CHAPTER 1
General Introduction

Larks (Family Alaudidae)

Larks are considered by most observers to be typically dull, unattractive birds that are difficult to see due to their mostly terrestrial habits and cryptic colouration. As a result they are assumed to be uninteresting and hard to identify and are conveniently avoided by many bird watchers and naturalists. Yet on closer examination one will find the contrary to be true.

As a family, larks are a fascinating group, of which many species have successfully conquered some of the most hostile environments on the planet and in fact, are often the only birds capable of surviving there (Donald 2004). They are able to withstand the freezing conditions of the Arctic Tundra and the extreme heat of the Namib Desert and as Maclean (1970) stated, no family of passerine birds has shown a greater adaptive radiation in the arid regions of the Old World as have the larks. This high degree of adaptability has lead to interesting variances in distribution among larks. The songbird species with the largest and smallest natural geographical ranges in the world are probably both larks – the Horned Lark *Eremophila alpestris* (Linnaeus, 1758) and the Raso Lark *Alauda razae* (Alexander, 1898) respectively (Meinertzhagen 1951; Donald *et al.* 2003). Larks are represented throughout the world except for New Zealand and Antarctica. Despite the supposed similarity of the lark family, a huge variation exists among species with regards to distribution, behaviour and ecology. This variation is reflected in the recent rearrangement of genera and the description of several new species following taxonomic research (Donald 2004) involving morphological, genetic and song analysis (Ryan *et al*. 1998; Ryan & Bloomer 1999; Barnes 2007).

Many lark species have extravagant songs and display flights. This fact, combined with the ability of some species to exploit anthropogenic habitats has ensured larks a prominent place in literature and music (Perrins 2003). The Skylark in particular has been eulogised by many famous authors and poets including the likes of William Shakespeare, Robert Burns, John Milton and Alexander Pope.

Characteristics of the family *Alaudidae*

The family is described as small to medium sized terrestrial birds resembling pipits (*Anthus* Bechstein, 1805) in general appearance, but with scutes on the posterior surfaces of the tarsi as opposed to the pipits and most other passerines that have a single, smooth plate (Dean *et al.* 1992; Del Hoyo *et al*. 2004; Hockey *et al.* 2005). Morphologically, larks also differ from most other passerines by lacking a bony central structure (ossified pessulus) in the syrinx. Furthermore, the syrinx only has five pairs of muscles as opposed to the six to eight of other oscine songbirds (Cramp 1988; Dean *et al.* 1992). These morphological characteristics and more recent molecular assessments show that the *Alaudidae* is an ancient and highly distinct family of oscine passerines with no close relatives.

Larks have cryptic plumage that often varies to match the colour of the substratum of the region in which they occur. This colour matching with their preferred substrates divides the larks of the Kalahari region of southern Africa into reddish species in the red sand dune and predominantly grey species in the grey limestone regions (Maclean 1970). The wings have ten primaries and are mostly short and rounded except for the migratory species where they are fairly long and pointed.

Larks sing well and many species are accomplished mimics such as the Melodious Lark *Mirafra cheniana* Smith, 1843 (see Vernon 1973) of southern Africa and the Red-winged Bush Lark *Mirafra hypermetra* (Reichenow, 1879) of east Africa. The latter has been heard mimicking the calls of at least 20 other bird species during a 15-minute song (Dowsett-Lemaire & Dowsett 1978). The males of many species have elaborate display flights that may incorporate acrobatic maneuvers and wing-clapping such as the aptly named Clapper *Mirafra apiata* (Vieillot, 1816) and Flappet *Mirafra rufocinnamomea* (Salvadori, 1865) larks of southern and eastern Africa (Maclean 1985b).

