

= Bluebuck =

The bluebuck ( Afrikaans : blaubok pronounced / ˈblau ˈbäk / ) or blue antelope ( *Hippotragus leucophaeus* ) is an extinct species of antelope that lived in South Africa until around 1800 . It is congeneric with the roan antelope and sable antelope , but was smaller than either . It was sometimes considered a subspecies of the roan , but a genetic study has confirmed it as a distinct species .

The largest mounted bluebuck specimen is 119 centimetres ( 47 in ) tall at the withers . Its horns measure 56 @. @ 5 centimetres ( 22 @. @ 2 in ) along the curve . The coat was a uniform bluish @-@ grey , with a pale whitish belly and similar flanks . The forehead was brown , darker than the face . Its mane was not as developed as in the roan and sable antelopes , and its ears were shorter and blunter , not tipped with black , and it had a darker tail tuft and smaller teeth . It also lacked the contrasting black and white patterns seen on the heads of its relatives . The bluebuck was a grazer , and may have calved where rainfall , and thus the availability of grasses , would peak . The bluebuck was confined to the southwestern Cape when encountered by Europeans , but fossil evidence and rock paintings show that it originally had a larger distribution .

Europeans encountered the bluebuck in the seventeenth century , but it was already uncommon by then , perhaps due to its preferred grassland habitat having been reduced to a 4 @, @ 300 square kilometres ( 1 @, @ 700 sq mi ) range , mainly along the southern coast of South Africa . The first published mention of the bluebuck is from 1681 , and few descriptions of the animal were written while it existed . The few eighteenth @-@ century illustrations appear to have been based on stuffed specimens . Hunted by European settlers , the bluebuck became extinct around 1800 ; it was the first large African mammal to face extinction in historical times , followed by the quagga in 1883 . Only four mounted specimens remain , in museums in Leiden , Stockholm , Vienna , and Paris , along with skulls and horns in various museums .

= = Taxonomy and etymology = =

In 1776 the German zoologist Peter Simon Pallas formally described the bluebuck as *Antilope leucophaeus* . British zoologists Philip Sclater and Oldfield Thomas pointed out that the blackbuck ( *A. cervicapra* ) was the type species of the genus *Antilope* , and instead moved the bluebuck and its closest relatives to the genus *Hippotragus* in their *Book of Antelopes* from 1899 . The type specimen is an adult male collected in Swellendam , now in the Naturalis Biodiversity Center in Leiden ( formerly Rijksmuseum van Natuurlijke Historie ) .

According to the German zoologist Erna Mohr 's 1967 book about the bluebuck , the 1719 account of the Cape of Good Hope published by the traveller Peter Kolbe appears to be the first publication containing mention of the species . Kolbe also included an illustration , which Mohr believed was based on memory and notes . In 1975 A. M. Husson and L. B. Holthuis examined the original Dutch version of Kolbe 's book and concluded that the illustration did not depict a bluebuck but rather a greater kudu ( *Tragelaphus strepsiceros* ) , and that the error was due to a mistranslation into German . The first published illustration of the bluebuck is therefore instead a depiction of a horn from 1764 . It has also been pointed out that the name was already published on a list of South African mammals in 1681 .

The Welsh naturalist Thomas Pennant made the next published illustration , and included an account of the antelope , calling it " blue goat " , in his 1771 *Synopsis of Quadrupeds* , based on a skin from the Cape of Good Hope , purchased from Amsterdam . In 1778 a drawing by the Swiss @-@ Dutch natural philosopher Jean @-@ Nicolas @-@ Sébastien Allamand was included in Comte de Buffon 's *Histoire Naturelle* ; however , he called the antelope tzeiran , the Siberian name for the goitered gazelle ( *Gazella subgutturosa* ) . The illustration is widely believed to be based on the specimen in Leiden . This drawing is the first published illustration that shows the entire animal . Another record of the bluebuck appears in the travel memoirs of French explorer François Levillant , published in the 1780s , describing his quest to discover the land to the east of the Cape of Good Hope , " Hottentots Holland " . The German zoologist Martin Lichtenstein wrote about the bluebuck

in 1812 , but the species was mentioned less frequently in subsequent literature .

