

## Type locality, habitat, behaviour, voice, nest, eggs and plight of the Sidamo Lark *Heteromirafra sidamoensis*

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**Localité type, habitat, comportement, voix, œufs et détresse de l'Alouette d'Érad *Heteromirafra sidamoensis*.** La localité type de l'Alouette d'Érad *Heteromirafra sidamoensis* est mentionnée comme étant à 2 km au sud de Negele, au sud-est de l'Éthiopie. L'espèce n'a toutefois jamais été trouvée ici depuis, mais uniquement sur la plaine de Liben, qui commence à environ 10 km à l'est de Negele. Nous pouvons confirmer que la localité type est en fait située à la limite nord-ouest de la plaine de Liben. Aujourd'hui l'habitat de cette alouette consiste en des prairies relativement rases, mais des indications provenant des décennies antérieures suggèrent que des zones à herbes plus hautes pourraient avoir été importantes. Avec ses longues pattes, son cou plutôt long et mince, et ses rectrices relativement faibles, l'espèce est essentiellement terrestre et semble mal équipée pour une dispersion aérienne à longue distance. Le chant, un sifflement gazouillé continu et ondulé, est émis lors d'un vol nuptial sur place, court (environ 20 secondes en moyenne) et bas (5–15 m), qui peut stimuler les voisins à en faire autant ; un faible *toui-toui-toui* (jusqu'à neuf notes) pourrait être un cri d'alarme. En juin 2007 trois œufs blanchâtres tachetés de brun ont été trouvés dans un nid tissé d'herbes avec une esquisse de dôme sous un petit arbuste de *Solanum tettense*. Un adulte a été capturé et, après la prise d'un échantillon sanguin, relâché. En juin 2008 nous avons trouvé que l'Alouette d'Érad était proche de l'extinction à cause du surpâturage, de l'expansion des cultures et de l'invasion du milieu par les broussailles.

**Summary.** The type locality of the Sidamo Lark *Heteromirafra sidamoensis* was given as 2 km south of Negele, south-east Ethiopia, but the species has never been found there since, only on the Liben Plain, which starts c.10 km east of Negele; we now confirm that the type locality is in fact at the north-westernmost edge of the Liben Plain. The lark's habitat today consists of relatively short grassland, but evidence from earlier decades suggests that areas of longer grass may have been important. With its long legs, rather long thin neck and relatively feeble rectrices, the species is largely terrestrial and appears to be poorly adapted for long-distance aerial dispersal. The song, a jingling, chirping, continuous whistling, undulating in pitch, is delivered in a short (mean c.20 seconds) low (5–15 m) hovering display-flight that may stimulate neighbours to do the same; a soft *twi-twi-twi* call (up to nine notes) may be an alarm. In June 2007 three brown-flecked whitish eggs were found in a feebly roofed grass-woven nest under a small *Solanum tettense* shrub, and an adult specimen was caught, sampled and released. In June 2008 overgrazing, scrub invasion and agricultural expansion were found to be threatening the Sidamo Lark with imminent extinction.

So far as is known, the Sidamo Lark *Heteromirafra sidamoensis* is confined to the Liben Plain, centred on 05°15'N 39°43'E, a small plateau with a core of grassland east of Negele in the Borana Zone of southern Ethiopia (Collar & Stuart 1985, Ash & Gullick 1989, Robertson 1995, Stattersfield & Capper 2000). Owing to its tiny range, and to reports of agricultural transformation of the plain, it is listed as globally threatened, category Endangered (BirdLife International 2007). The small genus to which it

belongs is of considerable taxonomic and conservation interest, since all three taxa, currently treated as three species (Sidamo Lark, Archer's Lark *H. archeri* of Somalia and Rudd's Lark *H. ruddi* of South Africa), are very similar in morphology although one of them is highly disjunct (by some 4,000 km), and all three have highly adverse conservation status (Archer's Lark Critically Endangered, Rudd's Lark Vulnerable).

Although in recent years the Sidamo Lark has been seen by dozens of bird-tour parties, the only

published accounts from the wild are those (1) by Robertson (1995), who supplied the first field description of the species and its call, discussed its likely song-type and reviewed the state of its habitat (the year of observation, initially given as 1974, was in fact 1994), and (2) by Francis & Shirihai (1999; also Shirihai & Francis 1999), who gave a further field description and provided some intriguing information on its habitat. On 3–4 July (LDCF, MNG, CNS) and 2 October 2006 (MNG, CNS and Callan Cohen), 9–16 and 21 June 2007 (all authors except LDCF, and with YDA and MW departing after 13 June) and 15–19 June 2008 (all authors except YDA and LDCF, and with Paul Dolman and Kiragu Mwangi), we visited the Liben Plain, in 2006 to make initial assessments of the situation, in 2007 to attempt a comprehensive first survey of the Sidamo Lark, its habitat, threats and population status, and in 2008 to scope the species for more detailed ecological study. The main results of the 2007 survey will appear elsewhere (Spottiswoode *et al.* in prep.); here we provide additional information on the species gathered during the field work, relating to field identification, voice, display-flight, feeding behaviour and breeding. All of this, however, needs to be set against early information relating to the type locality, the habitat it held, and the reported flight behaviour of the two specimens collected to date.

