Afrotropical Bird Biology
Journal of the Natural History of African Birds

Vol 3

Dune Lark longevity in the Namib Sand Sea

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Abstract

Resightings and recaptures of ringed Dune Larks indicate that this species can survive at least 11 years in the Namib Sand Sea, double the previously published longevity record.

Keywords: longevity, Dune Lark, *Calendulauda erythrochlamys*, SAFRING, Namib Sand Sea.

Introduction

The Dune Lark *Calendulauda erythrochlamys* is part of the Karoo Lark complex (MacDonald 1953), a group of closely related species, occupying the arid western regions of southern Africa. The Dune Lark is typically only found on sparsely vegetated sand dunes of the Namib Sand Sea. It is the only resident passerine constrained to this section of the Namib Desert (Cox 1983), making it the only truly endemic bird species in Namibia (Willoughby 1971; Cox 1983; Williams 1992).

During the first author's research on the thermodynamics of Dune Larks near the Gobabeb-Namib Research Institute (2019–2021), several Dune Larks at the !Khomabes site (23°32′ S, 14°40′ E) were habituated to collect food (mealworms) on a scale, allowing for close-up photographs of the birds. Analysis of the images identified one Dune Lark as SAFRING number FH67514, initially ringed on the 6th of July 2013 with colour combination yellow over red. This individual was resighted throughout the study, most recently on the 23d of February 2023 (days elapsed: 9y, 7m, 18d), and could easily be identified on sight by one yellow ring on each leg (the red colour rings were both missing since before September 2018, one yellow ring was lost in 2022; Fig. 1). In February 2020, this individual was seen collecting nesting material and, a short time later, collecting worms and carrying them while flying, suggesting the bird was breeding.

Several other Dune Larks were captured as part of the study. One of these was found to be a recaptured bird, SAFRING number FH62155, initially ringed on the 10th of December 2011. This individual was assigned new colour rings in 2019 (white over green) and was resighted throughout the study, most recently on the 23d of February 2023 (days elapsed: 11y, 2m, 14d), when it was observed to have lost the green colour ring on its right leg (Fig. 2). In February 2020, this individual was also seen collecting worms several times, suggesting the bird had an active nest.

The second author also has two long-term longevity records. Firstly, SAFRING number F34468 (no colour rings), first ringed on the 19th of February 1993 and recaptured on the 18th of May 2000 (days elapsed: 7y, 3m, 0d). Secondly, SAFRING number FA03676, first ringed on the 19th of May 2000, was re-trapped and colour ringed with yellow over purple on its left leg on

Figure 1. Dune Lark SAFRING number FH67514, initial ringing on the 6th of July 2013, most recently resighted on the 23d of February 2023, © Jessica Roberts.

Figure 2. Dune Lark SAFRING number FH62155, initial ringing on the 10th of Decmeber 2011, with colour rings added to both legs (white over green) in 2019, most recently resighted on the 23d of February 2023, © Jessica Roberts.

Table 1. Summary of resighting data for selected Dune Larks at !Khomabes in the Namib Sand Sea. Colour combinations are on both legs and are presented as first colour above/second colour below.

SAFRING ring #	F34468	FH67514	FH62155	FA03676/FH14365/FH46990
Colour rings	none	Yellow only	White/Green	Yellow/Purple
Date first ringed	19/02/1993	06/07/2013	10/12/2011	19/05/2000
Last resighted	18/05/2000	23/02/2023	23/02/2023	16/08/2011
Time elapsed	7y 2m 29d	9y 7m 18d	11y 2m 14d	11y 2m 29d

the 15th of March 2006, and the aluminium ring was noticeably thinner after ~6 years, but still legible. It was recaptured for a third time on the 20th of March 2009, identified by the colour rings, which were observed to be thinning after only three years. The colour rings were replaced, and the bird also received a new SAFRING ring (FH13465) made from more durable Monel metal, as the previous ring was missing entirely after ~9 years. The same colour identification code was added to the right leg. This individual was recaptured a fourth and final time on the 16th of August 2011, identified by the colour rings on the left leg as the right foot and rings were missing. This is the oldest recorded Dune Lark, having been resighted 11y, 2m, 29d after initial ringing. It was then re-ringed with SAFRING ring FH46990 on the left foot, and both colour rings were replaced. However, it was not seen again. A summary of the longevity records reported here is presented in Table 1.

The age estimates discussed here are conservative as all the birds presented were adults of unknown age when first captured and still alive when last seen. These longevity records show that Dune Larks in the Namib Sand Sea are potentially long-lived, with the four individuals discussed all reaching at least eight years of age and possibly more than 12 years. Although we lack data on how often birds reach this age, the estimate of approximately 12 years is double the previous estimate for Dune Lark longevity at this site, i.e., six years (Williams 1992). The new estimate is comparable to the Raso Lark *Alauda razae*, which has several longevity records of 12 years, and one record of 13 years (Dierickx et al. 2019). However, these records fall short of the world's oldest known lark, a Short-clawed Lark *Certhilauda chuana* recorded 15y, 8m, 1d after initial ringing (Engelbrecht 2021). The growing body of studies on the biology of larks suggests that they are potentially long-lived, despite inhabiting some of the most austere habitats on Earth.

Arid-zone birds are thought to have longer lifespans than similar species in more mesic areas (Galipaud and Kokko 2020). This is often seen as a life history strategy indicator of low breeding success due to reduced energy availability in arid areas, putting more emphasis on extended adult survival and longevity. Reduced energy and water availability lead to reduced parental effort, smaller clutch sizes, reduced nestling growth, and increased predation, all contributing to the lower breeding success of species inhabiting semi-arid, arid, and other extreme environments (Dean and Williams 2004; Tieleman et al. 2004). Increased adult survival can benefit species that may have to contend with periods of extended drought and breed opportunistically when conditions are more favourable (Dierickx et al. 2019). This also allows resident birds, such as Dune Lark, to retain a territory throughout their adult lives, increasing their knowledge of the area and learning all its various resources and refuges, further increasing their resilience to adversity (Dean et al. 2009).

The degree of abrasion of rings (colour and metal rings) observed in this study is a matter of concern and may potentially lead to the loss of valuable biological data (Allen et al. 2019). Larks and other ground-dwelling species, e.g., pipits (Motacillidae), often show a high degree of abrasion of rings caused by friction against the substrate while foraging or roosting (Engelbrecht 2014). The SAFRING rings in this study showed excessive wear after six years, while colour rings seem to depend on the colour: yellow lasted nine years, but green failed within two years. The proximal causes of colour rings perishing prematurely require further investigation to avoid the loss of valuable longevity data. It is also advised that birds living in hot and sandy environments, particularly larks and other mainly ground-dwelling species, should be ringed using more durable materials for both colour and SAFRING rings as a standard practice (Engelbrecht 2014).

Acknowledgements
We thank Hartmut Kolb who also spent his time and expertise in both the trapping and resighting of these birds over a number of years. We would also like to extend our thanks for the continued support of the Gobabeb–Namib Research Institute and the financial support received from the DST-NRF grant through the Centre of Excellence at the Percy Fitzpatrick Institute under the Hot Birds Research Project.

Acknowledgements
These observations were conducted under the first authors MSc research ethics approvals: SANBI: P19-24; University of Pretoria: NAS 184/2019; Namibia: RCIV 0062018. Bird capture and banding were done under the second author's SAFRING licence, #572.

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