referred to again in Zimbabwean ornithology (e.g., Irwin 1981).

 doi:10.20944/preprints202603.2209.v1

3.3. Agulhas Plain, Bredasdorp: 1961–2025 and Extant

The next report of breeding was by Martin et al. (1962): "On 29 November 1961, while travelling along the road between Bredasdorp and Cape Agulhas, we saw what appeared to be a large nest in the distance with a large white and black bird standing on it. Upon investigation it was found to be the nest of the European Stork which was built in a smallish Rooikrans tree *Acacia cyclops*. The nest was only eight feet from the ground and it contained three well feathered young. The nest gave the appearance of having been used more than once. The owner of the farm informed us that the birds had been nesting on his farm some years. A previous nesting tree had been destroyed in a veld fire."

Breeding of White Storks on the Agulhas Plain was monitored erratically after its discovery in 1962 (Table 2). There is some data for 12 of the 16 years from 1961 to 1976. No information is available for the years 1977 to 1988; there were four nests in 1974 and in 1989, and it is possible that there were as many as six nests in some years during this period (Hofmeyr 2001). Since 1992, there has been a single nest (Table 2, Hofmeyr 2001, Underhill & Ramsay 2025, P van Oudshoorn *in litt.*). At least 15 different nests have been constructed, all in trees. The nests were concentrated in an area of 12 km^2 (Hofmeyr 2001).

Table 2. Summary of records of breeding White Storks in the Western Cape, 1933–2025. For years that are not shown there is no preserved record, although breeding may have occurred. The documented counts of nests are denoted N, number of nestlings ringed with Safring rings, R, and fledglings, F. Cells which are blank are not likely to have breeding pairs; breeding possibly occurred at cells marked nr (no record). Years with no record are omitted.

Year	Calitz-dorp	Albertinia	Agulhas Plain	Tygerberg Zoo	Source
1933–39	1N				Roberts 1941a, b
1940	1N, 3F				Roberts 1941a, b
1941	1N, 0F				Roberts 1942
1961			1N, 3F, 3R		Martin et al. 1962, Broekhuysen 1965
1962			2N, 3F		Broekhuysen 1965
1963			3N, 5F		Broekhuysen 1965
1964		1N	3N, 6F,5R		Broekhuysen 1965, Safring
1965		1N, 3F	nr		Uys 1968, Hofmeyr 2001
1966		1N, 3F	1R		Hofmeyr 2001, Safring
1967		nr	4N, 2R		Safring
1968		nr	4R		Safring
1971		Note 1	nr		
1972		2R	10R		Safring
1973		2R	2R		Safring
1974		1N, 2F	4N, 4R	1N	Winterbottom 1977, Hofmeyr 2001, Safring
1975		2R	6R		Safring
1976		4R	6R		Safring
1977			nr	1N	Hofmeyr 2001

 doi:10.20944/preprints202603.2209.v1

1983			nr	1N, 3R	Hofmeyr 2001, Safring
1989			4N, 5R		Hofmeyr 2001, Safring
1990			3R		Safring
1992			1N		Hofmeyr 2001
1993			1N		Hofmeyr 2001
1994			1N	2N, 8R	Hofmeyr 2001, Safring
1995			1N	3N, 8R	Hofmeyr 2001, Safring
1996			1N	4N,1R	Hofmeyr 2001, Safring
1997			1N	9R	Hofmeyr 2001, Safring
1998			1N	3?N	Hofmeyr 2001
1999			1N	4N	Hofmeyr 2001
2000			1N, 2R	4N, 15F 9R	Hofmeyr 2001, Safring
2001			nr	7N, 15F, 7R	Mukherjee et al. 2003. Safring
2002			nr	6N, 14F	Mukherjee et al. 2003, Safring
2003			nr	4N, 3R	Mukherjee et al. 2003, Safring
2009			1R	5R	Safring
2011			1R	nr	Safring
2005–25			Note 2		
2012			1N, 3F		W Fiedler *in litt.*
2013			1N, 2F		W Fiedler *in litt.*
2024			1N		Underhill & Ramsay (2025)
2025			1N		P van Oudshoorn *in litt.*

1. Dead tree collapsed early in 1971/72 breeding season, replaced by an artificial nest platform in winter 1972; in the 1972/73 breeding season, storks started nesting on telephone pole, but ultimately moved to the platform and remained there (Hofmeyr 2001). 2. A pair has bred on a farm in the Bredasdorp district almost every year since 2005 (Pieter van Oudshoorn pers. comm.).

