



6

Subspecies of the white rhinoceros?
W. Daffue

CHAPTER 6

Subspecies of the white rhinoceros? – W. Daffue

Two subspecies of white rhinoceros are recognized, the southern white rhinoceros *Ceratotherium simum simum* of southern Africa and the northern white rhinoceros *Ceratotherium simum cottoni* in eastern Africa. The northern white rhinoceros used to range over parts of north-western Uganda, southern Chad, south-western Sudan, the eastern part of Central African Republic, and north-eastern Democratic Republic of the Congo. The first official record was in 1903, when Major Gibbons shot the first northern white rhinoceros at the White Nile. During 1963 there were estimated to be about 1300 northern white rhinoceroses in Zaire's Garamba National Park. In 1976 there were 220 to 760 animals and in 1983 there were only 13 to 20. Retrospectively, by individual recognition, the 1984 total was put at 15, little more than one percent of the figure of 20 years previously. This population is now considered extinct, based largely on extensive and systematic foot surveys which failed to sight live rhinoceros and find any signs (spoor and dung). The decline in numbers in the Garamba National Park of the Democratic Republic of the Congo can be seen in **Figure 6.1**.

Between 1949 and 2009 there were only 22 wild-caught animals held in captivity, plus additional five rhinoceroses born, which totals 27 northern white rhinoceros, including one premature calf but excluding one northern/southern white rhinoceros 'hybrid'. Dvůr Králové Zoo is the only zoological park where northern white rhinoceroses have reproduced successfully.

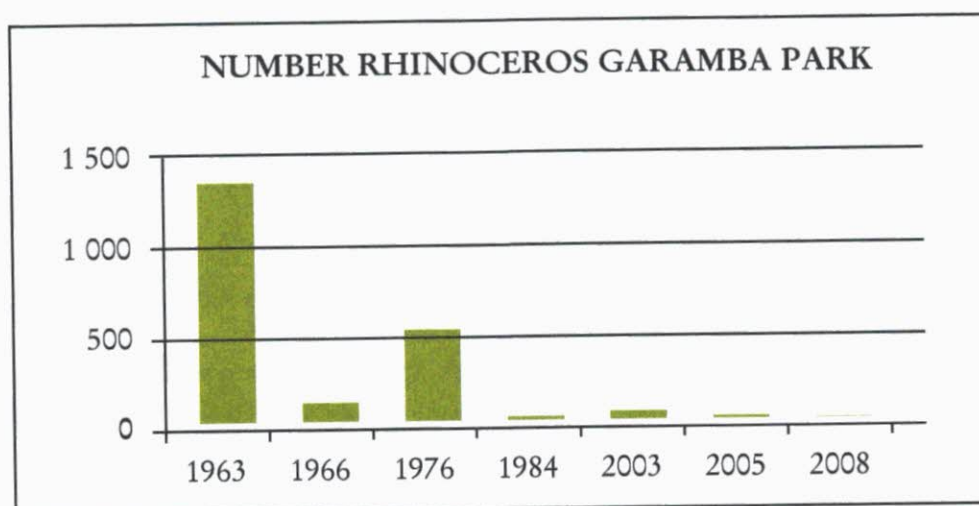


Figure 6.1: Numbers of the northern white rhinoceroses in the Garamba National Park.

The first bull calf (*Suni*) in Dvůr Králové Zoo was born in 1980 and another heifer (*Nabire*) followed in 1983. However, the breeding herd included only a single breeding cow (*Nasima*). Research on rhinoceros reproductive physiology was launched and a new house was built for the northern white rhinoceroses. During the same period it was agreed at international meetings that a part of the breeding herd would be translocated to another zoo with a warmer climate to improve the breeding results of the herd. Three 14-year-old rhinoceroses (breeding bull *Saut* and wild-caught cows *Nola* and *Nadi*) were therefore loaned to the San Diego Wild Animal Park in the USA. Subsequently, Khartoum Zoo's bull *Angalifu* was added to the cows. It was hoped that the improved environmental conditions in California and a 45-hectare enclosure would help the non-breeding cows to reproduce. Unfortunately these animals have failed to breed (Foges, 2009).

