

Field identification of Sand Lark *Alaudala raytal* and Lesser/Asian Short-toed Lark *Alaudala rufescens/cheleensis*: An unacknowledged pitfall

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Introduction

The Sand Lark *Alaudala raytal*, also known as Indian Short-toed Lark, is resident in Gujarat (Grimmett et al. 2011; Ganpule 2016). It is a polytypic species with three recognised subspecies: the nominate *A. r. raytal*, *A. r. adamsi*, and *A. r. krishnakumarsinhji*. The latter two occur in Gujarat (Ali 1954). *A. r. raytal* is not known to occur in the state and is resident in northern India, eastwards from Haryana, up to Assam, and Arunachal Pradesh (Rasmussen & Anderton 2012).

In Gujarat, the Sand Lark is fairly common and widespread in Kachchh and Saurashtra. It is seen in salt pans along the coast of Kachchh and Saurashtra, in other coastal areas of the state and, sometimes, inland too. The subspecies *adamsi* is widespread in Gujarat while *krishnakumarsinhji* is thought to be resident only in the Bhavnagar area (Ali 1954; Vaurie & Dharmakumarsinhji 1952). However, Rasmussen & Anderton (2012) stated that *krishnakumarsinhji* is resident in Kachchh too, and Abdulali (1976) stated that specimens from Kachchh are intermediate between *adamsi* and *krishnakumarsinhji*, and best fit the latter.

The Lesser Short-toed Lark (henceforth, LSTL) *A. rufescens* and the Asian Short-toed Lark (henceforth, ASTL) *A. cheleensis* are polytypic species, and are rare winter migrants or vagrants to India (Grimmett et al. 2011; Rasmussen & Anderton 2012; Christian 2019). The separation of LSTL/ASTL from Sand Lark has not been given much importance in the reference texts widely used in India and only the general features of both are mentioned in Grimmett et al. (2011), and Rasmussen & Anderton (2012).

Here, I present preliminary results regarding the identification of the Sand Lark in Gujarat and its separation from LSTL/ASTL. The details presented are for *adamsi* and *krishnakumarsinhji*. The identification and separation of the Sand Lark from LSTL/ASTL is discussed in detail. The nominate race of Sand Lark has a

slim, long, and pointed beak, making it look quite different from a LSTL/ASTL, and, further, since this subspecies does not occur in Gujarat, it is beyond the scope of this paper.

The taxonomy of LSTL/ASTL is unresolved and all races of ASTL are sometimes treated under LSTL. Generic assignment of these species also varies between works (see Table 1); but here, I follow Praveen et al. (2019) and treat all three as distinct species under the genus *Alaudala*.

Methods and observations

I made 25+ trips in 2017–2019 along the Gulf of Kachchh, in Saurashtra, in the coastal areas in Kachchh, and also in other parts of Saurashtra to study Sand Larks. Observations were made all round the year, in all seasons. Birds were photographed and also observed closely with binoculars. In all, I photographed, and carefully studied, 200+ individuals in the field, including 25+ individuals of *krishnakumarsinhji* in Bhavnagar (Map 1). About 20 pairs of displaying Sand Larks were studied. The displaying bird was presumed to be a male while the bird being displayed to was presumed to be a female. I also observed copulation in a few pairs, which was helpful in identifying the sexes. I observed 20+ juvenile/immature Sand Larks; usually from April till late October. After the first winter, they are inseparable from adults. Variation in bill shape and size, plumage details, streaking on underparts and length of primary projection were noted in all the Sand Larks I saw and photographed. It is important to note that plumage may look a little different (paler) in the harsh sunlight of the summer and it is often difficult to judge the tail length, and bill size and shape if proper views are not obtained. No study was undertaken on the museum skins of Sand Larks and no vocalisations were recorded or analysed.

Table 1. Taxonomy of Sand Lark, Lesser Short-toed Lark (LSTL), and Asian Short-toed Lark (ASTL)

Reference	Sand Lark	Lesser Short-toed Lark	Asian Short-toed Lark
Grimmett et al. (2011)		Not covered	<i>Calandrella cheleensis</i>
Rasmussen & Anderton (2012)	<i>Calandrella raytal</i>	<i>Calandrella rufescens</i>	Treated under <i>C. rufescens</i>
Shirihai & Svensson (2018)			Treated under <i>A. rufescens</i>
Alström (2019); de Jauna & Suárez (2019)			Treated under <i>A. rufescens</i>
Dickinson & Christidis (2014); Gill & Donsker (2019); Clements et al. (2019); Praveen et al. (2019)	<i>Alaudala raytal</i>	<i>Alaudala rufescens</i>	<i>Alaudala cheleensis</i>



Map 1: Locations in Gujarat, India, which were visited for study of Sand Larks

I also studied 150+ photographs of Sand Larks from all parts of Gujarat from www.orientalbirdimages.org (henceforth, OBI), www.indianaturewatch.net (henceforth, INW), www.birdsofgujarat.co.in (henceforth, BOG), www.hbw.com/ibc (henceforth, IBC), and www.ebird.org/india and also collected photographs personally from bird watchers in the state. I have scrutinized photographs of Sand Larks from the coastal areas of Iran and southern Pakistan, since *adamsi* occurs in the coastal regions of these countries.

I examined photographs of LSTL/ASTL from Iran, Kazakhstan, other parts of Central Asia, western Russia, and also from the Middle East. I consulted Shirihai & Svensson (2018) as the primary reference, apart from Ali & Ripley (1987), Grimmett et al. (2011), Rasmussen & Anderton (2012), and de Jauna & Suárez (2019). The subspecies *persica*, *heinei*, *leucophaea*, *seebohmi*, and *cheleensis* are known to be migratory; some individuals are said to winter in the Middle East and the north-western parts of the Indian Subcontinent (de Jauna & Suárez 2019). The subspecies *pseudobaetica* is also migratory, but winters in Arabia and the

Middle East, and hence, could occur here. Photos of *persica*, *heinei*, and *cheleensis*, from Iran, Kazakhstan, other parts of Central Asia, Russia, Mongolia, and Far East Asia, posted on birding websites, were studied in detail to get an idea about variations seen in these subspecies. These subspecies of LSTL/ASTL are selected and discussed here since they are winter migrants and could occur / are known to occur in India. I include *heinei* and *persica* in LSTL, fully aware that this will likely change in the future. Generally, LSTL and ASTL are extremely similar and separation without examination of tail pattern and wing formula is often impossible (Shirihai & Svensson 2018). Here, I do not attempt to separate LSTL from ASTL and indicate the subspecies of LSTL/ASTL in the photographs presented here, while detailing separation of both from Sand Lark.

Results

The details for identification and separation of the Sand Lark from LSTL/ASTL are presented in Table 2:

Structure: The Sand Lark has a stocky body with a short tail. In comparison, LSTL/ASTL looks 'slenderer', with a longer tail, which is a very important distinction when separating the two in the field. However, tail length is tricky to evaluate in the field and, additionally, the birds should be seen from the side (in profile) to appreciate this difference. The best way to judge tail length is to compare it with body length; in the Sand Lark, the tail looks quite short when compared with body length while in LSTL/ASTL, it looks longer. While this comparison is subjective, this feature can be judged properly with experience. Though, some subspecies of LSTL/ASTL may look bulky or seem to look bulky from certain angles, it almost always looks longer tailed than a Sand Lark. The structure (body shape and tail length) is similar in Sand Larks of both *adamsi* and *krishnakumarsinhji* subspecies. Compare 120/121 with 122 for tail lengths in Sand Larks (*adamsi*/*krishnakumarsinhji*) and LSTL/ASTL. The outer web of r6 (outer tail feather) is white in both Sand Lark and LSTL/ASTL and not very useful in identification.