3.4. Albertinia: 1966–1977

The discovery of the third breeding event was documented for the first time 35 years later (Hofmeyr 2001). On 1 January 1966, a schoolboy, traveling by long-distance train, observed a nest of what he thought was a White Stork with three chicks on a tree near the railway line. This observation was reported to ornithologists; phone calls to station masters and their discussions with locomotive drivers established that the nest was on the farm Arum Valley midway between Mossel Bay and Albertinia. The farmer reported that the birds had been nesting there for at least five or six years. The White Stork nest was in a dead blackwood *Acacia melanoxylon* tree, 9 m above the ground, 50 m from the railway line, 1 km from the farmhouse, and 200 m from a labourer's cottage. The nest is known to have produced three fledglings in following breeding season 1966–67. Nothing is known for the following four seasons. The nest collapsed early in the 1971–72 breeding season, and a platform was designed and constructed (Hofmeyr 2001). From 1972–73, P Vintcent kept a detailed diary, written

 doi:10.20944/preprints202603.2209.v1

up after every visit to the nest; a photocopy of the relevant part of the diary has been deposited in the Niven Library, University of Cape Town. 1976/77 was the last year in which breeding took place; a single bird returned to the nest for the following two breeding seasons, but had lost its mate and was unable to attract a new one.

Jan Hofmeyr and I visited the site during the breeding season in 2020 or 2021. It was straightforward to locate the exact position where the nest had been built from the descriptions, there was no nest in existence, not even an old one, and no White Storks were present (pers. obs).

3.5. Tygerberg Zoo; Headstarting Experiment

In the 1960s, it was observed that nests frequently produced three fledglings even when there were more than three hatchlings (Hofmeyr 2001). One or two chicks were removed from the nests and hard-reared in Cape Town. Between 1970 and 1975, Hofmeyr (2001) reported that six chicks from Albertinia and at least 12 from the Agulhas Plain were hand-reared. When fully grown, the primary feathers were clipped and the birds held in an enclosure at the Tygerberg Zoo. Broekhuysen (1975), in his last publication before he suddenly died in April 1975 (Uys & Martin 1975), stated: "They were kept there to enable me to study and observe their behaviour, and it is also hoped that when they have become adult some of them would perhaps start to breed." There is no record of the subsequent fate of these birds; it seems possible that as clipped primaries were replaced by new feathers, the birds escaped from the enclosure.

3.6. Tygerberg Zoo; c. 1975–c. 2012

The development of a fourth population of breeding White Storks, at the Tygerberg Zoo near Cape Town, was not well documented. In January 1975, a pair of "wild storks" built a nest on a cage close to the stork enclosure described above; the incomplete nest was blown off the cage by a gale-force wind and a new nest was started in February on the lion cage (Broekhuysen 1975). After his death two months later, there is no further record. The surviving information, summarized by Hofmeyr (2001), is that the zoo manager noted a single nest when he was appointed in 1977, and that three were ringed in 1983, and that there was a single nest (Table 2). Between 1994 and 1999 the number of nests increased to four. In the three years 2000, 2001 and 2002, a total of 34 fledglings were produced, and the number of nests at the zoo appears to have peaked at seven in 2001 (Table 2, Hofmeyr 2001, Mukherjee et al. 2001). The final year during which fledglings were ringed at the zoo was 2009 (Table 2). The Tygerberg Zoo closed in December 2012 (Davis 2012). It is unknown if White Storks were breeding at the zoo that summer. It is unfortunate that the data from this site is so sparse.