Larks have a preference for open habitats and forage on the ground for seeds and/or terrestrial invertebrates. The interesting diversity of bill structures within the lark family reflects a wide array of diets and associated foraging techniques, an evolutionary feature that has allowed many larks to survive in hostile environments which are completely devoid of other birds (Donald 2004). Species with long slender bills tend to be largely insectivorous and collect much of their food by digging in the ground, such as the Hoopoe-lark *Alaemon alaudipes* (Desfontaines, 1789) which can excavate holes of up to 50mm deep to extract insect larvae (Meinertzhagen 1951). Species with short, strong bills, which include members of the *Mirafra* (Horsfield, 1821) genus, are generally omnivorous and may specialize in invertebrates or vegetable matter at different times of the year (Maclean 1970). Species that have a largely granivorous diet such as Stark's Lark *Spizocorys starki* (Shelley, 1902) have short, deep bills (Maclean 1970).

Several species have adapted to exist in some of the most inhospitable and arid places on earth, such as the Dune Lark *Calendulauda erythrochlamys* (Strickland, 1853) of the waterless Namib Desert of Namibia. Dune Larks have been seen foraging across the desert sand with a surface temperature in excess of 62°C. This ability is made possible by a 40%

lower than normal evaporative water loss for a bird of that size and an effective metabolic conversion of food into water (Cox 1983; Williams 1999).

The breeding season of larks is either seasonal or, particularly amongst nomadic species, opportunistic, when breeding generally follows irregular rains (Donald 2004). In the dry Kalahari regions of southern Africa the gap between the first rains and the onset of breeding, which can be less than a week, is related to the heaviness of the first rain showers (Maclean 1970). Lark nests are usually placed on the ground at the base of a grass tuft, shrub or stone and are cup-shaped with or without domes. The scraped, cup nests of many desert-living species have a raised rampart of small stones around the rim to prevent sand from blowing into the nest (Maclean 1970). The eggs of larks are generally cryptically spotted or streaked in shades of brown or grey, normally with a white to dull base colour, often matching the colour of the substrate (Maclean 1970; Tarboton 2001). Egg clutch sizes are larger in temperate species (four on average) than in tropical or arid zone species (2-3 on average) with the Sclater's Lark *Spizocorys sclateri* (Shelley, 1902) being unique in always laying a single egg (Lloyd 1997; Tarboton 2001). Lark nestlings are altricial with prominent black tongue and mandible spots and fledge before they can fly (Maclean 1985a; Donald 2004). Although all lark species are monogamous, some species e.g. the Spike-heeled Lark *Chersomanes albofasciata* (Lafresnaye, 1836) (Steyn 1988; Tarboton 2001) and Gray's Lark (Boix-Hinzen & Boorman 2003; Demasius 2003) occasionally breed co-operatively with "helpers" having been observed feeding chicks.

Larks as a family contain a lower percentage of endangered species (8% as opposed to an average of 14% across all bird species), probably because most lark species tend to inhabit very arid areas with low human population density and pressure (Donald 2004). However, some larks are extremely rare and eight species are listed as Globally Threatened, of which

two are “Critically Endangered”, the Raso Lark *Alauda razae* of the Cape Verde Islands and Archer’s Lark *Heteromirafra archeri* Clarke, 1920 of Somalia (Birdlife International 2004). Other red listed species are the “Endangered” Ash’s Lark *Mirafra ashi* Colston, 1982 and Botha’s Lark *Spizocorys fringillaris* (Sundevall, 1850), and the “Vulnerable” Rudd’s Lark *Heteromirafra ruddi* (Grant, 1908), Degodi Lark *Mirafra degodiensis* Erard, 1975, Red Lark *Calendulauda burra* (Bangs, 1930) and Sidamo Lark *Heteromirafra sidamoensis* Erard, 1975 (IUCN Red List of Threatened Species™ 2006).

