Origins. Part of the East African long-fat-tailed group.
Sub-types and races. Sheep in Kivu in Zaire are similar to the Rwanda and Burundi types which appear to be undistinguishable from each other. The Tanzania Long-tailed is similar to this type, the Gogo sometimes being placed here rather than with the Red Masai.
Distribution. Rwanda, Burundi, Kivu province of Zaire, south-west Uganda and extreme north-west of Tanzania.
Ecological zones. As for the goat in the same area. Sub-humid bimodal rainfall zone of highland east-central Africa from 1200 m to 2500 m altitude in rainfall of 800 mm to 1500 mm per year.
Management systems. Agro-pastoral and agricultural. Table 5 provides some general data on the importance of sheep in 3 different localities within the general distributional area of this sheep. Sheep are much less common than goats and there are still some taboos against eating and keeping them. Only 32.6 per cent of families own sheep with an an average flock size of 2.1, larger flocks in Burundi (2.5) than than in Rwanda (2.2) and Zaire (1.8). In Burundi, 50 per cent to 90 per cent of all sheep are acquired by purchase. Generalized flock structure: females 76.8 per cent (62.6 per cent post-weaning); males 23.2 per cent (6.8 per cent post-weaning). Almost 45 per cent of sheep had only temporary incisors in traditional systems. Small ruminant population in Burundi was about 1.3 million in 1984 of which 25 per cent were sheep: an administrative census for tax purposes in Rwanda estimated 350 000 sheep in 1983 but an agricultural survey estimated 693 000 in 1984.

Figure 85: Ram of the African long-fat-tailed type at Songa station, Rwanda

Physical characteristics. Relatively small size 55-65 cm. Weight: 35-40 kg; male up to 45 kg; female 35 kg.
Forehead broad and short, profile convex. Males have typical fat pads on nose and behind poll common to all African fat-tailed types.
Both sexes usually hornless. Ears medium, pendulous towards the front; occasional vestigial ears.

Neck short and strong. Chest well rounded, averaging about 72 cm in circumference. Withers higher than sacrum. Back short, slightly dipped. Croup grades into fat tail. Brisket well developed. Legs poorly fleshed. Tail long and tapering Figure 85.
Colour generally black and white pied but red admixtures not uncommon. Hair longer or shorter, stiff, fine or slightly wavy. Males may have a mane and cape over withers and shoulders and an apron of long hair from throat, down the chest to the brisket.

