Journal of Natural Sciences Research www.iiste.org
ISSN 2224-3186 (Paper) ISSN 2225-0921 (Online)
Vol.14, No.11, 2023

Ethiopian Endemic Menelik's Bushbuck (Tragelaphus scriptus meneliki, Neumann 1902): Distribution, Behavioural Ecology and Threats

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Abstract
Bushbuck (Tragelaphus scriptus) is an even-toed ungulate (Artiodactyla) which are small, solitary, and bush dweller antelope. It occurs widespread in Africa. However, one of their subspecies, the Ethiopian endemic Menelik's bushbuck (Tragelaphus scriptus meneliki) is confined to the highland forests of the country. At the first time, Menelik's bushbuck was described by Matschie, in 1912 from the Managasha forest West of Shoa. Even though, Menelik's bushbuck is somewhat similar in appearance to the mountain races of the East and South African bushbuck, uniquely, both males and females have geometrically shaped white patches or spots on the ears, chin, tail, legs and neck as well as a band of white at the base of the neck. Females and young are mainly reddish, and males are darker. Both sexes and all age groups have a white underside on the broad woolly tail and white flashes above their black hooves. They are mixed feeders of different parts of plant**.** Moreover**,** Menelik's bushbuck are major threaten through habitat destruction, poaching and disease**.** Predictably, these threats come from anthropogenic, largely in the form of land-use pattern, livestock grazing, deforestation and other human activities.
Keywords: Behaviour, Endemic, Menelik's bushbuck, Threat
DOI: 10.7176/JNSR/14-11-01
Publication date: September 30th 2023

Introduction

The Bushbuck (*Tragelaphus scriptus*) is an even-toed ungulate (Artiodactyla) belonging to the family Bovidae and subfamily Tragelaphus (Dankwa-Wiredu and Euler, 2002; Meintjes, 2012). Bushbuck are small, bright-chestnut to dark-brown coloured antelope. Adults range from 70-80 cm in shoulder height and 30-45 kg in weight. They have the presence of vertical white stripes and spots on the sides of the body, to a greater or lesser extent, broad ears, short bushy tail, dark above and white below. The ram has short almost straight horns with a slight spiral and ridge (Meintjes, 2012).

Bushbuck (*Tragelaphus scriptus*) are described as solitary bush dwellers (Wronski 2004, 2005). The bushbuck, inhabits more or less dense forest or bush-land habitats. The bushbuck is an extremely flexible species surviving in numerous anthropogenically influenced habitats and adaptability in habitat use may be a key to its survival, even in densely settled areas and urban surroundings with severe hunting pressure (Wronski, 2005). Bushbucks are primarily browsers and also known to graze occasionally. Grazing is reported to be more frequent during the night than the daytime. Their diet includes leaves and fine twigs as well as flowers, fruits and grass (Dankwa-Wiredu and Euler, 2002).

The Bushbuck (*T. scriptus*) is one of the most widespread antelopes in Africa. It occurs from Senegambia to the Cape Province in South Africa (Wronski *et a*l., 2006C). Over the last decades, the bushbuck has received little attention by animal biologists and conservationists since it is found in almost all habitats of sub-Saharan Africa and occurring in approximately 73% of the total land area (Moodly and Wronski, 2009). The bushbuck formerly occurred widely in sub-Saharan Africa wherever there was adequate cover and access to permanent water. But it is absent in the primary lowland forest of the Congo basin, in the Somali-arid area (Horn of Africa) and in the South and South West African arid and semi-arid habitats (Moodley and Bruford, 2007).

The Ethiopian endemic Menelik's bushbuck (Tragelaphus scriptus meneliki) is confined to the highland forests of Bale, Menagesha Suba, Denkoro and other highland areas (Yazezew *et al*., 2011) and East and West of the Omo River and South of the Blue Nile (Wronski *et al*., 2006b). *Tragelaphus scriptus meneliki* also called Arussi bushbuck or black bushbuck named after Emperor Menelik II (1844 –-1913) of Ethiopia. It was described from the Managasha forest West of Shoa by Matschie, in 1912 (Moodley *et al*., 2008).