Alaudidae taxonomy

Larks belong to the order *Passeriformes*, sub-order *Passeri* and family *Alaudidae*. The family *Alaudidae* consists of 21 genera containing just on 100 species at present (Dean 1989; Sibley & Monroe 1990; Sinclair & Ryan 2003; Hockey *et al.* 2005; Barnes 2007). Proportionally, there are more monospecific genera within the larks than within most other passerine families and numbers are constantly varying as a result of ongoing research on the taxonomy of the group (Donald 2004). Several entities that were once thought to be subspecies have, after recent studies, been elevated to full species e.g. members of the Long-billed Lark *Certhilauda* (Swainson, 1827) complex. Until recently this group consisted of a single species with five subspecies. It is now recognized as five distinct species, based on significant phenotypic and genetic differences (Ryan & Bloomer 1999). Similarly, a “new” species now known as Barlow’s Lark *Calendulauda barlowi* emerged from the Karoo Lark complex of south-western Africa (Ryan *et al.* 1998). With constant improvement of molecular techniques it is quite possible that in future more species will be recognized based on significant genetic differences, particularly within the sedentary and geographically isolated subspecies and populations.

Dean (1989), Sibley & Monroe (1990) and more recently, Sinclair & Ryan (2003), Donald (2004), Hockey *et al.* (2005) and Barnes (2007) variously group the representatives of *Alaudidae* into between 20 - 23 genera. These are listed and briefly discussed below and a full list of the world's larks as recognized by Donald (2004) is given in Appendix 1.1.

1) ***Mirafra*** (Horsfield, 1821)

The largest genus in the *Alaudidae* comprising of 28 species occurring primarily in Africa with a few species in southern Asia. This genus contains the only larks to occur naturally in Madagascar, Indonesia and Australia. *Mirafra* larks have short, rounded wings, with rufous primaries which can be seen as a panel in the folded wing. Often referred to as bush-larks, the members of this genus build nests which are partially covered by a dome (Keith *et al.* 1992).

2) ***Heteromirafra*** (Grant, 1913)

This genus consists of three localized African species found mainly in high-altitude grassland habitats. They are characterised by having short, thin tails, large heads, disproportionally large feet and long, straight hind claws and show a distinctive upright stance (Keith *et al*. 1992; Hockey *et al*. 2005). All three species have extremely restricted ranges. This genus contains the vulnerable Rudd's Lark *Heteromirafra ruddi*, of central South Africa.

3) ***Pinarocorys*** (Shelley, 1902)

Pinarocorys represents two species of large thrush-like larks that occur in the African savanna. Both are intra-African migrants and as a result have long pointed wings. Bold facial patterns and heavy streaking on the underparts are also distinctive while wing flicking during foraging is a behavioural trait specific to this genus (Serle 1943; Benson 1959).

4) ***Certhilauda*** (Swainson, 1827)

A genus made up of six, large bodied, southern African endemic and near-endemic species, characterized by their long decurved bills and stooping display flights. The Short-clawed Lark *Certhilauda chuana* (Smith, 1836) falls within this genus.

5) ***Ammomanes*** (Cabanis, 1851)

This genus represents three species of small, plain-coloured larks with distinct short, conical bills. The nostrils are concealed by feather tufts (Cramp 1988). Upper plumage colouration is greatly variable within the species and often resembles the colour of the local substrate. They are restricted to the deserts and arid plains of north Africa, the Middle East and India.

6) ***Ammomanopsis*** (Bianchi, 1905)

This genus consists of a single species, Gray's Lark *Ammomanopsis grayi* (Wahlberg, 1855), which was recently split from the aforementioned genus, based on genetic evidence (Hockey *et al.* 2005). Gray's Larks are small pale birds with conical bills and concealed nostrils. They are restricted to the remote gravel plains of the Namib Desert in Namibia.

7) ***Alaemon*** (Keyserling & Blasius, 1840)

The genus *Alaemon* consists of two atypical lark species of north and north-eastern Africa, known as Hoopoe-larks. They are characterized by their long, narrow decurved bills and long legs. Hoopoe-Larks show courser-like foraging behaviour and tend to run long distances rather than fly. The Greater Hoopoe-lark *Alaemon alaudipes* is the only lark species known to construct nests in or on top of bushes (Archer & Godman 1961).