Table 2. Summary of identification features of Sand Lark and LSTL/ASTL

Feature	Sand Lark	LSTL/ASTL	Remarks
Structure	'Bulky' with short-tailed appearance	'Slenderer' with a longer-tailed appearance	Tail length is important and best seen from a side angle
Size	10.0–12.0 cm ¹ 12.0–13.0 cm ²	12.3–14.1 cm ¹ 13.0–14.0 cm ²	LSTL/ASTL is larger when compared directly; size of single individuals difficult to assess
Bill size and shape	Usually slender bill	Usually short, stubby, deep-based bill	Variable and hence not diagnostic
Underpart streaking	Variably streaked breast and flanks	Variably streaked breast and flanks	Similar and hence not useful
Face pattern	Usually weaker than LSTL/ASTL	Usually stronger than Sand Lark	Variable and hence not diagnostic
Upperpart streaking	Diffuse in <i>adamsi</i> but stronger in <i>krishnakumarsinhji</i>	Usually strongly streaked in fresh plumage	Similar and hence not useful
Primary projection	2–4 exposed primary tips	3–4 exposed primary tips	Similar and hence not useful. Difficult to assess in worn plumage

¹Rasmussen & Anderton (2012); ²Alström (2019); ³de Jauna & Suárez (2019)



120. Sand Lark: Pale sandy plumage with lightly streaked upperparts, short tail, and sparse breast-streaking. The overall sandy plumage with thin and sparsely streaked breast is typical of *adamsi*. Note somewhat heavy bill and longer primary projection. 12 May 2019, Jamnagar, Gujarat.



121. Sand Lark: Ssp. *krishnakumarsinhji*. Note very short tail when seen from the side and much worn brownish-grey plumage. Primary projection is long. The breast-streaking is prominent and forms lines when viewed from this angle. Strong bill. 21 April 2019, Bhavnagar, Gujarat.



122. Lesser Short-toed Lark: Prominently streaked crown and mantle. Note long tail and long primary projection. Breast-streaking is sparse and bill does not look very strong since it is open. Note dark culmen and tip. Presumed to be a *heinei*. Plumage is rather pale sandy. The long tail is very apparent when seen like this. 23 March 2019, Turkestan Region, Kazakhstan.

Bill size and shape: Though Sand Larks are described to have a finer/weaker bill than LSTL/ASTL, exceptions exist in Gujarat. There are many Sand Larks with a heavy bill, which approaches, or is even heavier, than the bill of a LSTL/ASTL. While *adamsi* is described as having a curved culmen, many birds here show a rather straight culmen, which is seen in both *adamsi* and *krishnakumarsinhji* Sand Larks. Some Sand Larks in Bhavnagar, presumed to be *krishnakumarsinhji*, had a very pale, whitish bill, which was rather long and pointed, and similar to the subspecies *raytal*. Other Sand Larks in the same area had a bill sized and shaped like *adamsi*. There is considerable variation in bill size and shape, which is depicted here in the photographs. Compare 125–127 for individuals of *adamsi* Sand Larks with weak bills, with 128–131 wherein birds with heavy to very heavy bills are depicted, and note the differences in bill shape and size in Sand Larks seen here. See 132–135 for differences in bill size and shape in Sand Larks of the subspecies *krishnakumarsinhji*.



125. Sand Lark: Pale sandy plumage with somewhat streaked upperparts, a weaker bill (with dark culmen and tip), short tail, and sparse breast-streaking. Note primary projection, which looks short. The overall sandy plumage with thin and sparsely streaked breast is typical of *adamsi*. 16 February 2019, Jamnagar, Gujarat.



126. Sand Lark: Note that bill is not very strong, looking yellowish with dark culmen and tip. Sandy-grey upperparts, streaked crown, medium-length primary projection with three exposed primary tips, tail looks relatively short. Breast-streaking is sparse. Upperparts look pale but streaked, with streaking more prominent on crown. Ssp. *adamsi*. 18 January 2015, Navlakhi, near Morbi, Gujarat.

Size: The Sand Lark is smaller-sized than LSTL/ASTL but without direct comparison in the field, it would be very difficult to judge size. However, it is a useful distinction when both species occur together. See 123 (a, b, c) and 124 (a, b, c) for size comparison in specimens of *adamsi* Sand Lark and LSTL/ASTL.



123a.



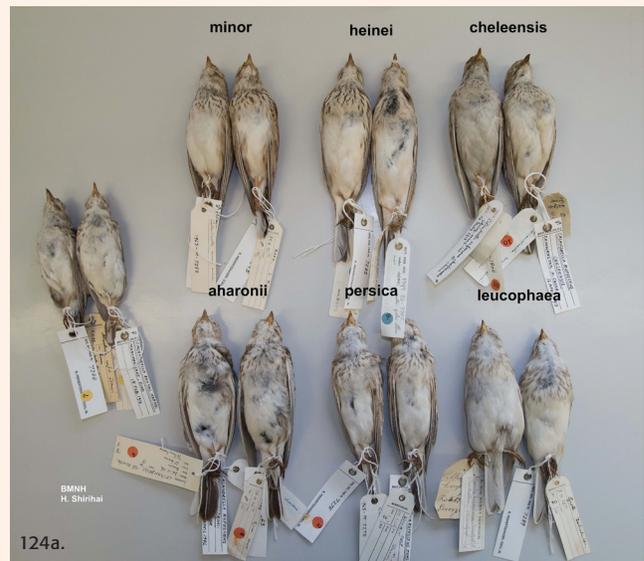
123b.



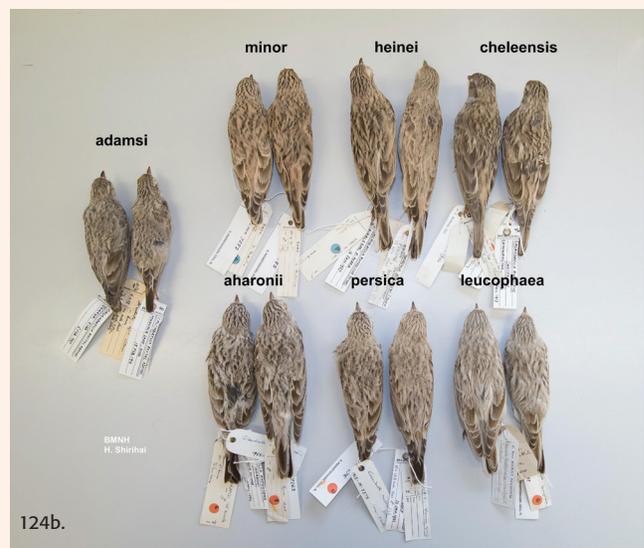
123c.

Lars Svensson

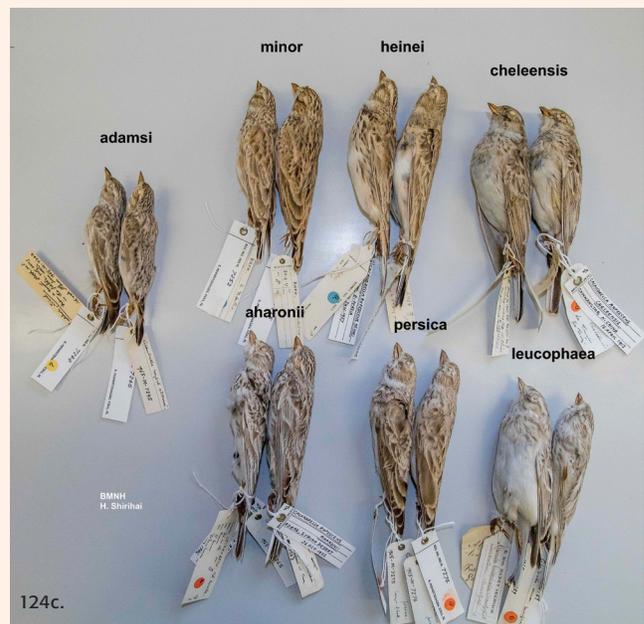
123 a, b, c. Comparison of Lesser Short-toed Lark and Sand Lark – Museum specimens: A comparison of museum specimens of *adamsi* Sand Larks (on the left) with *persica* Lesser Short-toed Larks (on the right) – ventral (a), dorsal (b) and side view (c). Note the longer tail, rufous or ochre-tinged upperparts and bulbous bill in *persica* when compared with *adamsi* Sand Lark. Specimens from the Natural History Museum (henceforth, NHM), London.