After its extinction , some 19th @-@ century naturalists began to doubt its validity as a species , with some believing the museum specimens to be small or immature roan antelopes ( *H. equinus* ) , and both species were lumped together under the name *H. leucophaeus* by the English zoologist George Robert Gray . The Austrian zoologist Franz Friedrich Kohl pointed out the distinct features of the bluebuck in 1866 , followed by Sclater and Thomas , who rejected the synonymy in 1899 .

Today , four mounted skins of the bluebuck are in existence : the adult male in Leiden , a young female at the Zoological Museum of Stockholm , an adult female in the Vienna Museum of Natural History , and an adult male in the Museum of Natural History in Paris . In addition , a mounted skin was housed in the Zoological Museum in Uppsala until the 19th century , but now only the horns remain . There are also records of a skin in Haarlem , but its current whereabouts are unknown . Several of these skins have been identified in various 18th century illustrations . A female skull is part of the collection at each of the Hunterian Museum and the Zoological Museum of Amsterdam , though it has been suggested that the Hunterian 's belongs to a sable antelope ( *H. niger* ) . A pair of horns is present at each of the Natural History Museum , London , and the South African Museum . In addition , skeletal remains have been found in both archaeological and palaeontological contexts .

The common name " bluebuck " or " blue antelope " is English for the original Afrikaans name " blaubok " ( pronounced / ?blau ? ?bäk / ) . The name is the compound of blauw ( " blue " , from the Middle Dutch bl? ) and bok ( " male antelope " or " male goat " , from the Middle Dutch boc ) . Variants of this name include " blaawwbok " and " blawebock " . The generic name *Hippotragus* is Greek for " he @-@ goat " , while the specific name *leucophaeus* is a fusion of two Greek words : leukos ( " white " ) and phaios ( " dusky " ) .

= = = Evolution = = =

Based on studies of morphology , the bluebuck has historically been classified as either a distinct species or as a subspecies of the roan antelope . In 1974 palaeoanthropologist Richard G. Klein showed that the bluebuck and roan antelope occurred sympatrically on the coastal plain of the southwestern Cape from Oakhurst to Uniondale during the early Holocene , supporting their status as separate species . In 1996 an analysis of mitochondrial DNA extracted from the bluebuck specimen in Vienna showed that it is outside the clade containing the roan and sable antelopes . The study therefore concluded that the bluebuck is a distinct species , and not merely a subspecies of the roan antelope as was supposed . The cladogram below shows the position of the bluebuck among its relatives , following the 1996 analysis :

= = Description = =

The adult male bluebuck in Leiden is 119 centimetres ( 47 in ) tall at the withers , and is possibly the largest known specimen . According to Sclater and Thomas , the tallest specimen is the one in Paris , a male that stands 110 centimetres ( 45 in ) at the shoulder ; the specimen in Vienna , on the other hand , is the shortest , a 100 centimetres ( 40 in ) tall female . The bluebuck was notably smaller than the roan and sable antelopes , and therefore the smallest member of its genus .

The coat was a uniform bluish @-@ grey , with a pale whitish belly and similar flanks . Its limbs had a faint dark line own their front side . The forehead was brown , darker than the face , and its upper lip and patch in front of the eyes were lighter than the body . Its neck @-@ mane was directed forwards and not as developed as in the roan and sable antelopes , and the throat @-@ mane was almost absent . Other differences between the bluebuck and its extant relatives include its shorter and blunter ears not tipped with black , a darker tail tuft ( though little darker than its general colour ) , and smaller teeth . It also lacked the contrasting black and white patterns seen on the heads of its relatives .

