

# The 2007 record of ‘Dunn’s Lark’ on Cyprus revisited, with notes on the separation of Dunn’s Lark *Eremalauda dunni* and Arabian Lark *E. eremodites*

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Dunn’s Lark has until recently generally been considered as a single species with two subspecies, the nominate *Eremalauda dunni dunni* of the southern fringes of the Sahara from Western Sahara to central Sudan west of the Nile, and *E. d. eremodites* of Sinai and the Arabian Peninsula north to Syria. The two forms were originally described as separate species and have been treated as such by several authors over the years, but Meinertzhagen (1951), who first described the Arabian form in 1923 under the name *Pyrrhulauda eremodites*, later merged them into a single species and this arrangement has generally been adopted since. However, del Hoyo & Collar (2016) recently split the two forms into Dunn’s Lark *E. dunni* and Arabian Lark *E. eremodites* on the basis of diagnosable differences in plumage and structure. This mirrors a growing recognition that western and eastern forms of what were previously regarded as single species spread across the Saharan-Arabian desert belt are better treated as different species eg Houbara *Chlamydotis undulata* and Macqueen’s *C. macqueenii* Bustards, African *Sylvia deserti* and Asian *S. nana* Desert Warblers and House *Emberiza sahari* and Striolated *E. striolata* Buntings (Schweizer *et al* 2017).

The two *Eremalauda* species are thought to be widely allopatric, Arabian Lark not having been recorded west of Sinai and Dunn’s Lark not east of the Nile or north of central Sudan in the east of its range. However, the ranges of both are poorly known; although there are no records of Dunn’s Lark from Libya or Egypt, it seems likely that the species has been overlooked there.

On 9 April 2007, Dr Theodoulos Poullis discovered an unusual lark that he suspected might be a Bar-tailed Lark *Ammomanes cinctura* c1 km west of the fishing port of Agia Napa in southeastern Cyprus. The next day he returned with SC, who took a number of photographs and correctly identified the bird as a Dunn’s Lark *sensu lato*, a record that was later accepted as the first for Cyprus and hence the first for Europe. The record was published in the 2007 *Cyprus Bird Report* (Christodoulides 2008), but this is not available online and so the photograph (reproduced here as Plate 1) and description of the bird were not widely seen. A footnote added by the editors stated that “This species is a known wanderer from its remote inland desert habitat, so perhaps it is not such a surprising addition to the Cyprus list.” This statement may have been referring to records of vagrant or wandering (presumed) Arabian Larks in coastal Israel (ter Haar 1981) and Lebanon (Harrison 1962), less than 200 km across the sea from Agia Napa, with the clear and wholly understandable assumption that the record related to what was regarded at the time as the Arabian subspecies of Dunn’s Lark *sensu lato*. This assumption would no doubt have been reinforced by the absence of any extralimital records of the African form, which is nomadic within its range but not, it seems, prone to long-distance vagrancy outside it.

In July 2017, PFD came across a reference to the record and, through the generous assistance of Colin Richardson and Richard Porter, was able to obtain a copy of the original report and the single photograph it contained. He was immediately struck by the bird’s overall pale orange- to sandy-buff appearance, lacking any dark brown or blackish streaking on the crown and very limited grey tones to the nape or mantle, the relatively indistinct supercilium and the narrow and inconspicuous ‘tear-drop’ mark below the



**Plate 1.** Dunn's/Arabian Lark *Eremalauda dunni/eremodites* Agia Napa, Cyprus, April 2007. This photograph was published with the original description. © Stavros Christodoulides

eye. The bird thus shows a number of features usually associated with Dunn's Lark *sensu stricto*, in other words a bird of African rather than Middle Eastern origin. The current Cyprus Bird Recorder, Jane Stylianou, kindly put PFD in touch with SC, who provided more photographs, some of which are reproduced here (Plates 2–5). These photographs were taken in strong morning light and well illustrate the wide variety of plumage tones that individual larks may present when seen at different angles to the sun. PFD compared these photographs to specimens in the Natural History Museum at Tring, UK, and to other photographs of both species in the field, in order to try to assess the identity of the Agia Napa bird and to develop a clearer understanding of the differences between the two forms.

