

CHAPTER 6 : LEOPARD CONSERVATION IN FARMING AREAS OF THE TRANSVAAL.

INTRODUCTION

Leopards have one of the widest geographical ranges of large terrestrial mammals and are the most widely distributed of all the world's large cats. Despite years of persecution they are still to be found in China, parts of the Middle East, over most of Africa and even industrial South Africa (Norton 1984).

The status of leopards has given rise to controversy, but in Africa it is generally accepted that they are not in immediate danger of extinction (Myers 1976; Eaton, 1978; Martin & De Meulenaer 1987). However in most African countries leopards are 'threatened' mainly due to the decline in area of their natural habitat, their potential for predation on live stock and by their use in the fur trade (Hamilton 1981). The South African Red Data Book Terrestrial Mammals (Smithers 1986) listed leopards as rare, not endangered or vulnerable, but at risk. In South Africa substantial leopard populations occur on our larger game reserves (Kruger National Park, Kalahari Gemsbok National Park, and Hluhluwe/Umfolozzi Game Reserve). Nevertheless, a large proportion of the South African population occurs outside these large protected areas (Norton 1984), especially in the Transvaal where leopards are gazetted as Protected Wild Animals (Ord.12, Art.15). This means that a permit is required to hunt leopards, except where they have killed livestock. In such cases the incident must be reported to the relevant authorities within 24 h.

Their presence and future survival on private land in the R.S.A. gives cause for concern. Not only is available natural habitat declining, but livestock owners lose thousands of rands from cattle losses caused by

leopards. In the process indiscriminate measures (poisoning etc.) taken by farmers, negatively influence whole ecosystems in that other rare secondary consumers disappear where leopards are intensively exterminated.

OBJECTIVES

Examining a conservation strategy for a specific predator species which competes with man in agriculturally developed areas, necessitates consideration of a number of factors. However, in the Transvaal, with its diverse farming activities, the situation is even more complex.

For this reason options for a specific strategy cannot always be applied consistantly. In a global approach the following information is necessary:

- a. A distribution map for leopards in the Transvaal whereby viable populations and areas of conflict are identified.
- b. Estimated number of leopards in the Transvaal.
- c. Information on what is happening in these areas i.e. the scope of the problem must be ascertained.
- d. Feasible solutions and human and financial resources to implement these, must be available.

METHODS

Information regarding distribution of leopards, their status in these areas as well as problems associated with their presence, was gathered from farmers, officials of the Transvaal Division of Nature and Environmental Conservation (TPA) and the Police. Information on distribution was plotted on a 1:250 000 Topo cadastral map.

The number of leopards in the Transvaal was estimated by means of

extrapolating information gained from radio collared leopards in the Transvaal Waterberg (Chapter 3), Transvaal Lowveld (Hornocker & Bailey 1986; le Roux & Skinner 1989), Kenya (Hamilton 1981), Zimbabwe (Smith 1977) and Tanzania (Bertrum 1978) to their occurrence and status in different areas of the Transvaal.

Potential solutions to the conflict between farmers (cattle and game) and leopards were discussed in depth with farmers in different areas and in different situations. The use of an electric fence, acting as a barrier between leopards and cattle calves was investigated as a possible calf protection strategy (CPS) in certain situations. A 400m paddock with a 1,2 meter high fence, consisting of five wire strains was erected in the Mabula Game Reserve. Two of the strains, 100mm and 350mm above ground level, were electrified.

Two domestic goats were kept permanently in the paddock for the period August to September 1987, to establish whether leopards could penetrate the barrier. An electric pulse with a voltage of seven thousand (0,5 Amps) was consistently supplied over this period with a battery driven Gallagher E9 energizer (Gallagher Poldenvale, Pietermaritzburg R.S.A). A sunpanel (Meps Electronics Witrivier R.S.A.) charged the battery.

RESULTS

Viable populations and high conflict areas

With the exception of areas north of the Scutpansberg and in the Lowveld, all leopard strongholds and resultant conflict zones are restricted to mountain ranges (Scutpansberg, Waterberg, Magaliesberg, Drakensberg etc.) and broken terrain in the foothills of these mountains (Fig. 21).