Since early 1990s, research in female reproductive cycling has been underway in partnership with the Veterinary University of Vienna. Subsequently, research in assisted reproduction was launched by the IZW Berlin's team of veterinary experts. At Dvůr Králové, none of the five attempts in two cows were successful and no pregnancies have resulted, despite repeated mating of the breeding female *Najin*.

Ol Pajeta Conservancy has a successful track record of rhinoceros conservation since 1987. The area has been selected and endorsed by the African Rhino Specialist Group on the basis of its suitable habitat for the white rhinoceros, good security, low risk of diseases and a location logistically close enough for the future translocation of rhinoceroses to their former range. It has the largest black rhinoceros population in East Africa, with 81 individuals as well as 11 southern white rhinoceroses. Ol Pajeta has a well-established and effective security unit, which includes an intensive rhinoceros patrol system necessary to prevent any poaching attempts on the black and white rhinoceros populations. The remaining northern white rhinoceroses were translocated from Dvůr Králové Zoo to Ol Pajeta in December 2009.

Groves and co-workers (2010) argued on morphological and genetic differences that the northern white rhinoceros should now be considered as a separate species. However there are a number of alternative ways to classify species. An agreement has not been found between scientists on this concept. Emslie (2011) argued that, given conservation objectives, the issue of whether or not the northern white rhinoceros should be treated as a species or subspecies is for practical purposes an academic exercise:

- 1) The high degree of relatedness of the four remaining northern white rhinoceroses at Ol Pajeta (calculated Founder Genome Equivalent of only 1.71);
- 2) The fact that any pure-bred offspring from remaining animals would be inbred;
- 3) The need to maximise reproductive output from all these northern white rhinoceroses (only one of which is young) to try and retain as many adaptive northern white rhinoceros genes as possible (by minimising loss of genetic diversity through genetic drift); and
- 4) Constraints to reproductive output. The two remaining northern white rhinoceros bulls are old and only two of the remaining northern white rhinoceros cows are young animals.

Subspecies of the white rhinoceros?

During the Pleistocene white rhinoceroses were distributed over the entire Africa continent, from the Mediterranean coast to South Africa. They were eliminated faster than the black rhinoceros in the 18th and 19th centuries and by the turn of the 20th century, there were reported to be only about 100 animals of the southern subspecies alive in Zululand in southern Africa. The last surviving white rhinoceros in Zimbabwe is thought to have been shot at Mpanda's Kraal in the north-east of the country in 1895. During 1929, the first official count in Umfolozi Reserve revealed 120 animals. An aerial survey in 1960 gave an estimate of 700 rhinoceroses. Today there are at least 10 000 animals in South Africa.

The southern white rhinoceros currently accounts for the majority of the rhinoceros taxa, with South Africa remaining the stronghold for this subspecies despite an increased poaching tendency. Sizeable populations occur in the Greater Kruger National Park and Hluhluwe-Umfolozi Park, but they also occur in numerous state protected areas and private reserves throughout the country. There are smaller, reintroduced populations within the historical range of the species in Namibia, Botswana, Zimbabwe and Swaziland. Populations of southern white rhinoceroses have also been introduced outside of the known former range of the subspecies to Kenya, Uganda and Zambia. The ownership of white rhinoceros can be seen in **Figure 6.2**.