Pennant observed that the eyes had white patches below them and the underbelly was white ; the coat was a " fine blue " in living specimens , while it changed to " bluish grey , with a mixture of white

" in dead animals . He also suggested that the length of the bluebuck 's hair and the morphology of its horns formed a link between antelopes and goat . He went on to describe the ears as pointed and over 23 centimetres ( 9 in ) long and the tail as 18 centimetres ( 7 in ) long , terminating in a 6 centimetres ( 2 @ . @ 4 in ) long tuft .

Its horns were significantly shorter and thinner than those of the roan antelope , but perhaps proportionally longer . The horns of the Leiden specimen measure 56 @ . @ 5 centimetres ( 22 @ . @ 2 in ) along the curve . The horns at Hunterian Museum are spaced 9 @ . @ 8 centimetres ( 3 @ . @ 85 in ) apart and are nearly 51 centimetres ( 20 in ) long with a basal circumference of nearly 15 centimetres ( 6 in ) . Pennant gave the horn length as 51 centimetres ( 20 in ) . He added that the horns , sharp and curving backward , consist of twenty rings . This description agrees with the horns at the Hunterian Museum . The skull at the Hunterian Museum measures 39 @ . @ 6 centimetres ( 15 @ . @ 6 in ) in length . The horns of the bluebuck appear to have hollow pedicels ( bony structures from which the horns emerge ) .

= = Ecology and behaviour = =

The bluebuck , as Klein puts it , became extinct before " qualified scientists could make observations on live specimens " . According to historical accounts , the bluebuck formed groups of up to 20 individuals . Similarities to the roan and the sable antelopes in terms of dental morphology make it highly probable that the bluebuck was predominantly a selective grazer , and fed mainly on grasses . The row of premolars was longer than in others of the genus , implying the presence of dicots in the diet . A 2013 study noted the scarcity of morphological evidence to show that the bluebuck could have survived the summers in the western margin of the Cape Floristic Region ( CFR ) , when the grasses are neither palatable nor nutritious . This might have induced a west @ - @ to @ - @ east migration , because the eastern margin receives rainfall throughout the year while rainfall in the western margin is limited to winter .

An 18th century account suggests that females might have left their newborn calves in isolation and returned regularly to suckle them till the calves were old enough to join herds , which is similar to the behaviour of roan and sable antelopes . Akin to other grazing antelopes , the bluebuck may have calved mainly where rainfall , and thus the availability of grasses , peaked . Such locations could be the western margin of the CFR during winter and the western margin of the CFR during summer . The aforementioned 2013 study revealed that the occurrence of juveniles in bluebuck fossils decreases linearly from the west to the east , indicating that most births took place in the western CFR ; due to the preference for rainfall , it may be further assumed that most births occurred during winter , when the western CFR receives most of its rainfall . The annual west @ - @ to @ - @ east migration would have followed in summer , consistent with the greater number of adult juveniles in the east that would have joined herds . Juvenile fossils also occur in other places across the range , but appear to be concentrated in the western CFR .

= = Distribution and habitat = =

Endemic to South Africa , the bluebuck was confined to the southwestern Cape . A 2003 study estimated the expanse of the historic range of the bluebuck at 4 @ , @ 300 square kilometres ( 1 @ , @ 700 sq mi ) , mainly along the southern coast of South Africa ; fossils , however , have been discovered in a broader area that includes the southern and western CFR and even the highlands of Lesotho . Historical records give a rough estimate of its range . On 20 January 1774 , Swedish naturalist Carl Peter Thunberg recorded a sighting in Tigerhoek , Mpumalanga . In March or April 1783 , Levalliant claimed to have witnessed two specimens in Soetemelksvlei , Western Cape . Based on these notes , a 2009 study estimated the range of the bluebuck to be limited within a triangular area in the Western Cape , bounded by Caledon to the west , Swellendam to the northeast and Bredasdorp to the south . Rock paintings in the Caledon river valley of the Free State province in eastern South Africa have been identified as bluebucks , which also confirms the once wider distribution of the species .