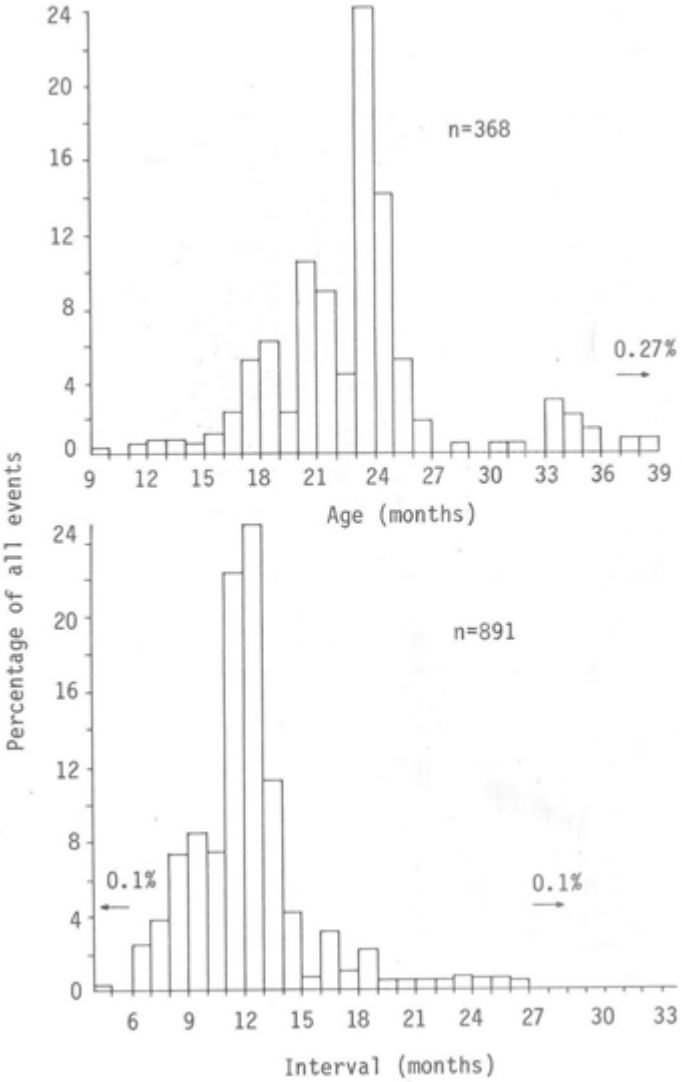

Figure 86: Age at first lambing (top) and parturition intervals (bottom) of Rwanda sheep on station

Products. Meat; (manure).

Productivity.

REPRODUCTION. *First lambing:* 714 ± 18.4 (s.e.) days (n=343) on station in Rwanda Figure 86 but not related to puberty as a breeding season and restrictions on age and weight at first service were imposed by management; affected by year, season and type (single or twin) of birth of ewe's own birth. *Lambing interval:* 406 ± 7.5 (s.e.) days (n=863) on two stations in Rwanda, varying with station of rearing, year and season of

previous parturition and increasing with parity. *Multiple births:* relatively uncommon in traditional system; single 85.5 per cent, twin 14.5 per cent (n=643). *Litter size:* 1.14 for 673 parturitions in traditional system Table 46); 1.43 on station in Rwanda, not affected by any environmental variables; 1.33 on station in Burundi increasing from 1.17 at first parity to 1.40 for all multiparous ewes. *Lifetime production:* relatively few ewes produced more than 4 parturitions in traditional system with an average of 2.29 parturitions for 643 ewes; on station few ewes exceed 5 parturitions (maximum 9) with an average of 3.44 for just over 600 ewes. *Gestation period:* 154 ±3.4 days (n=81) in range of 147 to 166 days.
Repeatability of litter size (calculated from within and between variances of ewes) 0.19 ± 0.035. Heritability (paternal half-siblings) 0.18 ± 0.086.

Table 46: Reproductive data established from owner recall in traditional flocks of long-fat-tailed sheep in Rwanda, Burundi and Zaire

Parameter	Physiological age of sheep					Overall
	Pairs permanent incisors				Temporary incisors	
	4	3	2	1		
Number in sample	413	151	150	133	405	1252
Type of birth						
single	317	117	105	36	3	578
twin	72	12	9	2	0	95
Total births	389	129	114	38	3	673
Total young born	461	141	123	40	3	768
Litter size	1.19	1.09	1.08	1.05	1.00	1.14

GROWTH. *Birth weight:* 2.6 ± 0.02 (s.e.) kg (n=1093) on station in Rwanda; 2.5 ± 0.56 (s.d.) kg (n=515) on station in Burundi, affected by sex, birth type and parity Table 47. *Weight for age:* 30 days-6.3, 90-11.9, 150- 17.0, 240-4.7, 365-31.0 kg on station in Rwanda, weights differ up to 365 days with station of rearing, type of birth (singles + 3 kg at 1 year) and sex (males + 6.7 kg at 1 year) but not by parity; males weighed 12.3, 15.9, 19.3, 21.0 and 24.5 kg at 3, 6, 9, 12 and 15 months on station in Burundi with females weighing 11.3, 15.0, 18.1, 21.0 and 24.1 kg at the same ages and 27.6, 27.9 and 29.0 kg at 18, 21 and 24 months. *Mature weights:* males 10 kg heavier than females at 3+ years.