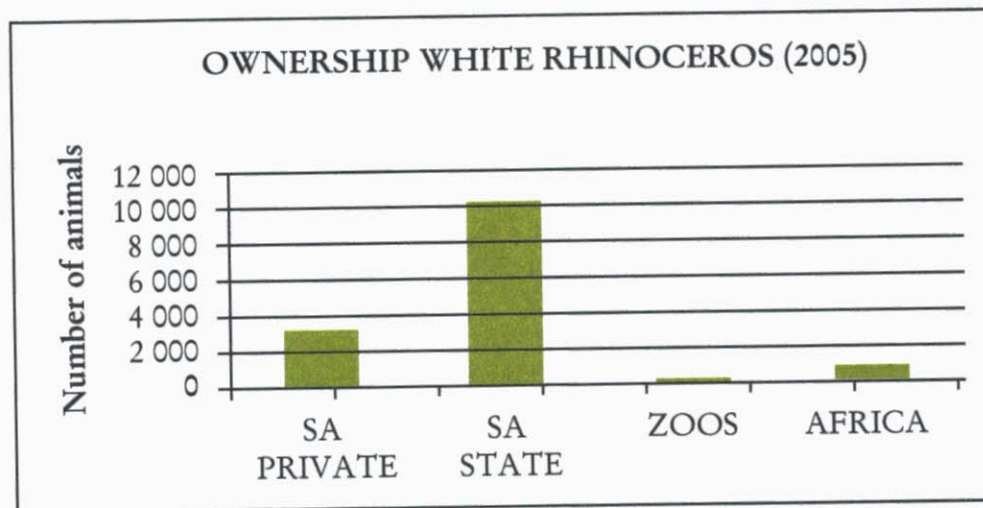


Figure 6.2: Worldwide distribution of white rhinoceros



Figure 6.3: Sudan captured at the age of three years in the Garamba National Park. Currently he is 38 years of age at Ol Pajeta Sanctuary in Kenya. Skulls differences – southern left and northern right.



Figure 6.4: Skulls differences – southern left and northern right.

