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## ***Mammal Habitat Scan***

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**The remainder of the farm Vlakplaats 138-IR  
(also known as Mapleton X 10)**

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**March 2017**

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## Declaration of Independence:

I, Jacobus Casparus Petrus van Wyk (68080450410845) declare that I:

- hold an MSc in the Biological Sciences, which allows registration by SACNASP (SA Council for National Scientific Professions) as a Professional Zoologist and sanctions me to function independently as a specialist scientific consultant
- as per prerequisite of the Natural Scientific Professions Act No. 27 of 2003, present this project as my work from inception and reflects exclusively my observations and unbiased scientific interpretations, executed to the best of my ability
- abide by the Code of Ethics of the SACNASP
- am committed to biodiversity conservation but concomitantly recognise the need for economic development. Even though I appreciate the opportunity to learn through the processes of constructive criticism and debate, I reserve the right to form and hold my own opinions and therefore will not willingly submit to the interests of other parties or change my statements to appease them
- abide by the Code of Ethics of the S.A. Council for Natural Scientific Professions
- act as an independent specialist consultant in the field of Zoology
- am subcontracted as specialist consultant by Galago Environmental CC for the project "Mammal Habitat Scan on Erven 832-863 & 865-866 on the Remainder of the farm VLAKPLAATS 138 IR, Gauteng Province" described in this report
- have no financial interest in the proposed development other than remuneration for work performed
- have or will not have any vested or conflicting interests in the proposed development
- undertake to disclose to Galago Environmental CC and its client as well as the competent authority any material information that have or may have the potential to influence the decision of the competent authority required in terms of the Environmental Impact Assessment Regulations, 2014
- Our intellectual property in this report will only be transferred to the client (the party/ company that commissioned the work) on full payment of the contract fee. Upon transfer of the intellectual property, we recognise that written consent of the client will be required for release of any part of this report to third parties.



J.C.P. van Wyk

# 1. INTRODUCTION

Galago Environmental CC. was appointed to undertake a Mammal Scan on the Remainder of the farm VLAKPLAATS 138 IR, Gauteng Province (the study site), also known as Mapleton X 10, which is scheduled for a High Density Residential Development.

The objective was to determine which mammal species might still reside on the site. Special attention had to be given to the habitat requirements of all the Red Data species, which may occur in the area. This survey focuses on the current status of threatened mammal species occurring, or which are likely to occur on the proposed development site, and a description of the available and sensitive habitats on the site.

This assignment is in accordance with the 2014 EIA Regulations emanating from Chapter 5 of the National Environmental Management Act, 1998 (Act No. 107 of 1998).

## 2. SCOPE AND OBJECTIVES OF THE STUDY

This report:

- is a survey of mammal habitats, with comments on preferred habitats;
- comments on ecologically sensitive areas;
- comments on connectivity with natural vegetation and habitats on adjacent sites;
- evaluates the conservation importance and significance of the site with special emphasis on the current status of resident threatened species;
- offers recommendations to reduce or minimise impacts, should the proposed development be approved

## 3. STUDY AREA

This study site lies in the quarter degree grid cell 2628AC (Alberton). The site is situated east of the N3 National Road and to the west of the study site lies the Mapleton X 10 suburb. Luvuyo Street borders the study site on the eastern side. The entire area is 3.6822 hectares in extent and is spatially more accurately defined by 26°19'31.7172"S; 28°12'1.1571"E.

The study site lies inside the Carltonville Dolomite Grassland (Gh 15) vegetation type (Mucina & Rutherford, 2006).

Part of the site has been transformed by fences, invasive plants, indiscriminate dumping of rubbish, diggings, foot paths and gravel roads.

A few sweet thorn trees, (*Acacia karroo*), grow on the site. Many of the plants on the site are exotic and invasive such as kikuyu grass, cosmos, Spanish reeds, fruit trees, *Eucalyptus*, mulberry trees and tall khaki weeds.

The substrate is mostly sandy soil and no important topographical feature occurs on the study site.