8) ***Chersomanes*** (Cabanis, 1851)

This genus consists of two species of Spike-heeled Larks of which one, Beesley's Lark *Chersomanes beesleyi* has only recently been described as a separate species (Hockey *et al.* 2005). These African larks have characteristic long, decurved bills, short, white-tipped tails and long, straight hind claws. Cooperative breeding has been observed in *Chersomanes albofasciata* (Steyn 1988).

9) ***Melanocorypha*** (Boie, 1828)

Melanocorypha comprises six species of large-bodied larks with robust bills. They have a predominantly Mediterranean and Eurasian distribution (Cramp 1988). Among these is the world's largest lark, the Tibetan Lark *Melanocorypha maxima* Blyth, 1867.

10) ***Ramphocoris*** (Bonaparte, 1850)

A monospecific genus consisting of the Thick-billed Lark *Ramphocoris clot-bey* (Bonaparte, 1850) of north Africa and the Middle East. The massive bill has contra-curved mandibles resulting in a small aperture which is visible when the bill is closed (Dean *et al.* 1992).

11) ***Calandrella*** (Blyth, 1852)

A group of eight small, sparrow-like larks occurring in open grasslands of Africa, southern Europe and Asia. The bills are small and conical with concealed nostrils. Nests are cup-shaped with some species constructing a ramp out of stones or dried mud (Keith *et al.* 1992). Most representatives of this genus are nomadic or migratory. In Mali the Greater Short-toed Lark *Calendrella brachydactyl*a (Leisler, 1814) forms large flocks outside the breeding season often numbering tens of thousands (Donald 2004).

12) ***Galerida*** (Boie, 1828)

Galerida is a genus consisting of six species of crested larks from Africa and Eurasia that inhabit a wide range of open temperate or semi-arid habitats. The bills are robust and the nostrils concealed. The Thekla Lark *Galerida theklae* (Brehm, 1858) has an extensive range that runs from east Africa to south-western Europe (Archer & Godman 1961).

13) ***Chersophilus*** (Sharp, 1890)

A monotypic genus represented by Dupont's lark *Chersophilus duponti* (Vieillot, 1820) confined to the dry grasslands of Spain and along the north coast of Africa. The bill is long, slender and decurved and the diet consists mainly of invertebrates collected by digging (Suarez *et al.* 1982).

14) ***Eremalauda*** (Sclater, 1926)

This genus consists of two highly nomadic species from Africa and the Middle East. Both species have short, stout bills and diagnostic white eye-rings. These small larks follow local rains to take advantage of the resulting eruption of food supplies such as seeding grasses and associated invertebrates (Dean *et al.* 1992).

15) ***Calendulauda*** *(*Blyth, 1855)

This African genus contains eight species and includes the Karoo Lark complex of south-western Africa. Previously all eight members of this genus were part of the genus *Mirafra* but on account of distinct genotypic and phenotypic features are now placed in the genus *Calendulauda* (Hockey *et al.* 2005; Barnes 2007). The latest addition to this genus is the Sabota Lark *Calendulauda sabota,* formally *Mirafra sabota* (Smith, 1836) (see Del Hoyo *et al.* 2004).

16) ***Pseudalaemon*** (Lort Phillips, 1898)

Another monotypic genus is *Pseudalaemon* consisting of the poorly known Short-tailed Lark *Pseudalaemon fremantlii* (Lort Phillips, 1897) of east Africa. The bill of this species is long and stout and the nostrils concealed by bristles. A complex of bold face pattern and dark breast patches are characteristic of this species (Keith *et al.* 1992).

17) ***Lullula*** (Kaup, 1829)

This is yet another monotypic lark genus which consists of the Woodlark *Lullula arborea* (Linnaeus, 1758) of Europe, the Middle East and north-west Africa. This species prefers woodland habitats and spends much of its time perched in trees (Cramp 1988).

18) ***Alauda*** (Linnaeus, 1758)

Alauda include four species of crested Eurasian larks including the well known Skylark *Alauda arvensis* Linnaeus, 1758. This genus also contains the critically endangered Raso Lark *Alauda razae* which is restricted to the small Raso Island that forms part of the Cape Verde islands off the west coast of Africa.