124a.



124b.



124c.

124 a, b, c. Comparison of Lesser/Asian Short-toed Lark and Sand Lark – Museum specimens: A comparison of museum specimens of *adamsi* Sand Larks (on the left) with Lesser/Asian Short-toed Larks (upper row and bottom row) – ventral (a), dorsal (b), and side (c) views. Note structure, bill shape, and size in Lesser/Asian Short-toed Larks. The subspecies *leucophaea* has the palest upperparts when compared to other subspecies depicted here. Compare LSTL/ASTL with Sand Lark and note structural differences along with different bill size and shape. Specimens from the NHM London.



127. Sand Lark: Sandy-grey upperparts. Somewhat weak and pointed bill, streaked crown and upperparts. Note the rather sparse breast-streaking. Bulky body with short tail. Note short primary projection and a slight hint of rufous around eye. Presumed *adamsi*. 09 March 2019, near Dwarka, Gujarat.



Ali: Prasad Ganpule

128. Sand Lark: The bill is quite strong for a Sand Lark and is similar to Lesser/Asian Short-toed Lark. Darker plumage (sandy-grey) with well streaked upperparts and well defined streaks on breast. It shows a much longer primary projection with 3–4 exposed primary tips; tertials are quite worn. The structure, with a bulky body and short tail (relative to body length), and typical sandy-grey plumage are different from a Lesser/Asian Short-toed Lark, even though bill size and shape are atypical. Ssp. *adamsi*. 06 May 2017, near Dwarka, Gujarat.



129. a,b. Sand Lark: This individual shows an unusually strong, massive bill, which is very atypical, with a curved lower mandible, and very similar to a Lesser/Asian Short-toed Lark. Other features, especially plumage and structure, and the poorly marked face, match a Sand Lark, and the position in which it is perched (front-leaning), makes it look slightly longer-tailed. Note how bill looks different when head angle changes [photo – 10 (b)], but still looks bulbous. Treated here as a Sand Lark but confirmation desirable. 10 March 2019, near Dwarka, Gujarat.



130. Sand Lark: Strong, deep-based bulbous bill, similar to a Lesser/Asian Short-toed Lark, and shows atypical bill (like in 128, 129). Sandy-grey, streaked upperparts. Breast-streaking is prominent with faint streaking on flanks. Streaked crown, nape, and upperparts. Long primary projection with 3 tips visible. Note very short tail and compact jizz. Treated here as a Sand Lark based on structure and plumage but further confirmation desirable. 10 March 2019, near Dwarka, Gujarat.



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131. Sand Lark: Note the deep-based bill, strong face pattern, and long primary projection, all recalling Lesser/Asian Short-toed Lark. Bill size and shape are atypical, and do not match that of a typical Sand Lark. Based on the compact jizz, pale sandy (less streaked) upperparts, short tail, and overall plumage, treated here as a Sand Lark but further confirmation desirable. 01 March 2017, Banni, Greater Rann of Kachchh.



132. Sand Lark: *krishnakumarsinhji*, with thinly streaked breast, brownish-grey upperparts, some breast-side streaking, strong bill, and streaked upperparts. Note the short primary projection and the short tail. The crest is raised. Underpart streaking is thinner and looks more sparse than usually seen in this subspecies. 21 April 2019, Bhavnagar, Gujarat.



133. Sand Lark: *krishnakumarsinhji*. Brownish-grey, streaked upperparts, and short tail. Note long primary projection. Sparse breast-streaking in centre with more prominent streaking on sides. Bill is strong. Compare with 156 and 157 and note similarity. 21 April 2019, Bhavnagar, Gujarat.



134. Sand Lark: *krishnakumarsinhji*. Prominently streaked upperparts (note streaking on lower mantle is similar to Lesser/Asian Short-toed Lark) with short primary projection and short tail. Note prominent breast-streaking. This individual shows a strong, but long and pointed bill, which looks quite pale. 21 April 2019, Bhavnagar, Gujarat.



135. Sand Lark: *krishnakumarsinhji*. Note much worn plumage with pale upperparts. Long primary projection with short tail. The bill is quite pale (almost whitish) and looks rather long and pointed, with a slender base, like in *raytal*. Prominent breast streaking. 21 April 2019, Bhavnagar, Gujarat.

Ali: Prasad Gampule

In museum specimens of *adamsi* Sand Larks, a consistency in bill structure and shape was noted, with all specimens having a rather thin, but much shorter bill, than *raytal*; no variations in bill size and shape were noted and all birds (n=90) in the Natural History Museum (NHM), had fairly slender bills (Lars Svensson, *in litt*, e-mail dated 02 May 2019). However, I noticed birds with heavier bills, which did not fit LSTL/ASTL and looked similar to Sand Larks based on structure, tail length, and plumage, as seen in the photographs presented here, illustrating an inconsistency between museum specimens and birds in the field.

The LSTL/ASTL has a short, stubbier, and deep-based bill than a Sand Lark, with a more feathered bill-base, often showing as a ruff around the bill base. However, *persica* and *heinei* have a heavy and deep-based bill, which sometimes looks quite similar to a Sand Lark with an atypical bill. The bill is pale yellow or horn-coloured, and is fairly large—see 136 for *persica* LSTL with a large, yellowish bill. Museum specimens of *persica* (and *heinei*) have a bulbous bill with curved outlines of both, upper, and lower mandibles (Lars Svensson, *in litt*, e-mail dated 02 May 2019). The bill size and shape of *cheleensis* is stated to be similar to *heinei/persica*, and from a study of photographs of birds from the distribution range of *cheleensis*, it can be noted that though bill size and shape is similar to *heinei/persica*, birds with short and fairly thin bills are sometimes seen: see Audevard (2013), Pelsy (2016), and Bogdanovich (2018) for photos of such individuals. See 137 for a LSTL/ASTL from Iran with a bill which is thin and does not appear deep-based. Further, *pseudobaetica*, which ranges from northern Iran to eastern Turkey, and which winters in northern Arabia and the Middle East, has a 'less bulbous and somewhat shorter bill' than *persica/arahunii* (Shirihai & Svensson 2018). This is depicted in Shirihai & Svensson (2018: 71, 3rd column, top), where it can be seen that bill size is smaller and the bill looks slimmer. The bill size and shape in this subspecies is very similar to that of a Sand Lark.

Thus, while bill shape and length could be indicative in separating Sand Lark from LSTL/ASTL, they cannot, by themselves, be used as diagnostic features due to such individual variations. Hence, the description, 'smaller or finer-billed' for Sand Lark when compared to LSTL/ASTL, could be misleading.



136. Lesser Short-toed Lark: Note the strong, deep-based yellowish bill, long primary projection, creamish tinge to plumage. Tail looks shorter due to the position/angle in which the bird is photographed. Note that the breast is sparsely streaked, with a dark neck-patch. Based on the strong bill, presumed to be *persica*. 22 May 2015, Band-e Ali Khan Marsh, Tehran, Iran.



