

may have been missed from the air, but inconsistencies in the ground counts make it impossible to apply correction factors. Our estimate therefore from a critical examination of all results is that at least 15 to 20, possibly more, white rhinos still exist in Garamba. They are confined to a fairly localised area.

The population is dangerously low but should be viable if a major input is made in Garamba and the northern whites already in captivity are managed to improve breeding with potential for genetic exchange. Garamba is a beautiful, productive and well-watered area with large numbers of other animal species, particularly buffaloes and elephants (of which there are estimated to be 5000 in 1600km<sup>2</sup>). Another major advantage is the well established infrastructure which can be re-developed.

The park staff lack equipment, funds, vehicles and supplies but IZCN has already taken steps to concentrate on rhino protection and research under Mankoto ma Oyisenzo and has invited an expatriate researcher. Some of the equipment priorities identified during the November mission have already been met. Other urgent requirements are needed immediately. A larger project should be developed to ensure that the rhinos are protected and managed along with the whole ecosystem.

Patrol bases are presently being established in the rhino area for intensive surveillance. Radio collaring is suggested as part of the future programme of intensive protection and management.

Strong possibilities exist for tourist development of the Garamba, which has several unique features, in particular the only African elephant domestication project. Although there are only four surviving trained elephants, there are proposals to catch and train more.

An excellent chance now exists to save the last most viable northern white rhinos in the wild, while conserving and developing a fabulous area. It must be seized.

The results of the survey have emphasised how important it is to develop the breeding and management of the northern white rhinos already in captivity. It was believed that there were only fourteen in captivity but recent information indicates that there are more. The possibility of consolidating these animals into two groups is being considered and the International Union of Directors of Zoological Gardens and American Association of Zoo Parks and Aquariums have agreed to oversee a programme. The largest group at present is the eight in Czechoslovakia which are breeding, but slowly. Artificial insemination is being developed and it is possible that semen could be collected from immobilised wild rhinos in Garamba.

An investment of money and effort is needed now for a co-ordinated programme of conservation in the wild and development of captive breeding to ensure that northern white rhinos and their habitats continue to exist.

Kes Hillman

## Selous Aerial Survey 1981

On behalf of the Tanzanian Rhino and Elephant Task Force a census was carried out in the Selous Game Reserve in Southern Tanzania in 1981. About 35% of the 55,000 km<sup>2</sup> Game Reserve was surveyed and the results were compared with a survey that had been carried out by Douglas-Hamilton in 1976.

The elephant numbers seem to have remained stable between 1976 and 1981. Numbers counted were 82 628  $\pm$  17% in 1976 and 85 504  $\pm$  12% in 1981. As data could be compared only for the wet season, when visibility is not optimal, the estimate is conservative. The actual number of elephants is probably nearer 100,000.

Elephant skeleton densities have increased by about 50% from 1976 to 1981 and the ratio of dead to live elephants has risen from 7.8% to 12.3%. This indicates a higher mortality rate in the elephant population. The distribution pattern of skeletons along access routes and close to settled areas indicates that the higher mortality in elephants is due to poaching.

We can conclude that the elephant population of the Selous remained at about the same level between 1976 and 1981, but that poaching in the more accessible areas has markedly increased.

Survey data seem to suggest that the total (corrected) number of rhinos in the Selous has decreased from about 5,000 to about 3,000 animals in the last five years. These figures must however be considered with reservations. Although there were

high 95% confidence limits on both counts (46% and 44% respectively) our ground counts showed clearly that aerial surveys have only limited value for counting rhinos. Using the results of ground counts we worked out a rhino correction factor of  $\times 2.55$  in the wet season for that specific area and vegetation cover. We were unable to work out a correction factor for the dry season, due to different behaviour patterns of the rhinos, who concentrate in riverine forest and thickets during this season.

According to professional hunters and Wildlife Division staff, rhino poaching is occurring occasionally but has not yet reached an alarming level.

The 3,000 rhinos estimated make the Selous black rhino population the largest in the world.

Up to date the best protection for the wildlife in the Selous Reserve was the vastness and inaccessibility of the area. SHELL is at present building seismic roads into three quarters of the Selous Game Reserve, thus making it unfortunately also accessible to illegal hunting.

A number of recommendations were made to improve protection and management of the Selous. The AERSG is making a high level approach to SHELL, to assure their cooperation in minimizing the negative effects their present work has in the Selous Game Reserve.

Markus Borner