19) ***Spizocorys*** (Sundevall, 1872)

This genus consists of six species of small, conical-billed, gregarious larks from Africa. Previously placed in *Calandrella*, they were separated by Dean (1989) on the basis of plumage, nest structure, song and territorial display. All have a well developed eye-ring and most have a distinct, dark tear-mark below the eye. Nests often have an apron of nesting material extending on the ground beyond the nest (Benson 1946; Dean & Colston 1988).

20) ***Eremophila*** (Boie, 1828)

The genus *Eremophila* incorporates two species of which one, the Horned Lark *Eremophila alpestris* (Linnaeus, 1758) has a circumpolar distribution and is the only lark species to have successfully penetrated the Tundra regions and the South American continent. Until the recent arrival of the Skylark in Alaska, this was the only lark to occur naturally in the New World (Donald 2004). The other species is Temminck's Horned Lark *Eremophila bilopha* (Temminck, 1823) of northern Africa and the Middle East. *Eremophila* larks have strongly marked face and breast patterns and small "horns" formed by elongated lateral crown feathers (Cramp 1988).

21) ***Eremopterix*** *(*Kaup, 1836)

This genus consists of a group of seven small, boldly coloured, compact species commonly known as Finch-Larks or Sparrow-Larks. They are widespread, occurring throughout Africa and the Middle East while one species is found across southern Asia. They all show sexual dimorphism and are mostly granivorous larks, though invertebrates are taken during the breeding season (Dean *et al.* 1992).

Southern African members of the Alaudidae

Lark species diversity is greatest in two distinct arid to semi-arid areas in Africa. These are the north-eastern arid zone which is centered around the countries of Somalia and Ethiopia and the south-western arid zone of Namibia and South Africa's Karoo region. Both regions are centres of high lark endemism and species richness (White 1961; Moreau 1966; Dean & Hockey 1989). The southern African region has 30 resident and one migratory lark species.

This total represents more than one third of the world's total number of lark species. Of these, 17 species are endemic to southern Africa while five are South African endemics: Rudd's Lark *Heteromirafra ruddi*; Red Lark *Calendulauda burra* (Bangs, 1930); Agulhas Long-billed Lark *Certhilauda brevirostris* (Roberts, 1941); Karoo Lark *Calendulauda albescens* (Lafresnaye, 1839) and Botha's Lark *Spizocorys fringillaris.*

In a study of the larks of the south-western arid zone, Dean & Hockey (1989) classified resident larks as those with generally a larger body size, a mainly insectivorous diet, occurring in pairs or small groups and that show local or limited movement. This group includes, amongst others, the Rufous-naped Lark *Mirafra africana* (Smith, 1836) and three of the local Long-billed Lark *Certhilauda* species. Nomadic larks were characterized by their smaller size, mainly granivorous diet, usually occurring in flocks ranging from a few to many hundreds of individuals, and extensive movements into areas where they may not have been recorded for several years. These included species such as Stark's Lark *Spizocorys starki*, Pink-billed Lark *Spizocorys conirostris* (Sundevall, 1850), Red-capped Lark *Calandrella cinerea* (Gmelin, 1789) and two local Sparrow-lark *Eremopterix* species. The only true southern African migratory lark is the Dusky Lark *Pinarocorys nigricans* (Sundevall, 1850) which after breeding in northern Angola and Zambia follows a regular migration route through Zimbabwe and Mozambique to north-eastern South Africa, southern Botswana and parts of western Mozambique (Dean 1974).