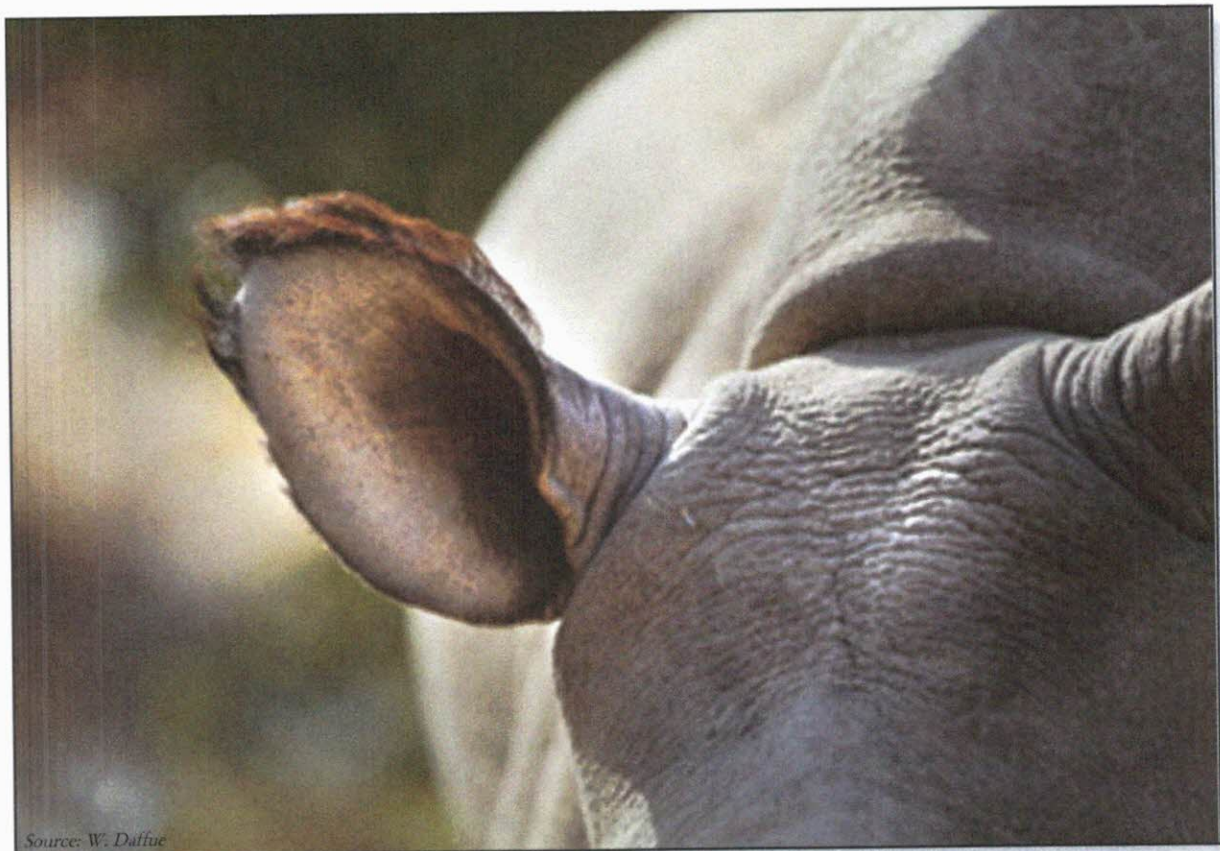
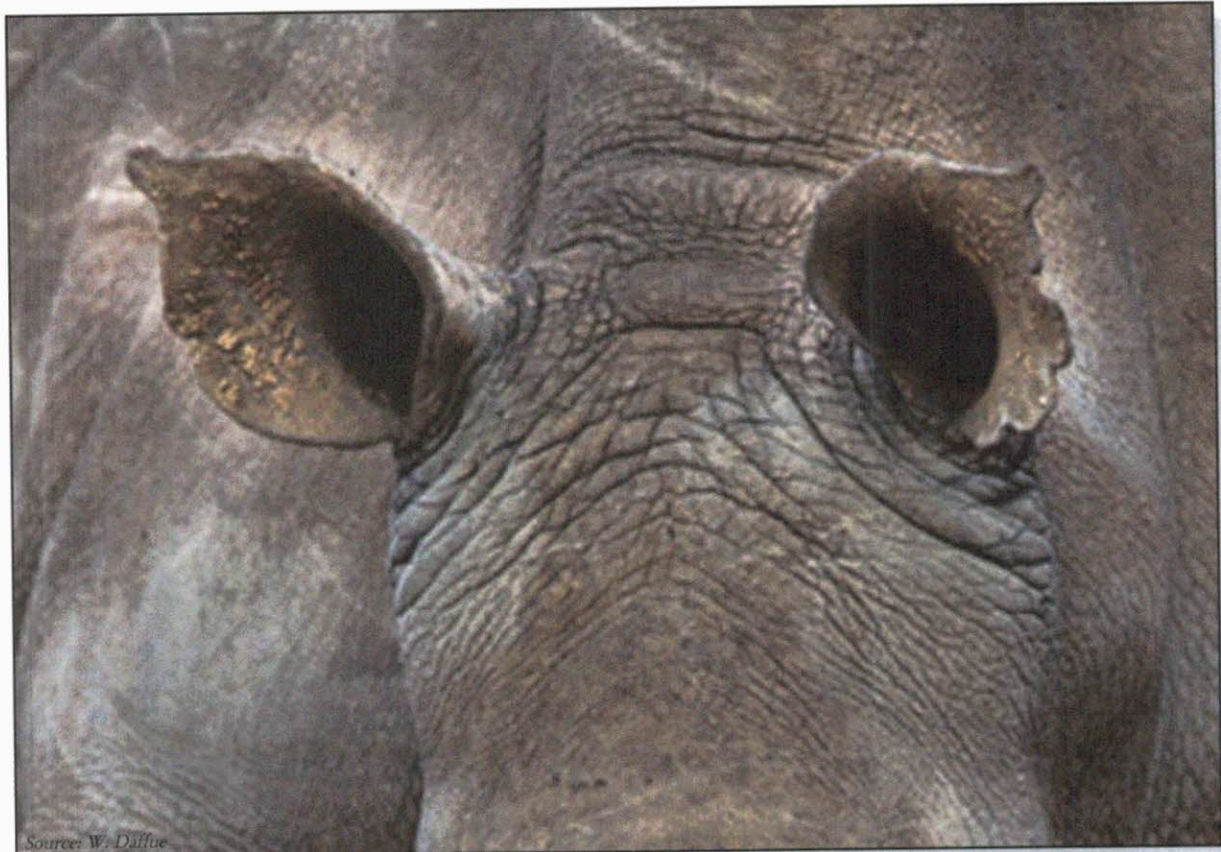


