

# Rhino Conservation in Garamba National Park

Kes Hiliman Smith

In 1963 there were estimated to be 1,300 white rhinos (*Ceratotherium simum cottoni*) in Zaire's Garamba National Park. In 1976 there were 490±270. By 1983 there were some 13 to 20.<sup>1</sup> Retrospectively, by individual recognition, the 1984 total was put at 15, little more than one percent of the figure of 20 years ago. Similar statements could be made about most populations of rhinos in Africa. What is less common is that we can go on to say that there are now 26 white rhinos in Garamba. If they continue to increase at the same rate, the population could have doubled in seven years from 1984.

The results of aerial counts and monitoring also indicate a major reduction in elephant poaching since 1984. From a general aerial census in 1983 the overall live:dead ratio of elephants was 8:1. Using the same counting method in 1986 the ratio was 118:1 with no fresh carcasses seen.<sup>2</sup>

The current significant reduction in poaching of rhinos and elephants at Garamba has been largely due to the co-operative efforts of an international aid project and the Institut Zairois pour la Conservation de la Nature (IZCN, the Wildlife Department of Zaire). The project, known as the Garamba Rehabilitation Project (GRP), comes under the auspices of IUCN and is funded by WWF, Frankfurt Zoological Society and UNESCO. The latter organization is involved because the Park was designated a World Heritage Site in 1980.

The increase in the rhino population is particularly heartening since so much was in question at the beginning of the project. In 1983, following the precipitous declines in numbers of northern white rhinos in Sudan, Uganda and Garamba itself, a recommendation had been made that all the rhinos remaining in the Park should be captured and held in zoos pending possible release at a later date. This was unacceptable to Zaire. Further, as Stanley Price points out, re-introduction of animals is not simple.<sup>3</sup> Susceptibility to disease has often been a problem with animals being moved to and from zoos, and disruption of patterns of social behaviour has led to loss of or injury to individuals in other rhino relocations. So, in 1984, a project to rehabilitate the general functioning of the Park with the rhinos as an integral part of the ecosystem became a reality. Since that time 11 northern white rhinos have been born in Garamba, while the last one born in captivity was in 1982.

If this is a measure of success so far, what factors have influenced it? Cumming *et al* showed a direct relationship between financial resources per unit area and the success of conservation.<sup>4</sup> They found the average of annual budgets for different conservation areas in 1980 was US\$ 558/km<sup>2</sup>, with a range from US\$ 5 to US\$ 6,000/km<sup>2</sup>. Leader-Williams and Albon extrapolated for

Luangwa Valley that spending needed to be US\$ 230/km<sup>2</sup>/year to arrest rhino declines.<sup>5</sup> However, the budget of the Garamba Park and Project together is only US\$ 55/km<sup>2</sup>. Financial input is not therefore the only key factor which determines success.

There have been two major declines in rhino numbers since the inception of the Park in 1938. It is difficult to make precise comparisons between previous population estimates since counting methods have varied, but the somewhat exaggerated-looking graph shown in the Figure is at least indicative of the dramatic fluctuations.

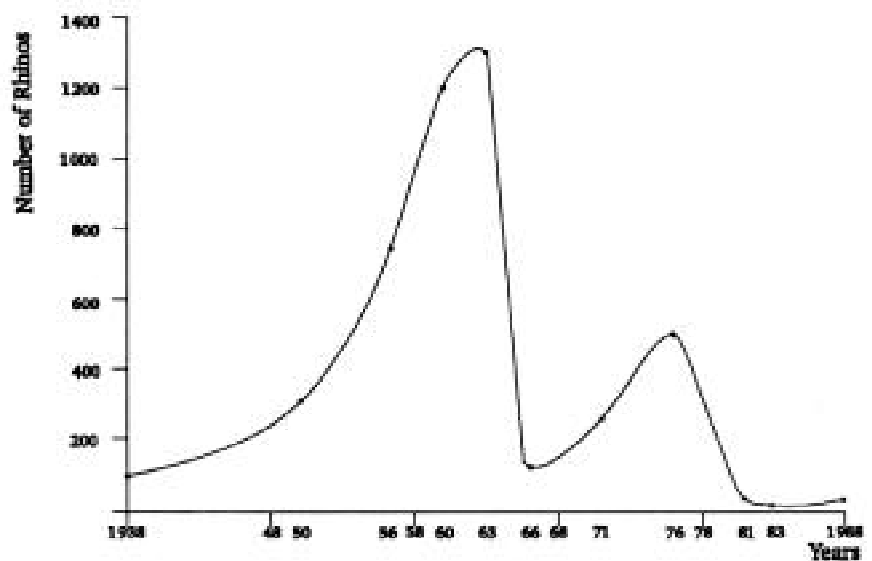


Figure: Estimates of the northern white rhino population of Garamba National Park since its inception in 1938.