#### Where is the type locality?

Érard (1975) reported that the type specimen of Sidamo Lark, an adult male, was taken on 18 May 1968, less than 2 km south of Negele. However, all subsequent records, starting with that of Ash & Olson (1985) and concluding with our own (Spottiswoode *et al.* in prep.), have come from the open grasslands of the Liben Plain, which begins some 10 km east of Negele and covers an irregularly shaped area with an approximate total span of 10 × 10 km, at an altitude of *c.* 1,550 m (EWNHS 1996, 2001, Spottiswoode *et al.* in prep., Wondafrash *et al.* in prep.). Subsequent searches at the type locality proved unsuccessful (Érard 1975) and the agriculture found there in 1989 was presumed to have replaced the habitat (see below) that Érard described (Ash & Gullick 1989). Indeed, on 21 June 2007, using local information as to where the centre of the town had been in 1968, NJC, MNG and CNS reached a point 2 km

south of Negele and found the habitat no longer suitable, being heavily farmed with a patchwork of cereal and other crops, field boundaries and tree cover, as reported by Ash & Gullick (1989) almost 20 years earlier. Moreover, it was rather different in relief from the habitat which the species occupies on the Liben Plain, such that we found it hard to credit that we were really in the area where Érard had taken the type. A further possibility was an area 6 km south of Negele where Robertson (1995) had mentioned a grassland whose 'habitat looked very suitable for larks', but on 4 July 2006 LDCF and CNS found only cultivated and unsuitable terrain at this site, with no sign of grassland.

In December 2007 NJC and CNS asked Christian Érard if he was able to recall any details of the type locality that would help explain this circumstance, and he kindly went back to his notebooks and discovered that his collecting at Negele was in fact undertaken just west of the junction of the Arero road with the Negele–Filtu road, and immediately to the north of this junction, around the army camp there. This clearly resolves the issue of the type locality: it is at the north-westernmost fringe of the Liben Plain, rather than being disjunct from it, and therefore lies at approximately 05°18'N 39°39'E (although GPS indicates that this point lies somewhere slightly above 1,550 m, not at 1,450 m).

#### What is the preferred habitat?

Érard (1975; our translations throughout) reported that the type was collected in herbaceous steppe dotted with acacias or (as later described) open wooded savanna at 1,450 m; he found his work impeded by the very dense herb-layer, which led Collar & Stuart (1985), and hence Vivero Pol (2001), to describe the habitat of the species as the 'seasonally lush grass of a herbaceous steppe'. In December 2007 Christian Érard confirmed that the type, collected by a skin preparator, was retrieved from waist-high grass (>1 m high), of which there were many patches in the vicinity, although these were not continuous; and he reported that in that year, 1968, there were many cattle on the Liben Plain, as well as several species of wild ungulate.

Érard (1975) speculated that the ecology of the Sidamo Lark might differ from that of the species' only two congeners, Archer's Lark *H.*

*archeri* (Somalia) and Rudd's Lark *H. ruddi* (South Africa), because the latter both occupy open grassland, but he noted that 'this habitat difference requires further study'. Six years later, in April 1974 when John Ash collected the second specimen, the Liben Plain held 'much new grass' but with 'extensive areas of tall dead grass, some of it forming tussocks' (Ash & Olson 1985, Collar & Stuart 1985). The first bird Robertson (1995) saw—and this was the first bird anyone saw alive, knowing what it was—ran 'across a patch of bare ground surrounded by taller grass', and he reported that prolonged rains in 1994 had resulted in 'a good growth of grass' although he did not indicate its height. EWNHS (1996, 2001) asserted that 'more than 95% of the site [Liben Plain] is covered with long grass', and in September 1997 Francis & Shirihai (1999) found the species at the junction of the Arero and Filtu roads east of Negele (this being Ash's site: Robertson 1995) only 'by driving it out of the long grass'. They judged that it 'seems to be associated mainly with isolated patches of high grasses surrounded by dense acacia savanna' but added that 'these unique yellow-grass patches have been adversely affected by increased grazing, cultivation and military activity'. Julian Francis (*in litt.* December 2007) has confirmed that the first sentence ('seems...savanna') was intended to refer to the entire Liben Plain (which is indeed surrounded by dense acacia; but to our knowledge, and as indicated by a careful examination of the images of south-east Ethiopia on Google Earth, there is no other such patch elsewhere in the entire region: Spottiswoode *et al.* in prep.), whilst the second ('these... activity') was a generalisation based on other published reports. Francis also recalls that the 'long' grass was, as with Érad, about waist-high.

