

Module # 3 – Component # 5



Topi and Tsessebe

Damaliscus lunatus

Damaliscus lunatus lunatus - Tsessebe
Damaliscus lunatus jimela - Topi

TRAITS

Resembles a hartebeest but smaller and darker, without elongated forehead; horns S-shaped, not sharply angled.

Height and weight: males 115cm (104 - 126), 130 kg (111 – 147) ; females 113 cm (105 - 118), 108 kg (90 – 130) (Serengeti N.P.).

Horns: ringed, lunate in tsessebe, 30 - 40 cm; more parallel, lyrate, and longer in other races, 45 - 60 cm in korrigum (*Damaliscus lunatus korrigum* – a West African subspecies) , the record (71 cm) equal to hirola record.

Coloration: short, glossy coat, tan with purple blotches increasing in hue from west to east and south to north, reverse countershading (darker below, lighter above); adult males darker than females, young calves tan without markings.

Scent glands: preorbitals with central duct, naked, developed in both sexes, secrete clear oil; hoof glands in forefeet only.

DISTRIBUTION

D. lunatus has a very extensive geographical range but a naturally patchy distribution reflecting specialization for certain grassland communities in the arid and savanna biomes. Hunting and habitat destruction by man have greatly accentuated the trend toward isolated populations. The tsessebe is isolated by hundreds of miles of *miombo* woodland from the nearest topi populations of East Africa. In the Northern Savanna and adjacent arid zones, *D. l. tiang* (up to

750,000 in Southern Sudan) and *korrigum* fill much the same niche as the wildebeest in East and southern Africa.

ECOLOGY

The topi favours grassland habitats, ranging from vast treeless plains to lightly wooded bush and tree savanna. It prefers medium grassland (up to knee-high). Where woodland and open grassland adjoin, it frequents the edge, withdrawing into the shade during hot weather. Though occasionally found in rolling uplands (e.g., Akagera Park, Rwanda), the topi generally sticks to flat lowlands and seldom occurs above 1500 m. This species eats virtually nothing but grass. Its long, narrow muzzle and mobile lips are adapted for selective feeding; it harvests the tenderest green blades, avoiding mature leaves and stems.

Like most grazers, it relishes greenflush but is unable to harvest very short pasture as efficiently as bulk feeders like the wildebeest, waterbuck, and zebra. During the rains topis avoid very short and very mature pastures; in the dry season they prefer plant communities with the greatest abundance of grass. They do not have to drink when their fodder is green, but drink every day or 2 when subsisting on dry grass. The densest populations occur where green pastures persist through the dry season, notably on plains bordering lakes and rivers subject to seasonal flooding. Tiang and *korrigum* migrate between the arid and savanna zones.

SOCIAL ORGANIZATION

Topi social and reproductive organization appears to be more variable than that of any other antelope. Depending on the type of habitat and ecological conditions, topis can assume any dispersion pattern between perennially sedentary-dispersed and perennially mobile-aggregated. Mating strategies range from large territories with resident female herds to small temporary territories in aggregations, to breeding leks or arenas (table 8.1). And depending on habitat and social organization, calves may be either *hidlers* or *followers*.

Table 8.1 Summary and Comparison of Topi Arena and Conventional Territories

Arena	Conventional
Ecotype	
Broad floodplains, especially at intersections.	Islands of grassland surrounded by unsuitable habitat.
Population Density	
High	Low
Movement-Distribution Pattern	
Mobile-aggregated; equal access to pastures for bachelor males.	Sedentary-dispersed; bachelors relegated to marginal habitat.
Territories	
Traditional sites, individual attachment to site, seasonal occupancy (rains).	Traditional sites, individual attachment to site, year-round to seasonal occupancy.
Territorial Function	
Reproduction only; males leave territories to feed.	Resources and reproduction; full selection of preferred plant communities required in perennial territories.
Male Competition	
For central positions in arena and directly for females. Males spend much time in aggressive encounters.	For habitat most likely to attract females (= best pastures). Males spend less time in aggressive encounters.
Mating	
Females in estrus come to arena.	Females breed in conventional territories, remain in herd.

