

REPTILE SURVEY

MAREMANI NATURE RESERVE
MUSINA
REPUBLIC OF SOUTH AFRICA

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1. Introduction

Maremani Nature Reserve covers vast areas of natural mopane bushveld and is home to a phenomenally vast reptile biodiversity.

This reserve spans about 44000 hectare and through the good efforts of the Foundation, staff and management, is under little threat to habitat destruction.

We strived to conduct a survey of live animals with little or no disturbance to wild animal populations at Maremani. Any captured animals were housed in disinfected (using Powder-Chlor H SABS sterilising powder) containers or bags, for the shortest period possible for inspection and photos.

Where possible, the animals are released back in the same area they were caught, thus minimising any risk of genetic contamination. In one case, we released a snake away from it's place of capture. On Wed 18th December 2002, we caught a male *Dendroaspis polylepis* (Black mamba) inside the confines of Mabuya Camp. According to camp personnel, this snake had been there for a while and in our minds, posed a safety risk to camp workers as well as any hunters / visitors / foundation management. This animal had also been injured. In our judgement, we thought it a wise decision to remove and relocate the snake, thus avoiding a confrontation and causing harm to the snake or person. The said snake was relocated to the Sand River. We have included some comments about safety factors in chapter 7.

Due to work commitments, we were forced to split our trip into two sections – November 17-28 2002 and December 17-23rd 2002.

This turned out to be a good choice, as we were lucky to return to Maremani in pouring rain. This rain made a huge difference to the reptile activity.

We chose this time of the year (Nov and Dec), as this is usually a good time to conduct this form of survey.

2. Survey Outline

We used a few methods to find and examine reptiles. Luckily we have had extensive experience of finding our way around the reserve during past filming trips and used this knowledge to our advantage. We collected while on foot, 4x4 driving around the farm and from radio communication from management and staff, who were all very helpful and thoroughly supportive of our efforts.

Much of our work was conducted at night on roads. This is a good manner in which to study nocturnal animals and reptiles. Our day work was conducted around areas which we thought would house the most reptiles. On our first trip we were a bit disappointed with the dry conditions and this had a bearing on our findings over this period.

We tried to be as non-intrusive or destructive while conducting our work, and even certain methods of reptile finding, like bark stripping, was kept to a minimum.

The basis of our research was to determine whether any species are under threat and whether we could collate as much info on rarely seen reptiles. We were also requested to take some mtDNA samples of various elapid snakes while at Maremani. This info will be sent to the University of Wales for scrutiny and hopefully help with their taxonomy studies. Habitat destruction and environmental issues were also taken into account.

We tried to cover as much ground as possible but found that the time period was a bit short to cover extensively both Dover and Njelele as comprehensively as we would have liked. We were lucky enough to cover the area around the new dam at Njelele, the findings of which are covered in our chapter on the dam (chapter 5)

3) Survey Findings

We found that while Maremani Nature reserve boasts a large reptile diversity, there were definite certain ‘hotspots’ of reptile activity and breeding areas, all of which, should be as protected as possible.

The Magdala River system is rich in reptile fauna and is an important breeding site for the following species.

African Rock Python (*Python natalensis*)

Black Mamba (*Dendroaspis polylepis*)

Horned Adder (*Bitis caudalis*) – few gravid females found

Giant plated lizard (*Gerrhosaurus validus*)

Nile and Rock Monitor Lizard (*Varanus albigularis and niloticus*)

Other important findings, were the population of *Scelotes limpopoensis* (Limpopo dwarf burrowing skink)on various locations around Maremani. This rarely seen reptile is endemic to this area only and it was positive to see good numbers of them. The Sand River proved a bit disappointing on the first visit, but we concluded that this was due to the inferior climatic conditions at the time of this visit (dry, hot, no rain) and this area was really feeling the brunt of the little or no rain. We were not too concerned, as this had been a prime reptile location on our previous visit.

Another important breeding site, occurs at the koppies at GPS location 22.23.615 S and 30.07.490 E.

Here we located the largest communal group of *Gerrhosaurus validus* (Giant Plated Lizard) at Maremani and consider this to be an important site in the protection and future of these large lizards.

It was quite obvious that environmental status plays a huge role in the herpetofauna success of this whole area (Limpopo Valley). The recent lack of rain and heat-wave compounded the low numbers of particularly threatened species, such as African Rock Python, as we were unsuccessful in locating large numbers of adults. We were suspicious of cases where Leopard had preyed on large python as ‘soft targets’ in difficult times where food was scarce.

We do not, however, think that these factors have had too bad an impact on species generally, as we did find many young python (yearlings), and the fact that we located evidence (skins, spoor etc) of python nest sites in the Old Copper Mines.

Due to the nature and behaviour of reptiles, we noted very small activity periods due to the high daytime temperatures in Musina at the time (43 degrees C Sat 23/11/2002).