In July and October 2006, June 2007 and June 2008 we saw no grass patches that we would characterise as tall, long or waist-high (in 2006 and 2007 the tallest grasses were typically little higher than 0.4 m, while in 2008 we could find no patches of grass above 0.1 m tall). Variations in rainfall between years could have been responsible for this apparent discrepancy, or perhaps in the 1990s grazing pressure was much less intense, resulting in areas of taller grass (which can of course appear more dominant and uniform than it is when viewed at eye-level). In June 2007 we talked to one or two herdsmen who reported that when their

grandparents lived on the plain it was covered in grass that they seemed to indicate as *head-high*; elders in 2008 said similar things. We likewise interpret this as possible evidence of still less grazing, but even so there must then also have been patches of shorter grass, given (a) the presence of the harvester ant *Messor cephalotes*, which keeps grass heights short around its nests, and (b) our current findings, which strongly suggest that the Sidamo Lark selects open 'short-grass' areas of plains land, avoiding both more degraded areas and those with apparently encroaching scrub and trees (Spottiswoode *et al.* in prep.; see Figs. 1–5). Whether this habitat is optimal for the species, or whether it is the best that now remains following considerable degradation by cattle, is difficult to gauge, but the latter seems (especially on 2008 evidence: see final paragraph) far more likely, and the testimony of earlier observers suggests that, at the very least, other habitats may be—or may have been—used. On the other hand, Rudd's Lark favours 'short' dense grass cover, with low average ground cover and grass around 0.6 m high, and it 'avoids patches where grass [is] >0.7 m tall and cover dense', optimal habitat being formed by annual burning and heavy winter grazing (Hockey *et al.* 2005).

#### Field appearance, feeding and general behaviour

Francis & Shirihai (1999) remarked that in the field the Sidamo Lark 'has a most unusual shape', with an almost triangular head, rather long and distinctly thin neck and relatively long legs; Figs. 6–7 show how apt these points are. On occasion we found that, when a bird ran very upright, its rather long strides, perhaps partly influenced by the seemingly cumbersome hindclaw, gave it a slightly gangling appearance, although we saw others that ran rapidly and efficiently while pressed very close to the ground in a mouse-like fashion. When standing upright, the broad buff hindcrown and nape with vague mid-brown speckling was usually very obvious, and the pale face and head-sides, continuous with the pale nape, reinforced the dark-crowned, dark-eyed effect. This, the shortish, curved culmen, scaly back pattern and relatively long thin neck (perhaps an adaptation for stretching and peering, suggestive of a species that lives in grass at least as high as its shoulder; see Fig. 6) gave it, as

Robertson (1995) also observed, a somewhat quail-like (*Coturnix*) appearance.

The Sidamo Larks that we observed fed by a combination of quick, barely perceptible dabs and pecks at stalks and blades of head-height grass, and much more obvious digs and probes at the soil surface (as the earth on the bills of the birds in Figs. 6, 7 and 15 confirms, although curiously Rudd's Lark is 'not known to dig for food': Hockey *et al.* 2005). Food items taken from stems and blades were either very small seeds or, much more likely, very small invertebrates, the mandibles barely being moved to process them. Food taken from the ground was larger but normally no items could be identified, although small grasshoppers were caught. Twice single red spherical objects (*c.*0.5 cm; possibly engorged ticks or velvet mites *Trombidium*) were taken, and on two other occasions a fairly large black hairy caterpillar was (in one case) briefly mandibulated, then dropped and ignored, and (in the other) picked up, thrashed about and apparently part-eaten.

Sidamo Larks spend relatively little time in the air. The display-flights (see below) are much shorter and lower than in many continental grassland larks in the genera *Alauda*, *Mirafra* and *Calandrella* (see Ryan *et al.* 2004). When flushed or making unforced flights (not a common phenomenon, apparently) the birds fly a few feet above the ground for relatively short distances in a direct, bounding flight. Neither in normal flight nor in display-flight do they suggest great aerodynamic qualities. On the contrary, the long legs and massive hindclaws seem incapable of full retraction (see Fig. 8) and strongly suggest an ancient adaptation to terrestrial living which has dispensed with aerial dispersal over any distance. In this, the species sits in strong contrast to the buoyant-winged Somali Short-toed Lark *Calandrella somalica*, a common inhabitant of the Liben Plain whose effortless high flights, whether displaying or not, denote a species well adapted for moving with speed and efficiency between habitat patches many kilometres apart. The difference between the thin, slightly frayed-edged rectrices of *Heteromirafra* larks and the broader, stronger ones of most *Mirafra* further emphasises the relatively weak flight capacity of the former. Altogether, therefore, the Sidamo Lark gives a strong impression of being a poor disperser and colonist, a relict species confined by evolutionary circumstance to

tracts of grassland (if indeed there are now more than one) between which it cannot move unless by flying only short distances and walking when climatic conditions join them up; this conforms with 'several analyses' that place *Heteromirafra* basal in the Alaudidae (*vide* de Juana *et al.* 2004).