### **SEPARATING DUNN'S LARK AND ARABIAN LARK**

The identification of Dunn's Lark *sensu lato* has been discussed in detail by a number of authors (eg Round & Walsh 1982, Shirihai *et al* 1990, Shirihai 1991, Shirihai 1994, Heard & Kirwan 1997, Lees & Moores 2006), but almost exclusively in relation to its separation from other similar species (particularly Bar-tailed Lark and Desert Lark *Ammomanes deserti*), rather than the separation of the two forms from each other. The recent split of the forms *dunni* and *eremodites* into separate species warrants a re-evaluation of their differences, which we briefly review here.

Perhaps the best plumage feature to differentiate Dunn's and Arabian Larks is the general ground colour of the upperparts and the colour of the streaking on the crown, nape and sides of breast. In Dunn's Lark, the overall tone of the upperparts is a pale sandy-to orange-buff, whereas Arabian Lark is slightly darker and less rufous, with a generally pronounced greyish cast on the nape and upper mantle. As noted by Heard & Kirwan (1997), Arabian Lark shows a distinctive greyish 'shawl' over the nape, upper mantle and sides of the breast, which is apparent in museum specimens (Plate 6). The differences



**Plate 2.** Dunn's/Arabian Lark *Eremalauda dunnieremodites* Agia Napa, Cyprus, April 2007. © Stavros Christodoulides



**Plate 3.** Dunn's/Arabian Lark *Eremalauda dunnieremodites* Agia Napa, Cyprus, April 2007. © Stavros Christodoulides





**Plate 4.** Dunn's/Arabian Lark *Eremalauda dunnieremodites* Agia Napa, Cyprus, April 2007. © Stavros Christodoulides



**Plate 5.** Dunn's/Arabian Lark *Eremalauda dunnieremodites* Agia Napa, Cyprus, April 2007. © Stavros Christodoulides

in upperpart plumage tones between Dunn's and Arabian Larks thus recall those that separate African Desert Warbler and Asian Desert Warbler. Furthermore, in Arabian Lark the streaking on the crown and upper nape, formed by the dark central shafts and centres, is dark grey-brown to almost blackish, and dark orange to rufous-brown in Dunn's Lark. The same pattern is true of any streaking that may be present on the sides of the upper breast, although this may be lacking in both species and is poorly preserved in museum specimens. Examination of 17 specimens of Dunn's Lark and 29 specimens of Arabian Lark in the Natural History Museum at Tring, UK, suggests that while Dunn's Lark may on occasion show crown and nape streaking as dark as that of Arabian Lark, the converse is not the case; none of the Arabian Larks examined had crown streaks or upperpart tones approaching the rufous- to orange-brown of typical Dunn's Lark (Plate 6).

It has been suggested that the greyness of the upperparts of Arabian Lark may increase with feather wear (Shirihai 1994), although this pattern was not apparent from the sample of skins examined, which showed no consistent seasonal variation in plumage tone. Both Dunn's and Arabian Larks appear to breed largely from February–June (de Naurois 1974, Jennings 1980, Lamarche 1981, Baha El Din 1990, Shirihai 1991, Copete *et al* 2008, Perlman & Kiat 2012), although breeding of Dunn's Lark has also been recorded in October (Qninba *et al* 2011). Like most larks, both species have a complete post-breeding or post-juvenile moult, after which adults and juveniles cannot be separated, even in the hand. In April, therefore, Arabian Lark is in worn plumage and appears largely sandy-grey above with darker streaking, the more rufous edges to the feathers having being worn away or faded (Shirihai 1994).

