

Blackbuck antelope

Antilope cervicapra



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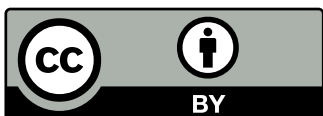
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Summary

Antelope cervicapra (blackbuck antelope) is native to parts of India, Pakistan and Nepal. Once widespread across the entire subcontinent of India, its population has suffered a significant decline due to hunting and habitat modification.

A. cervicapra utilises a range of habitats including tropical and subtropical woodland, dry deciduous forest, open plains (grassland), riverbanks, semi-desert habitats, crop land and pasture land.

A. cervicapra is a popular target for hunting and a small number were released (illegally) on a Cape York grazing property in the late 1980s or early 1990s for sport. There were reliable reports of four to five animals surviving in the wild for a few years. Following trapping and destruction efforts, these animals are believed to have died out.

Blackbuck antelope possess a number of attributes considered to confer long-term pest potential in Queensland: *viz.* (1) they are generalist herbivores that would have little difficulty finding food in extensive, unfenced areas of Cape York (tropical savannahs and grasslands); (2) they have naturalised elsewhere (United States, Argentina and Western Australia); and (3) climatically, they are well suited to seasonally dry, tropical areas of north Queensland.

While blackbuck antelope do not appear to be major pests overseas or interstate, a precautionary approach to their management as potential pests of Queensland appears wise.

Introduction

Identity and taxonomy

Species identity: *Antilope cervicapra*, Linnaeus, 1758 (Bovidae)

Common names: blackbuck antelope, Indian blackbuck antelope, Indian antelope

Synonyms: *Capra cervicapra* Linnaeus 1758

A. cervicapra represents the only species within its genus, and belongs to the subfamily Antilopinae ('true antelopes') within the family Bovidae. There are four sub-species—*Antilope cervicapra cervicapra*, *Antilope cervicapra rajputanae*, *Antilope cervicapra centralis* and *Antilope cervicapra rupicapra*.

Description

A. cervicapra is one of the few antelope species that exhibit pronounced sexual dimorphism. Males are easily distinguished by their large spiralling horns, which can reach 79 cm long. Females and juveniles are yellowish-fawn on their back and head, and are generally without horns. Both sexes have white underparts, including the insides of the legs and lower chest, as well as a white ring surrounding the eye and a white chin (Figure 1). The name 'blackbuck' is a reference to the dark colour of the males. Males gradually darken with age, from tan to deep brown or black, beginning at two years of age. *A. cervicapra* have a slender build and short tail. Table 1 lists typical morphological features.

Table 1. Morphological features of *Antilope cervicapra* (blackbuck antelope)

Body length	100–150 cm
Shoulder height	60–85 cm
Tail length	10–17 cm
Horn length (male)	35–79 cm
Body weight	19.5–56.7 kg (male), 19–33 kg (female)
Coat colour (male)	Dark head and back with white underside
Coat colour (female and juvenile)	Yellow to fawn head and back with white underside



A



B



C

Figure 1. *Antelope cervicapra* (blackbuck antelope)—images A and B are males with spiralling horns and dark coat colour; image C is a female lacking horns and with light coat colour (all images were obtained from Wikimedia Commons and reproduced under the terms of a GNU Free Documentation License)

Biology and reproduction

A. cervicapra is mainly diurnal, but sometimes nocturnal (Long 2003). It lives either in groups (single or mixed sex, numbering anywhere from 15 to several thousand animals) or as single animals at densities of 0.5–3 per hectare (Long 2003). Diet includes grass and cereal crops, leaves, forbs and browse (Long 2003).

In its native range, mating can occur throughout the year, but tends to be concentrated in two periods—March to May and August to October. During these times, males become territorial and maintain a territory of between 1–100 ha (Long 2003). Females are sexually mature at approximately 15 months. Gestation is 5–6 months with females able to produce an average of 1.9 offspring per year (only a single offspring is born at a time, rarely two). The young are able to run soon after birth and are weaned at around 2 months. Longevity can be up to 18 years in the wild (Long 2003).

Origin and distribution

A. cervicapra is native to parts of India, Pakistan and Nepal. Prior to the 19th century it was the most abundant ungulate in this region, with a population of around four million (Long 2003). However, hunting and habitat loss has caused a substantial population decline (8000 animals by 1964) and the species is now listed as ‘near threatened’ in the IUCN Red List, with populations in Nepal and Pakistan regionally extinct.