Table 47: Birth weights (kg) of Burundi long-fat-tailed sheep

Parity	Single		Twin	
	Male	Female	Male	Female
1	2.66	2.50	2.11	1.91
2	2.90	2.80	2.20	2.17
≥3	3.09	3.03	2.34	2.30

MILK. *Lactation length:* maximum 12 weeks. *Yield:* maximum 700 g/d, total about 45 kg in 12 weeks.
MEAT. A total of 12 600 sheep was slaughted in abattoirs in Rwanda in 1983.

Research. Institut des sciences agronomiques du Rwanda, BP 138, Butaré, Rwanda. Faculté des sciences agronomiques, Université du Burundi, BP 2940, Bujumbura, Burundi. Institut de recherche agronomique et zootechnique de la Communauté économique des pays des grands lacs, BP 91, Gitega, Burundi.
References. Ngendahayo, 1980; 1982; Bizimungu, 1986; Branckaert & Habonimana, 1987; Wilson & Murayi, 1988b.

TSWANA

Origins. Part of the African long-fat-tailed group.
Distribution. Botswana, mainly along the eastern and southern boundaries. Also in Zimbabwe and Bophuthatswana close to their common borders with Botswana. Total Botswana sheep population was estimated at 165 000 in 1983 of which about 25 per cent were Karakul and Karakul crosses in the extreme south-west, the remainder being the native hair type. Numbers increased to 200 000 by 1985. Total numbers were estimated in excess of 400 000 in the late 1960s.
Ecological zones. Semi-arid to arid with a single, short, unreliable rainy season in summer and up to 50 nights per year with temperatures below 0°C. Ranges into the annual/perennial short grass and herb areas of the Kgalagadi (Kalahari) desert where Cucurbitaceae are important dry season sources of food and water.
Management systems. Pastoral, agro-pastoral and ranching. About 16 per cent of sheep are kept in commercial systems. There were 70 cooperative groups comprising 1648 small farmers with 42 693 sheep and goats in 1985. Extension services provided to these groups include dipping, vaccination, castration and some other veterinary services. Flock sizes average 14.0 in the traditional sector and 113.8 in the commercial sector. Only 12 300 traditional households own sheep (compared to 53 000 owning goats). Flock structures are related to meat production with relatively early offtake of males: females 69.9 per cent (55.1 per cent breeding > 1 year); males 30.1 per cent (16.9 per cent > 1 year).
The ram subsidy scheme provided 2 rams to producers during 1985.
Physical characteristics. Medium size 60-70 cm (male castrate 3 pairs permanent incisors 64 cm; female 61 cm). Weight: male castrate 3 pairs permanent incisors 35.7 ± 2.77 kg; female 31.7 ± 5.98 kg. This sheep is larger than the Sabi and has a fatter tail, otherwise the two types are similar. Legs rather long. Tail fat but variable in shape and length.
Colour usually white but pied sheep common. Coat of rather coarse hair.
Products. Meat.
Productivity.
REPRODUCTION. *Lambing interval:* usually once a year. *Multiple births:* very rare; only 10 of 578 parturitions produced twins over an 8 year period (1976-1983) on research station in Botswana. *Litter size:* 1.02 (n=578) on research station. *Lambing percentage* (=lambs born/ewes exposed): 86 in 1976-1983 on research station for 686 ewes.
Ministry of Agriculture estimated 50.9-68.1 "lambing percentage" nationwide in 1980-1985.

GROWTH. *Birth weight:* 3.2 kg (n=588) on research station. *Weight for age:* 4 months(weaning)-17.1, 12-26.7, 18-34.1 kg.
percentage: 44 for live weight of 26.8 kg (milk teeth), 46 at 29.3 kg (1 pair permanent incisors), 49 at 31.3 kg (2 pairs), 47 at 35.7 kg (3 pairs) for male castrates Table 48;
45 at 31.7 kg for mature (4 pairs) females. *Carcass proportions:* 47.6 per cent hindquarters in male castrates with 3 pairs permanent incisors; 49.9 per cent in mature females. *Carcass composition:* 52.2/19.2/23.6 per cent lean/bone/fat in temporary incisor castrates and 52.4/19.5/21.8 in full mouth females.