We noted a huge decrease in the number of reptile sightings at the Sand River, due mainly the lack of water and adequate ground bush cover. There was, however a marked increase in the number of reptile sightings from around the Magdala River area, testament to the fact that there seems to be permanent water, adequate cover and good prey numbers.

The new Dam at Njelele is already creating a perfect biome for reptiles and will hopefully become another breeding site for the protected African Rock Python and other water-loving reptiles like Nile monitors (*Varanus niloticus*)

4) Causes for Concern

➤ Environmental:

The conditions at Maremani during our research program were not great. The lack of rain combined with the high temperatures, are taking it's toll at Maremani. We noticed that game was being fed, at huge cost, at most areas of the farm, evidence of the bad environmental conditions. This has a knockdown effect on the ecology and the breeding and feeding activities of reptiles are also affected.

As stated before, we had concerns for African Rock Python, a protected species in R.S.A. In times of environmental hardship, these huge reptiles become 'soft targets' and easy prey for predators like the Leopard.

Tortoise numbers were minimal compared to previous visits. This was too, put down to environmental factors.

Important breeding sites should be protected, and even man-made structures/excavations like the Old Copper Mines at GPS location 22.23.040S and 30.06.900E are extremely important in the preservation of many species of reptiles. Illegal collecting of reptiles in Southern Africa has become a huge problem, with many species fetching huge prices for the illegal pet trade overseas. This is not a factor at Maremani.

Weather predictions for the upcoming year look negative. Drought conditions are forecast and this does not bode well for the breeding activities of many reptiles. Hopefully this will improve in summer 2003 during the December rains.

➤ Rare Species

There was concern for the lack of location of the following species:

Cordylus tropidosternum – Tropical Girdled Lizard

Kinixys spekii – Speke's Hinged Tortoise

Amblyodipsas microphthalma – Common Purple-glossed snake

These are not usually-seen reptiles, but on an extensive hunt like the one we conducted, one should expect to find them. We can only surmise that climatic conditions at the time of the research were not conducive to finding them.

5) New Dam at Njelele

The new dam at Njelele proves to be a fabulous breeding biome for many species of reptile. Even in the early stages of the construction of this dam, it has shown to be a good spot for many lizards and snakes.

There is evidence of African Rock python already mating around this point, and the black mamba population is very healthy.

Many lizard species were found around the dam.

We were unclear whether there were many Nile crocodiles in the dam, but in communication with staff, there seem to be 2 or 3.

We were also unclear whether more crocodiles would be introduced into the dam to establish diversity of breeding stocks, and feel that this would probably be a good idea. Nile crocs are not common in the area, with the exception of the Limpopo river itself.

This dam is all-important in the drought conditions as there is hopefully a steady and permanent body of water which can sustain many animal species and create it's own sustainable ecological zone.

6) Road Casualties

Reptiles are often the victims of road casualties around South Africa.

Many species will come out to feed (especially gecko species) or to bask on warm asphalt, which retains heat long after sunset.

Luckily Maremani spans enough open land and the ultimate problem of road casualties is not really a Maremani one but rather a National one.

We did notice many species of reptiles killed on the road around Musina, most of the perpetrators being the trucks from Venetia Mine.

For interests-sake....In some states in the U.S.A., under-road tunnels are used in areas where rare species are known to be regularly killed. This did however pose another problem, with unscrupulous reptile dealers concentrating their efforts at these tunnels and removing all the species they found.

In short, we do not see this as a problem at Maremani and the road casualties are an unfortunate by-product of the roads around Musina.

7) Safety Issues

Safety aspects with regard to reptiles are an important factor at Maremani. There are many venomous creatures which exist at MNR. Apart from the reptiles, scorpions (*Parabuthus* species) also pose a valid threat with deaths being known to this species. This will be divided into 3 categories, namely 1) Crocodiles, and 2) Venomous snakes

1) Crocodiles.

The only species to exist in South Africa is the Nile crocodile (*Crocodylus niloticus*). While this species is resident on Maremani, it is not common. There are reports of a large croc at the waterholes at Njelele, but we saw no sign of him. Crocodiles seem to still be common in the Limpopo river and stories abound of local folk regularly being attacked. The threat, however at MNR is small and not at this stage worth further comment.

2) Venomous snakes

Venomous snakes are a valid safety threat at MNR. The following species are known to exist there and have proved fatal to humans.

Boomslang (*Dispholidus typus*)

Vine snake (*Thelotornis capensis*)

Puff Adder (*Bitis arietans*)

Egyptian (snouted) cobra (*Naja annulifera*)

Mozambique Spitting Cobra (*Naja mossambica*)

Black mamba (*Dendroaspis polylepis*)

The following species are venomous but have no known fatalities attributed to them.

Bites from these would, however require medical treatment.

