

Sub-Saharan Africa (Ethiopian)

6.1 Side-striped jackal

Canis adustus Sundevall, 1847

Least Concern (2004)

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Other names

Afrikaans: witwasjakkals; **French:** le chacal à flancs rayés; **German:** streifenschakal; **Indigenous names:** Amharic: Balegone Mesmer Kebero (Ethiopia); Karamojong: Oloo (Uganda); Kikinga: Ngwe (Tanzania); Kinyakyusa: Akambwe, Imbira (Tanzania); Kinyiha: Habila (Tanzania); Kiswahili: Bweha, Bweha Miraba (East Africa); Luganda: Akabowa, Ekihe (Uganda); Lugbara: Bowa (Uganda); Lwo: Too (Sudan); Madi: Uba (Uganda); Ndebele: kanka (South Africa, Zimbabwe); Runyankole: Emuha (Uganda); Runyoro: Eboa (Uganda); Sebei: Bleyit (Uganda); Shona: Gava (Zimbabwe, South Africa).

Taxonomy

Canis adustus Sundevall, 1847. Ofv. K. Svenska Vet.-Akad. Forhandl. Stockholm 1846, 3:121 [1847]. Type locality: “Caffraria Interiore”; fixed by Sclater (1900) as “Magaliesberg” [South Africa].

Description

Medium-sized canid (Table 6.1.1), overall grey to buff-grey in colour, with a white side stripe blazed on the flanks, and a diagnostic white tip to the tail. Head is grey-buffy, ears dark buffy. The back is grey, darker than the underside, and the flanks are marked by the indistinct white stripes running from elbow to hip with black lower margins. The boldness of markings, in particular the side

Table 6.1.1. Body measurements for the side-striped jackal from Zimbabwe (Smithers 1983)

TL male	1,082mm (960–1,165) n=50
TL female	1,075mm (1,000–1,170) n=50
T male	361mm (305–390) n=50
T female	354mm (310–410) n=50
HF male	172mm (160–192) n=50
HF female	168mm (153–178) n=50
E male	88mm (80–97) n=50
E female	86mm (80–95) n=50
SH male	448mm (420–490) n=9
SH female	437mm (420–460) n=6
WT male	9.4kg (7.3–12.0) n=50
WT female	8.3kg (7.3–10.0) n=50



Side-striped jackal, age and sex unknown. Nairobi National Park, Kenya, 1993.

Chris and Tilde Stuart

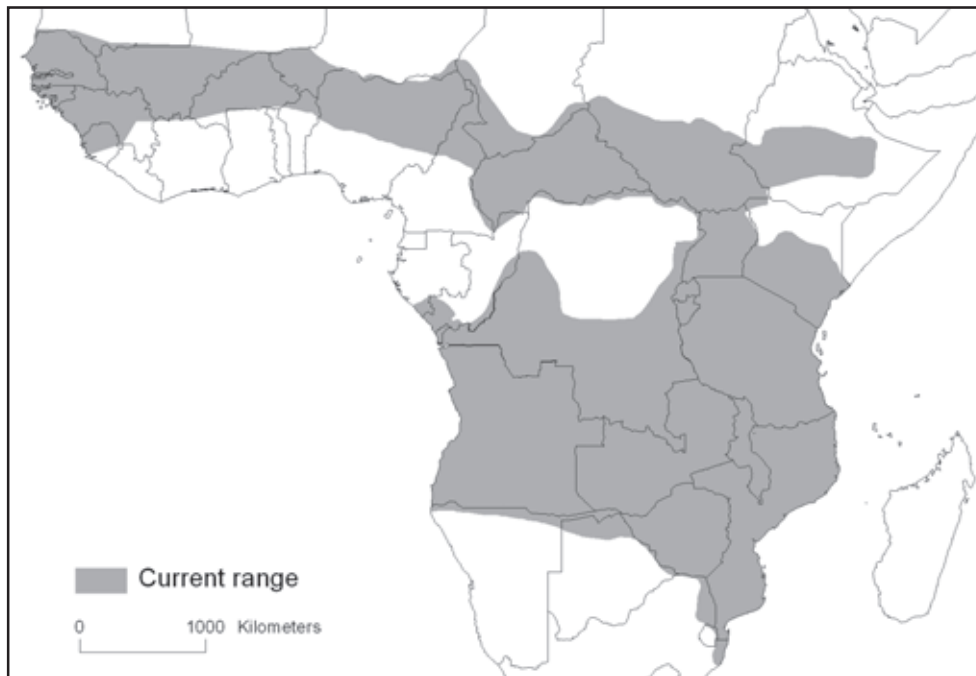


Figure 6.1.1. Current distribution of the side-striped jackal.