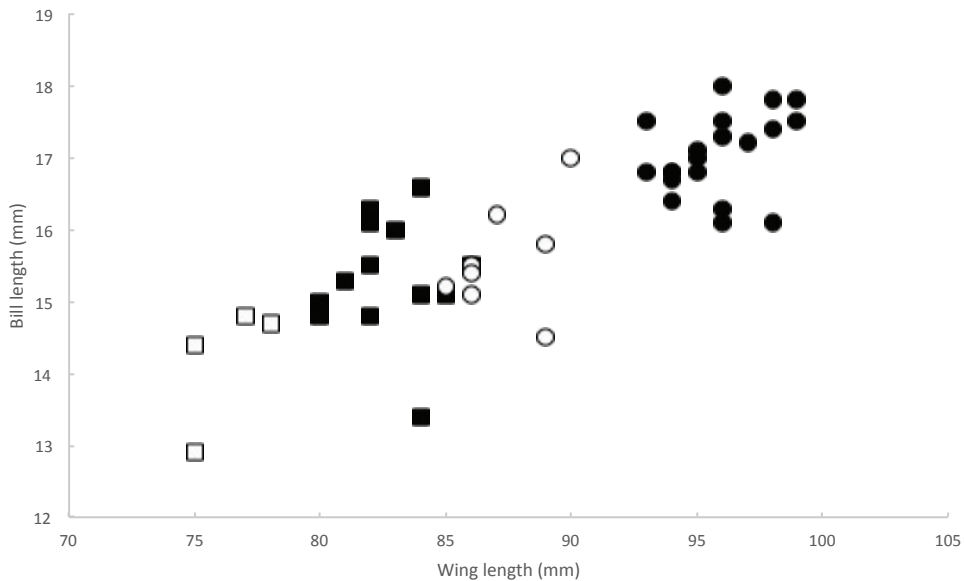
Structurally, the two species differ significantly (Table 1, Figure 1). Both male and female Arabian Larks have significantly longer wings than Dunn's Lark. Arabian Lark has



**Plate 6.** Five Arabian Larks *Eremalauda eremodites* (left) and five Dunn's Larks *E. dunni* (right), selected to show the greatest degree of variation in each species in upperpart coloration and crown streaking. © Natural History Museum Tring (NHMUK)/Paul F Donald

**Table 1.** Measurements of specimens of Dunn's Lark *Eremalauda dunnii* and Arabian Lark *E. eremodites* in the collection of the Natural History Museum at Tring, UK. All except the ratio of bill length to bill depth ('Bill ratio') are measured in mm. Bill length is measured from the base of the skull, bill depth just behind the nostrils. The range and sample size are given in parentheses. Means in **bold** indicate statistically significant (t-tests, alpha set at  $P < 0.01$  for multiple testing) differences between species within sexes. Underlined means indicate statistically significant differences between sexes within species. Finally, means in *italics* indicate significant differences between male *E. dunnii* and female *E. eremodites*. Specimens showing damage to the features of interest were not included. All measurements taken by PFD.

	Dunn's Lark <i>E. dunnii</i>		Arabian Lark <i>E. eremodites</i>	
	Males	Females	Males	Females
Wing	<b><u>82.7</u></b> (80–85, 13)	<b><u>76.3</u></b> (75–78, 4)	<b><u>95.8</u></b> (93–99, 20)	<b><u>86.9</u></b> (84–90, 9)
Tail	<b><u>56.1</u></b> (54–59, 13)	<b><u>46.8</u></b> (40–52, 4)	<b><u>57.3</u></b> (54–61, 19)	<b><u>51.3</u></b> (49–57, 9)
Bill length	<b><u>15.3</u></b> (13.4–16.6, 13)	<b><u>14.2</u></b> (12.9–14.8, 4)	<b><u>17.0</u></b> (16.1–18.0, 20)	<b><u>15.6</u></b> (14.5–17.0, 8)
Bill depth	6.9 (6.7–7.2, 13)	6.5 (5.9–7.1, 4)	<b><u>6.8</u></b> (6.5–7.2, 16)	<b><u>6.5</u></b> (5.9–7.0, 8)
Bill ratio	<b><u>2.2</u></b> (2.0–2.4, 13)	<b><u>2.2</u></b> (2.0–2.3, 4)	<b><u>2.5</u></b> (2.3–2.7, 16)	<b><u>2.4</u></b> (2.3–2.5, 8)
Tarsus	<b><u>20.5</u></b> (18.7–22.4, 13)	<b><u>20.0</u></b> (19.5–20.5, 3)	<b><u>22.4</u></b> (21.2–23.9, 19)	<b><u>21.5</u></b> (21.1–22.1, 9)