A. cervicapra has been introduced into the United States, Argentina and Australia. It was first released in Texas in 1932, with repeated releases in subsequent years for hunting purposes. In 1988, the Texas Parks and Wildlife Department estimated the blackbuck antelope population to be 21 232 (Willard 1995). In Argentina, blackbuck antelope were first introduced in 1906 (Long 2003) and are now established over a large area. In Australia, blackbuck antelope were first introduced into Western Australia in the early 1900s (Allison 1970). By 1929, wild populations near Perth were described as reaching ‘pest proportions’ and were culled.

Status in Australia and Queensland

The species is a ‘declared pest’ and is subject to restrictions in Queensland, Western Australia, New South Wales and Victoria.

A. cervicapra is a popular target for hunting and a small number were released (illegally) on a Cape York grazing property in the late 1980s or early 1990s for sport. There were reliable reports of four to five animals surviving in the wild for a few years. Following trapping and destruction efforts, these animals are believed to have died out. Feral populations of blackbuck antelope in Western Australia are thought to have died out.

Preferred habitat

A. cervicapra can utilise a range of habitats including tropical and subtropical woodland, dry deciduous forest, open plains (grassland), riverbanks and semi-desert habitats, and can forage in crop land and pasture land (Long 2003; Maldron 2008). While generally sedentary, they may move long distances in search of water and forage in summer (Rahmani 2001). In Texas (United States), naturalised populations inhabit rough, stony hills across the Edwards Plateau of southern central Texas, where elevation ranges from 400 to 1000 m. The climax vegetation in this region is described as ‘savannah and open grassland interspersed with dry scrub and woody plants such as mesquite’ (Lever 1985). More than 80% of blackbuck antelope in Texas inhabit the Edwards Plateau region, where the patchwork of open grassland and brush provides forage and cover. Their range is restricted to the north and west by cold winters, to the south by coyote predation and to the east by parasitism.

History as a pest elsewhere

In India (within the species' native range) *A. cervicapra* damages a number of crops, in particular sorghum and millet (Jhala 1993; Sekhar 1998; Chauhan & Singh 1990). It is reported to nibble mainly the young shoots of various cereal and pulse crops but damage is not great (Chauhan & Singh 1999). This study was unable to find published data on economic losses. Similarly, while the species is abundant in eastern Argentina and parts of Texas, impacts on crops and pasture are poorly documented. On some cattle grazing properties in eastern Argentina, blackbuck became so numerous that culling 'by the hundreds' was necessary (Barrett 1968).

Uses

A. cervicapra is used for hunting and a source of meat in the United States and Argentina. In Argentina, its meat is exported (Jaksic et al. 2002).

A small number of *A. cervicapra* were successfully farmed in Victoria in 1986, with meat achieving a high market price (Woodford 1995). However, the current status of this market is unknown.