Menelik's bushbucks are mixed feeders. They feed on leaves, shoots, fruits, flowers and dig up various tubers and roots (AMWCDO, 1981; Yazezew *et al*., 2011). The most common habitat of Menelik's bushbuck is the dense bushes in the highland forests up to the tree-line of 4000 m (AMWCDO, 1981). The major threats of Menelik's bushbuck are habitat destruction and poaching, disease (e.g rinderpest) (Wronski *et al*., 2006a). Menelik's bushbuck is classified as least concern by the IUCN (IUCN, 2012). The actual population size of Menelik's bushbuck has been unknown (Tefera, 2011), and little is known about the distribution, habitat association, food

preferences and behaviour of this ungulate in (Yazezew *et al*., 2011).

Taxonomy and distribution of Bushbuck (Tragelaphus scriptus)

The Bushbuck (*Tragelaphus scriptus*) was first described by Pallas in 1766 (Wronski, 2004). It is a medium sized sexually dimorphic antelope (Wronski, *et al*., 2006d; Apio, 2003*)*. Females are hornless and smaller than males. Bushbucks are comparatively easy to recognize by differences in the pattern of individual coats (Estes, 1991). This is valid for males and females, where this type of pattern is sufficiently widespread in the population to allow large number of individuals to be recognized. The colour of bushbuck is fawn (a pale yellowish brown colour), "harnessed" with straps on the body. Male bushbucks have a darker colouration than the females, resulting in a more striking differentiation between their white stripes and spots. As males age, their coats become darker and they look even more striking. All have white under parts and white markings on the face and ears. They have an arched back posture and the rear legs are a little longer and more muscular than the forelegs (Wronski, 2004).

Bushbuck *(Tragelaphus scriptus)* is an even-toed ungulate (Artiodactyla) belonging to the family- Bovidae, Subfamily- Tragelaphus, Genus –*Tregalaphus,* species –*scriptus* (Dankwa *et al*., 2002). *Tragelaphus scriptus* is one of the most widespread antelopes in Africa; occurring from as far West as southern Mauritania and Senegal, East across the Sahel to Ethiopia and Somalia and South in all countries to South Africa (Apio and Wronski, 2005). The families of Bushbuck occur widely in sub-Saharan Africa, wherever there is cover to conceal it, from sea level to 4,000 m, from rainforest edge to patches of gallery forest and bushes near water in the sub desert. Bushbucks are predominantly browsers and inhabit dense bush-land, riverine forests and similar habitats (Estes, 1991; MacLeod *et al*., 1996). It is naturally absent in dry and semi-arid regions and in extensive areas of closed-canopy forest. Its ability to survive in human-dominated landscapes and withstand heavy hunting pressure has enabled it to persist over much of its former ranges (East, 1999; Dankwa and Euler, 2002).

Tragelaphus scriptus is a generalist and herbivore that has kept pace with environmental changes by local adaptation to changing habitats, since this sedentary species appears to require water, cover and the availability of grazing or browse (Kingdon, 1997). As a consequence, *T. scriptus* is the most widespread and ecologically and taxonomically diverse of all spiral-horned antelopes, occurring in approximately 73% of the total land area of sub-Saharan Africa (Moodley and Bruford, 2007; Moodley, *et al*., 2008). Local adaptation across this vast and heterogeneous range has resulted in marked geographic variation in body and horn size, coat length and pattern, colouration and sexual dimorphism. Dorsal stripes and patterning are stronger in bushbuck populations from African forest block (harnessed type) and weaker in the bushbuck from the southern and eastern half of the continent (sylvan type). Montane populations are often darker with more hairs than those living in the surrounding lowlands (Wronski, 2004). Over 40 subspecies of bushbucks are known, which vary in both colouration and type of habitats they frequent (Moodley and Bruford, 2007).

According to Grubb (1985), geographical variations of *Tragelaphus scriptus* can be interpreted by recognition of five most distributed groups of subspecies in Africa. These are *T. s. scriptus*, the western type subspecies, *T. s. sylvaticus*, the south African type and two small localized populations, one in the mountains of Ethiopia (*T. s. meneliki*) and another along the coastal areas of Kenya (*T. s. fasciatus)*. Both Menelik's bushbuck (*T. s. meneliki*) and Common bushbuck (*T. s. decula*) are found in different parts of Ethiopia. The Ethiopian highlands East and West of the Omo River and South of the Blue Nile are inhabited by the endemic Menelik's bushbuck (Wronski *et al*., 2006b). However, Common bushbuck (*Traglaphus scriptus decula*) is a widely distributed antelope in the sub-Saharan Africa except for the extreme desert regions (East, 1999; Moodley and Bruford, 2007). The animals mostly occur up to 4000 m on the East African mountains and they live in various habitats, including rain forests, forest-savanna mosaics, and bush savannas (Wronski *et al*., 2009). The main habitats of bushbucks are woodlands and dense forests (Apio and Wronski, 2005).