137. Lesser/Asian Short-toed Lark: Bill is yellow, but not much deep-based and looks slender, with a feathered bill base. Sandy-pale yellowish plumage, with dark streaked head. Long primary projection and tail. Breast-streaking very sparse. Note similarity with Sand Lark but sandy-yellowish plumage (lacking grey), all yellow bill, long primary projection, and long tail are features which separate it from Sand Lark. An individual with somewhat atypical bill. Race unknown, but based on the weaker bill, does not resemble *persica*. 22 May 2015, Band-e Ali Khan Marsh, Tehran, Iran.

Both: Dorna Mojab

Underpart streaking: *A. r. krishnakumarsinhji* shows a breast that is darker and more heavily streaked vis-à-vis *admasi* (thinner- and sparsely streaked). However, there is considerable individual variation in breast-streaking in Sand Larks in Gujarat, with some birds showing quite sparse streaks. In a few individuals, it was observed that the streaks on the breast often coalesced into a larger dark neck-patch (see 138), similar to a Greater Short-toed Lark *C. brachydactyla* and Hume's Short-toed Lark *C. acutirostris*. This feature has not been described in the reference texts for Sand Lark but, has been noted in a few (n=15/200+) individuals that I have seen here in Gujarat.



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138. Sand Lark: Sandy-grey upperparts. Strong, somewhat long and pointed bill, streaked crown and upperparts. Note the rather sparse breast-streaking, coalescing into a dark patch on neck-side, rather like a *C. brachydactyla* or *C. acutirostris*. Note faint streaking on flanks. Bulky body with short tail. Presumed *admasi*. 09 March 2019, near Dwarka, Gujarat.

Grimmett et al. (2011) and Rasmussen & Anderton (2012) state that flanks are somewhat streaked for LSTL/ASTL but do not describe this feature for Sand Lark. However some Sand Larks show streaking on the flanks; mostly rather fine, with thin streaks, and, in a few individuals, quite prominently (see 139). It should be noted that Vaurie & Dharmakumarsinhji (1954) describe *krishnakumarsinhji* as having 'greyish and faintly streaked' flanks. Thus, a few Sand Larks do show flank streaking, a feature which is similar to LSTL/ASTL, though the amount of streaking is variable. Further, many LSTL do not show prominent flank streaking as seen in the photos presented here.



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139. a, b. Sand Lark: This individual has fairly prominently streaked breast, streaking on the flanks, greyish-brown plumage with streaked head, pale (almost whitish) bill, longer primary projection (with four exposed primary tips visible). However, the plumage looks quite worn and primary projection looks longer due to worn tertials. Note compact jizz with short tail, typical of Sand Lark. Such birds are difficult to separate from Lesser/Asian Short-toed Larks but plumage, structure, and pale bill are features which should be noted. A probable *krishnakumarsinhji* or an intermediate. 18 November 2018, Naliya, Kachchh, Gujarat.



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The LSTL/ASTL has a prominently streaked breast, similar to a Sand Lark, but is described as having more prominent breast-streaking than *admasi*. However, when compared with *krishnakumarsinhji*, the breast-streaking in LSTL/ASTL looks quite similar, or sometimes, less prominent. Frequently, *krishnakumarsinhji* has almost 'tear-drop' shaped markings on the breast, which look very prominent. In the subspecies *cheleensis*, 'fine streaks on chest often coalesce into larger spot on sides', *heinei* has 'sharper streaking on breast', while *persica* has 'relatively few and narrow dark streaks on breast' (Shirihai & Svensson 2018). However, since breast streaking is variable in both, Sand Lark, and LSTL/ASTL, this feature is not very helpful in identification.

Face pattern: The Sand Lark has a weaker facial pattern than LSTL/ASTL with an obscured (almost lacking) dark lateral throat-stripe (Shirihai & Svensson 2018), a strongly streaked crown, with a relatively prominent supercilium extending beyond the eye, a broad whitish eye-ring often broken by dark, thin loreal mark, creating a pale crescent below eye and ill-defined pale sub-moustachial patch. This feature is also variable – see 140, 141 for differences in face pattern in Sand Larks. In general, it is true that the Sand Lark has a weaker facial pattern, but some individuals can show a stronger facial pattern (*pers. observation*) – see 142 a, b for such birds. Further, it can be seen in the photographs that, often, LSTL/ASTL shows a weaker facial pattern, similar to a Sand Lark. See 143, 144 for *persica* and *heinei* LSTL with a very plain face. This feature is not very helpful in identification in the field or from photographs. Both species can raise the crown feathers, creating a crest.



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140. Sand Lark: Sandy-grey, streaked upperparts. Note the rather deep-based bill and stronger face pattern with prominent eye-ring bordered below by a blackish stripe. The breast-streaking is prominent with a small dark neck-patch. Primary projection looks long. Note typical bulky body with short tail. Presumed *admasi* or intermediate. 09 March 2019, near Dwarka, Gujarat.



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141. Sand Lark: Sandy, streaked upperparts. Note the rather plain face pattern with reduced whitish eye-ring. Strong, deep-based, somewhat pointed bill. Sparse breast-streaking and short primary projection. Typical bulky body with short tail; *adamsi*. 03 March 2019, Navlakhi, near Morbi, Gujarat.



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142. a, b. Sand Lark: **142a** shows a weaker bill, short primary projection, diffusely streaked breast, pale sandy-greyish plumage, short tail. The ear-coverts look dark and well streaked, with supercilium, and eye-ring visible. It is possibly a female.

142b also shows a strong face pattern, with darker ear coverts and a hint of a dark moustachial stripe. Note that the bill looks short and stubby in both individuals, similar to a LSTL/ASTL, but is subtly slimmer. Structurally, such birds have a very short tail, short primary projection, and the plumage is very pale sandy-greyish, which helps in identification. 14 January 2019, Chhari-Dhand, Greater Rann of Kachchh, Gujarat and 18 August 2019 near Navlakhi, Gujarat.



Dorna Mojib

143. Lesser Short-toed Larks: These individuals show the typical, thick and stubby, deep-based bill. Note that these birds look quite plain-faced. Note that the primary projection does not look very long (3 primary tips visible) and the upperparts are dark brownish and quite plain (worn plumage?). The breast streaking is sparse and restricted only to the upper breast, rather like what is seen in *adamsi*. Structurally, they look slender and longer-tailed. From locality and bill shape and size, presumed to be *persica*. Such birds bear resemblance to Sand Larks and need to be carefully examined for correct identification. 16 May 2015, Band-e Ali Khan Marsh, Tehran, Iran.



Arend Wassink

144. Lesser Short-toed Lark: Note long primary projection, and tail. The upperparts look less streaked (are plainer) but rufous wash on mantle is apparent. Bill is deep-based and strong.

A rufous wash is also seen on supercilium and face. However, note the rather plain-faced appearance. Some streaking is visible on the neck. Presumed to be *heinei*. 10 September 2009, Kyzylkol Lake, Kazakhstan.

Upperparts: Upperparts in Sand Lark are cold sandy-grey with diffused streaking, rather uniform wings (median coverts being less dark) and paler rump and uppertail coverts (Shirihai & Svensson 2018). Rasmussen & Anderton (2012) stated that it has pale cool grey and faintly streaked upperparts and is more weakly patterned above than LSTL/ASTL. However, it should be noted that the subspecies *krishnakumarsinhji* has more prominently streaked, darker greyish upperparts. In the birds observed in Saurashtra, there is considerable variation in upperpart streaking; some individuals are quite plain-backed, with almost no streaking, while many birds show very prominent streaking on the upperparts, similar to a LSTL/ASTL. This is dependent on wear of the upperpart feathers and the state of plumage, and birds in worn plumage look somewhat different. See **145** for an individual in worn plumage. Further, some individuals can have very pale, greyish-white upperparts [**146**]. Birds with plumage which is intermediate between *adamsi* and *krishnakumarsinhji* are also seen widely in Gujarat. It is not clear if the differences in plumage are related to the ground colour of its habitat; this requires more study.