### Display flight, song and calls

Érard (1975) had expected that the specimen which subsequently proved to be the type of *H. sidamoensis* was a Flappet Lark *Mirafra rufocinnamomea*, because the larks he was trying to collect were making intermittent, vigorous snapping noises with their wings as they circled in display flight at *c.*20 m. 'It was while searching the area where *one of these birds* had "fallen"', he wrote (our italics), 'that the *Heteromirafra* was found', but he acknowledged that this did not prove that the bird he saw in flapping flight was the same as the one he collected. He also acknowledged that Rudd's Lark does not snap its wings, whilst the behaviour of Archer's Lark was (and remains) unknown. Ash & Olson (1985) also mentioned the possibility of the Sidamo Lark having a flapping display, as John Ash heard several birds showing such behaviour at the site at which his specimen was collected, but he too was unable to be certain whether the bird he collected had been one such. (Incidentally, given that Flappet Larks tend to be associated with bushes and trees, we should report that our few encounters with the species on the Liben Plain involved flapping birds at least several hundred metres from the plain-thornbush ecotone, i.e. we cannot assume that Érard's or Ash's records imply a tolerance by the Sidamo Lark of bushed habitat.)

Subsequent field observations on the Liben Plain, including at least 62 individual singing birds in June 2007 (Spottiswoode *et al.* in prep.), have established that, contrary to the indication in de Juana *et al.* (2004), the Sidamo Lark does not possess a flapping display—Robertson (1995) correctly judged that such behaviour 'probably refers to another species'—but rather sings in a low, hovering, more or less stationary flight (generally 5–10 m but perhaps up to 15 m above ground level). The bird takes off on an upcurving trajectory in a fluttering flight, begins singing within 1–2 seconds of leaving the ground, sings during the next *c.*3–5 seconds as it reaches the apex, and continues in a stationary, hovering posi-



tion for up to 35 seconds longer. In this hovering phase, the body is held at roughly 45°, the head turns from side to side to broadcast the song, and the legs are not fully retracted, the tarsi and feet with their long hindclaws being easily visible at moderate range (see Fig. 8). The total song lasts 11.3–38.5 seconds (mean 19.7 of 15 songs pooled from four individuals), breaking off as the bird switches abruptly from hovering to a steep gliding descent, wings fixed in an arching parachute posture with tips pointing at the ground, the drop

back to earth taking only a few seconds. Nine inter-song intervals from three singers averaged 49 (14–124) seconds.

The song is a jingling, chirping, continuous whistling, in general timbre and tone recalling (to ears familiar with Palearctic species) a Skylark *Alauda arvensis* but following a distinct structure. It opens with 5–6 short high whistles, each note slightly lower than the preceding (*tii-tii-tii-tii-tii*, rather like the thin descending flight-call of a Meadow Pipit *Anthus pratensis*) (two seconds), merging into a short jumble of jingling whistles (two seconds). This immediately merges into the main part of the song, begun at the start of the hovering flight, a variable number of repetitions (up to 16, but as few as five) of a stereotyped rising or falling phrase (each phrase *c.*2.5 seconds long; see below), terminating in a short burry coda, each note often slightly rising but also often lower than the preceding (*swerzz-wrzz-wrzz-wrzz-wrzz*, two seconds) (see Figs. 9a–c). Both duration and content appear to be variable between and within individuals. The variable repeated phrase in the main part of the song is usually a series of notes that rise up the scale, the first two chirping and throaty but shifting to clearer, cleaner, higher notes, very rapid and complex, e.g. very roughly expressed as a buzzy jumbled quick *skoriol-skuriul-skeriel-skee*; occasionally, however, the phrase runs down the scale, with the clear high jingling notes becoming a throaty chirping as it does so (Fig. 9b). Sometimes there is a distinct if tiny break between phrases; sometimes everything is run together. The rise and fall in pitch over the duration of the song is sometimes blurred by the Skylark-like jumbling and crowding of many notes together, but is usually obvious and distinctive, and the whole song sounds bright and cheerful without being notably musical. The sound carries in good conditions for at least 300 m, with maximum distance at which we detected song somewhat over 450 m (from a bird measured as singing 444 m perpendicular to the transect line) (Spottiswoode *et al.* in prep.). Once it has been learnt, and once it is heard, it gives the observer an immediate cue to search for a hoverfly-like dot holding a position low in the sky for 15–30 seconds before dropping from view (although in 2008 we found two males that briefly counter-sang full songs from the ground).