Table 48: Carcass composition of castrate and female MEAT. *Dressing* Tswana sheep

Body component and Value	Castrate				Female
	Pairs permanent incisors			Temporary incisors	Full mouth
	3	2	1		
Carcass weight (kg)	15.9	13.4	12.4	11.1	14.7
Hindquarter (%)	47.6	48.3	47.9	47.9	47.3
Neck (%)	9.5	9.0	9.2	9.0	9.0
Shoulder (%)	15.7	16.3	16.0	16.3	15.9
Thorax (%)	20.4	19.4	19.4	19.8	20.8
Loin (%)	26.3	25.6	25.3	25.1	23.1
Leg (%)	21.1	22.6	22.7	22.8	20.1
Kidney (%)	0.5	0.6	0.6	0.7	0.7
Loss (%)	0.0	0.0	0.5	0.3	0.0

The Botswana Meat Commission slaughtered 10 032 sheep in 1985 paying Pula 455 984 to farmers.
SKINS. Revenue to BMC for skins in 1985 was Pula 70 360, about 25 per cent of the value of meat revenue.
Research. Animal Production Research Unit, Private Bag, Gaborone, Botswana.
References. Owen et al, 1977; 1978; Owen & Norman, 1977; APRU 1986.

SWAZI

Origins. Along with Zulu forms part of the Nguni group.
Sub-types and races. Part of the Nguni group which also includes the Landim and other varieties in the Republic of South Africa.
Distribution. Swaziland.
Ecological zones. Sub-tropical sub-humid areas at low altitudes.
Management systems. Principally agro-pastoral. Kept in common flocks with goats (p.55) but outnumbered by them at a ratio of about 1:5.
Physical characteristics. Small size. Weight: 25-35 kg.
Horns usually present in males but absent in females. Ears short.
Legs long in relation to overall size. Tail long and carrot shaped, rather flat with less fat than other sheep of the region.
Colour usually black, brown or reddish in whole colours but broken colours not uncommon. Coat hairy, longer along back and on rib cage.

LANDIM

Synonyms. Nguni ("Landim" = Portuguese "Landrace").
Origins. Part of the Nguni group, including Swazi, Zulu and Bapedi.
Distribution. Mozambique, mainly south of the Limpopo.
Ecological zones. Semi-arid to sub-humid sub-tropical rainfall areas.
Management systems. Agro-pastoral with subsistence crops as the dominant farm enterprise. Mozambique has less than 150 000 sheep.
Physical characteristics. Relatively small size 65 cm (Table 49). Weight: male 55 kg; female 35 kg.

Table 49: Body measurements and body mass of female Landim sheep

Age		n	Shoulder height (cm)		Chest girth (cm)		Weight (kg)	
Pairs permanent incisors	Months		x	s.d.	x	s.d.	x	s.d.
0	<15.5	10	50.0	4.0	60.8	4.6	18.0	3.5
1	15.5-22.3	14	57.7	3.4	72.3	5.0	28.6	3.1
2	22.3-28.3	25	57.5	3.4	76.2	4.2	31.6	3.3
3	28.3-38.8	31	60.1	3.3	77.9	6.1	33.5	4.5
4	38.8-48.8	66	60.1	3.3	79.9	4.1	35.6	3.5
Aged	>48.8	9	61.0	2.7	80.7	4.9	35.4	3.4

Forehead broad and short, profile convex. Males have fat pads on face and poll, as do females to a lesser extent.
Horns absent in both sexes. Ears pendulous but rather short, 12.9 cm: atrophied or vestigial ears are present in 12 per cent of sheep. Toggles absent in both sexes.
Neck relatively long and fine. Girth exceeds withers height at all ages. Brisket not well developed. Withers well covered and level with tail head. Back longish and usually straight. Croup merges into fat tail. Legs poorly fleshed. Tail similar in both sexes, tapering to a point at about one-third of distance between hocks and ground, averaging 35.6 cm in length Figure 87.

