

Davidson B. Wildlife Society cheetah status survey. (unknown).

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Abstract: Until about 1960 the cheetah was considered to be an animal which could not be bred in captivity, the success rate was abysmally poor. Since that time, in at least a dozen centres, this species has been successfully and reliably bred. The success achieved would appear to be at least in part due to the provision of sufficient free space, and the presence of only one male with the female in oestrus. This breeding policy does have its drawbacks. Some breeders achieve success with relatively little trouble, whilst others using very similar methods have little success. Various reasons are discussed.



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The anomalous position of the cheetah: sufficient numbers not to be considered endangered, but such poor genetic diversity as to be severely imperilled.

Until about 1960 the cheetah was considered to be an animal which could not be bred in captivity, the success rate was abysmally poor. Since that time, in at least a dozen centres, this species has been successfully and reliably bred. The success achieved would appear to be at least in part due to the provision of sufficient free space, and the presence of only one male with the oestral female. This breeding policy does have its drawbacks. It is very tempting to consistently use "proven" males and females, and thus limit the genetic variation. In a wild situation, with no special limitations imposed by Man, this is a common occurrence amongst many species. The wolf, for example, appears to only permit mating between the dominant male and dominant female; this is however a social animal. The situation may be different amongst the typically asocial Felinae. The underlying problem is the perennial chestnut of man's anthropomorphic analysis of the requirements of another, only slightly related species. A particular method may work with the wolf but what is important, environmentally to the cheetah for successful breeding?

Some breeders achieve success with relatively little trouble, whilst others using very similar methods have little success. Thus there are obviously factors affecting cheetah breeding beyond the current state of our knowledge. One factor which may be contributing to the great variability between the success rates of different centres is the source of the animals comprising their breeding stock.

The cheetah has been shown to be a genetically impoverished species. This results in animals of apparently very divergent backgrounds actually being

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very closely related genetically. Thus the classic problem of the poor fecundity of close relatives raised its ugly head. Lack of variation has been demonstrated between many Southern African cheetah and in several ways. Specific proteins have been shown to be deficient in diversity, also there is a lack of range of response to infective material. These two points indicate close relationships between individual cheetah, but the real crunch evidence concerns the ability to transplant skin from one individual to another. In humans this is not easy, and careful compatibility tests must be performed first. In mice and rats approximately one skin graft in 50 is successful if the donor and recipient are chosen randomly. Tests performed between cheetahs of Southern African heritage, both in the USA and in South Africa/Namibia, showed hardly any rejection of transplants at all; indeed most grafts were completely accepted by the recipient with no signs of



rejection. Thus from a genetic point of view the cheetahs of Southern Africa are like a closely knit and inbred family. This lack of diversity is thought to stem from a population bottleneck which probably occurred about 10 000 years ago when several other species actually became extinct. Examples of this are the Giant Sloth and the Cape Lion. It would appear the cheetah only just survived.

So what? How is this relevant to the conservation of the cheetah? Lack of genetic variation results in most individuals being very similar in response to external phenomena. Thus if one individual is susceptible to a specific virus then all, or most, of the others will be. The recent epidemic of horse virus which swept through the racehorses of this country is a good example of this. If it happens to be a generally lethal infection then most of the population will succumb in a short space of time; and insufficient numbers may be left to regenerate the species. These sort of considerations are thus very important when assessing the potential for survival of any particular species. Unfortunately, such data is very thin on the ground and not many species of wild animals, especially those on the endangered, threatened, and marginal lists have been examined. It is obvious that to consider only numbers of a species will thus give a potentially distorted picture of that species ability to survive. One wonders just how many other species smuggly considered to be safe really are safe!

However, one has to have reliable figures relating to numbers and distribution before any sort of assessment of other relevant parameters can be undertaken. Thus we have initiated a programme to try to ascertain the numbers, distribution, and rate of proliferation or decline of the cheetah throughout Africa both in the wild and in captivity. Such a survey was first carried out in the early 70s, but with the rate of expansion of Man and the high levels of poaching, the results are now very much out of date. This programme is being coordinated by the personnel of the Endangered Species Sub-Committee of the Transvaal Branch, and because of the less than ideal relations this country enjoys with her neighbours and others in Africa, all communications are being routed through other countries. To date we have despatched letters to the Heads of State, and their Heads of Conservation, of all the countries where cheetah were reported to be extant at the time of the previous survey. We are at present awaiting replies.

Bruce Davidson, 36-year-old Londoner, first became interested in Conservation as a 12-year-old. He now has a PhD and is a Research Officer in the Department of Biochemistry at 'Wits' Medical School. He spent 5 years at the Research Institute at the London Zoo and is interested in the genetic make-up of the African Fauna. Bruce is an active member of the Wildlife Society's Transvaal Branch Endangered Species sub-committee.