**Figure 1.** Scatterplot of wing length and bill length of Dunn's Lark (squares) and Arabian Lark (circles). Open symbols: females; filled symbols: males.

a longer bill than Dunn's Lark but the two species differ less in bill depth, so the ratio of bill length to depth is higher in Arabian Lark, Dunn's Lark consequently having a stubbier bill. However, whether these structural differences are useful characters in the field is unclear; differences in mean measurements between species are complicated by differences between the sexes, and there is some overlap between species in all measurements. These structural differences may be more useful field characters if the sex of the bird is known, but this will clearly not usually be the case.

### THE AGIA NAPA BIRD

The Agia Napa bird appears to show many of the characteristics of (African) Dunn's Lark. Despite clearly being in worn plumage, the Agia Napa bird shows only a faintly grey tinge around the lower nape and collar, the rest of other upperparts and the darker streaking on the crown being sandy orange-brown or rufous-buff. Similarly localised grey



tinges around the hind-nape are apparent in museum specimens of Dunn's Lark (Plate 6). Furthermore, in some of the photographs some faint streaks may be seen on the sides of the upper breast, and again these are orange-buff in tone and not dark grey or blackish as in Arabian Lark. The overall plumage tone of the bird varies greatly according to the light and the bird's angle to it, but in no cases do the crown, nape or mantle appear grey, and in all lights the streaking on the crown and mantle appears consistently orange-brown and the upperparts appear pale sandy buff to pale orange-brown. The 'tear-drop' line is apparent in all photographs but is never prominent, as it is in even worn Arabian Larks. Features that do not fit Dunn's Lark are the mid-greyish eye-stripe, which in typical Dunn's Lark shares the rufous tones of the rest of the plumage, and the bill, which does not appear to be particularly stubby. However, the eye-stripe on this bird is also not consistent with that of typical Arabian Lark, in which it is typically dark grey or blackish, and bill shapes overlap between the two species (Table 1). The Cyprus record did not coincide with a breeding irruption of Arabian Larks into southern Israel, Sinai or elsewhere within the species' range outside the Arabian peninsula (Perlman & Kiat 2012).

The bird's rufous-sandy plumage tones as they appear in the photographs are supported by SC's field description, which described the upperparts as being "sandy-coloured with vertical reddish-brown streaks along its back" and the wings as "rather uniform (same colour as rest of bird) with darker reddish-brown centres". Furthermore, he noted that the "head pattern [was] not as prominent as shown in field guides". The Agia Napa bird may therefore represent the first record of Dunn's Lark outside Africa and so would constitute a new species for Europe and for the OSME region. However, we caution that the identity of the bird may never be known with sufficient certainty to constitute such a record. Variation in upperpart colour in Arabian Lark is insufficiently documented and the light conditions at the time the photographs were taken may have influenced the bird's appearance. Furthermore, the plumage colouration of larks may be plastic with respect to the colour of their substrate type, between and perhaps even within individuals, meaning that larks can exhibit a high degree of individual variation in upperpart coloration (Donald *et al* 2017).

While the results of this re-evaluation may not be sufficient to identify the Agia Napa bird beyond all doubt, we hope that it encourages further investigation into the differences between these two species, and raises the awareness of observers encountering an out-of-range *Eremalauda* lark that Dunn's Lark might occasionally wander far outside its usual range. Photographs should be taken in a range of light conditions, and with the bird at different angles to the sun. Perhaps the only way to be absolutely sure is to capture the bird for measurements and, ideally, to obtain a genetic sample.

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