Estimated number of leopards in the Transvaal

The following leopard densities were recorded so far in different savanna areas of Africa :

Tsavo National Park, Kenya = one leopard per 13 km^2 (Hamilton 1976),
 Serengeti National Park, Tanzania = one leopard per 29 km^2 (Bertram 1978),
 Kruger National Park, R.S.A. = one leopard per 6 km^2 (Bailey, pers. comm.
 in Hamilton 1981)
 Rhodes Matobos National Park, Zimbabwe = one leopard per 5 km^2 (Smith 1977)
 Waterberg (Naboomspruit) = one leopard per 53 km^2 (present study)

The leopard density in the Naboomspruit area can be regarded as fairly low, as areas with much higher densities exist (e.a. Melk River study area pers observ., Transvaal Lowveld (le Roux & Skinner 1989). Two conservative categories of leopard density were (subjectively) assumed to be representative of core and low density areas (Fig 21), namely one leopard per 30 km^2 and one leopard per 60 km^2 respectively. The total low density areas in the Transvaal (Fig 21) totalled 19500 km^2 , while that of core areas were determined at 39500 km^2 (G.I.S. Lab, University of Pretoria). Thus, giving an effective population estimate of 1642 individuals for the Transvaal, outside of the Kruger National Park, Independent States and Selfgoverning States.

The scope of the problem

How are stock and game farmers being affected?

Leopards in the Transvaal are responsible for taking a considerable number of livestock each year, the majority being calves up to four months old. These calves are captured mostly in mountainous veld (rocky areas), remote from human disturbance (Chapter 4). The present economic depression

- 100 -



Figure 21 : Leopard distribution in the Transvaal.

necessitates that farmers get the maximum use out of their land. The current high meat price also exacerbates these losses.

On game farms the impact of leopards on the young of valuable game animals must not be underestimated. Due to high costs, regarding the acquisition and relocating of game on private property, leopards are seldom tolerated on these farms.

How are leopards being threatened in these areas?

The elimination of leopards mainly happens by means of trap-cages, setguns and poison (toxicants). Trap-cages are seldom successful. Gintraps and setguns on the other hand are very effective although indiscriminate when not used with caution. These devices are not only applied due to the above-mentioned leopard/farmer conflict situations, but are also important in the local fur trade and even for trophy hunting as some hunters do pay to shoot leopards in gintraps and trapcages.

At present many leopards are killed by individual farmers with considerable experience in killing leopards (by means of gintraps and setguns). Most farmers rely on them to eliminate leopards that have actually killed calves. What was initially done as a hobby and 'community service' is turning into a profit making scheme, whereby innocent leopards are also disposed of. The present demand and high value of leopard pelts compensating for their efforts.

Poisons such as strychnine, folidol etc, on the other hand, are used irresponsibly by many cattle and game ranchers in an attempt to destroy all predators, including leopards. These poisons also contribute to the absence of vultures and several eagle species in most of the Northern

Transvaal (van Jaarsveld, pers comm.*).

Complete destruction of parts of the leopard's natural habitat due to crop farming (bush clearance) on mostly marginal land, may eventually lead to islands of small leopard populations. Such populations may not be viable in the long term, because of possible loss of genetic diversity (Humphrey 1985).

More emphasis must also be placed on preventing the elimination of natural prey species, especially small mammals and game birds in farming areas of the Transvaal. Most farmers are unaware of the fact that many farm labourers supplement their food supply by using dogs, snares and different traps to capture small mammals and game birds. At the end of the day, two to three large families can have a definite influence on the number of prey species.

This trend in some areas not only leads to dangerously low leopard densities, but also to an increased risk of calves being taken and the subsequent schooling of problem leopards.

All leopards are potential stock killers, a leopard that takes a calf is not necessarily a problem leopard. Only when taking calves on a regular basis, and/or making an effort to get into a paddock or enclosure, can it be regarded as a problem leopard.

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Feasible solutions

Electric fencing :

During the 60 day trial (August/September 1987), leopard spoor were found on ten occasions in the vicinity of the electrified enclosure. The fence was however not crossed and both goats survived.