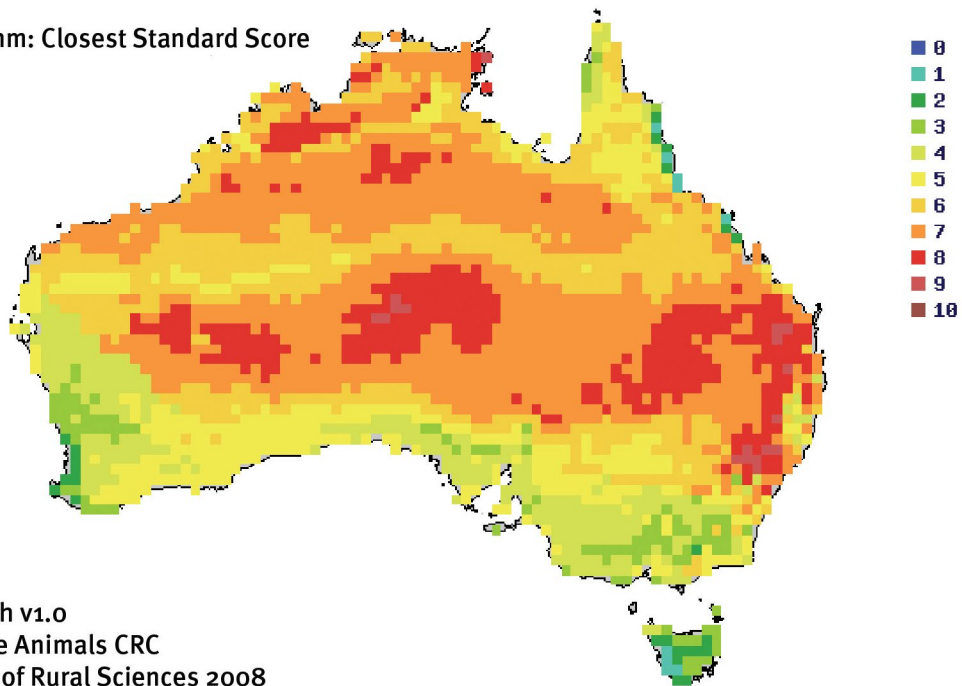
Pest potential in Queensland

Blackbuck antelope possess a number of attributes considered to confer long-term pest potential in Queensland: viz. (1) they are generalist herbivores that would have little difficulty finding food in extensive, unfenced areas of Cape York (tropical savannahs and grasslands); (2) they have naturalised elsewhere and are considered pests elsewhere (United States, Argentina and Western Australia); (3) climatically, they are well suited to seasonally dry, tropical and subtropical areas of Queensland; and (4) prior to hunting and habitat modification, the species had a broad natural geographic range (which suggests considerable habitat flexibility). The species' natural range in India extends over latitudes of approximately 32° N to 8° N.

Over this range, climate can be broadly described as tropical to subtropical. Similarly, Queensland experiences tropical to subtropical climates between comparable latitudes (28° S – 10° S). On the Edwards Plateau in Texas (United States), where a large naturalised population exists, climate can be broadly described as subtropical with cold winters (this area lies at approximately 30–31° N). Using a computer-based model called 'Climatch' (BRS 2009), areas of Australia where climate is similar to the species' overseas range have been mapped (Figure 2).

Figure 2. Areas of Australia where the climate appears suitable for *Antelope cervicapra* (areas where the climate appears most suitable are red and orange; areas where the climate is marginally suitable are green and yellow; blue indicates areas where the climate is considered unsuitable)

Algorithm: Closest Standard Score



While blackbuck antelope do not appear to be major pests overseas or interstate, a precautionary approach to their management as potential pests of Queensland appears wise. Further releases of this species for hunting could result in successful naturalisation, especially in Cape York where the animals are less restricted by fences and can forage over large areas.

References

- Allison, C (1970). Sporting Shooter 1970: 30–1, 70–1.
- Bomford, M (2008). Risk assessment models for establishment of exotic vertebrates in Australia and New Zealand. Invasive Animals Cooperative Research Centre, Canberra.
- Booth, C. (2009). Oh deer: ‘conservation hunting’ in Australia, In: Wildlife Australia Magazine, Wildlife Preservation Society of Queensland, Winter 2009, Vol. 46(2), pp. 35–6.
- BRS (2009). Climatch, Bureau of Rural Sciences, Department of Agriculture, Fisheries and Forestry, Australian Government, <<http://adl.brs.gov.au:8080/Climatch/>>.
- Chauhan, NPS and Singh, R (1990). Crop Damage by Overabundant Populations of Nilgai and Blackbuck in Haryana (India) and its Management. Proceedings of the Fourteenth Vertebrate Pest Conference 1990, pp. 218–220.
- Lever, C (1985). Naturalised mammals of the world, Longman Group, England.
- Long, JL (2003). Introduced mammals of the world: their history, distribution and influence, CSIRO Publishing, Victoria, Australia, pp. 486–7.
- Mallon, DP (2008). *Antelope cervicapra*. In: IUCN 2009. IUCN Red List of Threatened Species. Version 2009.1. <www.iucnredlist.org>. Downloaded on 23 August 2009.
- de Magalhaes, JP and Costa, J (2009). A database of vertebrate longevity records and their relation to other life-history traits, *Journal of Evolutionary Biology* 22:1770–1774.
- Novillo, A and Ojeda, RA (2008). The Exotic Mammals of Argentina, *Biological Invasions* 10: 1333–1344.
- Willard, ST, Jeffery, MS, Carroll, A, Ronald, MS, Randel, D and Welsh, TH (1995). In vitro cell culture and adrenocorticotropin secretion by Indian Blackbuck Antelope (*Antelope cervicapra*) anterior pituitary glands collected under field conditions, *Journal of Zoo and Wildlife Medicine* 26: 252–259.
- Woodford, K (1995). The production characteristics of farmed Blackbuck Antelope. Rural Industries Research and Development Corporation, Research Report No. 95/11.

Attachment 1

Table 1. Using a risk assessment system published by Bomford (2008), blackbuck antelope (*Antelope cervicapra*) were assessed as an 'extreme' threat species in Queensland.