Figure 87: Landim sheep at Chobela research station, Mozambique

Colour variable. Coat of coarse hair, usually short but up to 4 cm long in some cases.

Products. Meat.

Productivity.

REPRODUCTION. *First lambing:* 768 ± 289.7 (s.d.) days (n=161). *Lambing interval:* 412 ± 163.1 (s.d.) days (n=464). *Multiple births:* common. *Litter size:* 1.41 ±0.049 (s.d.) (n=753). *Annual reproductive rate:* 1.40. Age at first lambing and lambing intervals controlled by station management. Landim sheep are capable of lambing all the year round Figure 88;

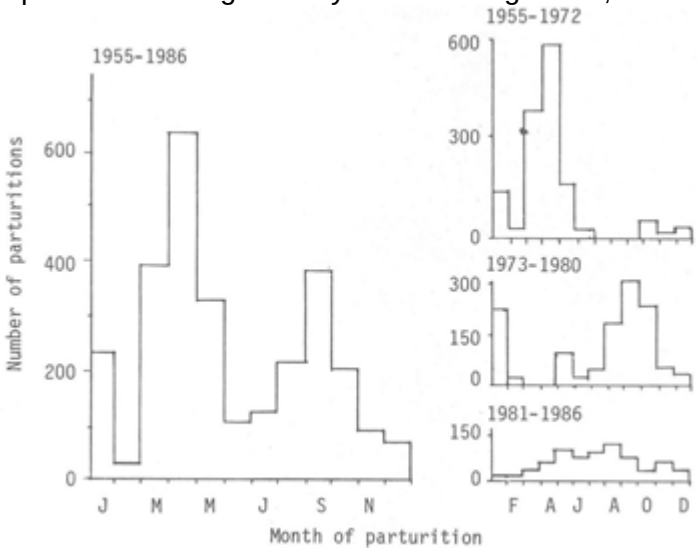

Figure 88: Distribution of lambings by Landim sheep at Chobela showing effects of management policies

GROWTH. *Birth weight:* 2.37 ± 0.441 (s.d.) kg (n=987); males 2.43 kg, females 2.32 kg, singles 2.52 kg, twins 2.24 kg. weight *for age:* 90 days-9.9, 180-15.6 kg. *Average daily gain:* birth-90 days - 83 g.

Research. Institute of Animal Production, CP 1410, Maputo, Mozambique.

References. Wilson, Murayi & Rocha, 1989; Rocha, McKinnon & Wilson, 1990a; 1990b.

SABI

Synonyms. Rhodesia.
Origins. Part of the African long-fat-tailed group.
Sub-types and races. Many local varieties.
Distribution. Zimbabwe.
Ecological zones. Semi-arid.
Management systems. Agro-pastoral. In low-potential tsetse infested areas in north-west Zimbabwe sheep are outnumbered by goats in the ratio of 12.9:1.0 and flock sizes vary from 12.7 to 5.7 for families owning in 3 Communal Areas. Most flocks are very small with less than 5 breeding ewes. Ratio of rams to ewes is about 1:5 but most flocks do not own a ram.
Physical characteristics. Large size. Weight: females 40-50 kg.
Head strong with prominent forehead and convex profile in males. Well developed pads of fat behind nostrils and behind poll in males, less well developed on dewlap Figure 89.
Horns: present or absent in males, if present they usually have only one twist; females usually polled but if horns are present they are usually straight and flat. Ears short and carried horizontally or slightly drooping; vestigial ears occur Figure 90.
Neck short and strong. Well-developed and prominent brisket.
Chest rather pinched. Withers about level with tail head. Back short and straight. Croup short and sloping. Legs long and very lightly fleshed. Tail long and tapering, generally almost reaching fetlocks but very variable in length and shape.
Colour generally fawn, brown or red but blacks also common, as are mixed colours. Coat of short, stiff hair.