DISCUSSION

Much speculation has arisen as to the minimum population size of a large mammal population to ensure genetic viability. It has been established that large carnivores generally exhibit a higher degree of homozygosity and probably possesses fewer alleles per gene within any given population than is the case in herbivore populations. It might well be that carnivores have found another way of coping with their evolutionary adaptability problems. However this aspect may make a large carnivore less genetically adaptable and therefore more vulnerable (Leyhausen 1986).

Much more intensive research is needed to answer these questions on the genetic diversity of species and of the number of individuals necessary for the long term conservation of a population (Humphrey 1985).

For Indian tigers (Panthera tigris tigris) a minimum number of 300 individuals has been suggested (Leyhausen 1986). The conservative figure of 1642 leopards in the Transvaal (outside the Kruger National Park, Independent and Selfgoverning States) seems therefore from an adaptive variability point of view out of danger.

Although information on different aspects of gene flow of free ranging leopard populations are lacking, Figure 1 shows that different leopard populations in the Transvaal are currently to a large extent linked, which

makes natural gene flow a possibility.

Another encouraging tendency, from a leopard's point of view, is the vast number of private game ranches proclaimed in the Transvaal. Although suitable areas for leopards thus exist (Fig.21), these may not be available as homogeneous units in the future, due to increasing human pressure. It is therefore important to start concentrating on the monitoring of habitats providing leopards with strongholds.

What is proposed, is not to isolate these identified habitats which would comprise thousands of hectares as nature reserves, but rather request that they be reserved in the future as 'nature areas'. In order to achieve this it is proposed that details of leopard distribution be provided to the co-ordinators of the S.A. Plan for Nature Conservation. The S.A. Plan for Nature Conservation, administered by the Department of Environmental Affairs in conjunction with the provincial authorities, has as its aim the establishment of a scientifically based national network of protected areas.

The S.A. Plan, in it's selection of an area, looks at a variety of factors such as ecological diversity, threatened plants and animals scientific value etc. In the selection of an area, every effort is made to ensure that only the 'best' areas are protected. It is possible that habitats identified as leopard strongholds are also worthy of protection in terms of other characteristics. The presence of leopards would thus be an additional motivation in a decision making process.

The reservation of an area as a 'nature area' will mean that there is no change in ownership and that the landowner can continue with his current activities. It will also mean that a scientific management plan can be established for the total area. To enable this, and appropriate boundary definition for the 'nature areas', information about certain

aspects of leopard ecology in different ecosystems of the Transvaal must be available. This information is also essential for proper future monitoring.

Conservation of the leopard's natural prey species, especially small mammals and game birds cannot be over emphasized. Although nature conservation officials confiscate hundreds of snares each year, the majority are not detected (K. Myburg. pers. comm.)* due to the large areas involved and the remoteness of many farms.

In this regard many farmers must definitely consider providing supplementary protein rations for labourers, to prevent unnecessary hunting pressure on small game. Conservation of this sector of the fauna will reduce the potential loss of cattle calves and valuable antelopes.

In the Transvaal, cattle farming is being conducted under intensive and extensive conditions, in different veld types (sweet, mixed, sour bushveld). This together with diverse farming policies applied by individual farmers makes a generalised solution regarding the leopard/cattle conflict very difficult.

As most losses are of new born calves, the leopard/cattle contact problem can be overcome to some extent by adapting stock management to the threat. For example synchronisation of calving and removing calves from high risk areas.

* Although the maintenance of a high level of vigilance is essential, it is considered as not being a long term solution. It is therefore suggested that the following measures be considered:

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Although many farmers do practice this, much more can be achieved in this regard. Improved synchronisation of calving periods together with advanced planning concerning rotational grazing programmes, whereby high risk camps are only used prior to the calving period, and when calves are older than six months, can be applied with considerable success.

A calf protection strategy (CPS) with the emphasis on the prevention of the risk factor in terms of locality of camps and calf age, is definitely a crucial component of a long term leopard conservation strategy in the Transvaal. On farms where such measures are impractical or where drought has complicated management, prevention of stock losses through farm management must be through other actions. The most realistic approach would be the construction of a physical barrier such as an electrified fence (Norton 1985), which may effectively deter a leopard from hunting. However the permanent exclusion of leopards from large farming units through electric fencing, might solve the conflict problem but will not satisfy the global objective, namely the conservation of the species.

