Monitoring and identification of black rhinoceros *Diceros bicornis* in Damaraland and the compilation of a population register

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Identification files for black rhinoceros in Damaraland were begun in 1982. By 1986 almost every individual animal known to occur in the area was listed and documented by means of photographs and relevant data pertaining to individual animals. The maintenance of the identification files is described as are the activities of the monitoring teams. Records show that tracking on foot is the most reliable method of censusing and identifying black rhinoceros in the Damaraland area.

Key words: Black rhinoceros, identification files, population register, Damaraland, monitoring teams, spoor size.

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Introduction

According to naturalists, prospectors and conservationists who travelled the Kaokoveld during the early 1950s it is possible that there could have been 600 or more black rhinoceros *Diceros bicornis* (Linnaeus, 1758) in the whole of Kaokoland and the same number for the whole of Damaraland in the 1940s and 1950s. Human encroachment and poaching caused a decline in those numbers, and between 1970 and 1972 43 black rhinoceros were removed from Damaraland for safekeeping in the Etosha National Park (Hofmeyr, Ebedes, Fryer & De Bruine 1975; Hall-Martin, Walker & Bothma 1988).

During the 1970s and early 1980s the poaching of black rhinoceros in Damaraland was extremely heavy and in Kaokoland the species was almost completely wiped out (Owen-Smith 1984), leaving a relict population of five or six animals. To put an end to the poaching it became necessary to patrol the area whilst trying to locate the rhinoceros and identifying their home ranges.

Identification files for the black rhinoceros in Damaraland were begun in 1982 during an investigation into the feeding habits of rhinoceros in the Ugab/Doros area (Loutit, Louw & Seely 1987). Subsequently, identification files were begun for the whole of Damaraland and the southern Kaokoland by K.P. Erb and G. Owen-Smith and continued by R. and D. Gilchrist of the Directorate of Nature Conservation and Recreation Resorts in Damaraland. During 1985-86 a census of black rhinoceros was undertaken by Owen-Smith with the Gilchrists which resulted in an excellent record of almost every individual rhinoceros in the area with photographs and relevant statistics documented. At the beginning of 1987 the Directorate began an ecological survey of Damaraland/Kaokoland and

since then regular monitoring of black rhinoceros, based on the identification files, has been carried out.

Methods

Monitoring of the different areas is done once a month on an *ad hoc* basis as far as timing is concerned. This is done on purpose to ensure that the monitoring system may not be associated with a particular time and date by which potential poachers can predict the monitoring activities. The area to be monitored is often selected in accordance with the results of the 10 hour aerial surveillance flights done every month by the Directorate of Nature Conservation. These flights, depending on the time of the year, indicate where rain has fallen and how the vegetation has reacted. Rhinoceros tend to make limited movements towards areas where showers have occurred.

The monitoring team consists of about 12 persons selected from staff members of the Directorate stationed in Damaraland and/or the Skeleton Coast Park, as well as from personnel associated with the Save The Rhino Fund, the Auxiliary Game Guards, and trackers. These people are then divided into groups of three, each consisting of one tracker, one game ranger, and one photographer. In some cases where the terrain is difficult, the groups may pair up or the team may work as a unit walking abreast to locate the spoor.

The region to be monitored is divided into areas to be searched by each group. When a fresh spoor is located it is followed on foot until the rhinoceros is sighted. Water-holes are inspected for fresh spoor in the early morning and the fresh tracks are followed on foot until the rhinoceros are sighted. Furthermore, the area which is monitored is thoroughly searched thereby ensuring that there have not been any unwanted intruders.

When the rhinoceros is located each member of the group is allocated a particular task. The tracker will note the ear-notches, the ranger notes any tail deformities and sex of the calf or individual, while the photographer endeavours to get a side view, front view, and back view photograph of the animal(s). After the rhinoceros has moved off, the hind foot spoor measurements are taken. The locality of the sighting is noted. Food plants are also noted if the rhinoceros was encountered whilst feeding. The physical condition of the animal is recorded as 1) good; 2) fair; or 3) poor. On return to camp the specified rhinoceros identification forms are filled in for each individual or cow and calf pair.

Results and Discussion

The data collected for the record files are diverse. The most important aspect probably relates to the monthly sighting records. Each rhinoceros sighted is recorded on an annual record list. This list is divided into columns in which records of male and female calves, subadults, young adults, adults, and unsexed individuals are noted. The records also include codes, names, cows with calves, spoor sizes, ear notches, month in which they were seen, and the observer's initials. Notes on behaviour are also recorded on the pre-printed form or into a notebook. The sightings of rhinoceros are plotted on a map in a different colour for each individual or cow/calf pair and each sighting is numbered to define the individual movements. The estimated dates of birth of calves and estimated age of subadults when weaned are also entered on the form.

The records indicate that at present (1987-88) a total of ± 100 rhinoceros (including Kaokoland's five) occur in the area. It is possible that there could be another five or six individuals which have not yet been positively identified due to the difficulty of identifying sub-adults which have not yet developed specific characteristics such as ear notches or horn shapes.

The measurements of the hind foot spoor has proved extremely helpful once a group of rhinoceros inhabiting a specific home range had become

known to us. Spoor measurements are also helpful in estimating the age of a juvenile animal, enabling one to recognise a particular cow/calf pair if for some reason the animals were not physically located (e.g. impending dusk and nightfall). Individual spoor measuring more than 20 cm in width will usually indicate an adult bull, as most adult cows' spoor are often accompanied by a juvenile. Spoor measurements of between 18 cm and 19,5 cm are generally indicative of sub-adults or young adults. However, there are two records of exceptionally large measurements of 21 cm for subadults under the age of four years.

Horn sizes are extremely variable and it was found that it was not possible to estimate either the age or sex of a rhinoceros by the size of the horn. A table indicating the angle and size of the horns of known rhinoceros is used as a guide for the game guards and trackers to use when filling in the I.D. forms which require the horn shape to be drawn in.

The location of rhinoceros has been achieved by means other than tracking on foot, but our records show that tracking on foot is the most productive method. This method also ensures that the areas monitored are thoroughly searched for snares or signs of other malpractices which may take place in that area. The various methods by which black rhinoceros were located and counted between August 1987 through August 1988 are as follows: random driving through an area accompanied by visitors (11); patrols by the Directorate of Nature Conservation (19); searching from a viewpoint with binoculars (7); tracking on foot (65); tracking by vehicle (10); and surveillance from the air (33).

Since the beginning of 1987 there has been one known mortality. A sub-adult bull died of anthrax at a remote water-hole. All the rhinoceros known to drink at the water-hole were vaccinated and the water sterilised. No further deaths of any game have been reported from that area.

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