Unique features of Menelik's bushbuck

Menelik's bushbuck is an attractive, medium-sized bushbuck with a rather long coat of dark brown hair (Fig. 1). Usually, there are contrasting white patches on the throat, base of neck and inside of legs, and a few white spots on the thighs. The head is reddish brown with a black nose stripe and imperfect white chevron between the eyes (Yazezew *et al*., 2011). Male of Menelik's bushbuck has a dark grey-brown pelage that is pretty and longer than other bushbucks, with virtual absence of pale dorsal markings (AMWCDO, 1981; Yalden *et al*., 1984). The female is bright rufous, with a dark suffusion on neck and saddle (Moodley *et al*., 2008).

Figure 1: The hides of Menelik's bushbuck (A, male B, female) (Photo: Mastewal Hailemariam, 2013)

The Menelik's bushbuck is somewhat similar in appearance to the mountain races of the East African bushbuck in Kenya and the Cape bushbuck in South Africa (Dankwa and Euler, 2002). Both males and females have geometrically shaped white patches or spots on the most mobile parts of their body, such as ears, chin, tail, legs and neck as well as a band of white at the base of the neck (Hillman, 1986). Females and young are mainly reddish, and males become progressively darker with sexual maturity and age. Both sexes and all age groups have a white underside on the broad woolly tail and white flashes above their black hooves (Kingdon, 1997).

Menelik's bushbucks have large broad ears and when they stop to regard an intruder the ears with their tufts of white are conspicuous. Spinal crests of long whitish or black hairs run down the centre of the back. The tail is bushy and long, reaching up to just above the hocks, white underneath and black- tipped in appearance, and they displays a unique and beautiful coat colour (Dankwa and Euler, 2002).

Population status and distribution of Menelik's bushbuck

A total population estimation of Menelik's bushbuck has not been made because of their furtive habits (Yazezew *et al.,* 2011; Tefera, 2011). In Ethiopia, bushbuck is locally common in areas such as the Bale Mountains, Nech-sar National Park and Omo-Mago Murule region with largest concentration in Mago National Park, where its population is 735 individuals (Wilhelmi *et al*., 2006). They also occur in Simien Mountain National Park in association with Gelada baboon, Walia ibex, Duiker and Klipspringer at an altitude of 3300 m a.s.l. (Dunbar, 1978). Menelik's bushbuck is also fairly widespread in the Cedar forests in Menagesha and the Eucalyptus groves of the Entoto range. Nevertheless, their most common habitat is the dense bush in the highland forests up to the tree-line of 4000 m (AMWCDO, 1981).

Most authors considered that, the Menelik's bushbuck inhabits montane grass land areas. Moreover, records indicate that, throughout historical times, Menelik's bushbucks have occupied a limited and disjunct range in the Chercher, Arsi and Bale Mountains, the mountains of western Shoa and areas of high ground in the province of Illubabor (Yalden *et al*., 1984). They are usually found near water sources (ETC, 1982; Wronski *et al*., 2006c). Menelik's bushbuck is a forest-dwelling antelope. It makes its home in a wide array of forest types. Rainforests, savanna-forest mosaics, light woodlands, and savanna bush forests are among its preferred habitats (Yalden and Largen, 1992).

According to Yalden *et al.* (1984), in some of the more arid parts of its range, such as the Awash Valley, bushbuck is largely restricted to riverine vegetation, but dissemination into dry area is limited because the species does not tolerate prolonged drought. This indicates why bushbuck is scarce in water deficient areas of northern and southern Ethiopia, and is totally excluded from the Dankil desert and most parts of the Ogaden region (Wronski *et al*., 2006a).

Threat of Menelik's bushbuck

The major threats of bushbuck are habitat destruction, poaching and disease (e.g rinderpest) (Wronski *et al*., 2006a;

Yazezew *et al.,* 2011, Brnesh *et al*., 2015). Predictably, the main threats to the species come from humans, largely in the form of land-use pattern changes that have resulted in degraded or loss of habitat over the last century. Much of the montane forest has been cut and replaced by agriculture and deforestation tends to be on the increment (Dankwa *et al*., 2002). Menelik's bushbuck have disappeared from some areas in the drier parts of its former range because of habitat destruction and increasing aridity, but it is expanding its distribution within the equatorial forest zone as this is unlocked up by human activities (Yazezew *et al.,* 2011). Human activities were herding livestock, collecting firewood, cutting trees for construction, farm tools and timbers and collecting grasses, which have disturbed the Menelik's bushbuck and/or cause threat to the habitat in Wof Washa Forest (Brnesh *et al*., 2015).