Emphasis should be placed on the fact that electrified fencing should be used as a supplementary action for high-risk paddocks during specific times, when other measures are not possible.

In addition, specific use of such measures on a small scale, for instance the creation of overnight electrified paddocks (1-2 ha) may also be considered as protecting calves in exceptional circumstances.

Although the maintenance of an electrified fence, especially longer fences over rough terrain, may at first cause some difficulties from a farmer's point of view, these can be overcome. As energisers, batteries, shockboxes and sunpanels are mobile, it means that only one such unit set need be used on a farm. Expenditure wise the first kilometer will cost R2189,00.

It entails :

1 x Meps 122 (12v) Energiser	R 460,00
1 x 12 Volt Battery 610	R 120,00
1 x Shockbox	R 195,00
1 x 12 Watt Sun Panel	<u>R 386,00</u>

Sub.Total: R1161,00

30 x LIM Clamps	R 18,00
30 x Strain Insulators	R 360,00
1000 x UNW Insulators	R 350,00
2 x 50 kg Steelwire (2,2mm)	<u>R 300,00</u>

Sub.Total: R1028,00

Total : R2189,00

The second kilometer up to 6 km will cost R1028,00 per/km. Problem leopards causing damage which are not deterred by the above-mentioned measures, should be eliminated immediately.

Game ranching has over the years grown into a multi million Rand farming industry. The availability of leopards for trophy hunting purposes is however still a controversial matter. At present land owners in the Transvaal can apply for permits to hunt (trophy) leopards (Ord.12, 1983 Art.18) for themselves or for any other person, providing that the species occur on the property on a permanent basis.

However landowners are not allowed to hunt a Protected Wild Animal (i.e. leopard), which has been lured by bait on account of it's edibility,

smell or taste, or by any sound. (Ord.12,1983, Art.23), unless livestock* have been killed by the animal and therefore naturally lured due to the audibility, smell or taste of the kill. Many leopards are illegally hunted in this way and with the aid of gintraps or trap-cages (without stock being killed) for trophies.

Leopards outside Game Reserves are seldom seen because of their shyness. Therefore hunting of leopards under normal hunting circumstances for trophy purposes is virtually impossible. Adjustment of the Ordinance in terms of baiting (hunting from a hide) will make leopards more available, thereby turning them into an economic asset. In other words, sustainable utilization, which can be interpreted as using the interest and keeping the capital. Nevertheless it is still very difficult to bait leopards, so the actual number shot annually should not increase, but the actual figure for leopards culled in this fashion will become apparent. Such more representative statistics will eventually promote a long term conservation strategy for leopards.

A strict well controlled scientifically based permit system, together with a licence system regarding the possession of leopard skins and trophies, as applied in the case of elephant tusks, is however essential.

Recommendations for the number of permits to be issued for trophy hunting in each district of the Transvaal, are at present the responsibility of law enforcement officials of the Division of Nature and Environmental Conservation (TPA). Although decisions are made based on

*Livestock: Horse, mule, ass, bull, cow, calf, sheep, goat, pig or poultry.

inadequate data this is the only option in the absence of information regarding the different leopard populations in the Transvaal. The number of leopards hunted during the last three years, were 22 in 1986, 51 in 1987 and 47 in 1988 (F. Postma pers. comm.).

The total number of permits issued annually in the Transvaal for exporting trophies, is with effect from 1 January 1990 however subject to the granting of a CITES quota. This must definitely be backed up by a licence system for the possession of leopard skins and trophies. Such a licence system will not only provide vital representative information (up to date lacking) on how many leopards are killed (problem or trophy hunting) annually in the Transvaal, but will also identify problem areas (districts) and prevent uncontrolled trade in specimens.

Any individual who persistantly attempts to get a licence for more than one or two skins will attract attention and the case can be investigated. The current system whereby farmers in the Transvaal only need to report the killing of a leopard (that caused damage) within 24 h to a local authority are inadequate. Only the more conscientious farmers bother to notify the authorities, and a significant number of skins enter the illegal trade.