The Short-clawed Lark, *Certhilauda chuana*

The Short-clawed Lark was described as *Alauda chuana* (Smith 1836). The species name refers to the native Tswana (Chuana) people of eastern Botswana and north-western South Africa. In turn, the species is known in the local Setswana and Northern Sotho vernacular as

"Leswi", (pronounced leswee), an onomatopoeic name associated with the drawn-out territorial whistle (M. Mphoka & S. Maponya, pers. comm.) The type locality is described as "the country beyond Latakoo" (Smith 1836), an area to the north of the modern-day town of Kuruman in South Africa's Northern Cape Province. The Short-clawed Lark was later included in the genus *Mirafra* (Maclean 1969, 1985a) and is currently placed within the genus *Certhilauda* (Dean & Keith 1992) along with the long-billed larks *Certhilauda curvirostris* (Hermann, 1783), *C. brevirostris*, *C. semitorquata* (Smith, 1836), *C. subcoronata* (Smith, 1843) and *C. benguelensis* (Sharpe, 1904). Until recently the Karoo, Dune and Red Larks were also included in the genus *Mirafra* but have since been assigned to the genus *Calendulauda* as *C. albescens* (Lafresnaye, 1839), *C. erythrochlamys* (Strickland, 1853) and *C. burra* respectively. The genus name *Certhilauda* is a blend of Greek and Latin, a combination of the words, "*Certhia*" meaning tree-creepers referring to the decurved bills and "*Alauda"* which refers to the lark family (Hockey *et al.* 2005).

Description

Field identification of the Short-clawed Lark is not easy and many field guides have contradictory descriptions of certain characteristics of this species. Before it was placed within the Long-billed lark *Certhilauda* complex it was likened closely to the *Mirafra* genus by several authors. Hunter (1990) pointed out that Maclean (1985a) erroneously described Short-clawed Lark features as "rufous edging in the primaries, with such rufous being conspicuous in flight and the presence of a slight rufous crest". Further aspects that may lead to confusion in identification of this species is its pipit-like posture (Hockey *et al.* 2005) and the fact that it is sexually dimorphic with males being on average 20% heavier than females and 8 – 12% larger in biometric measurements than females (Engelbrecht 2005).

Below follows a description of the field characteristics of the species based on Hockey *et al.* (2005) and Keith *et al.* (1992).

> The head patterns are characterized by a broad cream-coloured supercilium that extends from the base of the bill to the nape and is contrasted by a dark brown eye stripe. The cheeks and ear coverts are light and streaked with russet while the crown has dark, bold streaking. The dorsal feathers and wing coverts are rusty-brown with dark brown centers. A diagnostic feature of this species is the broad rufous rump on which faint darker streaking can only be seen at close range. The tail is light-brown with the centre pair of rectrices showing broad tawny outer margins, while the outer rectrices have buff margins. The ventral colouration is sandy-buff except for the whitish throat and chin. This colouration can however show up deeper or darker depending on the substrate colour. The upper breast has dark streaks and spots. The fairly long, slightly decurved bill is dark grey with a pale base to the lower mandible. The eyes are brown and the legs are dark flesh to pale brown (Fig. 1.1).

Habitat, movements and general habits

Herremans & Herremans (1992) described the habitat of the Short-clawed Lark as semi-arid, *Acacia* savanna, sparsely vegetated with short grass and scattered low bushes. In south-eastern Botswana they are mainly recorded on granitic soils on fallow land, heavily grazed by livestock where there are scattered, coppicing bushes (Herremans & Herremans 1992). In the Northern Cape, South Africa, the habitat of this species is described as semi-arid Camphor Bush *Tarchonanthus camphorates* savanna (Brooke 1984; Del Hoyo *et al*. 2004).

Short-clawed Larks are resident and sedentary, showing some local movement and apparently limited dispersal abilities to occupy suitable habitat (Herremans 1997). They

occur singularly or in pairs and walk with an upright pipit-like posture, moving in short runs and stopping abruptly (Hockey *et al.* 2005). According to Herremans MLJ (unpublished data) the species will run away rather than fly when disturbed but personal observations indicate this is not necessarily the case as this behaviour is influenced by the amount of vegetation cover.