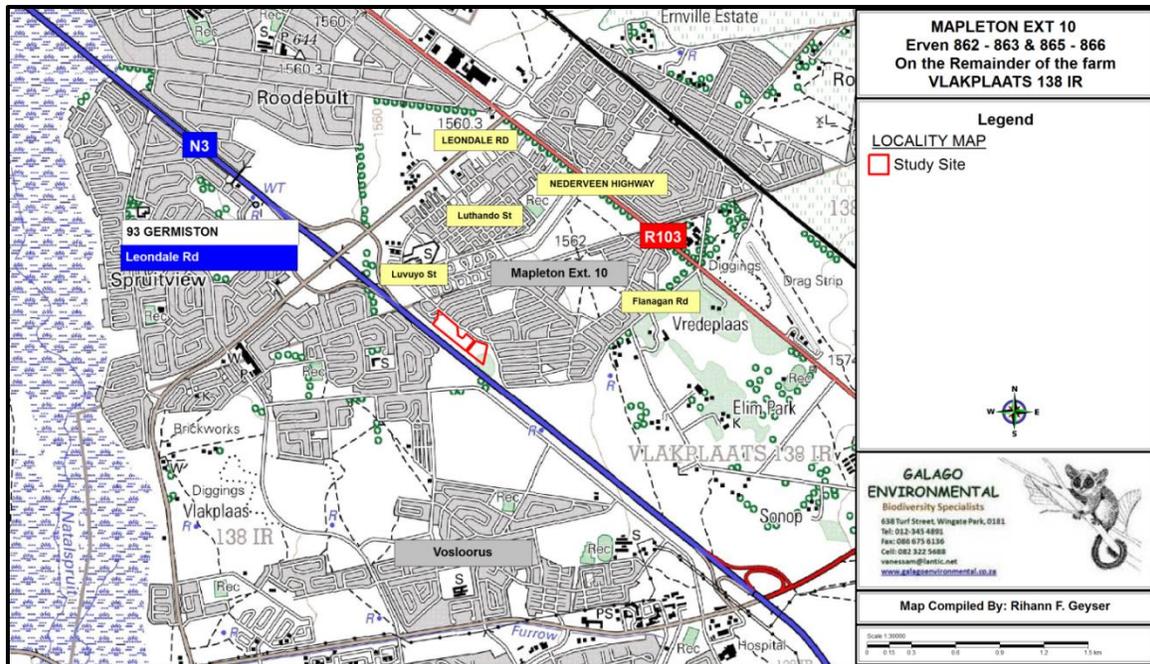


Figure 1: Locality map of the study area

## 4. METHOD

The site visit was conducted on 14 March 2017. During this visit the observed and derived presence of mammals associated with the recognised habitat types of the study site were recorded. This was done with due regard to the well-recorded global distributions of Southern African mammals, coupled with the qualitative and quantitative nature of recognised habitats.

The 50-500 metres of adjoining properties were scanned for important fauna habitats.

### 4.1 Field Surveys

During the site visit mammals were identified by visual sightings through random transect walks. No trapping or mist netting was conducted, as the terms of reference did not require such intensive work. In addition, mammals were also identified by means of spoor, droppings, burrows or roosting sites. Locals were interviewed to confirm occurrences or absences of species.

Different criteria were used to gauge the probability of occurrence of mammals on the study site. These include known distribution range, habitat preference and the qualitative and quantitative presence of suitable habitat.

### 4.2 Desktop Surveys

As the majority of mammals are secretive, nocturnal, hibernators and/or seasonal, distributional ranges and the presence of suitable habitats were used to deduce the presence or absence of these species based on authoritative tomes, scientific literature,

field guides, atlases and databases. This can be done irrespective of season. During the field work phase of the project, this derived list of occurrences is audited.

The probability of occurrences of mammal species was based on their respective geographical distributional ranges and the suitability of on-site habitat.