3.7. Nest Sites

Several of the papers describe the nest sites. Mostly, they were constructed in alien trees (*Eucalyptus*, Rooikrans *Acacia cyclops*, Blackwood *Acacia melanoxylon* and pines, Figures 1 and 2) and a few in indigenous trees (Melkhout *Calvaria inermis* and a large aloe tree, species unknown, in a farm graveyard).

 doi:10.20944/preprints202603.2209.v1

Figure 1. The arrow points to the White Stork nest, with adult standing on it, on the Agulhas Plain. The trees are *Eucalyptus* (Broekhuysen 1965).

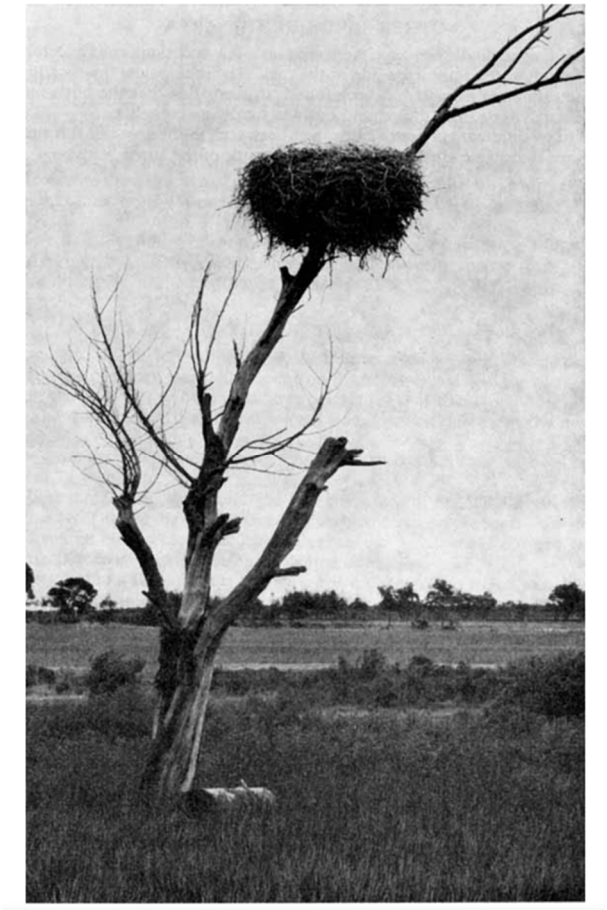

Figure 2. White Stork nest at Albertinia in dead Blackwood *Acacia melanoxylon* tree, 1966 (Uys 1968).

3.8. Estimate of Total Number of Storks Fledged

Hofmeyr (2001) estimated that at least 300 chicks had fledged from nests in the Western Cape over a period from 1933 to 2000 (Oudtshoorn 14, Bredasdorp 160, Albertinia 34, Tygerberg Zoo 90).

 doi:10.20944/preprints202603.2209.v1

The numbers fledged at Tygerberg Zoo in 2001 were 15 and in 2002 was 14, which gives 2.2 fledglings per nest (Mukherjee et al. 2003). Assume that ongoing breeding at the zoo produced an average of six fledglings per year for nine years (2003–2011), that the remaining nest on the Agulhas Plain between 2001 and 2025 produced an average of two fledglings per year. It is likely that a further 110 fledglings were raised, bringing the total to c. 400 fledglings between 1933 and 2025.

4. Discussion

The White Stork is one of, possibly, 11 species (Table 1), usually regarded as Palearctic or Nearctic breeders, which have attempted to breed in the southern hemisphere close to the southern limits of migration. The European Bee-eater *Merops apiaster* was first recorded breeding at a single locality in South Africa in 1855 (Layard 1867); the southern hemisphere population breeding in western South Africa and southern Namibia (Underhill 1997) is genetically indistinguishable from the population that breeds in Eurasia (Carnerio de Melo Moura et al. 2019). Leach's Storm Petrel has been confirmed to breed in South Africa and New Zealand, and has probably bred in the South Shetland Islands between Antarctica and South America (Underhill 2024).

Barn Swallows *Hirundo rustica* and American Cliff Swallows *Petrochelidon pyrrhonota* were first observed breeding in Argentina in 1980 (Winkler et al. 2017) and 2015 (Areta et al. 2021), respectively. For both species, populations have increased in range and numbers, and both adults and juveniles migrate north during the austral winter (Winkler et al. 2017, Areta et al. 2021A).