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145. Sand Lark: This individual is in much worn plumage. Note pink-horn bill and very long primary projection. The upperparts look worn and are brownish-grey. Breast streaking is sparse. The primary projection looks very long (5 primary tips visible!), probably due to worn tertials. The tail is quite short. The bill looks different than what is usually seen in *adamsi*, showing a curved lower mandible. Such birds are seen in May–June in Gujarat and look quite different from typical Sand Larks due to worn plumage. Further, this photo was taken in harsh sunlight and that is also affecting plumage tone. But note short tail and bulky body, typical of Sand Lark. Presumed *adamsi*. May 2014, near Dwarka, Gujarat.



Jaysukh Parekh 'Suman'

146. Sand Lark: Prominent breast and upperpart streaking. Primary projection is rather short. Bill is deep-based, rather like a LSTL/ASTL. Bulky body with short tail. Rather pale, greyish-white upperparts with contrasting greater coverts. Note very plain face pattern, but this individual shows a diffuse moustachial stripe. The typical structure and plumage are useful in identification. 02 December 2018, Naliya, Kutch, Gujarat.

The *persica* and *heinei* subspecies of LSTL have grey-brownish upperparts, which are prominently streaked. See **147** for a *persica* LSTL with prominently streaked upperparts. The taxon *cheleensis* is said to be similar to *heinei*, but is darker and browner above in direct comparison, and often rufous-tinged brown on upperparts (Shirihai & Svensson 2018). Many individuals of the subspecies *persica*, *heinei*, or *cheleensis* do not show any rufous in the upperparts. If a rufous tinge is seen in the plumage, it is a good indication that it could be a LSTL/ASTL as I have never seen any Sand Lark with rufous in wings or on the mantle. However, Abdulali (1976) stated that a specimen collected in Karachi, in 1903, and presumed to be *adamsi*, was very rufous, a character not shown by other specimens of Sand Larks in the Bombay Natural History Society collection. It is possible that this specimen could be a LSTL/ASTL instead of a Sand Lark, and should be re-checked, as based on this study and my observations in the field, the Sand Lark never shows any rufous in mantle or wings.



Ilya Ukolov

147. Lesser Short-toed Lark: Prominently streaked crown and mantle. Note strong, deep-based bill, long primary projection, long tail, and streaked flanks. Breast-streaking is sparse and more prominent on the sides. Plumage is rather brownish (lacks greyish tinge). Location is at extreme northern range of *persica* / within range of *pseudobaetica*, but bill much stronger than in latter and it is a *persica* LSTL. Such individuals present very little challenge in identification and are easy to separate from Sand Larks as they show all typical features of a LSTL. 20 April 2018, Shirvan, Azerbaijan.

In museum specimens, the upperparts in *adamsi* are tinged isabelline-drab, whereas the upperparts of the neighbouring *persica* LSTL are decidedly warmer and more ochrous-tinged (Lars Svensson, *in litt.*, e-mail dated 02 May 2019). This is a very important feature in separating the two, but, some LSTL/ASTL show dark brownish plumage without any rufous or ochrous tinge. In such individuals, often, grey tones in plumage are lacking, which is also helpful in separating the two. Similarly, some Sand Larks can show (but very rarely) a rufous tinge near the alula, on the flanks / near the rump or on the face, when viewed from certain angles or depending on how the sunlight falls on the bird [**148**]. But, the Sand Lark usually does not show any creamy tinge in plumage, which is frequently seen in LSTL/ASTL.



Prasad Ganpule

148. Sand Lark: This individual shows some rufous on face, alula, and a hint on breast-side. Note pale rufous fringes to greater coverts, but overall plumage is typical of Sand Lark, with sandy-grey upperparts and lacking rufous on mantle and wings. Tail is short and bill looks slender. The breast is prominently streaked. Note typical compact jizz. Only rarely does Sand Lark show rufous on face and coverts. 31 August 2019, Navlakhi, near Morbi, Gujarat.

Primary projection: Both, the Sand Lark, and LSTL/ASTL show a noticeable primary projection (extension of wing tips beyond tertials), a feature which helps in separating both from *C. brachydactyla* and *C. acutirostris*. Shirihai & Svensson (2018) stated that the primary projection in Sand Lark is shorter than in LSTL/ASTL, with only two to three visible primary tips (*versus* three to four in LSTL/ASTL). This is true when the Sand Lark is in fresh plumage or in 'typical' individuals. However, as seen in the photographs given here, Sand Lark often shows a longer primary projection, which is similar to a LSTL/ASTL. This is especially true for birds in worn plumage, when the tertials are worn away and the primary projection looks quite long, with three to four primary tips visible, and is rather like what is seen in LSTL/ASTL. It is prudent to check the state of plumage (whether worn or fresh) when judging the length of primary projection, and also account for variation, especially in atypical individuals. Sometimes, Sand Larks show contrastingly darker primaries with whitish tips on folded wings [**149**]. The primary projection in *adamsi* and *krishnakumarsinhji* is similar and both can show three to four visible tips, depending on wear to the tertials.



149. Sand Lark: Note white primary tips on visible primaries which are blackish. Note contrast of primaries with tertials, sandy-grey upperparts and fine streaks on flanks. Note that outer webs of tertials are paler than inner webs; this individual shows very slight rufous wash behind eye. Bill medium strong. Short tail. 31 August 2019, Navlakhi, near Morbi, Gujarat.

Sexual dimorphism in Sand Lark: Except Alström (2019), who states that the female is smaller than the male, all other works consider the Sand Lark to be sexually monomorphic. While single birds would be impossible to sex, it is sometimes possible to sex the birds when seen in pairs. Even when two males were displaying in front of one female, it was possible to separate the sexes in two instances. The male looks larger than the female in the field when both are seen together and, sometimes, the size difference is quite conspicuous. It was seen that in a few instances, the female had warmer brown, darker ear coverts, and a subtly smaller and stubbier bill than the male, in direct comparison (see **150 a, b**).



All: Prasad Ganpule

150. a, b. Sand Lark: Male (a), female (b). Note the stronger bill in male. The female shows subtly darker ear coverts. While this could be dependent on the sunlight and angle from which birds are seen, some differences between the sexes are often apparent, when they are seen together; *adamsi*. 21 March 2019, near Balammbha, Jamnagar.

Sand Lark – juvenile: Alström (2019) described juvenile Sand Larks as having 'whitish fringes and indistinct dark subterminal bands above'. In fresh plumage, juveniles show neat white fringes to scapulars, greater coverts, tertials, and wing tips, which are worn and replaced with adult feathers after moult. The white fringes on the crown and mantle are fairly prominent. The primary projection in juveniles looks quite long, with three to four exposed primary tips. Juveniles of *adamsi* are paler and more brownish with sparse breast-streaking, compared with those of *krishnakumarsinhji*, which look much darker, with darker greyish plumage, and diffused streaking on the breast. **151–153** show the variation in juvenile/immature Sand Larks seen in Gujarat. Although a juvenile LSTL/ASTL is quite like a juvenile Sand Lark, it is quite unlikely that a juvenile LSTL/ASTL would be seen in India. A photo of a juvenile LSTL/ASTL from Kazakhstan, taken in August and presumed to be *heinei*, is given here for reference [**154**]. This individual is in post juvenile moult and by October / November would look like an adult and would be difficult to age.



151. Sand Lark: Juvenile. White-fringed crown and scapulars. See neat white fringes to tertials and primary tips, with long primary projection and three visible primary tips. Tail also looks long. Plumage is pale brownish (central mantle feathers are replaced while wings are juvenile). This bird was seen along with adult shown in **145** – presumably its parent. May 2014, near Dwarka, Gujarat.