Conclusions were drawn based on the impressions gathered during the site visit, as well as publications such as *The Complete Book of Southern African Mammals* (Mills & Hes, 1997), *The Mammals of the Southern African Subregion* (Skinner & Chimimba, 2005), *Smithers' Mammals of Southern Africa; A Field Guide* (2012) and *Stuarts' Field Guide to Mammals of Southern Africa* (Stuart & Stuart, 2015). The latest taxonomic nomenclature was used. The vegetation type was defined according to the standard handbook by Mucina and Rutherford (eds) (2006).

### 4.3 Specific Requirements

During the visit the site was surveyed and assessed for the potential occurrence of Red Data species such as: Juliana's golden mole (*Neamblosomus juliana*), Highveld golden mole (*Amblysomus septentrionalis*), Rough-haired golden mole (*Chrysospalax villosus*), White-tailed rat (*Mystromys albicaudatus*), a number of shrews such as the Forest shrew (*Myosorex varius*), Southern African hedgehog (*Atelerix frontalis*), a number of bats such as the Short-eared trident bat (*Cloeotis percivali*), Spotted-necked otter (*Hydrictis maculicollis*), Brown hyena (*Hyaena brunnea*), etc.

## 5. RESULTS

The vegetation types of the site were analysed according to Mucina and Rutherford (2006).

### ***Mammal Habitat Assessment:***

The local occurrences of mammals are closely dependent on broadly defined habitat types, in particular terrestrial, arboreal (tree-living), rupicolous (rock-dwelling) and wetland-associated vegetation cover. It is thus possible to deduce the presence or absence of mammal species by evaluating the habitat types within the context of global distribution ranges. From a mammal habitat perspective, it was established that only one of the four major habitats is naturally present on the study site, namely terrestrial.

No moribund termitaria were recorded, which are good indicators of the occurrence of small mammals. Accordingly, it is estimated that the mammal population density for the study site is lower. At the time of the site visit the basal cover was good in many places and would provide adequate cover and nourishment for small terrestrial mammals (Figure 2).



**Figure 2: A westerly view of the study site. Note the good basal cover after the rains and the N3 Highway in the background.**

Part of the site has been transformed by fences, invasive plants, indiscriminate dumping of rubbish, diggings, foot paths and gravel roads.

There are some loose rocks (Figure 3) as a result of digging in one area, but in general there are no natural rupicolous habitat on the study site. Manmade rupicolous habitat exists in the form of building rubble (Figure 4). These man-made habitats offer nooks and crannies as refuge for some common rupicolous mammal species.



**Figure 3: Some scattered rocks on the study site.**



**Figure 4: Building rubble on the study site.**

Only a few sweet thorn trees occur on the site (Figure 2), but they are not enough to create natural arboreal habitat. Most of the trees on the study site are exotic species, but they are also too few and far between to provide arboreal habitat for any arboreal mammals. Because of the presence of squatters, who need fire wood near the study site, there are no dead logs, which could have provided shelter and food for some mammals.

No aquatic habitat or wetland-associated vegetation cover occur on the study site, only a storm water drainage line (Figure 5).



**Figure 5: Storm water drainage line on the study site.**

Connectivity on the study site is poor. The study site is surrounded by the busy N3 National Road and various properties.

The study site contains no caves suitable for cave-dwelling bats. The buildings on or near the study site may act as substitute daytime roosts. It is likely that common bats commute from roosting sites elsewhere to hawk for insects on the study site.

Sight records were also used to compile this mammal report.

***Expected and Observed Mammal Species Richness:***

The species richness is poor due to the small size of the study site and the disturbed nature of some parts.

Exotic feral mammal species are expected to occur on the study site (e.g. house mice, house rats, dogs and cats) since these species are normally associated with human settlements.

The species assemblage is typical of what can be expected of habitat that is severely disturbed, but with sufficient habitat to sustain populations. Most of the species of the resident diversity are fairly common and widespread. Scrub hares prefer short grass veld. The mole rat, four-striped grass mouse, multimammate mouse, Tete veld rat and Highveld gerbil are likewise robust and capable of persisting in ecologically disturbed conditions. The yellow and slender mongooses are taciturn small carnivores with a wide food preference.

