
Threats to Aberdare Rhinos: Predation versus Poaching

Claudio Sillero-Zubiri and Dada Gottelli

The black rhino, *Diceros bicornis*, once common in most sub-Saharan countries, has suffered a most serious decline since about the middle of this century and now faces extinction throughout its range. Until recently it was abundant in many parts of Kenya. During the 1970s, poaching, stimulated by the illegal trade in rhino horn, turned into a massive-scale operation. In 1985 Jenkins estimated less than 400 rhinos remained in Kenya in populations large enough for their management.¹

Declining Trend of the Aberdare Rhino Population

The Aberdare National Park (ANP) was famous in the past for its very high density of rhinos. This was particularly true for the Salient, a 70 km² wedge-shaped area of forest stretching down the eastern Aberdare slopes and separated from the densely populated farmland by a moat and electric fence. The then warden, F.W. Woodley, in a personal comment, estimated the rhino population of the entire Park to be in the order of 450 during the early 1970s. Sadly, they have been decimated by poachers during the last decade. The 1982 ANP census counted 132 rhinos in the area and the present population is well under 50. It is possible that the Salient rhino population alone has been reduced by as much as 80 percent of its former level.² We estimated a rhino population for the Salient of 30 in 1987, which agreed with the estimate by the ANP Rhino Surveillance Unit. Approximately five more occurred in northern ANP.³

Today, in spite of the dramatic decrease in rhino numbers, the ANP is probably the only National Park in Kenya with a genetically viable population of native black rhinos.⁴ However, their numbers are already below the recommended threshold to minimize loss of genetic variability in a population.⁵

Rhino Sightings at Forest Lodges

The Salient with its two forest lodges, the Ark and Treetops, is one of the best places in Kenya to watch black rhinos. The records of animals seen at the lodges' salt-licks have proved useful in providing information on long-term trends in animal populations of the area. Rhino sightings indicate a dramatic reduction in numbers, especially at Treetops where up to 1978 an average of eight to ten rhinos visited the salt-lick every night. From 1979 to the present there has been a steady decline of sightings. An average of 1.48 rhinos were seen at the salt-lick on 31% of the nights between July 1986 and June 1987. All these sightings correspond to a male and a cow with calf making regular visits.

The Ark and its surroundings hold the highest concentration of rhinos in the ANP. Trends of rhino sightings at the Ark are less clear-cut, with daily records oscillating but totalling nearly 1,000 a year. At least 20 rhinos are frequent visitors to its salt-lick. The Ark area may have acted as a refuge for rhinos moving from places where poaching was heavy. Such an inflow of new animals may have kept the Ark records relatively constant, masking any significant decline of the population as a whole.

Predation in the Salient

Conservationists have expressed fears that spotted hyenas, *Crocuta crocuta*, could be killing rhino calves in the Salient. Since the late 1970s the Wildlife Conservation and Management Department (WCMD) has expressed concern about the effect that a high density of spotted hyenas might have on the herbivore species in the ANP forest, in particular on those endangered species such as bongo, *Tragelaphus euryceros*, and black rhinos whose numbers have decreased rapidly in the last few years. The skyrocketing of hyena sightings at both forest lodges during the 1980s and the extent to which pack hunting became more conspicuous have also been a matter of concern. A field study was undertaken in 1986-87 to estimate the actual population of hyenas in the Salient and its effect on prey species.⁶

Hyenas are the chief predator in the Salient. Although the Salient does not resemble the optimal habitat for hyenas as described in the literature, it harbours a density of 1.34 hyenas per km², second only to that of Ngorongoro. This may be a result of the high concentration of herbivores which itself is probably a consequence of a 'funnel effect' exerted by the physical boundary and the creation of secondary forest by elephants. Hyenas were found to feed mostly on medium-sized ungulates. They forage alone or in small groups more often than in packs. However, hunting packs of up to 17 hyenas were observed, which was unexpected in a forest habitat. Lions, *Panthera leo*, were rare in the ANP forest until 1983 when the lodges' records show a sharp increase in their presence, probably due to range expansion from other parts of the ANP. At least 12 different lions utilized the Salient during our study. Regular use of the area by lions would almost certainly lead to a decrease in the hyena population through interference and exploitation competition.