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stripes, varies greatly between individuals; those of juveniles are less well defined than those of adults. The legs are often tinged rufous, and the predominantly black tail nearly always bears the distinctive white tip, which Kingdon (1977) suggests may be a “badge” of the species’ nocturnal status. The female has two pairs of inguinal teats.

Skull similar to that of the black-backed jackal (*Canis mesomelas*), but flatter, with a longer and narrower rostrum and having a distinct sagittal crest and zygomatic arches of lighter build. As a result of the elongation of the rostrum, the third upper premolar lies almost in line with the others and not at an angle as in the black-backed jackal (Skinner and Smithers 1990). The dental formula is $3/3-1/1-4/4-2/3=42$.

Subspecies Allen (1939) listed seven subspecies from the continent, Coetzee (1977) five, and Kingdon (1997) recognises only three. Many authorities have pointed out that, as with the black-backed jackal, subspecies are hard to distinguish, and the differences may be a consequence of individual variation (Kingdon 1997).

Similar species Black-backed jackal (*C. mesomelas*): usually smaller size, characterised by a prominent dark saddle and black-tipped tail, as well as reddish flanks and limbs (see skull differences noted above); lacks white-tipped tail characteristic of the side-striped jackal.

Golden jackal (*C. aureus*): golden coat colour, and cream-coloured underparts; lacks white-tipped tail.

Current distribution

The side-striped jackal occurs in West, Central and southern Africa (excluding the southernmost part) (Figure

6.1.1), being replaced in the arid south-west and north-west of the continent by the black-backed jackal and in North Africa by the golden jackal. This species probably occurs extensively in the areas shown.

Range countries Angola, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Democratic Republic of Congo, Ethiopia, Gabon, Gambia, Ghana, Kenya, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Tanzania, Togo (probably in north), Uganda, Zambia, Zimbabwe (Ansell 1960; Rosevear 1974; Coetzee 1977; Kingdon 1977; Skinner and Smithers 1990; Grubb *et al.* 1998).

Relative abundance

Regional estimates of abundance are not available, but from work undertaken in two diverse habitats in Zimbabwe, it seems reasonable to assume the species is common and to estimate a total population in excess of three million. It is likely that the population is at least stable. This species’ dietary flexibility and ability to co-exist with humans on the periphery of settlements and towns suggests that populations are only vulnerable in cases of extreme habitat modification or intense disease epidemics.

Estimated populations/relative abundance and population trends Jackal densities are estimated at around $1/\text{km}^2$ in highveld commercial farmland in Zimbabwe (Rhodes *et al.* 1998), where rural density is probably highest. Density estimates from western Zimbabwe were between 0.5–0.8 individuals per km^2 . In Senegal’s Sahel

jackal density was estimated at 0.07 per km² (Sillero-Zubiri *et al.* 1997).

Habitat

Side-striped jackals occupy a range of habitats, from game areas through farmland to towns within the broad-leaved savannah zones, including wooded habitats, bush, grassland, abandoned cultivation, marshes and montane habitats up to 2,700m (Kingdon 1977, 1997; Estes 1991). The species tends to avoid very open savannah (although Rowe-Rowe (1992) mentions they occur in open grassland in north-eastern KwaZulu-Natal), thickly wooded areas and arid zones (Stuart and Stuart 1988; Skinner and Smithers 1990; Kingdon 1997), but Kingdon (1997) states that it enters the equatorial forest belt in the wake of human settlement. Side-striped jackals frequently occur near rural dwellings and farm buildings (Skinner and Smithers 1990; Kingdon 1997), and penetrate peri-urban and urban areas (Liebenburg 1990; Skinner and Smithers 1990). In Botswana, Smithers (1971) recorded them where mean annual rainfall was 400–700mm, and many authors note that the species occurs in well-watered areas (e.g., Kingdon 1977; Skinner and Smithers 1990). Where side-striped jackals occur sympatrically with golden and black-backed jackals, they may avoid competition by ecological segregation (Fuller *et al.* 1989). In such areas of sympatry, side-striped jackals usually occupy areas of denser vegetation, while black-backed and golden jackals dominate in the more open areas (Loveridge 1999; Loveridge and Macdonald 2003).