SOURCE. Adapted from Monfort-Braham, 1975.

The sedentary-dispersed mode is characteristic of topis / tsessebes inhabiting patches of grassland in woodland habitat. Territories vary from a half to 4 km² and may or may not have common borders, depending on the extent of the patches. The territory contains the resources needed to sustain a herd of 2 - 6 (rarely over 10) females with their young of the year. Serengeti females have been known to frequent a single territory for 3 years. The resident male has a more or less exclusive harem.

Not only are such herds closed (actually semi-closed, since persistent females may gain acceptance), but the females play an active part, as does the male, in preventing outside topis of either sex from settling on their property (author's observations).

In the bull's absence, the dominant cow may actually behave like a territorial male, approaching intruding cows and even bulls in the *rocking canter* and performing the *high-stepping display*. The sexes look so alike that this mimicry is apparently as convincing to other topis as it is to the human observer, at least from a distance. I have seen cows from a neighbouring herd which had grazed past the border turned back in this way. But once the male-impersonator's bluff was called by a feisty female intruder and another time by a passing male that saw through the disguise.

Where topis live at relatively high density (up to 47/-km²), notably on alluvial plains, the great variability in their social organization is most apparent. For example, in Uganda's Queen Elizabeth N.P. (before being shot out during the Tanzania occupation) all the topis of the Ishasha Plain remained aggregated the whole time in 1 or more concentrations of up to 2000 head. They circulated constantly and unpredictably across the 80 km² plain, which is a patchwork of different grassland types. A temporary territorial network was established wherever an aggregation settled down for a few hours or days, with the usual result of fragmenting and segregating the concentration. Spacing between territorial males was as little as 50 m, close to the minimum in a conventional territorial system.

In Akagera N.P., Rwanda, the fittest males (written before the civil war and partition of the park in the 1990s) gather on traditional leks every year at certain locations where large open plains intersect. A hundred males were counted on the largest arena, spaced 200 - 250 m apart on the periphery down to 25 m near the center. Some known bulls managed to reclaim the same territory for 2 or 3 years in a row. Females and young remain aggregated in herds of 200 - 300 up to 1000 head which circulate outside an arena, accompanied by hundreds of bachelor males. Most females enter the lek singly or in small groups on their day of oestrus and are bred by centrally located males. Central grounds are so small and worn that the owners have to leave in order to graze (cf. kob). They do so hurriedly during lulls in activity. As mating tapers off late in the rains, the lek network begins to break down and later all the topis migrate 30 km or so to a dry-season range. The differences between arena and normal territorial organization

are summarized in table 8.1. Topi lekking behaviour has also been observed in Kenya's Masai Mara Reserve.

The topi's maternal bond lasts only a year, or until the next calf is born. Calves as young as 8 months are sometimes seen in bachelor herds, and most yearling males join by the end of the calving season, or at latest by the time of the rut 4 months later. Bachelor herds often include yearling females, too, for territorial males tend to evict them along with the males. Once they become detached from their mothers, the *head-in display* no longer protects yearlings from the bull's intolerance. The aggressive treatment of yearling females is unusual and not easily explained, unless it reflects some difficulty in distinguishing the gender of immature topis.

Topis mature about a year sooner than hartebeests. Well-fed females reach adult size in their second year and may breed at 16 - 18 months. Males are nearly as tall but weigh less than adults by the end of their second year and mature in their third year.

However, the age when they become territorial depends on such factors as population density and sex ratio; perhaps relatively few males gain the opportunity to breed before they are 4 years old. Spirited contests and fights can often be seen in bachelor herds, particularly early in the morning (fig. 8.9).