#### Captions to photos on opposite page

**Figure 1.** Liben Plain, with tall and short grasses, and ant nest (*Messor cephalotes*) in foreground, June 2007 (Claire Spottiswoode)

La plaine de Liben, avec herbes hautes et basses, et une fourmilière (*Messor cephalotes*) au premier plan, juin 2007 (Claire Spottiswoode)

**Figure 2.** Liben Plain: central depression, with (progressively from camera) cattle, crops, eroding grassland and apparently invading trees, June 2007 (Claire Spottiswoode)

La plaine de Liben : dépression centrale avec bétail, cultures, prairie érodée et arbres invasifs, juin 2007 (Claire Spottiswoode)

**Figure 3.** Liben Plain, with variable grass heights, giant fennel *Ferula communis* and huts, June 2007 (Claire Spottiswoode)

La plaine de Liben : herbes de hauteur variable, férule *Ferula communis* et cases, juin 2007 (Claire Spottiswoode)

**Figure 4.** Liben Plain: south-eastern quarter, with grass erosion by cattle, June 2007 (Claire Spottiswoode)

La partie sud-est de la plaine de Liben : sol herbeux érodé par le bétail, juin 2007 (Claire Spottiswoode)

**Figure 5.** Liben Plain: south-eastern edge with apparently invading acacia, June 2007 (Claire Spottiswoode)

La limite sud-est de la plaine de Liben, apparemment envahie par des acacias, juin 2007 (Claire Spottiswoode)

**Figure 6.** Sidamo Lark *Heteromirafrā sidamoensis*, Liben Plain, 2 August 2007 (Greg Davies)

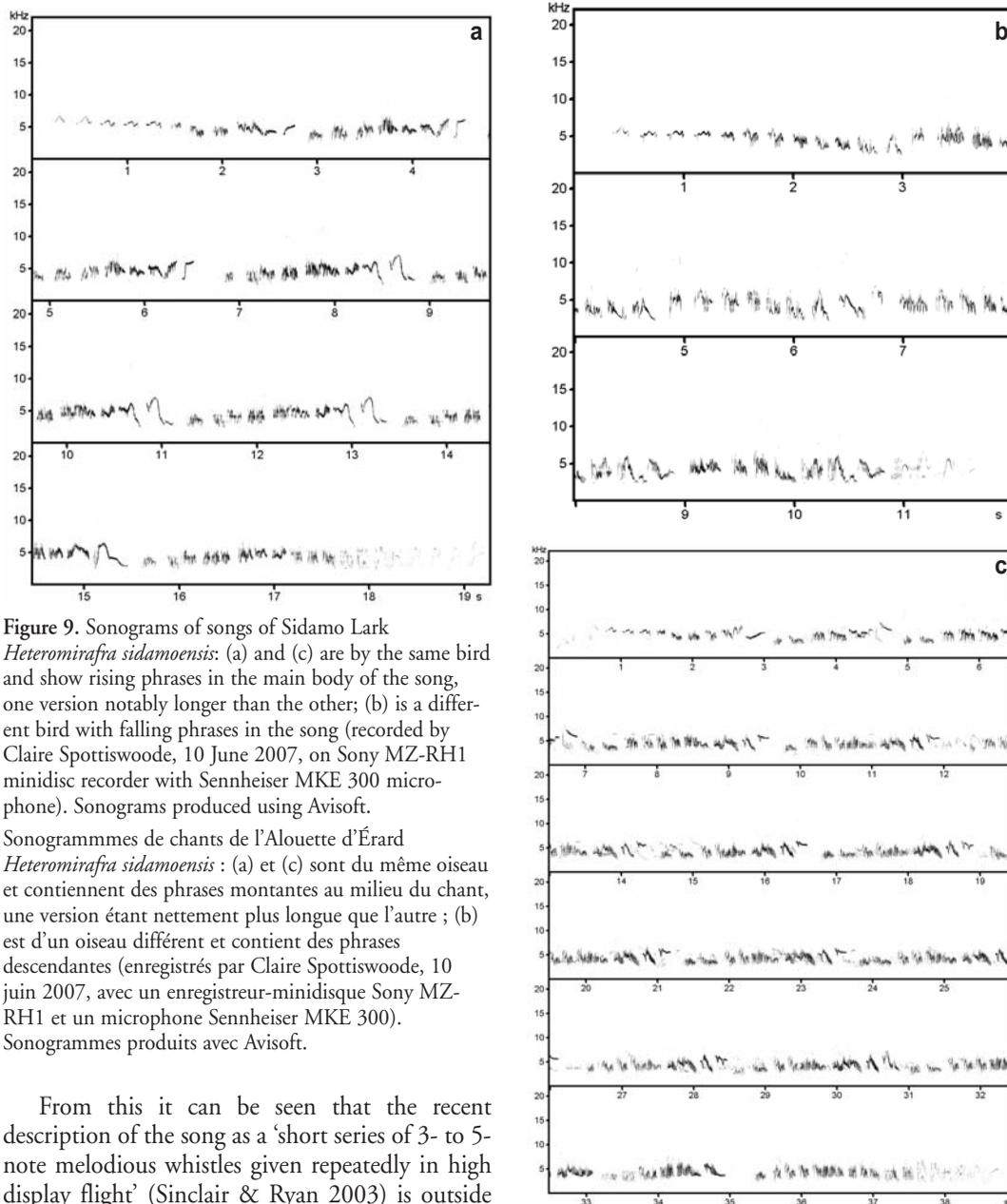
Alouette d'Érard *Heteromirafrā sidamoensis*, plaine de Liben, 2 août 2007 (Greg Davies)