Between the 1,300 in 1963 and the 490 in 1976 there was no steady decline but a rapid drop until a rough estimate of 100 remained in 1966.<sup>6</sup> The poaching in 1963 and 1964 resulted from civil war and was carried out by both rebels and the mercenaries employed to subdue them. After the Wildlife Department regained control of the Park the rhino population increased. If the figure of 100 was correct, the rate of increase must have been of the order of 14% per annum. Since the current rate is 11%, even if the 100 was somewhat an under-estimate it was probably not far out.

The second wave of poaching started around 1978 in line with increased poaching throughout eastern and central Africa and the rising value of rhino horn. In Garamba the problem was exacerbated by poor communications, lack of resources and personnel problems; and also by its position on the borders of Zaire, Sudan and Uganda, where arms and ammunition were available after recent civil wars.

Zaire is the second largest and most heavily forested country in Africa. At the best of times communications are difficult, and the Park is about as far from the IZCN headquarters as it can be. Resources were particularly limited in 1978. When salaries were meagre, late in arriving or non-existent, and no vehicles nor radios worked because there was no fuel nor spare parts, it was a natural consequence that some



Guards of Garamba National Park. Uniforms and equipment were supplied by the Garamba Rehabilitation Project.

Before the GRP began, the IZCN responded to the seriousness of the situation by posting a Rhino Protection Officer and a vehicle to the Park. With the project came a major input of vehicles, spares, fuel, equipment, an aircraft, rations for guards and expert assistance. Roads were opened, river crossings made, patrol posts constructed, a radio network established and workshops set up. The patrol system was re-established and a monitoring programme was started.

But equipment alone is ineffective without good leadership. The previous Director of the Wildlife Department was replaced for involvement in ivory trading. The excellence of the current Director has permeated the IZCN with better principles and motivation. He has increased significantly the guards' salaries and ensured that they receive their payments regularly. After a series of different Conservators at the Park, we now have one who is strong and principled. He has enforced his control over most of the Park and extended the anti-poaching ethos outside the Park through contacts with local administrators and chiefs.

The over 400% increase in resources together with the management changes have probably been the main factors



Adult female northern white rhino FS, 'Mama Giningamba', with calf Sa, 'Giningamba', aged less than one month, March 1985.

responsible for the improvement in Garamba's rhino conservation. However, these might not have been sufficient if the poachers had been organized, well-armed men with highly-placed backers rather than local people. In addition, the war in Sudan may have helped by disrupting a trade route.

The distribution of the vulnerable animals, which has resulted primarily from the effects of the poaching, has allowed a concentration of effort in the most important areas. The 4,900 km<sup>2</sup> Park is over 100 km long north to south, but in many places less than 50 km wide. The north abuts the Sudan frontier, while the headquarters are on the southern border. Control of the north is therefore more difficult and there is still some poaching, largely of buffaloes (*Synceros brachyceros*) for meat. But the elephants (*Loxodonta africana*) and

rhinos are concentrated in the south. During an elephant census we carried out in 1989, the density of the 4,000-4,500 strong elephant population was 3.1/km<sup>2</sup> in the central southern section and 0.3/km<sup>2</sup> overall in the region north of the Garamba river.<sup>7</sup> The rhinos have been observed within a 900km<sup>2</sup> range, but the more regularly used area is of the order of 500 km<sup>2</sup>. It has thus been possible to have a higher intensity of patrolling and monitoring within the section where the elephants have tended to concentrate and the rhinos remain. If one were to consider that roughly 2/3 of the resources were concentrated in the southern 1/4 of the Park the spending would be more of the order of US \$ 145/km<sup>2</sup>.

The conservation of so small a rhino population is fraught with risks. The rhinos' future in the wild depends upon the continuation of at least the same level of resources, the right personnel, political stability and no increase in poaching pressure.

The present population structure is: 7 adult males, 5 adult females, 3 sub-adult males, 4 sub-adult females, 3 juvenile males, 3 juvenile females and 1 infant of as yet unconfirmed sex. Of the sub-adult females, one six year-old, has been in oestrus and observed as the recipient of courtship behaviour. If she is considered part of the potential female breeding cohort, there is a near equal sex ratio among the effective population ( $N_e$ ).