Figure 89: Sabi sheep with docked tail at Matopos research station, Zimbabwe

Figure 90: Vestigial ears on a Sabi ewe (note normal ears on her lamb)

Products. Meat.

Productivity.

REPRODUCTION. *Multiple births:*fairly common at 19.0 per cent of all pregnancies (8.2 per cent of ewes mated produce multiples at 2 and 3 years, 30.6 per cent at 4 to 8 years) at Matopos. *Litter size:* 1.37 (n=305) at Makoholi; 1.10 (n=890) at Matopos. *Birth rate* (=lambs born/ewes mated): 102.9 in . ewes 2 and 3 years old, 124.6 at 4 to 8 years at Matopos and similar at Makoholi. *Fertility* (=per cent of ewes lambing): 89 at Makoholi. *Gestation period:* 150.7 days (n=281) Figure 91; slightly shorter for male lambs and for multiple births.

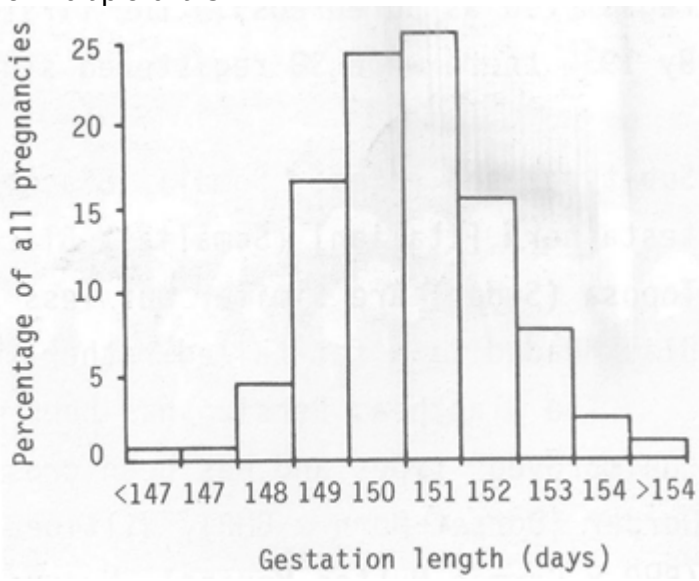

Figure 91: Duration of gestation in Sabi sheep at Matopos, Zimbabwe

GROWTH. *Birth weight:* 2.7 kg (n=414) at Makoholi; 2.57 ± 0.02 (s.e.) kg (n=1143) at Matopos. *Weight for age:* 120 days(weaning)-19.8 kg; males 5 months-21.4 (twins 16.9), 20 months-31 kg; females 5 months-19.3 (twins

14.9), 18 months-33.6, 30-34.4, 42-38.1, 54-38.7 kg; 140 days-20.9 ± 0.14 (s.e.) kg. *Average daily gain:* 0-140 days - 130.7 ± 0.09 (s.e.) g. *Post-partum weights:* 37.7 kg.
Heritability estimates of birth weight were 0.11 ± 0.064, of 140 day weaning weight were 0.08 ± 0.059 and of daily gain were 0.10 ± 0.062.
MEAT. *Dressing percentage:* 45.3 and 41.6 at live weight of 31.1 and 30.2 kg for male castrate single and twin at 20 months.
Research. Department of Research and Specialist Services, P.O.Box 8100, Causeway, Harare, Zimbabwe.
References. Chigaru, 1971; Hale, 1986; Tawonezvi & Ward, 1986; Chifamba et al, 1988a; 1988b.