ACTIVITY

Serengeti topis typically have 2 daily grazing/activity peaks, feeding in the morning until 08h00 or 0900 and in the afternoon beginning after 16h00 until dusk. The intervening hours are devoted mainly to ruminating and resting, interrupted by short, relatively unsynchronised feeding bouts, and in the dry season by going to water. This can entail a round trip of 5 km or more and meetings with other topis at water on neutral ground, or en route while passing through other territories. Rather than be subjected to harassment from territorial males and females, travelling topis tend to pass along territorial margins, although these are often overgrown areas (where risks of lion or leopard ambush are greater) that they normally avoid (author's unpublished. observ.). Topis tend to feed longer and at shorter intervals during the rains than during the dry season, when the more fibrous diet requires long processing.

Dozing topis sometimes lie with the mouth resting on the ground supporting the head, looking (with their curving horns) like a claw hammer resting on its face. Still more peculiar, topis in aggregations often rest standing in parallel ranks, with eyes apparently closed, but keep nodding to one another. This behaviour is particularly frequent in male groups and seems to be a form of signalling, but the meaning has yet to be deciphered. Topi herds often, possibly even routinely, make a move at the end of their afternoon feeding peaks, just after dark before settling down to ruminate (cf. sable). Young calves then usually leave the herd one by one and go off 100 m or so to bed down for the night. The adults and older

calves have 1 or 2 activity periods during the night, beginning before and lasting until well after midnight (author's observ.)

TERRITORIAL BEHAVIOUR

Advertising: standing, cantering, and walking in *erect posture*, *high-stepping* (courtship); defecating in crouch (as in hartebeest, fig. 8.1); *ground-horning*; *mud-packing*; *shoulder-wiping*; grunting.

Topis and termite mounds go together (fig. 2.4). Every desirable territory has elevations, some of which are regularly used as vantage points. But females and young use them too, so not every topi sentinel is a male advertising territorial status- it may be a female in the *alert posture*. Nor are *preorbital-gland marking*, *ground-horning*, and *mud-packing* confined to territorial males. Both sexes perform these acts in the same way; only the frequency and vigour vary.

Topis insert grass stems into the preorbital duct, if necessary after preparing a stem by biting it in two at the desired height (cf. oribi), and agitate it until it is well-coated with the gel-like secretion. Then they anoint their foreheads and horns by weaving head movements. This is an impressive exercise in controlled movement, but the purpose is totally obscure. It is not a major activity and plays no obvious role in territorial marking.

Far commoner and very important as a display of aggressiveness, if nothing more, is the topi habit of *soil-horning* and *mud-packing*. Topis often get down on their knees, rub their faces in and plow up a patch of mud (e.g., the base of a termite mound or margin of a water hole). Next comes vigorous head-shaking and mudslinging, followed by wiping the horns on the brisket and back (note that topis wipe themselves with their horns, hartebeests with their heads). After a good rain half the topis one sees are mud-streaked and their horns, caked with mud, look unusually impressive.

Harem males display a proprietary interest in females and young that is otherwise unusual in territorial males. While remaining vigilant against trespassers, a preoccupation that often keeps them on patrol or on sentry duty atop a mound, they play a watchdog role, warning the herd of danger (alarm snorts), leading or directing the retreat, and stationing themselves between the herd and predators. They sometimes threaten and even chase jackals and hyaenas that prowl close to a herd. Males in aggregations, by contrast, are preoccupied with meeting and detaining as many females as possible. They are much more active and interactive, continually on the move and conspicuous as they canter, wheel, and turn in the *erect posture*, *grunting* and performing courtship displays (see below).

AGONISTIC BEHAVIOUR

Dominance/Threat Displays: *lateral presentation in erect posture, nodding/head-casting, horn -sweeping, cavorting, ground-horning, head-shaking.*

Defensive/Submissive Displays: *head-in posture, head-low posture, lying-out.*

Fighting: *clash-fighting, ramming, front-pressing, twist-fighting.*

Dominant topis, notably territorial males, need only adopt the *erect posture* with ears cocked and tail out to intimidate and impose their will on lower-ranking individuals. The performer stands or walks very stiffly. Females and young get out of the way and respond with the *head-low posture* or the *head-in display* (like hartebeest, fig. 8.4). Territorial males block the way of intruding males by *standing broadside*, often combined with *cavorting* and emphatic nodding (*head-casting*). Tsessebes emphasize the latter more than East African topis: males compete to see which can throw its head highest, to the point of actually rearing (fig. 2.6).