Ashok Mashru

152. Sand Lark: Juvenile. Note rather dark greyish plumage, with remnants of white fringes to crown, scapulars, and mantle. Long primary projection with four primary tips visible. See white fringes to primaries. Diffuse breast streaking; *krishnakumarsinhji*. Compare with **151** and see differences in plumage with *adamsi*. 16 September 2012, Bhavnagar, Gujarat.



Prasad Ganpule

153. Sand Lark: Juvenile. Note the pale fringes to crown, mantle, and scapulars. The greater coverts, tertials, and wing-tips have neat white fringes. Breast-streaking is diffuse. Long primary projection with short tail. Note rather deep-based bill. A juvenile *krishnakumarsinhji* undergoing post juvenile moult. 21 April 2019, Bhavnagar, Gujarat.



Arend Wassink

154. Lesser Short-toed Lark: In post juvenile moult. Note white fringes on mantle and scapulars, indicating the age. Note deep-based bill. Rufous-buff fringes to greater coverts. It is moulting its primaries (is missing approx. p7/8) and tertials / wings. It is re-growing its tail and hence looks short-tailed. Note long primary projection. Presumed *heinei*. 24 August 2010, Fetisovo, Mangghystau Province, Kazakhstan.

Review of photographs from Gujarat

Of 150+ photographs of Sand Larks from Gujarat that I studied, I found two individuals to be different.

a) The first was a bird photographed in Kachchh [155]. This individual had a protruding and feathered bill base, with a short and stubby bill, prominently streaked crown and mantle, dark brownish plumage with prominent whitish edges to primaries, wing-coverts and tertials, strongly streaked underparts, noticeable primary projection, and a long tail. As explained in the caption, it is most likely a LSTL/ASTL, based on the structure (slender body with long tail), black-and-white streaked head and mantle, and the plumage (where grey tones are absent in the upperparts). However, bill shape and size is not like a typical LSTL/ASTL, but, as explained here, such a bill size and shape is sometimes seen in *cheleensis*, or in *pseudobaetica*. This photo has now been removed from the OBI website (Krys Kazmierczak, *in litt.*, e-mail dated 16 February 2019). It was suggested by Lars Svensson that it is possible that the long tail could be an artefact or an example of extreme variation in Sand Lark, and since bill shape and colour is similar to a Sand Lark, this could be a Sand Lark rather than a LSTL/ASTL (Lars Svensson, *in litt.*, e-mail dated 02 May 2019). However, I have not seen any Sand Lark with such a long tail in my field study, or in any photographs from Gujarat, and, along with the feathered and protruding bill base, prominent white fringed tertials and wing-coverts along with absence of grey tinge in upperparts (all of which are absent in a Sand Lark), this individual seems to be, in my opinion, a LSTL/ASTL and not a Sand Lark. Based on the weaker bill, it could be a *cheleensis* or *pseudobaetica*. Hanne & Jens Eriksen have posted photos of a LSTL/ASTL from Oman with a similar beak shape and size (www.birdsoman.com). Also note that a LSTL/ASTL can frequently show a weaker bill. I treat this as a 'putative' LSTL/ASTL as, except for the bill shape and size, none of its features match a Sand Lark's.



Jugal Tiwari

155. Putative Lesser /Asian Short-toed Lark: Prominently streaked crown and mantle, a short and stubby bill with a feathered bill base, long tail, a moderate length primary projection, white-fringed tertials and wing-coverts, prominent streaking on breast. This individual is quite heavily streaked above and below. The bill size and shape look similar to a Sand Lark's but structurally, the tail is too long and the compact jizz is lacking. The upperparts are dark brownish (lacking grey tinge), with supercilium seen behind eye. It is considered to be a 'putative' Lesser/Asian Short-toed Lark. Subspecies unknown, but based on the weaker bill, does not appear to be *persica*. 24 January 2008, Bhadreswar, Kachchh, Gujarat.

b) The second individual was photographed in Kachchh (Francis 2008). As explained in the caption for this individual [156], the features, at first glance, do not seem to fit a Sand Lark; this individual has a slender body and a primary projection with four exposed tips, stronger face pattern, brownish plumage; features that are more like LSTL. Note similarity with a *heinei* photographed from Kazakhstan [157] and compare with this individual from Gujarat, which has a shorter primary projection, subtly finer bill with a straight lower mandible, shorter tail, and less streaked upperparts, all of which fit a Sand Lark. Expert opinion (Per Alström) confirmed that this was a Sand Lark and the photos are retained on the OBI website (Krys Kazmierczak, *in litt.*, e-mail dated 16 February 2019). Similar individuals of *heinei*, if seen in the winter in Gujarat, could be quite easily be overlooked as Sand Larks unless observed closely.

Review of photographs of LSTL/ASTL from India

An overview of recent photographs of LSTL/ASTL from India is given by Christian (2019), who lists seven sightings of LSTL/ASTL from India, with a total of 21 photographs. While identification is correct in many cases, I raise identification concerns in four of the sightings, as listed below.

1) Photos 89–91 on page 81 (Faridabad, Haryana): The author quotes opinions from Tim Inskipp that it fits an LSTL/ASTL better and from Per Alström that it is probably *heinei*. However, I have different views. The photos show an individual with a rather weak and stubby bill which does not appear deep-based and is similar to a Sand Lark, and has grey-brown streaked upperparts. The tail looks quite short, which is also unlike a LSTL/ASTL. The primary projection looks short. Overall, it shows a compact jizz. This individual does not seem to be a LSTL/ASTL, and looks more like a Sand Lark, most likely an *adamsi*.

2) Photos 80–82 on page 81 (Desert National Park, Rajasthan): The identification here is tricky. The author quotes an opinion from Per Alström for these photographs as not a



Clement Francis

156. Sand Lark: The primary projection is long (with four exposed primary tips visible), the mantle is streaked, plumage looks brownish-grey and is not sandy/greyish, and bill looks strong. Compare plumage with other Sand Larks shown here. Note that structurally, this individual has an apparently slender body but its tail is very short. The plumage looks somewhat different from the Sand Larks seen in Gujarat but based on the weakly streaked upperparts, compact jizz, and subtly finer bill, it can be identified as a Sand Lark – 09 March 2008, Bhadreswar, Kachchh, Gujarat.



Pavel Parkhaev

157. Lesser Short-toed Lark: Note the strongly streaked upperparts, sparse breast streaking, and strong bill. Note that the primary projection is very long with four exposed primary tips, which make the tail look short. Note how similar this individual is to **156**. The upperparts in this individual look more streaked when compared with the bird from Kachchh, but see the almost similar bill shape and size. Also compare with **133** (a *krishnakumarsinhji* which shows similar upperpart streaking). The strong bill and plumage indicates *heinei*. 25 May 2017, Almaty Region, Kazakhstan.

Sand Lark, but likely from the *heinei* group. However, based on the results of my studies, I differ in my views. The individual in Photo 80 has a typical 'bulky' body with a short tail, similar to a Sand Lark. The upperparts look streaked but sandy-grey. The bill looks thin. The overall structure, plumage, and the bill size and shape are more similar to a Sand Lark rather than LSTL/ASTL. This individual is most likely a Sand Lark. Photo 81 shows two individuals, which again show features similar to a Sand Lark; a bulky body with short tail, sandy upperparts, and weaker bill. These birds are also most likely Sand Larks. Photo 82 shows a bird with bulky body, short tail, greyish streaked upperparts, and it has a 'large-headed' appearance. The beak is open with a drop of water on the lower mandible. The bill size and shape also fits a Sand Lark more than LSTL/ASTL. Looking at the overall structure and plumage, along with bill size and shape, this individual is most likely a Sand Lark.