Predation on Rhino Calves

Rhinos can be killed by lions even when adult.⁷ They also appear to be vulnerable to predation by spotted hyena up to the age of four months.⁸ Four attempts by hyenas to pull down rhino calves were observed at the Ark salt-lick during this study, all of them unsuccessful (Table). Three attacks were made on male calf A12 when he was approximately one year old. In August 1986, two hyenas grabbed the calf by the flank, inflicting wounds. A12 was attacked twice again in 1986, and on both occasions the mother, who herself is missing half her tail, charged the hyenas after the calf emitted a distress squeal. In April 1987, a very young calf of unknown sex was harassed by two hyenas and presumably wounded. Again, the mother defended the calf by repeatedly charging the hyenas, and then mother and calf fled for cover. Both calves were seen again after the attacks in seemingly good condition.

Four out of nine individually recognizable calves observed in the Salient had scars on flanks or hind legs and one had neither ears nor tail (Table). Earlessness (i.e. lack of pinnae) in the black rhino has been reported from a number of populations in southern and eastern Africa^{9,10} Although Goddard first suggested that a

genetic character could be responsible for a congenital deformity, Hitchins reviewed the subject and attributed the conditions to predation on rhino calves by spotted hyenas.¹¹

Table. Known rhino calves in the Salient and evidence of pre-dation attempts. Age estimation follows Hitchins (1970)¹²

Calf	Age	Sex	Evidence of predation
A4	2.5 yr	F	none
A7	2yr	F	none
A12	1 yr	M	attacked by hyenas 3 times in 1986
A14	2.5 yr	F	no ears, no tail
A17	1 yr	F	wound right shoulder
A?	<1 yr	?	attacked by hyena in April 1987
A19	3.5yr	F	none
TT	3 yr	F	none
MM	2yr	M	none

Rhino calf survival

Attacks by hyenas on rhino calves in the Salient have been observed at the lodges' salt-licks for many years, although no successful attack has ever been reported. The high percentage of calves showing scars presumably inflicted by hyenas point to predation as a potential factor of infant mortality in the ANP. However, six out of eight known rhino cows regularly visiting the Ark salt-lick were accompanied by their calves. This gives a cow-calf ratio of 1:0.75 which is comparatively high; cow-calf ratios at Ngorongoro and Olduvai are 1:0.72 and 1:0.79 respectively.¹³

Poaching

Poaching has been the main and probably the sole cause for the depletion of the ANP rhino population. In 1982, 20 fresh carcasses were seen within one month in the Salient by S. Weller.¹⁴ The last outbreak of organized poaching occurred in

1984.¹⁵ During our study, six rhino skulls were collected and their age estimated using Hitchins' method.¹⁴ Five were from animals less than 15 years old and were likely killed by poachers: the nasal region of three skulls bore signs of cutting by a sharp instrument, presumably utilized to remove the horns. The sixth, approximately a 29 year-old, was killed within 400 metres of one of the guard outposts, revealing the limited influence the Rhino Surveillance Unit was having in preventing poaching in the Salient. At least one elephant was killed in 1987 by poisoned arrow heads planted on the ground.¹⁶

Conclusions

Our study concluded that, in their present numbers, there is no reason to suppose that predators are detrimental to the rhinos and other herbivore populations in the Salient. Despite the high percentage of calves showing scars, no successful attack by hyenas on a newly-born rhino has ever been reported. Furthermore, since the end of the study there has been a remarkable decrease in hyena sightings throughout the Salient.¹⁷

The increase in the number of lions frequenting the Salient has been checked by limited control of trouble animals. It is uncertain whether culling of predators would enhance the survival rate of infant rhinos, a variable reasonably high in the Salient as proved by the cow-calf ratio recorded. The maintenance of the rhino population is most strongly related to poaching activity and its fate therefore lies with improving conservation. Resources allocated for the conservation of the species would be best directed towards anti-poaching and security activities.

The implementation of a Rhino Sanctuary in the ANP's Salient has been long recommended as a high priority.^{18,19} Fortunately funds have been secured and fencing of the Aberdare Rhino Sanctuary is well advanced. Combined with an improved regime of foot patrols carried out from Headquarters and existing and planned outposts, the Sanctuary will provide appropriate protection for the black rhino and other wildlife.

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