Other common elements of the *challenge ritual* include *touching/sniffing noses, pawing and defecating, kneeling and ground-horning, cavorting, displacement grazing and grooming, horn-sweeping*, confrontation in combat attitude, and brief sparring or fighting. Males with large territories interact less but often at higher intensity, usually on the common border, than closely spaced males, which usually invade one another's property to initiate an interaction (cf. wildebeest). Like hartebeests, when topi bulls fight, the winner often chases the loser a long distance.

REPRODUCTION

Topis are strictly seasonal breeders in most of their range. However, some equatorial populations have 2 calving peaks (e.g., in Virunga N.P., DRC), and breeding may be perennial in the population north of the Tana River, Kenya. Elsewhere, topis habitually calve at the end of the dry season, unlike most other associated mammals (but cf. impala, warthog). Yet calf survival is equal to that of species that calve during the rains. Gestation is 8 months.

SEXUAL BEHAVIOUR

High-stepping with head up, ears down, and tail out; *lowstretch*; *immobile stance* (*in erect posture*) behind female (pre- and post-copulation).

The bull's approach with head high, often in a *rocking canter*, may be intimidating, but dropping the ears and *high-stepping* are addressed only to females. When close, the displaying male slows down and lifts a foreleg at the knee with each stride, his movements slow and deliberate (fig. 8.10). The more intense the

display, the higher the forelegs and tail are raised. The contrast between the pale lower legs and the dark purple of the upper legs and shoulders makes *high-stepping* very conspicuous. Territorial bulls returning from a challenge ritual routinely show off in this way to their cows. Males also approach in the more familiar *lowstretch*, ears cocked and nose outstretched to sniff the female's rear, meanwhile uttering a strangled cry resembling a calf's bleat. There is no *urine-testing* sequence.

Females typically react to being sniffed by rapidly wagging the tail and running a meter or so. Having detected a cow in heat, the bull follows closely in *lowstretch*, *bleating*, until she stands, tail raised, head up, ears up and back, in a pose similar to the *head-in display*. Prior to and after mating, the bull remains immobile in a very upright stance a meter behind the cow (fig. 8.1 I). Then he advances, lowers his muzzle to the base of the cow's tail and mounts. Cows mate many times, with the same or different males depending on circumstances, during their 1 – 1 and a half days in oestrus.

PARENT/OFFSPRING BEHAVIOUR

The topi's calving strategy is intermediate between the ancestral *hider* system and the *follower* system of the wildebeest. Yet apart from breeding seasonally and the fact that calves may not *lie out* (at least by day), the topi has developed virtually none of the adaptations seen in the wildebeest and retains all of the characteristics of the *hider* system (cf. blesbok). Even in aggregations whose mobility and presence on open plains should select for the *follower* strategy, at least some calves leave and seek hiding places for the night, just as they do in sedentary small herds, and females in resident herds isolate to calve like typical *hider* species. Some even leave the herd's range and stay away for weeks, giving birth and remaining on guard during the calves concealment stage in areas with more cover than usual (author's observations).

ANTIPREDATOR BEHAVIOUR

Alert posture; snorting, style-trotting, stotting, cavorting in flight (defiance?).

Newborn topis are vulnerable to predators as small as jackals, if found in hiding and unguarded. Cheetahs run down young up to the yearling stage, but predation on adults appears to be light where other prey species are more numerous, as in the Serengeti. Even a female topi with an injured leg who limped badly for weeks was unnoticed by the hyaenas and lions, as though adult topis were simply discounted as a prey species (author's observations).

SOURCES

Bell 1970, Child, Robbel & Hepburn 1972, Duncan 1975, Duncan 1976, Huntley 1972, Jewell 1972, Joubert 1972, Joubert 1975, Monfort-Braham 1975, Sachs 1967, Vesey-FitzGerald 1955, Ward 1962, Garstang 1982, Gosling 1991, Gosling, Petrie & Rainy 1987, Hillman and Fryxell 1988.