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The longest distance recovery of Cape Sparrow: 421 km in Namibia

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Abstract

The longest distance a Cape Sparrow *Passer melanurus* has moved between the sites of ringing and recovery is 421 km from southern to central Namibia.

Observation

An adult male Cape Sparrow *Passer melanurus* was marked with Safring ring FC46781 at the Alte Kalköfen Bird Observatory (Underhill 2025) in southern Namibia on 12 March 2023, For the record, the mass at ringing was 21g, the wing-length was 77 mm and the primary moult was recorded 530000000; i.e. the first primary was new, the second was half grown and the remaining seven large primaries were all old. It was recovered at a point 50 km south of Windhoek in central Namibia, on 4 November 2023. The distance moved was 421 km and the time elapsed was almost eight months (Table 1). The question that arises from this observation relates to where this record fits in with other long-distance movements of this species.

Discussion

Cape Sparrow movements

When Dean (2005) wrote the species account for the Cape Sparrow for the seventh edition of Roberts Birds of Southern Africa (Hockey et al. 2005), he noted that there were 28 recoveries of ringed Cape Sparrows in the Safring database. He summarized them in relation to movements; 24 of the 28 distances between ringing and finding sites were less than 25 km, and the remaining four were at distances of 83 km, 148 km, 222 km and 2,165 km. However, the distance of 2,165 km seemed unlikely because that would need a Cape Sparrow to travel across the longest axis of its entire range, from the Eastern Cape, South Africa, to Namibe province, Angola (Dean 1997).

We therefore examined all recoveries (and retraps) of Cape Sparrows in the Safring database from the perspective of distance moved. The file of both retraps and recoveries of Cape Sparrows was downloaded from the database on 19 May 2025. It contained 3,087 records, of which 2,733 (89%) showed no movement. The shortest recorded movements were 1.5 km; this occurred when the finding site was one minute east or west of the ringing site. We carefully checked all cases which showed a movement of a distance greater than 50 km. There were 32 of these in the database; 28 of these 32 records contained mistakes. Thus Table 1 contains the four records which we consider reliable.

The longest distance a Cape Sparrow has moved between the place where it was ringed and the finding place is 421 km from southern to central Namibia. There were three other records considered reliable with distances moved of 155 km, 83 km and 60 km (Table 1).

Table 1. Cape Sparrow recoveries with distances exceeding 50 km (Safring database 19 May 2025). Coordinates are provided in decimal degrees. Elapsed time in months was calculated as days between ringing and finding, divided by 30.44 which is the average month length. There were no retraps which moved more than 50 km.

Ring number	Age/sex at ringing	Ringing date	Ringing place	Ringing place coords	Finding date	Finding place	Finding place coords	Elapsed time (months)	Elapsed distance (km)
FC46781	Adult/Male	12 Mar 2023	Alte Kalköfen Bird Observatory	26.82S 17.35E	04 Nov 2023	Khomas region, 50 km south of Windhoek	23.03S 17.20E	7.8	421
218753	Immature/ Female	24 Apr 1973	Sasolberg	26.75S 27.82E	16 Jun 1974	Petrus Steyn district/ Mamafubedu	28.13S 27.65E	13.7	155
A25645	Adult/Male	30 Jul 1968	Barberspan Nature Reserve	26.55S 25.60E	27 Oct 1969	Stella district	26.47S 24.77E	14.9	83
FH34932	Adult/Female	15 Jun 2007	Swakopmund	22.67S 14.52E	11 Jan 2010	Rooibank, south of Walvis Bay	23.17S 14.63E	30.9	60

Earlé (1988) suggested that there were two categories of Cape Sparrows: those that lived in unpredictable rural environments, and were nomadic; and those that had settled in towns and suburbs, and had become resident. Nomadism was likely to be prevalent in Cape Sparrows of arid environments. Becoming resident would have been an adaptation to the reliable availability of food and water in areas settled by people. Two of the four birds in Table 1 which had moved more than 50 km had been ringed in desert and semi-desert habitats in Namibia, so potentially belong to the nomadic component of the population of the species. It is likely that most of the ringing of Cape Sparrows takes place in suburban contexts, and that these birds belong to the resident component of the population. This would explain why the overwhelming majority of recoveries and retraps of Cape Sparrows show no movement.

The database of recoveries and retraps

From the section above, the obvious inference is that the Safring database must be riddled with errors and be unreliable. The reality is that the analysis we carried out, which involved a sort on distance moved, is the one which is going to highlight most of the errors relating to coordinates, which generate spurious distances.

The database of recoveries and retraps contained one gross error (FA61587); a Cape Sparrow ringed in Pretoria, South Africa on 20 March 2006, and retrapped, as a Cape Sparrow, in Jos, Nigeria, on 14 June 2011, a great circle distance of 4,473 km. Cape Sparrows do not occur farther north than southern Angola, so this record is clearly wrong.

In the downloaded file there were clearly data entry errors in two records (FC46007 and FC46103). In those two cases, the field for the ringing site was given as 2649S1721E and that for the finding site is 2949S1721E, exactly three degrees south (334 km) of the ringing site. However, the majority of the mistakes were from recent years when some ringers had used decimal degrees instead of degrees and minutes. For example, 3352S1835E was entered as 3387S1859E; in words, 33 degrees 52 minutes south is 33.87 degrees south. This category of error is relatively easy to spot because either the ringing site or the finding site, once converted to decimal degrees, is almost

identical to the record for the other site, as originally entered. So, for example, if the ringing site is entered as 3352S1835E and the finding site is 3387S1859E, these most likely refer to the same place. It ought to be possible to develop an algorithm to check for this class of error. Situations in which neither of the “minute-digits” are more than 60 ought also to be identifiable by algorithm. An example of this occurs when the ringing site is entered as 3330S1815E and the finding site as 3350S1825E. Then the sites of both ringing and finding are likely to be the same; the ringing site is in DDMM format, and the finding site is in DD.DD format, with the decimal point omitted.

Besides sorting Safring data by distance moved, which focuses attention on errors related to incorrect coordinates, another simple check is to sort by elapsed time. The obvious errors are negative elapsed times (when a bird was found before it was ringed), and ridiculously large outliers in elapsed time (a Cape Sparrow aged 20 years old or more, for example). Of 3,088 records, three showed negative elapsed times (0.01%) of 2 days, 31 days and 240 days respectively. At the other end of the scale, the three oldest birds were 10.5, 10.7 and 10.9 years; in a sample of this size, these are the kinds of maximum values that would be expected. No large subset of a database the magnitude of Safring’s is ever error-free immediately on download. The analyses done here help highlight where the errors are likely to occur in similar analyses, but the overall sense is that the overwhelming majority of records are problem-free. The take home message from this analysis is that no database, regardless of its origin, is ever likely to be totally error-free, and careful checking can help eliminate gross errors.

The discrepancies between the distances in Table 1 and those in the species text for the Cape Sparrow (Dean 2005) are inexplicable. The species text does not provide ring numbers; therefore no checking can be done.

This minimum distance of 1.5 km is a by-product of ringing and finding sites being recorded to the nearest minute. In the pre-GPS era, getting coordinates correct to even one minute was a challenge. Since the early 2000s, GPS units firstly become increasingly affordable, and then gradually became a standard feature on cell phones. The opportunity thus exists to collect ringing and retrap data at a fine resolution. This would enable fine-scale studies of local movements to be done, especially for species classified as residents.

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