The current 11% rate of increase compares favourably with that of 10% found for the southern sub-species (*C.s.simum*) by Owen-Smith,<sup>8</sup> and shows no sign of inbreeding depression at this stage. The average interval between surviving calves is 2.75 years, but one female has had four calves in six years. I also suspect that another female may have had a calf and lost it, which, if true, would reduce the mean overall inter-calf interval.

It has been postulated that populations of less than 50 are not worth consideration. Yet with



Northern white rhinos, Garamba National Park, February 1989. Female FS, 'Mama Giningamba', with female calf 5b. 'Grizmek'. born in October 1987.

many populations reduced to less than this number, efforts must be made to conserve them. The Garamba population has probably only been under 50 for less than ten years and, theoretically, rapid passage through a bottleneck minimizes loss of genetic heterozygosity.<sup>9</sup> Changes in the management of captive northern white rhinos may also encourage a build-up of their numbers which could lead to the possibility of using them as a

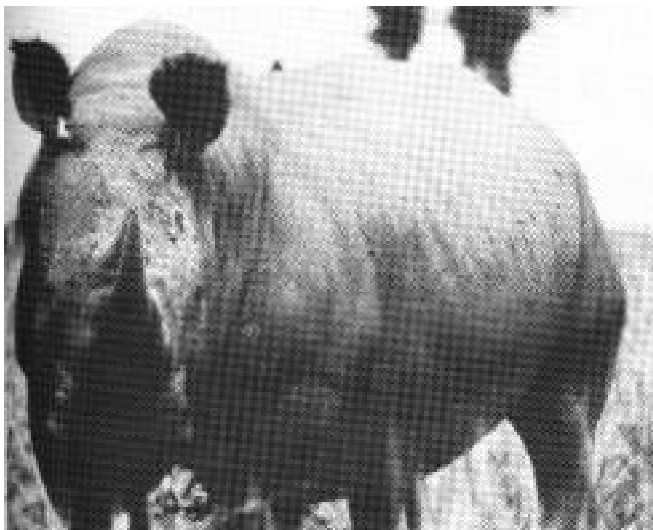
reservoir to supplement the gene pool of those in the wild. The potential for increase is therefore favourable and the Garamba population could well be over 50 in six years from now. The first increase in the number of rhinos after the creation of the Park was probably partly due to immigration. Nevertheless, its past record of rapid build-up and the example of the southern sub-species also bode well for the rhinos' ability to increase when protected.

Adequate protection, however, is going to involve international as well as national commitment for some time to come. It could be argued that conservation of a sub-species is not worth the investment. Happily though, we are not just talking of the conservation of a sub-species, but of a whole ecosystem, which includes 4,000 – 4,500 elephants, over 30,000 buffaloes, the

only population of giraffe in Zaire, 14 other species of Ungulata, 16 Carnivora, ten primates and 93 other small or medium-sized mammals, not to mention a unique habitat and a valuable National Park. Now the GRP is also moving into more extension work and conservation education, with a view to improving the lot of the local people and their attitudes towards wildlife. Within these broader contexts I believe the investment is worthwhile.

## References

1. K. Hillman, M. Bomer, Mankoto ma Oyisenzoo, P. Rogers and F. Smith, "Aerial census of the Garamba National Park, Zaire", IUCN/WWF/FZS/UNEP, 1983.
2. K. Hillman Smith, Ecosystem Resource Inventory, Garamba National Park, 1989.
3. M.R. Stanley Price, *Animal re-introductions: the Arabian Oryx in Oman*, Cambridge: Cambridge University Press, 1989.
4. D.H.M. Cumming, R.B. Martin and R.D. Taylor, "Questionnaire survey on the management and conservation of elephant and rhino", *The Status and Conservation of Africa's Elephants and Rhinos*, Eds. D.H.M. Cumming and P. Jackson, IUCN, 1984.
5. N. Leader-Williams and S.D. Albon, "Allocation of resources for conservation", *Nature*, No 336, (1988), pp 533-535.
6. K. Curry-Lindhal, "War and the White Rhinos", *Oryx*, No 11(4), (1972), pp 263-267.
7. Hillman Smith, Inventory; Garamba National Park.
8. R.N. Owen Smith, "The behavioural ecology of the white rhinoceros", Ph D thesis, University of Wisconsin, 1974.
9. O.H. Frankel and M.E. Soule, *Conservation and evolution*, Cambridge: Cambridge University Press. 1981.



Adult male rhino M9. Individual recognition is by horn shape, damage to ears, tail, and nose crinkle pattern.



Guards on patrol, Garamba National Park.