Call and display

The distinctive territorial song is only uttered by the male, usually from a prominent perch and can be described as a series of long, plaintive whistles, shorter phrases that vary regionally and a 2 – 4 note contact call (Herremans & Herremans 1992; Engelbrecht 2005). The aerial display flight, performed mainly during the breeding season is described by Herremans *et al*. (1994) as a vertical ascent followed by a stall at between 5 and 20m high and a near-vertical, nose-dive descent with closed wings and fanned tail. The wings are only opened again just before the bird alights. The descent is usually accompanied by a very high-pitched whistling call. This spectacular aerial display is typical of the *Certhilauda* species (Hockey *et al.* 2005).

Breeding

The nest is an undomed cup, usually built at the base of a grass tuft or small shrub (Hustler 1985; Engelbrecht 2005). The breeding season stretches from September to April but peaks in October to November in Botswana (Herremans 1997) and December to January in the Limpopo Province (Engelbrecht 2005). Two to three eggs are laid with hatching having been recorded after 14 - 16 days of incubation (Engelbrecht 2005). Feeding is done by both parents and fledging takes place after 11 – 12 days, well before the fledglings are able to fly (Herremans & Herremans 1992; Engelbrecht 2005).

Status, distribution and range

The Short-clawed Lark, is a southern African endemic species listed as “Near-threatened” (Collar *et al.* 1994; Barnes 2000) and “Least concern” (Birdlife International 2004) in respective Red Data publications. Its listing as a Red Data species is due to its relatively small global range (Barnes 2000). A survey by Engelbrecht *et al.* (2007) suggested an apparent range reduction of the western population in South Africa and the species conservation status is currently under review by the Threatened African Birds forum of Birdlife International (D. Butchart pers. comm.).

According to Dean *et al.* (1992) the species has a disjunct distribution, divided between two geographical areas, a western population in south-eastern Botswana and adjacent South Africa and a smaller eastern population in South Africa’s Limpopo Province. The western population’s stronghold is the rural areas of south-eastern Botswana (Herremans 1993; Herremans 1997) within the Eastern Hardveld - Open Thorn Savanna vegetation type. Scattered records exist for the North West, Northern Cape and the north-western Free State Provinces of South Africa (Dean *et al.* 1992; Herremans 1997). Engelbrecht *et al.* (2007) surveyed the entire distribution range of the species’ western population in South Africa and reported a dramatic range reduction compared with that presented in the South African Bird Atlas (Harrison *et al.* 1997). The eastern population is almost entirely restricted to the Limpopo Province’s Polokwane Plateau (Barnes 2000). This area of approximately 4400km^2 falls primarily within the Polokwane Plateau Bushveld vegetation unit (Mucina & Rutherford 2006). Due to its unobtrusive nature and highly localised distribution within its restricted range (Hunter 1991), the possible presence of the Short-clawed Lark’s eastern population was first reported by Clancey (1966) and only later confirmed by Tarboton *et al.* (1987).

The eastern population of the Short-clawed Lark's "close association" with the Polokwane Plateau and more specifically with the city of Polokwane has not gone unnoticed. The species was afforded due recognition by the Polokwane Municipality when it was decided to honour the bird by incorporating it in the municipal coat-of-arms where it now holds a prominent position (Fig.1.2).

Population numbers of the species are estimated to be well in excess of 10000 pairs for Botswana (Barnes 2000) and between 500 and 5000 for South African populations (Brooke 1984). It is estimated that in South Africa as little as 100 - 300 birds occur within protected areas such as nature reserves (Siegfried 1992). The Polokwane Nature Reserve represents the stronghold for the eastern population and Barnes (2000) estimated that between 80 - 150 birds occur in this reserve which is registered as a South African Important Bird Area (SA 006) (Barnes & Tarboton 1998). This reserve also represents the largest and one of only four formally protected areas within the eastern population's area of occurrence (Engelbrecht 2005). Thus, the Polokwane Nature Reserve is an important refuge area and possible centre of dispersal for the eastern population. Unfortunately however, it is being increasingly encroached upon by developmental activities on its borders (Engelbrecht 2005).