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Any landowner who legally hunted a leopard may dispose of the skin without being the holder of a permit (Postma pers. comm.).

A controversial matter is that leopards are at present included in Appendix I, of the Convention In International Trade in Endangered Species of Wild Fauna and Flora (CITES). Appendix I includes all species threatened with extinction, which are or may be affected by trade. Trade (export), in specimens of these species is subject to particularly strict regulation, in order not to endanger their survival, and is only authorised in exceptional circumstances. No trade is allowed - only export of hunting trophies or personal effects.

Trade in specimens of Appendix I species, also requires the approval of the Scientific and Management Authorities in the importing country, notwithstanding permission given by the exporting country. For species in Appendix II, only the Scientific and Management Authorities of the exporting countries are involved. There are however exceptions to the rule for which import permits are required due to stricter legislation adopted by the importing country (Postma pers. comm.)

Demanding Appendix II status for the leopard will mean that the responsibilities will be placed on the exporting country to decide on the quota to be exported. This can lead to a dangerous situation in the absence of information on population trends of different leopard populations and the proper monitoring of exploitation in many African countries.

Only if the different countries adhere to CITES stipulations, can transfer from Appendix I to II be considered. The quota of 50 granted to the R.S.A for the export of leopard trophies (1990) also seems to be rather low.

Although not a major threat, the constant elimination of individual

leopards , or attempts to do so, are a cause for concern. If conflict (leopard/farmer) prevention measures, as proposed in the preceding paragraphs, could be applied successfully, the continuous elimination of individuals would be less important. More leopards will thus be available for proper exploitation (trophy hunting) rather than for just the skin.

The use of different capturing devices to eliminate individual leopards is getting out of hand. Subject to the provisions of Ordinance 12, Art 27, no person shall hunt or catch a leopard by means of gintraps, setguns or trap cages, unless this occurs in the immediate vicinity of a livestock carcass, which has apparently been killed, or if there is a reasonable suspicion that the leopard is about to cause damage to stock. It is however necessary for measures to be taken as these devices (gintraps, setguns etc.) are being misused.

Experienced farmers (with gintraps etc.) should operate under the auspices of the Transvaal Agricultural Union, to assist the Problem Animal Control Unit of the Division of Nature and Environmental Conservation, Transvaal, or be incorporated within registered problem animal clubs (private landowners). In the latter however, a lack of control regarding the use of gintraps etc. may cause problems. Registered problem animal clubs are also not found in all districts. Gintraps and setguns must definitely be made illegal and only used under these controlled circumstances by authorized individuals, for the exclusive control of problem leopards.

Poisoning game without a permit is illegal (Ord 12, 1983; Art 31). However, strychnine may be used in pill form to poison problem animals (chachma baboons, vervet monkeys, black backed jackals and bush pigs). Although a prescription from a veterinarian is required for strychnine, the poison is available without any permit from certain pharmacists in the

Northern Transvaal.

This may be irrelevant because a toxicant like folidol, that is also highly lethal to leopards, will always be freely available due to its use by crop farmers. Thus, banning poisons may serve as a deterrent. However, it is crucial to inform landowners about the destructive effect of poisons on an ecosystem and that every predator species has a definite ecological role. When eliminated in total, or from most of its area, this could mean that other predator species will partially occupy the area vacated by the original occupant. The extermination of leopards in many parts of the Transvaal bushveld has contributed for example to an increase in black backed jackals and caracals. These species are at present causing larger problems than leopards on both cattle and game farms. They are also more difficult to control (caracal to a lesser extent) and have little value as trophy animals.

In conclusion, the implications of leopard conservation are greater than merely for aesthetical and ethical considerations. As the largest predator in most farming areas of the Transvaal, they have a definite functional role to play in balancing and stabilizing the different ecosystems.

Leopard populations outside large sanctuaries in the Transvaal are not yet in danger of extinction, but it would be naive to think that they are stable or even increasing. Although prospects appear gloomy, farmers are sympathetic, and will cooperate if stock losses can be limited, and the game farm problem solved.

The biggest longterm threat however to the future survival of leopards still is the reduction of their natural habitat. What is of importance, is that we still have some time to experiment with our options, to ensure the long term survival of this prince of the bushveld.