Food and foraging behaviour

Food: The side-striped jackal is omnivorous, and their diet is very responsive to both seasonal and local variation in food availability. On commercial farmland in the Zimbabwe highveld, they eat mainly wild fruit (30%) and small- (<1kg) to medium-sized (>1kg) mammals (27% and 23%, respectively), with the remainder of their diet comprising birds, invertebrates, cattle cake, grass and carrion (Atkinson *et al.* 2002a). In wildlife areas of western Zimbabwe, side-striped jackals feed largely on invertebrates during the wet season and small mammals up to the size of a springhare (*Pedetes capensis*) during the dry months of the year. This species scavenges extensively from safari camp rubbish dumps and occasionally from large carnivore kills (although they are out-competed for this resource by black-backed jackals) (Loveridge and Macdonald 2002, 2003). In the Ngorongoro Crater, Estes (1991) recorded the species competing with black-backed jackals to catch Grant's gazelle (*Gazella granti*) fawns. Certain fruits may be taken almost exclusively when in season (Smithers and Wilson 1979; Atkinson *et al.* 2002a). The species appears less predatory than other jackals, although Estes (1991) states that they may be just as predatory as other jackals when prey is highly available.

Foraging behaviour The species forages solitarily, although in western Zimbabwe family groups have been observed feeding together on abundant resources, and Estes (1991) mentions that as many as 12 have been counted at kills or scavenging offal outside towns. Atkinson *et al.* (2002b) described jackals foraging opportunistically, exploiting food-rich habitats by random walks with fractal characteristics. They are primarily nocturnal, and, where persecuted, retain extreme flexibility in their foraging strategies (Atkinson 1997a). The species has an amazing ability to find food where none seems obvious to the human observer. A pair studied in the Zimbabwe highveld remained permanently in their territory after a bush fire had apparently destroyed all available food and somehow survived (Atkinson 1997b).

Damage to livestock or game There is very little evidence for extensive predation on domestic stock (Shortridge 1934; Roberts 1951; Smithers 1971; Coetzee 1977; Smithers and Wilson 1979; Rowe-Rowe 1992), or game larger than a baby antelope (Kingdon 1977, 1997; Estes 1991). They have never been recorded running anything down, and it may be pertinent that one was seen to enter a pen to eat ducks' mash, without attempting to harm the birds themselves (Kingdon 1977).

Adaptations

The species is unspecialised and well adapted anatomically and behaviourally for opportunism. The dentition appears well suited to an omnivorous diet (Skinner and Smithers 1990). The canines are long, curved and sharp-pointed, with a sharp ridge on their posterior surfaces. The upper outer incisors are canine-like, the carnassial shear well adapted for slicing, while the first and second upper molars are broad and developed for crushing. The side-striped jackal has relatively smaller carnassials than the more carnivorous black-backed jackal (Skinner and Smithers 1990), and is certainly less adapted for total carnivory than, for example, the African wild dog (*Lycan pictus*), which has carnassials wholly adapted for shearing.

Social behaviour

Side-striped jackals occur solitarily, in pairs and in family groups of up to seven individuals (although see Foraging behaviour above). The basis of the family unit is the mated pair, which has been known to be stable over several years. In game areas of western Zimbabwe, home ranges varied seasonally from 0.2km² (hot dry season) to 1.2km² (cold dry season), whereas in highveld farmland, they were seasonally stable and in excess of 4.0km² (a third of the yearly total range). Sub-adults disperse from the natal territory, up to 12km in highveld farmland and 20km in game areas of western Zimbabwe. In highveld farmland, territories are configured to encompass sufficient patches of grassland, where resources are most available, and the

structure of the habitat mosaic appears an important factor. Home ranges overlap by about 20% in highveld farmland and 33% in game areas. The residents use the core territory almost exclusively (Atkinson 1997a).