The predators of Menelik's bushbuck include the leopard, lions, hyenas, cheetahs, hunting dogs and crocodiles (Wronski *et al.,* 2006a). The young are also caught by servals, golden cats, eagles and pythons (Yazezew *et al.,* 2011). Bushbucks do not tolerate oxpeckers or other birds that help control insect pests (Brashares and Arcese, 2002). As a result, they often have numerous ticks on their head and neck. They also suffer from common ungulate diseases, including rinderpest, which diminished their numbers (Apio, 2003; Wronski *et al.,* 2006a).

Behaviour and Ecology of Menelik's Bushbuck

Bushbuck are semi-solitary animals that occur either singly, in pairs, or in small groups consisting of one dominant mature ram, 2-3 adults and 1-2 sub-adult youngsters (Magliocca *et al.,* 2002). The dominant ram stays with a family group throughout the year. Both male and female bushbucks are sedentary and occupy well-defined home ranges (Wronski, 2005; Wronski and Apio, 2006; Wronski *et al*., 2006c). Adult males defend the inner core of their home ranges against other males, indicating that the males at least are territorial (Wronski, 2005; Wronski *et al*., 2006d). After natal dispersal, young-adult males join loose bachelor pools, from which they will later challenge territory holders, so as to take over an existing territory (Wronski, 2005). Females are philopatric and form matrilines, which means that the home ranges of related females strongly overlap while those of non-related females show little or no overlap (Wronski and Apio, 2006). Family bonding of Menelik's bushbuck is weak and individuals constantly exchange between adjacent groups. Groups usually avoid each other where home ranges overlap but for a short period of time it may occur on communal feeding grounds. Sub-adult rams are solitary and keep to the fringes of family groups (Seymour, 2002).

Menelik's bushbuck is usually most active during early morning and in the late afternoon hours (Dankwa and Euler, 2002; Brnesh *et al*., 2015). They become almost entirely nocturnal in areas where they are disturbed frequently during the day (Wronski *et al*., 2006c). When alarmed, individuals react in a variety of ways. If they are in forest or thick bushes, they may "freeze" in one position and remain very still, their coloring camouflaging them. Sometimes they will sink to the ground and lie flat, or they may bind away, making a series of hoarse barks. When surprised in the open, they sometimes stand still or slowly walk to the nearest cover. They spend the heat of the day lying up in dense bushes where there is no hope of spotting them (Apio and Wronski, 2005).

Bushbucks feed on various species of trees, shrubs, perennial woody and annual non-woody herbs, and sometimes on grass (MacLeod, *et al*., 1996; Haschick and Kerley, 1997). Bushbucks are primarily browsers; in some areas, they enter agricultural fields to eat crops and may be considered as a pest. They do need water, although are able to obtain by licking dew from plants and grasses in the morning (Estes, 1991). However, Menelik's bushbucks are mixed feeders. They use both plant species and plant specific material, especially young growth from actively growing shoot ends. Menelik's bushbuck feeds on leaves, tender shoots, and dig up various tubers and roots and depend on grasses only when they are young (AMWCDO, 1981; Yazezew *et al.,* 2011; Brnesh *et al*., 2015). A versatile diet and ability to subsist on both grass and browse contribute to the success of them (Kingdon, 1997).

According to Estes (1991), reproduction appears to be seasonal in most bushbuck populations with two peak birth periods a year. After a gestation period of around six months, one offspring is born. The young is kept hidden in thickets or long grasses for the first four months of its life. The mother returns to her young to allow it to suckle and she eats its faeces. This may be done to prevent detection of the young by predators with a keen sense of smell and to keep the area clean, as the mother does not move her young from its safe retreat regularly, as other antelope species are seen to do. Offspring reach maturity at around one year; however males do not reach physical maturity until they are three years. By this time, the horns would grow to adult size, and colouration and behavior of the animal changes.

Generally, this review have implicated several conservation and management recommendations to mitigate the threats that could be faced on the Menelik's bushbucks and their habitat.

- Local residents should be received awareness and incorporated conservation practices to minimize their impact on Menelik's bushbucks and their habitat
- Conservation program and project for endemic Menelik's bushbuck in in Ehiopia should be established.
- Long term research should be carried out in all distribution of this endemic animal.

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