3) Photos 92–94 on page 82 (Desert National Park, Rajasthan): The photos show an individual with a long tail, deep-based bill, streaked ear coverts and long primary projection. This is correctly identified as an LSTL/ASTL. In Photo 94, it is noted on Jacob (2018) that the first (extreme left) and the third (extreme right) birds are LSTL/ASTL. In fact, the first bird is a Sand Lark and in direct comparison to the LSTL/ASTL, it can be seen that the first bird is smaller, has a shorter tail, a smaller and weaker beak and is structurally different. This photo is most useful as a direct comparison between both species can be made. Similarly, in Photo 93, the second bird is most likely a Sand Lark. Thus, both individuals are not LSTL/ASTL and one is a Sand Lark.

4) Photos 95–97 on page 82 (Tal Chappar): The bird is seen only from the front and the primary projection is not visible. The tail looks rather short (see photo Macaulay Library ML 133035191), and wings and mantle look quite plain. Thus, it is difficult to judge tail length while other features (like primary projection and upperpart streaking) are not visible. The bill looks

quite bulbous and is similar to an LSTL/ASTL. But, looking at the variation seen in bill size and shape in Sand Lark and LSTL/ASTL, it is difficult to confirm the identification of this individual from the given photos and this should not be identified to the specific level.

To summarize, one of the records has both, the Sand Lark, and LSTL/ASTL in the same flock, two of the records are most likely Sand Lark, and one of them cannot be identified with certainty. These examples illustrate the difficulties in separating LSTL/ASTL from Sand Larks in India. The other three sightings given in Christian (2019) are correctly identified: by Sandip Das from West Bengal (Photos 86–88 on p. 81); Abhijeet Mhaskar from Tal Chappar, Rajasthan (Photos 83–85 on p. 81); and Nayana Amin from Tal Chappar, Rajasthan (Photos 98–100 on p. 82). Another photograph posted in 'Delhibirdpix' group on the same day, and from the same location (Prosenjit 2019) as Photos 98–100 also shows an individual with long tail, deep based bill, prominent breast-streaking, and prominent median coverts—correctly identified as an LSTL/ASTL. The same photographer posted another picture on 'OBPix' (psd 2019) labelled as Sand Lark from Tal Chappar. It also shows a bird with a long tail, deep-based bill and long primary projection, features which are conclusively that of an LSTL/ASTL. However, photos 98–100, taken on the previous day, seem to be of a different individual and this bird has a slightly deformed upper mandible.

Review of photographs of LSTL and Sand Lark in Shirihai & Svensson (2018)

In Volume I, page 73—photos on the top of the page are given as LSTL of the subspecies *persica* from Iran. However, both these individuals are not like typical *persica* seen in Iran and are likely to be Sand Larks. The rather pale and greyish plumage, weak bill, shorter primary projection, and the bulky body with the short tail, thus showing a compact jizz, are indicative of this. Lars Svensson

suggested that the birds in these photos are not conclusively identifiable as LSTLs and are probably Sand Larks, and these images would be replaced if the volume is reprinted (Lars Svensson, *in litt.*, e-mail dated 06 February 2019). Similarly, a photo of Sand Lark (p. 76 – bottom) in the same volume is given as a Sand Lark of the *adamsi* subspecies. However, this individual shows the typical slim, long, and pointed bill seen in *raytal*, which is not known to occur in the Western Palaearctic region, and hence, is incorrectly depicted since it is a *raytal* Sand Lark.

Variation in Sand Larks in Gujarat

Based on this study, both, *adamsi*, and *krishnakumarsinhji* are seen in Saurashtra and Kachchh. Birds with intermediate-type plumage are also widespread. Birds with heavier streaking on upperparts and underparts, resembling *krishnakumarsinhji*, are seen widely and such *krishnakumarsinhji*-type individuals are not restricted to Bhavnagar, the locality where they are known to occur. This has been referred to by Abdulali (1976) and Rasmussen & Anderton (2012), who state that *krishnakumarsinhji*-type birds occur in Kachchh also. In Bhavnagar, where only *krishnakumarsinhji* is said to occur, there is considerable variation in underpart/upperpart streaking and bill shape and size, as depicted in the photographs. It is interesting to note that some birds in Bhavnagar had pale, almost whitish bills, a hitherto unreported feature for this subspecies. While *krishnakumarsinhji* is in general darker, I found that the difference in plumage is also dependent on feather wear and sun-bleaching, with *krishnakumarsinhji* looking greyer and darker than *adamsi* in worn plumage.

Looking at the widespread distribution of *krishnakumarsinhji*-type individuals in Gujarat, it is possible that birds with heavy streaking on upperparts/underparts could be mistaken as LSTL/ASTL as it is not common knowledge that such individuals occur outside the Bhavnagar area. Hence, this factor has to be looked into when identifying Sand Lark or LSTL/ASTL in any part of Gujarat.

Discussion

Field identification of Sand Lark and LSTL/ASTL

Based on the results of this study, it can be seen that the identification challenge for LSTL/ASTL vis-à-vis the Sand Lark has not been adequately dealt with in various works, and the pitfalls are not well-documented. Considerable variations in the features of a Sand Lark and LSTL/ASTL exist and it can be argued that there is no single, diagnostic feature, which can separate a Sand Lark from LSTL/ASTL in the field. However, in profile the tail looks longer in LSTL/ASTL compared to a Sand Lark, and this is an important characteristic for identification though it is difficult to judge in single individuals in the field and from photographs, particularly without a reference. The shorter tail of Sand Lark apparent in the field is borne out by specimens (Table 3).

The Sand Lark is described as being 'finer billed' (Grimmett et al. 2011; Rasmussen & Anderton 2012; Shirihai & Svensson 2018) while Alström (2019) stated that it has 'proportionately longer and slimmer bill than *C. rufescens* (mainly *persica* and *leucophaea*)'. However, none of the works mention that a Sand Lark can sometimes show a bill structure similar to that of LSTL/ASTL. I observed and documented this in the Sand Larks in Gujarat, but it could also be true for elsewhere in its range where *adamsi* occurs. Hence, using bill structure as a key feature to identify an LSTL/ASTL, anywhere in India, should be done with caution.

Lars Svensson suggested that for a lark with a heavier bill, other explanation than individual variation within Sand Larks should be considered and, it might not be a Sand Lark at all, as not a single specimen of Sand Lark was found with a strong or bulbous bill in the NHM collection, London, and such a bill variation would have been represented in the fairly large specimen collection (n=90). However, it seems unlikely that these individuals with heavy bills are LSTL/ASTL and genetic analysis and measurements will clarify this. But based on this study, it seems this variation in bill size and shape in Sand Larks can possibly be attributed to individual variation but questions remain as to why museum specimens of *adamsi* do not show this bill variation. It is possible that such bill variation is seen only in Gujarat and a larger sample size taken from the state will represent the variation in bill shape and size.

The plumage for Sand Lark is described as 'rather uniform sandy-grey upperparts (with streaking most prominent on crown)' by Grimmett et al. (2011), 'pale cool grey and faintly streaked upperparts' and 'greyer and more weakly patterned above than LSTL' by Rasmussen & Anderton (2012), and 'less distinctly streaked upperparts' than LSTL/ASTL by Alström (2019). For LSTL/ASTL, Shirihai & Svensson (2018) report *heinei* as generally darker, more heavily streaked above than *persica*. They describe *cheleensis* as rather similar to *heinei* and *persica*, but generally darker and browner above in direct comparison, with fine streaks on breast often coalescing into larger spot on the breast side. The plumage in all these species may not agree with what is described in various works due to feather wear. None of the works have compared the stronger underpart and upperpart streaking in *krishnakumarsinhji* Sand Lark with LSTL/ASTL. While this factor is localized to Gujarat, it is misleading when the texts refer to LSTL/ASTL as having 'more distinctly streaked mantle and breast', when this subspecies of Sand Lark is similar.