Species:		<i>Antelope cervicapra</i> (blackbuck antelope)
Date of assessment:		25 August 2009
Literature search type and date:		See references
Factor	Score	
A1. Risk to people from individual escapees (0–2)	0	Blackbuck pose a low risk of harm to people
A2. Risk to public safety from individual captive animals (0–2)	0	Blackbuck pose no risk to public safety
Stage A. Public safety risk rank = sum of A1 to A2 (0–4)	0	Not dangerous
B1. Climate match (1–6)	5	Very high climate match in Australia CMS = 1994
B2. Exotic population established overseas (0–4)	4	Blackbuck have established in the United States and Argentina
B3. Overseas range size (0–2)	1	Overseas range size of less than 70 million square kilometres (approximation)
B4. Taxonomic class (0–1)	1	Mammal
B5. Diet (0–1)	1	Generalist grazer (Novillo & Ojeda 2008)
B6. Habitat (0–1)	1	Can survive and breed in human-disturbed habitats (including grazing and agricultural lands)
B7. Migratory (0–1)	1	Non-migratory or facultative migrant in its native range
B. Probability escaped or released individuals will establish a free-living population = sum of B1 to B7 (1–16)	14	Extreme establishment risk
C1. Taxonomic group (0–4)	4	Order Artiodactyla, family Bovidae
C2. Overseas range size including current and past 1000 years, natural and introduced range (0–2)	0	Overseas range size 4.6 million ha
C3. Diet and feeding (0–3)	3	Mammal that is a primarily a grazer or browser
C4. Competition with native fauna for tree hollows (0–2)	0	Does not use tree hollows
C5. Overseas environmental pest status (0–3)	1	Minor environmental pest in any country or region (Jhala 1993; Chauhan & Singh 1990)
C6. Climate match to areas with susceptible native species or communities (0–5)	4	The species has 10–20 grid squares within the highest two climate match classes, and/or has 30–100 grid squares within the highest four climate match classes

Factor	Score	
C7. Overseas primary production pest status (0–3)	2	Moderate pest of primary production in any country or region
C8. Climate match to susceptible primary production (0–5)	3	Total commodity damage score = 53 (see Table 2)
C9. Spread disease (1–2)	2	Mammal
C10. Harm to property (0–3)	1	\$1–\$10 million (reasonable estimate)
C11. Harm to people (0–5)	2	Injuries, harm or annoyance likely to be minor and few people exposed: low risk (males can be territorial)
C. Probability an exotic species would become a pest (for birds, mammals, reptiles and amphibians) = sum of C1 to C11 (1–37)	22	Extreme pest risk
A. Risk to public safety posed by captive or released individuals A = 0 = not dangerous; A = 1 = moderately dangerous; A ≥ 2 = highly dangerous	0	Not dangerous
B. Risk of establishing a wild population For birds and mammals: B < 6 = low establishment risk; B = 7–11 = moderate establishment risk; B = 12–13 = serious establishment risk; B > 14 = extreme establishment risk For reptiles and amphibians: B < 3 = low establishment risk; B = 3–4 = moderate establishment risk; B = 5–6 = high establishment risk; B > 6 = extreme establishment risk	14	Extreme establishment risk
C. Risk of becoming a pest following establishment C < 9 = low pest risk; C = 9–14 = moderate pest risk; C = 15–19 = serious pest risk; C > 19 = extreme pest risk	22	Extreme pest risk
Vertebrate Pests Committee threat category		Extreme

Table 2. Calculating the total commodity damage score

Industry	Commodity value index*	Potential commodity impact score (0–3)	Climate match to commodity score (0–5)	Commodity damage score (columns 2 × 3 × 4)
Cattle (includes dairy and beef)	11	0	Not estimated	0
Timber (includes native and plantation forests)	10	0	Not estimated	0
Cereal grain (includes wheat, barley sorghum etc.)	8	2	3	48
Sheep (includes wool and sheep meat)	5	1	Not estimated	5
Fruit (includes wine grapes)	4	0	Not estimated	0
Vegetables	3	0	Not estimated	0
Poultry and eggs	2	0	Not estimated	0
Aquaculture (includes coastal mariculture)	2	0	Not estimated	0
Oilseeds (includes canola, sunflower etc.)	1	0	Not estimated	0
Grain legumes (includes soybeans)	1	0	Not estimated	0
Sugarcane	1	0	Not estimated	0
Cotton	1	0	Not estimated	0
Other crops and horticulture (includes nuts, tobacco and flowers)	1	0	Not estimated	0
Pigs	1	0	Not estimated	0
Other livestock (includes goats, deer, camels, rabbits)	0.5	0	Not estimated	0
Bees (includes honey, beeswax and pollination)	0.5	0	Not estimated	0
Total commodity damage score				53

* The commodity value index is an index of the value of the annual production value of a commodity. For a full explanation refer to Bomford (2008).