Figure 6.5: Ears of southern (top – less hair) versus northern (bottom – more hairy)

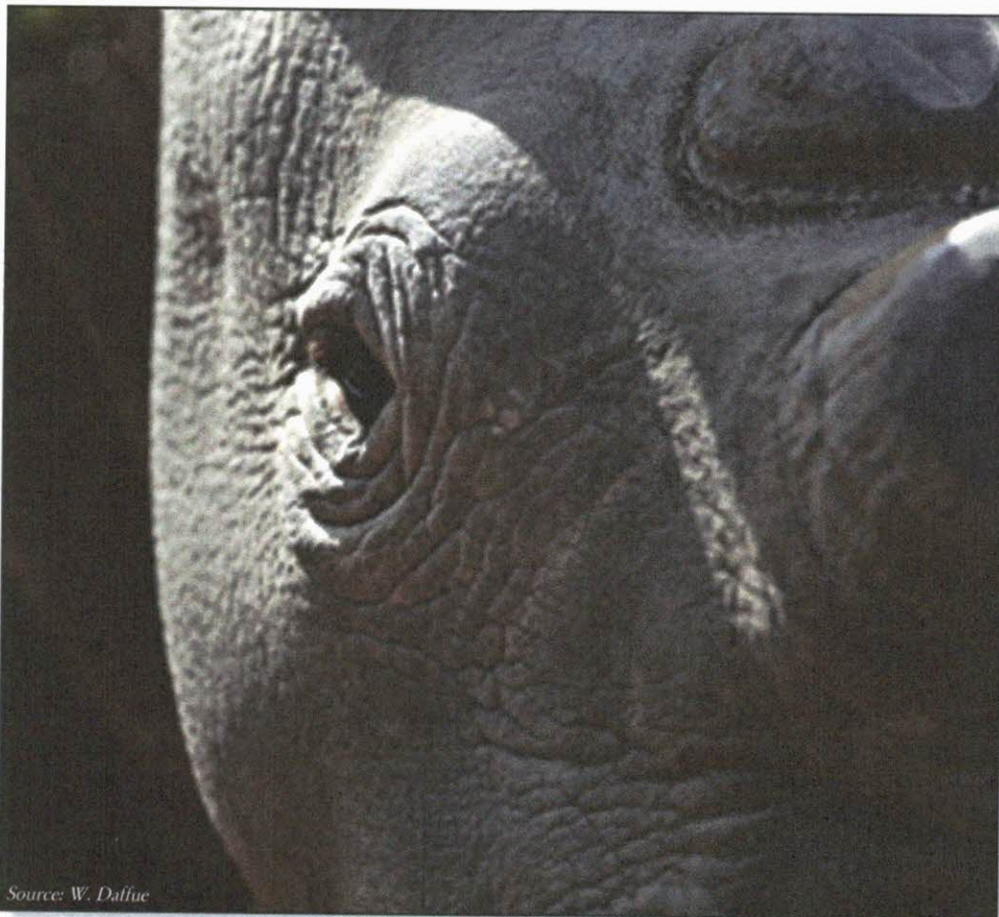


Figure 6.6: Eyes of southern (top – more skin folds) versus northern (bottom – fewer skin folds)



Figure 6.7: Southern white rhinoceros in mud bath in Kruger National Park.

REFERENCES

- Emslie, R. (2011). *Ceratotherium simum*. In: IUCN 2011. IUCN Red List of Threatened Species. Version 2011.2. www.iucnredlist.org
- Foges, R. 2009. Last Chance to Survive: Northern White Rhino Conservation Project. Unpublished Report.
- Groves, C.P., Fernando, P. & Robovský, J. (2010). The Sixth Rhino: A Taxonomic Re-Assessment of the Critically Endangered Northern White Rhinoceros. PLOS ONE 5(4): 9703.
doi:10.1371/journal.pone.0009703.