The species has a wide repertoire of sounds, including an explosive bark (“bwaa!”), growls, yaps, cackles, whines, screams, a croaking distress call, and a hooting howl (Estes 1991; Kingdon 1997). Calling occurs all year round, but is especially common between pair members during the mating period. Jackals from neighbouring territories sometimes answer each other. Captive pups have been heard calling at eight weeks, but may start earlier (Atkinson 1997a).

Reproduction and denning behaviour

Mating is most common during June and July in Zimbabwe, and the gestation period is about 60 days. Litters of 4–6 pups (Skinner and Smithers 1990) are born from August to November, coinciding with the onset of the rainy season. Pup mortality is thought to be high, and, since up to 12 fetuses have been found in pregnant females (Wolhuter, quoted in Shortridge 1934), some reabsorption may occur (Kingdon 1977).

Abandoned aardvark holes or excavated termitaria are common den sites (Skinner and Smithers 1990), with the den chamber occurring 0.75–1.0m below the surface and 2–3m from the entrance. The same pair may use such dens in consecutive years (Kingdon 1977). After weaning, both parents assist in rearing the young, returning at 2–3-hour intervals through the night to feed the pups on food that probably is regurgitated (Moehlman 1979). The pups are aggressive towards each other, as evidenced by the degree of wounding seen.

Year-old offspring remain in (or occasionally return to) the parental territory while additional offspring are raised. It appears likely that alloparental care of young occurs in this species, as has been observed in other jackal species (Moehlman 1989), and that side-striped jackals may be more social than has been previously suspected (Loveridge and Macdonald 2001).

Competition

Side-striped jackals compete for food with a wide variety of other animals, including other canids, mustelids, viverrids, felids, primates and humans. Many of these competitors are more specialised, and the side-striped jackal’s survival is due to its own flexibility. An interesting case of inter-specific, intra-generic and intra-guild competition has been documented in wildlife areas of western Zimbabwe. Here black-backed and side-striped jackals occur in sympatry. Diet does not differ significantly between the species, but there are marked differences in habitat use. Black-backed jackals use open grassland, while side-stripes use woodland and scrub areas. Interestingly, and in an unusual and perhaps unique circumstance where a larger mammalian carnivore is

displaced by a smaller one, black-backed jackals (7–9kg) aggressively displace the larger side-striped jackal (10–12kg) (Loveridge and Macdonald 2003).

Mortality and pathogens

Natural sources of mortality Leopards (*Panthera pardus*) are the only regular predator of the side-striped jackal, although they may fall prey to other large carnivores. As noted above, pup mortality is thought to be high.

Persecution In areas of high human population density, snaring may be the commonest cause of death in adult side-striped jackals, and may account for as much as a third of adult deaths in such areas (Atkinson 1997a).

Hunting and trapping for fur None known.

Road kills In towns and suburbs, they may be run over by vehicles (Kingdon 1977).

Pathogens and parasites They are vulnerable to rabies (Bingham and Foggin 1993), distemper, tick fever (Kingdon 1977) and mange, for all of which they are known or suspected reservoirs and vectors for domestic dog infection. Computer simulations (Rhodes *et al.* 1998) suggest rabies can only persist in side-striped jackal populations where the density is very high (such as around towns), and that most rabies occurrence in side-striped jackals is a result of spill-over from domestic dogs living on communally owned land. Side-striped jackals can contract the disease from domestic dogs, other jackal species and conspecifics and may spread it to domestic stock. Intra-specific infection is more likely during periods of the year when aggressive encounters are more common such as during the mating season, and after weaning when young disperse and may interact with other jackals (Loveridge and Macdonald 2001). The spread of rabies may be more restricted in stable populations than in those disturbed by culling regimes. Rabies in jackals is probably best controlled by oral vaccination (Rhodes *et al.* 1998).

Longevity As with the black-backed jackal, longevity has been given as 10–12 years (Haltenorth and Diller 1980), but is likely to be much shorter in the wild.

Historical perspective

Jackals of unspecified species play an important role in African folklore (for example, see Elliott 1939, 1947, 1957).

Conservation status

Threats Side-striped jackals are persecuted for their role in rabies transmission and their putative role as stock killers. It is unlikely that this persecution has an effect on the overall population, but indiscriminate culling through