Shield-nose snake (*Aspidelaps scutatus*)

Burrowing Adder (*Atractaspis bibronii*)

Various garter snake species (*Elapsoidea* spp.)

Snouted Night Adder (*Causus defilippi*)

Horned Adder (*Bitis caudalis*)

The African Rock python is non-venomous but has been known to cause fatalities in humans from constriction.

As venomous snakes are abundant at MNR, we strongly advise that a Snake-bite Kit be on hand at all times, preferably kept in a fridge and that it comprises at least 6 ampoules of polyvalent antiserum. This antiserum covers most of the venomous snakes at MNR, except the boomslang.

It must also be said that the use of this antiserum can be extremely dangerous, and correct measures must be taken to ensure that the necessary management have the correct protocols to manage such a bite.

Although there is a hospital in Musina, we still advise that this kit is kept on the Reserve. We will gladly supply such a kit and any training should it be necessary. We think that the greatest threat at MNR in terms of safety would be a bite from a black mamba. Death is usually between 1 and 6 hours, although deaths within 15 minutes are known in South Africa.

As stated before, we would gladly give all the necessary info and kits in a presentation at MNR should it be deemed necessary. We can also present a lecture on the subject,

covering all the first-aid techniques and antiserum administration. I am a consultant to NetCare Hospitals with regard to the management of snakebite.

8) Habitat Destruction

As MNR spans over 44000 Hectare, and is a reserve, we see no problem with habitat destruction. We were impressed with the attitude towards reptiles from all management and the fencing contractor on site (Neil). The only habitat destruction threat would be environmental, of which we have no control.

9) Conservation Status of Black mamba and African Rock Python

Black mamba (*Dendroaspis polylepis*)

This species is fairly common at MNR and is not under serious threat. It is under threat in other areas in South Africa, though mainly due to illegal collecting for export and collection of venom for the production of Antivenom. This is not the case at MNR. In S.A., this species has been unofficially crowned with the term ‘King of African snakes’, it has been persecuted and killed ruthlessly. While this species is highly alert and fast, it is not aggressive and deserves to maintain it’s positive conservation status at MNR. Studies on wild populations of this species are few and far between, and it would be an idea to conduct further studies on this species.

African Rock Python (*Python natalensis*)

This species is threatened, endangered and protected. It is under serious threat in South Africa from the following:

- Illegal collecting – pet and export trade
- Muti trade– python fat is thought to be the equivalent of Viagra. The Shona, Zulu and Venda people are believers in this. It has, of course, no scientific basis.
- Skin Trade – python skins fetch good prices on the black market. The meat is also highly prized.
- Ignorance: unjust killing of pythons for no purpose.

The above factors do not really play a role at MNR, but we would like to see the numbers increased. As mentioned before, this species numbers are down at MNR. We would very much like to propose a relocation project around Musina. We heard of many farmers killing python because they ‘ ate their game’. With the correct communication and planning, a relocation project could take place, thus saving python from neighbouring farms and releasing them on MNR. This way surrounding farms can alleviate themselves of pythons they would certainly otherwise kill, and

these snakes could then thrive at MNR. It could also be a filmed project. Please consider this seriously.

10) Interesting Sights

There are always interesting sights at MNR. The most notable was the witnessing of an African Civet Cat being bitten by a black mamba. The civet cat must have been close to 30kg, and was dead within 20 minutes after being bitten. The cat family do have a natural partial immunity to snake venom, particularly the Civet, as it regularly preys on snakes. This hits home the reality of the potency of these snakes venom and reinforces our statements in the chapter on safety.

It was also very good to see the remains of a python nest site, in the abandoned mines at Magdala. Here we saw many small skins and faecal matter from pythons. We also found a live python in one of the caves. This is always heart-warming, as it was testament to the fact that there had least been some successful breeding activity within this species at times when the conditions were not ideal.

11) Furthering Research

It would be fantastic to do furthering research at MNR. More extensive research is needed on python. Python activity is now feasible to research with breakthroughs in technology. We can now put transmitters in pythons and track them with VHF or satellite tracking devices. This would indicate where breeding sites are, as well as main feeding sites. It would also give us an idea into the amount of activity that actually takes place during the year.

Mitochondrial DNA testing has taken place at MNR. We did this with certain elapid species including black mamba. The results were sent to the University of Wales and are being scrutinised. So far, differences have been found between mtDNA taken from mambas in East Africa and samples taken from South Africa (Musina). At this stage there is no call for change in taxonomy, but more samples would have to be taken on venom etc.

Scientists are now, with the help of mtDNA, being able to look more closely at reptiles and their taxonomy. This area has been in quite a mess and we can now differentiate between different species and subspecies more accurately. We will, hopefully continue this type of research at MNR and hope that our contributions will be valuable to the herpetological world.

12) Credits

We would like to thank the following for helping us and being so open to suggestions. Without them such work cannot be conducted.

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