



Ms Nosipho Ngcaba
Director-General
Department of Environmental Affairs
Private Bag X447
Pretoria
0001

Fax: (012) 320-7026

Dear Madam

Ref: 1/1/40/1

SCIENTIFIC EVIDENCE ON COLOUR MUTATION / VARIATIONS

I refer to your inquiry, dated 19 March 2010, regarding the selective breeding of rare colour morphs of various game species in South Africa. In response to this inquiry, the Scientific Authority would like to submit the following for your noting:

The genes responsible for rare colour morphs in a wide range of wildlife species are generally recessive in nature and are therefore very infrequently expressed in naturally occurring populations. Game breeders however select homozygous recessive individuals to breed from in order to ensure that the rare coat colour is expressed in the offspring. Due to the fact that the founder population is very small and often made up of closely related individuals, evidence of inbreeding depression is often seen within a few generations. Depending on the scale, such practices could be construed as a form of genetic manipulation.

The threat posed by the selective breeding of recessive colour morphs will depend on the size and genetic make-up or diversity and viability of the population receiving these recessive colour morphs. Relatively small receiving populations or threatened taxa could be more vulnerable than large or genetically more diverse populations. It is highly unlikely however that animals selectively bred for the expression of a rare coat colour would have any significant effect on a natural population should they escape, as the homozygous recessive genes would clearly have little effect in an overwhelmingly heterozygous population. The only real threat may arise in a situation where there is a large scale “mixing” of recessive colour morphs into a population of dominant colour morphs, which in practice is highly unlikely to occur.

Office of Prof John Donaldson
SANBI, Private Bag X7, Claremont, 7735, SOUTH AFRICA
SANBI, Kirstenbosch Botanical Gardens, Rhodes Drive, Kirstenbosch, SOUTH AFRICA
Tel: +27-21-799 8771; Fax: +27-21-762 5834; e-mail: Donaldson@sanbi.org

The breeding of genetically inferior recessive colour morphs does not further the conservation of South Africa's wild biodiversity and therefore cannot be supported. However, the Scientific Authority currently views this as a low risk threat to the species that are likely to be affected and therefore does not recommend that it be legislated against. The Scientific Authority would however like to recommend the following:

1. Selectively breeding for rare colour morphs should be discouraged or disincentivized as an undesirable practice and game farmers who wish to manage their farms and animals using sound ecological principals should be incentivized.
2. Conservation authorities should be aware of the potential threat that could result from this type of practice and the risk should be monitored and evaluated on a regular basis. Towards this end, the Scientific Authority recommends that:
 - a. All breeders register with DEA.
 - b. Breeders report annually on the number of animals leaving (i.e. being released from) their facilities each year, as well as the destination of the animals leaving.
 - c. DEA report on the number of animals of each species' recessive colour morph being released in each province, relative to the total population of normal colour animals in the province.

On this basis the Scientific Authority will be able to monitor the impact on wild populations and take relevant management actions before the practice becomes a real threat. The Scientific Authority, in conjunction with DEA, should decide on and agree to a threshold to initiate stricter regulation

3. The general public should be properly educated in these matters, so that conservation funding is not misdirected to illegitimate conservation programmes, such as the campaign to save the white lion from extinction as if it were a separate species.

Please find attached two supporting documents compiled by Scientific Authority members, Dr Adrian Tordiffe (National Zoological Gardens of South Africa) and Dr Kas Hamman (Cape Nature).

I trust that you will find this information useful.

Sincerely



pp Prof. John Donaldson
Chief Director: Applied Biodiversity Research Division
10 September 2010