**Figure 7.** Sidamo Lark *Heteromirafrā sidamoensis*, Liben Plain, 3 August 2007 (Greg Davies)

Alouette d'Érard *Heteromirafrā sidamoensis*, plaine de Liben, 3 août 2007 (Greg Davies)

**Figure 8.** Sidamo Lark *Heteromirafrā sidamoensis* in song-flight, Liben Plain, 2 October 2006 (Claire Spottiswoode)

Alouette d'Érard *Heteromirafrā sidamoensis* en vol chanté, plaine de Liben, 2 octobre 2006 (Claire Spottiswoode)

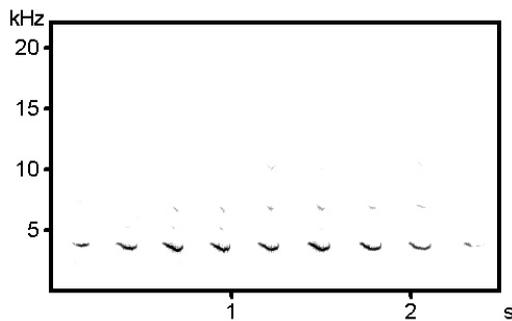


**Figure 9.** Sonograms of songs of Sidamo Lark *Heteromirafrā sidamoensis*: (a) and (c) are by the same bird and show rising phrases in the main body of the song, one version notably longer than the other; (b) is a different bird with falling phrases in the song (recorded by Claire Spottiswoode, 10 June 2007, on Sony MZ-RH1 minidisc recorder with Sennheiser MKE 300 microphone). Sonograms produced using Avisoft.

Sonogrammes de chants de l'Alouette d'Érard *Heteromirafrā sidamoensis* : (a) et (c) sont du même oiseau et contiennent des phrases montantes au milieu du chant, une version étant nettement plus longue que l'autre ; (b) est d'un oiseau différent et contient des phrases descendantes (enregistrés par Claire Spottiswoode, 10 juin 2007, avec un enregistreur-minidisque Sony MZ-RH1 et un microphone Sennheiser MKE 300). Sonogrammes produits avec Avisoft.

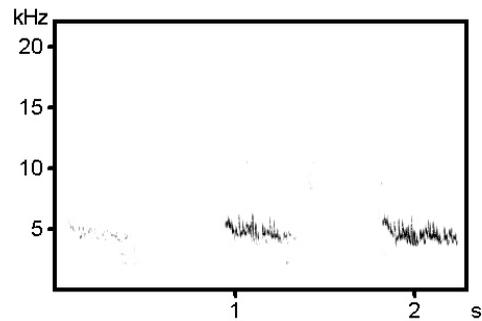
From this it can be seen that the recent description of the song as a 'short series of 3- to 5-note melodious whistles given repeatedly in high display flight' (Sinclair & Ryan 2003) is outside our experience, and seems to be based on a misreading of Robertson (1995), whilst the description of the species singing 'in protracted aerial display, with several males calling at once while circling over territories' (Ryan 2004) is also out of line with our evidence. However, we did observe birds that we have no doubt were the same male, singing from different sites within a territory (within a radius of perhaps 50 m). Moreover, it is certainly the case that neighbours have the effect

of stimulating each other to sing: we observed repeatedly that a second and sometimes a third male would sing in almost immediate response to a first bird performing a song display-flight. It is unclear, however, whether territories are clumped. On 2 October 2006, south of the Arero/Filtu road junction east of Negele, seven males were found singing and their positions logged with a GPS. The area in which they were displaying occupied



**Figure 10.** Sonogram of apparent contact-alarm (possibly nestling-warning) call of Sidamo Lark *Heteromirafra sidamoensis* (recorded by Claire Spottiswoode, 9 June 2007)

Sonogramme d'un cri, probablement de contact-alarme (peut-être un avertissement pour les oisillons), de l'Alouette d'Érard *Heteromirafra sidamoensis* (enregistré par Claire Spottiswoode, 9 juin 2007)



**Figure 11.** Sonogram of apparent contact or flight-call of Sidamo Lark *Heteromirafra sidamoensis* (recorded by Claire Spottiswoode, 10 June 2007)

Sonogramme d'un cri, probablement de contact ou en vol, de l'Alouette d'Érard *Heteromirafra sidamoensis* (enregistré par Claire Spottiswoode, 10 juin 2007)

28 ha, yielding a density of one singing male per 4 ha; this value was certainly not encountered elsewhere across the Liben Plain in June 2007 (Spottiswoode *et al.* in prep.), but whether it represents a patchiness that reflects habitat quality or some other biological characteristic is not known.