It is also important to note that the plumage colour in photographs can be misleading since it depends, to some extent, on the contrast with the soil colour in which the bird is photographed. For example, based on my personal observations in Gujarat, it was noted that if an *adamsi* Sand Lark is seen in wet marine soil (which is blackish), the plumage looks bright sandy while in the brownish/sandy coloured soil of Little Rann of Kachchh, a similar *adamsi* Sand Lark looks paler. Such perceived colour differences are also true for LSTL/ASTL as found in *heinei*

Table 3. Tail lengths in Sand Lark and LSTL/ASTL

	Sand Lark <i>adamsi</i>		Sand Lark <i>krishnakumarsinhji</i>	LSTL <i>persica</i>		LSTL <i>heinei</i>		ASTL <i>cheleensis</i>	
	Male	female		male	female	male	female	male	female
Tail length (mm)	40-51 (n=20)	42-48 (n=14)	42-50 (n=11)	55-66 (n=20)	53-62 (n=10)	58-67 (n=24)	55-62 (n=16)	58-70 (n=11)	58-67 (n=12)

Source: Measurements for Sand Lark *krishnakumarsinhji* are taken from Vaurie & Dharmakumarsinhji (1954). All other measurements are taken from Shirihai & Svensson (2018).

in Kazakhstan, where, in the reddish sand around Kyzylkol Lake, the colour of *heinei* looks different, but is almost the same as in other parts of its range (Arend Wassink, *in litt.*, e-mail dated 09 April 2019). The plumage is similar but the soil colour influences our perception of plumage tone. Camera settings will also affect the plumage tone and it is important to get it as natural as possible. All this becomes important for field observers to watch for and photograph the birds in different conditions and select the photos with most natural tones to discuss the identification.

For primary projection, Grimmett et al. (2011) stated that in Sand Lark 'primaries extend beyond tertials on closed wing', Rasmussen & Anderton (2012), and Shirihai & Svensson (2018) stated that 'LSTL/ASTL has a longer primary projection than Sand Lark', while Alström (2019) said it has a 'distinct primary projection'. None of these references stated that the primary projection in LSTL/ASTL and Sand Lark can be similar, with Sand Lark also showing three to four primaries beyond tertials in worn plumage or in atypical individuals. Length of primary projection or number of visible primary tips on closed wing is a feature which can be variable in these species.

The sexual dimorphism in Sand Lark, with the female Sand Lark often showing darker ear-coverts, is not mentioned in any of the works cited here. This observation is of interest since, in many cases, the female Sand Lark, by showing darker ear coverts, a somewhat stronger face pattern, and a shorter and stubbier bill, looks quite similar to a LSTL/ASTL. But, its typical structure, with a bulky body and a short tail, along with the usually paler plumage, is helpful in separating it from LSTL/ASTL. Ideally, a large number of birds, of both sexes, should be trapped and sexed to confirm this.

The descriptions of juvenile plumages of both subspecies of Sand Lark, and, especially, the longer primary projection present in a juvenile, is another feature which has not been mentioned in these works. Hence, using only the primary projection as the diagnostic feature of LSTL/ASTL has another pitfall; these could also be young Sand Larks and it is important to note whether the observed individual shows any remnants of juvenile plumage and it is sometimes necessary to age the individual or this could lead to confusion / misidentification.

It may be noted that this identification problem is essentially limited to separating *adamsi* and *krishnakumarsinhji* from LSTL/ASTL. The slim, long, and pointed bill in *raytal* is also confirmed by museum studies of specimens (n=84) at the NHM, London, where *raytal* was immediately identifiable and separable from LSTL/ASTL based on the long and thin bill (Lars Svensson, *in litt.*, e-mail dated 02 May 2019). But, *adamsi* intergrades with *raytal* in northern India in Haryana (Alström 2019) and the bill size and shape in such intergrades is not known and requires further study.

For individuals correctly identified as LSTL/ASTL from photographs taken in India, it is impossible to identify the subspecies involved given our present knowledge. Hence, if there is a taxonomic revision, the correct species to be added to the national checklist will be based, purely, on museum specimens or trapped birds. It is pertinent to note here that the few photos of LSTL/ASTL presented in this paper are only to illustrate the challenges in separating it from Sand Lark and are in no way representative of their variation.

In summary, the emphasis on Sand Lark being 'finer-billed', 'less heavily streaked', or having 'shorter primary projection' is not justified as these features are variable, at least in Gujarat, and there is considerable overlap with LSTL/ASTL.

Status of LSTL/ASTL and Sand Lark in Gujarat

LSTL/ASTL is not included in the Gujarat checklist (Parasharya et al. 2004; Ganpule 2016; Ganpule 2017). However, the photographs by Jugal Tiwari, from Kachchh, are of a putative LSTL/ASTL and hence a potential candidate for the Gujarat checklist. A few birds, shown here in the photographs and treated as Sand Larks show atypical bills, which are deep-based and heavy, and which are quite similar to LSTL/ASTL; these are presumed to be Sand Larks based on structure and plumage but further confirmation by trapping and obtaining biometric and genetic data is desirable. In general, unfamiliarity with variations in plumage and bill size and shape in Sand Lark and LSTL/ASTL among birders here is an important factor and it is quite likely that LSTL/ASTL could be overlooked even if seen here and photographed.

The variation seen in *adamsi* / *krishnakumarsinhji* in Gujarat is not well understood. Molecular studies of Sand Larks should be carried out on a large scale in the state, and biometric data collected, to understand the variation seen here. I believe that if the so-called 75% rule, meaning that at least three quarters of a sample of individuals of a subspecies, selected at random, must differ diagnosably from other described subspecies within the examined species (Shirihai & Svensson 2018), is applied in the case of Sand Lark in Gujarat, the results might be interesting. Based on this study, it seems that since both *adamsi* and *krishnakumarsinhji*-type individuals are seen widely over the state, it is probable that the subspecies *krishnakumarsinhji* may not be found to be diagnosably different from *adamsi* but further research is required. It also necessary to know if there are differences in calls or songs of *adamsi* and *krishnakumarsinhji* before arriving at any conclusion. Individuals with plumage which is intermediate between these two subspecies will also have to be looked at and examined. Surprisingly, the Sand Lark has not been studied in great detail by ornithologists, Indian or European, and there remains much to be learnt. Gujarat is an ideal location to study the Sand Lark further and it is hoped that this work will inspire others to look more closely at the taxa involved and the details presented here may be confirmed or further refined.

Conclusion

The identification and separation of Sand Lark of the *adamsi* and *krishnakumarsinhji* subspecies, from LSTL/ASTL is more challenging than what is documented in existing literature. It is advisable to take as many photographs as possible and consider the following points before concluding the identification:

- a) Profile photographs showing ratio of tail length to body.
- b) Photographs with, preferably, other birds in the same image for size comparison.
- c) Photographs against multiple backgrounds, if possible, so that plumage can be accurately assessed.
- d) Field features and associated field notes that would give an indication about the sex and age of the individual bird.
- e) Proper camera settings for colour accuracy.

It is urged that all Sand Larks in Gujarat be carefully observed and photographed by birders, especially in the winter, as it is probable that the LSTL/ASTL occurs here, but is overlooked.

The Sand Larks in Gujarat need to be examined in detail, genetically, and biometric data collected on a large scale to understand the genetic distance and variation in the subspecies *adamsi* and *krishnakumarsinhji*. Existing specimens

of Sand Larks (Bombay Natural History Society: 17 *adamsi*, 9 *krishnakumarsinhji*, 5 *raytal*; NHM: 90 *adamsi*, 84 *raytal*; United States National Museum: 3; American Museum of Natural History: 4) in museums could add to the samples of this study. A study of calls/songs of Sand Larks, from different regions, will add to the integrative taxonomy of the species.

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