At the start of the 20th century, both White Stork and the Glossy Ibis *Plegadis falcinellus* had the status of migrants to South Africa from the Palearctic (Underhill 2019, 2025). The first confirmed records of breeding for both species are a decade apart: 1940 for the White Stork (Roberts 1941), 1950 for the Glossy Ibis (Anon 1951). The Glossy Ibis has become a relatively common breeding bird in wetlands scattered over the grassland biome of north-central South Africa and the winter rainfall region of southwestern South Africa (Underhill 2019). In contrast, the White Stork has hovered near the edge of extinction in its South African range, with a single pair known to be breeding in 2024 (Underhill & Ramsay 2025). The trajectories. in terms of status in South Africa, taken by these two species start at similar times, but subsequently diverged. We do not understand why this happened.

In terms of the conventional understanding of bird migration, via genetically inherited migration programmes, hemisphere-switching is not a possibility. However, Helm & Muheim (2021) pointed out that there is a step in the clock-and-compass migration programme which facilitates instant hemisphere switching.

Another striking contrast is the level of research interest that has been focused on the breeding of two species of swallow in Argentina compared with that on the White Stork in South Africa. With hindsight, the weak monitoring in South Africa is partly due to timing, the first next being discovered in 1940 near the start of the Second World War. In part it is also likely to be attributable to the fact that individuals took initiatives, rather than institutions. Potentially, this could have been satisfactory; however, as pointed out by Hofmeyr (2001) continuity of records was lost due to the deaths of key project leaders. Jan Hofmeyr himself died in 2013 (Schmidt 2014), and the data he had collected at both the Tygerberg Zoo and the Agulhas Plain was lost. The lesson for the future is that these events, of hemisphere swapping, are so rare that there needs to be an advance agreement that institutional leadership is required.

Given the need to understand the mechanism of swapping hemispheres (Helm & Muheim 2021), the next time a long-distance migrant breeds in the southern hemisphere, the ornithological research community should swing into action, following the example set by Areta et al. (2021).

It would be a good idea to have the basics of a research project predeveloped. This could contain these elements. (1) An international interest group should be formed, possibly as a committee of the International Ornithologists' Union (IOU). (2) As soon as feasible after discovery of breeding, the chair of that committee should be informed. (3) The breeding event should be appropriately monitored, resourced if needed, either locally or by the IOU. Minimally, monitoring should be adequate to determine the outcome of the breeding attempt. (4) If feasible, the breeding adults and

 doi:10.20944/preprints202603.2209.v1

the chicks should be ringed, and feather and blood samples obtained for isotope and DNA analysis. (5) Attaching size-appropriate tracking devices to adults and fledglings should be considered, if possible.

There were four occasions, on three continents, on which observers could have realized the Leach's Storm Petrel was breeding in the southern hemisphere, but intellectual knowledge appears to have overruled the evidence (Underhill 2023). Birders, and especially citizen scientists, ought to be educated to be alert to the possibility that migrants described in the textbooks and fieldguides as breeding in the Palearctic and Nearctic do occasionally breed in the southern hemisphere. The fact that there are colonies of Barn Swallows in Argentina ought, for example, be common knowledge to birders in southern Africa. They should be encouraged to be aware of the possibility that they might discover nests of species that "only" breed in the northern hemisphere.

5. Conclusions

The paucity of quantitative monitoring of the breeding of White Storks in the Western Cape is remarkable, but understandable. The primary lesson to be learnt is that the leadership of these iconic events needs to be assigned to an institution, in preference to an individual researcher.

Birders, and especially citizen scientists, need to be encouraged to be open-minded about thinking the impossible, that migrants from the northern hemisphere do, on rare occasions, breed in the southern hemisphere.

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Dedication: This paper is dedicated to the memory of Jan Hofmeyr (24 August 1934–23 October 2013), who monitored the breeding of White Storks in the Western Cape over several decades with dedication and consistency.

Conflicts of Interest: None reported by the author.

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