Polokwane City is situated in the centre of the Polokwane Plateau Bushveld vegetation unit and its municipality covers approximately 90% of this vegetation unit's surface area. The tremendous population growth of 19% experienced in Polokwane during the last decade (Statistics South Africa 2007) as well as anthropogenic impacts such as farming, urbanization, and increased mining and industrial activities are resulting in a drastic reduction of suitable, available habitat for the eastern population of the Short-clawed Lark.

The Short-clawed Lark is an insectivorous lark, and it is possible that the use of pesticides in agriculture may have a negative impact on the numbers of this species outside protected areas. It is therefore evident that habitat alteration and development within the eastern population's range, is threatening the species' long-term survival (Engelbrecht 2005). Furthermore, there are indications that the eastern population may represent a distinct taxonomic entity and several authors have called for an urgent clarification of its taxonomic status (Barnes & Tarboton 1998; Barnes 2000; Birdlife International 2004). A study conducted to estimate genetic relationships among several populations of Long-billed Lark, *Certhilauda curvirostris*, a closely related species of the Short-clawed Lark, found that the Long-billed Lark actually comprises a mosaic of several cryptic species throughout its distribution range (Ryan & Bloomer 1999). The possibility therefore exists that the two isolated populations of the Short-clawed Lark may represent distinct taxonomic entities. This will have serious conservation and management implications especially due to the abovementioned restricted population size, limited dispersal abilities and threats facing the eastern population.

Current study

Successful conservation and management of a species, requires a thorough understanding of its taxonomic status, biology and ecological requirements. This study aims to resolve the taxonomic status of the two populations of *Certhilauda chuana* using morphometric data and analyses of vocalizations as well as molecular genetic data. Furthermore, additional information is provided with regards to the eastern population's ethology, preferred habitat, ecological requirements as well as its present distribution.

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In light of the foregoing, the objectives of the study are:

- To confirm the taxonomic status of the eastern population of the Short-clawed Lark using genetic, call and biometric data (Chapter 2),
- To analyse the habitat and ecological requirements of the Short-clawed Lark (Chapter 3),
- To compare the present distribution of the eastern population with the demographic data presented in the literature (Chapter 3),
- To estimate the size of the eastern population of this species in order to re-assess its current conservation status (Chapter 3),
- To enhance our understanding of the species by conducting research into its ethology and aspects of its general biology which have not been addressed in previous studies (Chapter 4),
- To make relevant recommendations for the development of a conservation strategy to ensure the survival of the eastern population of the Short-clawed Lark (Chapter 5).

Fig.1.1. Male (left) and female (right) Short-clawed Larks showing distinct facial features i.e. prominent cream-coloured supercilium, dark brown eye-stripe, light russet cheeks and ear coverts, streaked crown, dark eye and light base to lower mandible. Plumage staining as a result of dusting can also be seen on the upper flanks of the female bird.

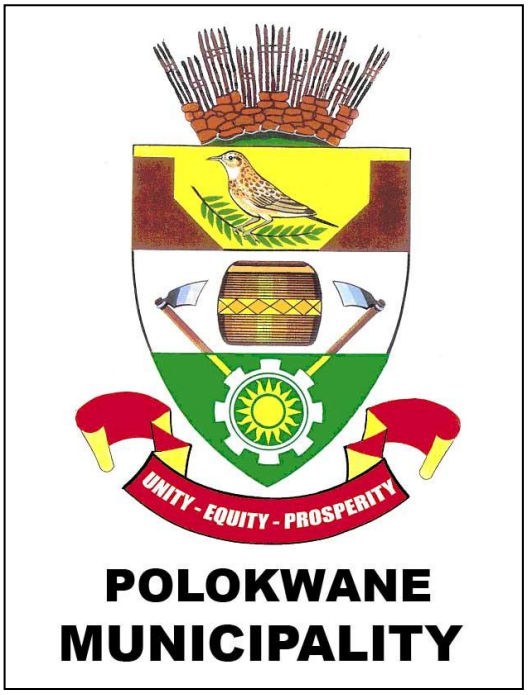

Fig. 1.2. The coat-of-arms of Polokwane Municipality featuring the Short-clawed Lark.