There are (to our knowledge) two other aerially displaying larks on the Liben Plain, Somali Short-toed Lark and Flappet Lark, both of which undertake much higher and more sustained flights, moving through and around a wide airspace rather than hovering in one place, and accompanied by very different sounds: Somali Short-toed Larks give a jerky, often discontinuous song, interspersed with chirruping notes and sometimes short mimicked phrases of Sidamo Lark and Pectoral-patch Cisticola *Cisticola brunescens*, which also occurs commonly on the plains. This discontinuous song is matched by its flight, which consists of alternate flutters and glides, the sound seemingly synchronised with the physical movement of the birds. The display-flight of the Flappet Lark, which we saw or heard only towards the eastern fringes of the Liben Plain where scattered *Acacia* trees adjoin light woodland, involves short bursts of wing-rattling at intervals, with no song, given at heights comparable to and possibly higher than those of Somali Short-toed Larks, and entirely unmistakable for either Somali Short-toed or Sidamo Lark.

Robertson (1995) described the call of flushed birds as 'a soft *tswee-ee-eeep* at the point where they

hovered before dropping back into cover'. We also heard (and tape-recorded) this call from a flushed bird shortly before it landed (flight reaching no higher than 3 m), describing it as a bright, clear *twi-twi-twi-twi-twi-twi-twi-twi-twi* (nine notes over 2.3 seconds, the last barely audible), somewhat reminiscent of a Pectoral-patch Cisticola but sweeter and longer, each note more upward-inflected, and with a certain plaintive tone (Fig. 10). We heard it, too, from another bird on the ground, and from unseen birds quite close at hand, which we assumed were on the ground. We speculated that this might well be a contact/alarm-call, possibly directed at offspring, but we have no good evidence of this other than one observation of it being given by a bird carrying food. Hockey *et al.* (2005) described a clearly homologous call in Rudd's Lark as an 'alarm call when [an] intruder approaches [the] nest'.

In 2007 we also once heard, from a male that had been singing a minute before, a series of seven notes, each a dry sibilant rolling *swirrrr, swirrrr*, etc., as it flew off (Fig. 11). We assumed this might have been a general contact call. However, in 2008 we heard this call from one of two birds as we were approaching their nest.

### Ground display, nest and eggs

During an hour-long observation by NJC of a foraging bird (A) in the mid afternoon of 12 June 2007, it moved 50 m upslope into an area over which a male (B) had earlier performed a song-flight. B sang again, and (in an example of the stimulus that singing provides) a second male (C)

then did so *c.*75 m to the east. When B landed, it did so in short grass and stood conspicuously upright, and ran rapidly towards A. B stood very close in front of A; both were then part-obscured by a passing cow, but it appeared that B gave a rapid burst of bobbing movements while facing A. Immediately, the two flew off in a flight-chase, directly over the area where C had sung, the chaser dropping a little beyond C's area, the chased bird continuing another 25 m before also dropping. Whether this was courtship or aggression is unclear, although the fact that A had given no song-display but had walked into an area occupied by a singing bird tends to suggest that A was female.

At 09.30 hrs during a transect on 13 June 2007 MW discovered a nest of a Sidamo Lark containing three very fresh eggs (less than two days old: CNS). By running to the left from close in front of him but not flying, the bird instantly suggested it had just vacated a nest, and this was discovered within seconds, recessed into the ground at the base of a very small *Solanum tettense* shrub (Fig. 12). The nest was a bowl constructed entirely of fine dry grass and unlined, with a weak partial canopy of pulled-down stems (Fig. 13), the entrance opening 63 mm across. The eggs were off-white with fairly dense but fine flecking in various shades of dark brown and occasionally grey, most heavily concentrated at the larger end (Fig. 14); they measured 21.4 × 15.2, 20.8 × 15.3 and



12



13



14



15

**Figure 12.** *Solanum tettense* shrub under which a nest of the Sidamo Lark *Heteromirafra sidamoensis* was discovered, with the discoverer Mengistu Wondafrash, 13 June 2007 (N. J. Collar)

L'arbuste *Solanum tettense* sous lequel un nid de l'Alouette d'Érard *Heteromirafra sidamoensis* a été trouvé, avec Mengistu Wondafrash, qui l'a découvert, 13 juin 2007 (N. J. Collar)

**Figure 13.** Nest of Sidamo Lark *Heteromirafra sidamoensis*, showing its weak canopy, 13 June 2007 (N. J. Collar)

Nid de l'Alouette d'Érard *Heteromirafra sidamoensis*, avec son faible dôme, 13 juin 2007 (N. J. Collar)