In 1974 Klein studied the fossils of Hippotragus species in South Africa . Most of these were found to represent the bluebuck and the roan antelope . The fossil record suggested that the bluebuck occurred in large numbers during the last glacial period ( nearly 0 @.@ 1 million years ago ) , and was more common than sympatric antelopes . The bluebuck could adapt to more open habitats than could the roan antelope , a notable point of difference between these species . Fossils of the bluebuck have been found in the Klaises River and the Nelson Bay Caves ( near Plettenberg Bay ) and Swartklip ( to the west of the Hottentots Holland mountains ) . The aforementioned 2013 study noted that the western and southern CFR were separated by biogeographical barriers , such as the Cape Fold Belt and afromontane forests . A 2011 study suggested that low sea levels facilitated migrations for large mammals ; therefore the rise in sea levels with the beginning of the Holocene would have led to fragmented bluebuck populations and distanced many populations from the western coast ( fossils dating to this period are scarce in the western coast but have been recorded from the southern coast ) . Thus , a mass extinction could have taken place , leaving behind mainly the populations that remained in the resource @-@ rich western CFR . The causes of the drastic decline in bluebuck populations just before the 15th and 16th centuries have not been investigated ; competition with livestock and habitat deterioration could have been major factors in its depletion .

The 2013 study further suggested that the bluebuck , being a grazer , probably favoured grassland habitats . This hypothesis is supported by fossil evidence ? bluebuck fossils appear in significant numbers along with those of grassland antelopes . The aforementioned 2009 study suggested that the bluebuck frequented grasslands and shunned wooded areas and thickets . In a 1976 study of fossils in the Southern Cape , Klein observed that the blue antelope showed similar habitat preferences as the Cape buffalo ( Syncerus caffer ) and the reedbuck ( Redunca ) .

= = Extinction = =

Due to the small range of the bluebuck at the time of European settlement of the Cape region compared to the much wider area evidenced by fossil remains , it is thought the species was already in decline before this time . The bluebuck was the sole species of Hippotragus in the region until 70 @,@ 000 ? 35 @,@ 000 years ago , but the roan antelope appears to have become predominant about 11 @,@ 000 years ago . This may have coincided with grasslands being replaced by , for example , brush and forest , thereby reducing what is presumed to be the preferred habitat of the bluebuck , the grasslands .

According to the International Union for the Conservation of Nature and Natural Resources ( IUCN ) , the bluebuck was hunted to extinction by European settlers ; the last bluebuck specimen was shot around 1800 . The bluebuck is the first historically recorded large African mammal to become extinct , followed by the quagga ( Equus quagga quagga ) , which died out in 1883 . The bluebuck population had already declined significantly and its range had contracted when Europeans settling in the Cape Colony in the 17th and 18th centuries first came across this antelope . Around the time of its extinction , the bluebuck occurred in what would be known as the Overberg region ( Western Cape ) , probably concentrated in Swellendam . In 1774 Thunberg noted that the bluebuck was becoming increasingly rare ; Lichtenstein claimed the last bluebuck had been shot in 1799 .

= = Cultural significance = =

A South African fable , The Story of the Hare , mentions a bluebuck ( referred to as inputi ) that , among other animals , is appointed to guard a kraal . The bluebuck is also mentioned in French novelist Jules Verne 's Five Weeks in a Balloon ( 1863 ) ; the animal is described as a " superb animal of a pale @-@ bluish color shading upon the gray , but with the belly and the insides of the legs as white as the driven snow " , after the hunter shot it and they debated what to do with the fine carcass as it would be too heavy for the balloon .

The bluebuck rock paintings from the Caledon river valley have been attributed to Bushmen . They show six antelopes faced by a man , and were supposedly inspired by shamanic trance ; they may depict a Bushman visiting the spirit @-@ world through a tunnel . As with other animals in their

environment , the Bushmen may have believed the bluebuck had a supernatural potency . The animals in the paintings are similar in proportion to the reedbuck , but the large ears , horns , and the lack of a mane rules out species other than the bluebuck .