**Figure 14.** Eggs of the Sidamo Lark *Heteromirafra sidamoensis*, 13 June 2007 (Claire Spottiswoode)

Œufs de l'Alouette d'Érard *Heteromirafra sidamoensis*, 13 juin 2007 (Claire Spottiswoode)

**Figure 15.** Sidamo Lark *Heteromirafra sidamoensis* in the hand, Liben Plain, 21 June 2007 (Claire Spottiswoode)

Alouette d'Érard *Heteromirafra sidamoensis* en main, plaine de Liben, 21 juin 2007 (Claire Spottiswoode)

21.5 × 15.2 mm. This is the first record of the nest and eggs of Sidamo Lark.

The nest was empty when it was inspected eight days later on 21 June 2007, with no sign of broken shells. We presume the eggs were taken by an animal capable of consuming them without breaking them, perhaps a snake or crow. Nest failure of ground-nesting birds must be frequent on the Liben Plain, given the number of cattle that move across the area. During the hour-long watch of the individual bird (A) mentioned above, three herds of cattle moved through its immediate vicinity, causing it little if any disturbance but suggesting a great potential for the trampling of nests, although local people declared that they do not take eggs of any size and leave all birds unmolested.

On 17 June 2008 we found a Sidamo Lark nest with three young roughly three or four days old; the nest was well concealed below a small thistle and associated ungrazed grass leaves (0.4 m), the thistle itself being in very short-grazed grassland. This nest and the sitting bird were predated on the night of 18 June. A few adult flight feathers and the nest base were collected and deposited at the Natural History Museum, Tring, UK.

#### Data on a trapped individual

At 16.45 hrs on 21 June 2007 CNS and NJC mist-netted a single Sidamo Lark at a point marked with a GPS where a bird had been singing the previous week. The bird caught possessed some cloacal protuberance, so was possibly male; the skull was ossified and the feathers were very worn but showed no moult. There was no (or else a very old) brood-patch, and the following notes (measurements in mm) were taken: upper mandible pale brown over the maxilla, creamy horn along the cutting edge; lower mandible creamy horn; irides mid-brown; legs flesh-pink with red earth in the grooves; bill from skull 14; wing-chord 75, 82 flat; tail (worn) 50.5; tarsus 29; right hindclaw 14.5, left hindclaw 13; weight 28.0 g.

The bird was sampled for blood (to be deposited at the Zoological Museum, University of Copenhagen), photographed (see Fig. 15), ringed with a South African ring (FA46590) and released at the point of capture at 17.30 hrs, one hour before sunset. This is the first live (and only the third) specimen of the species to be sampled.

#### Conservation

Our research in 2007 indicated that the Sidamo Lark occupies an exceptionally small range, especially for an open-country species: only some 40 km<sup>2</sup> of habitat appears to remain to it, all on the Liben Plain, and the total male population of the species, on the well-justified assumption that no other sites exist for it at least within a 200 km radius (as suggested by Google Earth maps), does not exceed 250 individuals (Spottiswoode *et al.* in prep.). There is considerable evidence that the grasslands of the Liben Plain have been deteriorating in quality and extent for several decades (Figs. 2–5), almost certainly to the detriment of the Sidamo Lark, and this, combined with the very low population size and single location, suggests that the species should be uplisted to Critically Endangered (Spottiswoode *et al.* in prep.).

In 2008 we were dismayed to find that the plain's pasturelands were even more heavily grazed: grass across the entire plain was all less than 5 cm, and the eastern half of the area comprised extensive bare earth covering more than 50% of the ground within a severely overgrazed and degraded sward. Despite three days of field work and transect walking in eastern and northern areas of the plain that had been occupied in 2007, no Sidamo Larks were seen or heard in these severely degraded areas, with all observations from a small area of grassland immediately south-east of the junction of the Arero and Negele–Filtu roads. The predation of the nest and sitting adult, presumably female, was a depressing indication that in such conditions, where predators can simply move from one tiny clump of taller cover to another, breeding success is likely to be zero or near-zero, and that there may well be a serious skew in sex ratio, such that the effective population size may be even lower than the 2007 estimate (which assumed an equal sex ratio). Moreover, several new areas of agricultural cropland had been created, whilst others were marked out for ploughing. NJC and Kiragu Mwangi met with some elders who expressed their own deep concerns for the future of the Liben Plain. The failure of adequate rains in spring 2008, overgrazing of the plain (which, as a commons, is visited by herds from a 50-km radius or more), rapid scrub encroachment (which in 2008 we confirmed by transects and interviews) and the expansion of agriculture (largely driven by the plain's inability to support its livestock load) are

combining in a way that suggests that the Sidamo Lark is unlikely to survive even for another few years without major management intervention (an endeavour to which we are now committed).

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