The bats on or near the study site are mostly common on the Highveld wherever they can find daytime roosts in manmade structures. Many bat species commute over considerable distances in search of rich feeding patches, such as swarms of insects.

Most of the adjoining areas are ecologically disturbed by invasive plants, buildings, building rubble, fires, fences, indiscriminate dumping of rubbish, diggings, foot paths and gravel roads. Mega- and medium-sized mammals have long since been extirpated to favour agricultural and then urban interests.

The fairly low diversity is due to the disturbed ecological state of the study site and adjoining areas, the relatively small size of the site and the poor quality of conservation.

***Threatened and Red Listed Mammal Species:***

Almost all Red Data species became endangered as result of the deterioration of their preferred habitats.

It is amazing how many local mammals have never been studied in nature. As a result, the conservation status of all the shrew species is unknown and they are ranked as "Data Deficient" as a precautionary measure.

Due to the absence of especially wetland-associated vegetation cover the possibility of Red listed mammal species decreases dramatically. No spotted-necked otter and very few shrew species should occur on the site.

The study site falls outside the natural range of the Juliana's golden mole and Highveld golden mole. These species should not occur on the study site.

The study site lies inside the natural range of the rough-haired golden mole. However, no excavated burrows of which the entrances are characterised by loose piles of soil at the sides and back and which are left open when these moles leave the burrows to forage, were found. Rough-haired golden moles prefer sandy ground on the fringes of marshes or vleis (Skinner & Chimimba, 2005). There are also no marshes or vleis on the site. This species should therefore not occur on the study site.

The White-tailed mouse is often found in rocky areas with good grass cover. No natural rocky areas are found on this site and this species should not occur on the study site.

The Southern African hedgehog occurs in a wide variety of habitat types, but must have vegetation. The possibility exists that some individuals occur on the study site.

Due to their ability to fly and to cover large distances, the distribution information of some bat species is insufficient. This resulted in Red Data status for some bat species as a precautionary measure.

No other Red Data or sensitive species are deemed present on the site, either since the site is too disturbed, falls outside the distributional ranges of some species, or does not offer suitable habitat(s).

## 6. FINDINGS AND POTENTIAL IMPLICATIONS

The study site has no important topographical features. It contains only one natural mammal habitat, namely terrestrial. The study site has been ecologically disturbed by fences, invasive plants, indiscriminate dumping of rubbish, squatters, several foot paths and gravel roads.

Species richness: The species richness is poor due to the small size of the study site and its disturbed nature. In most instances, only robust species will persist.

Endangered species: Endangered mammal species treat the site as part of their home ranges / territories. Most of these species include bats, which move over huge distances, and a few shrew species. It is very difficult to confirm whether any of these species are present on any study site, but there is a possibility that some individuals of these two groups of species do occur on this particular study site.

In optimum conditions the possibility exists that the Southern African hedgehog may occur on the study site.

Sensitive species and/or areas (Conservation ranking): The study site falls in the Carltonville Dolomite Grassland (Gh 15) vegetation type, which is considered Vulnerable (Mucina and Rutherford, 2006).

Habitat(s) quality and extent: The terrestrial habitat quality has been jeopardised by fences, invasive plants, indiscriminate dumping of rubbish, squatters, several foot paths and gravel roads.

Impact on species richness and conservation: The residential development will have a large and permanent footprint.

Connectivity: Connectivity on the study site is poor to fair.

## **7. LIMITATIONS, ASSUMPTIONS AND GAPS IN KNOWLEDGE**

Galago Biodiversity and Aquatic Specialists are committed to the conservation of biodiversity but concomitantly recognise the need for economic development. Even though we appreciate the opportunity to learn through the processes of constructive criticism and debate, we reserve the right to form and hold our own opinions and therefore will not willingly submit to the interest of other parties or change statements to appease them.

Even though every care is taken to ensure the accuracy of this report, environmental assessment studies are limited in scope, time and budget. To some extent, conclusions are drawn and proposed mitigation measures suggested based on reasonable and informed assumptions built on *bone fide* information sources, as well as deductive reasoning. Deriving a 100% factual report based on field collecting and observations can only be done over several years and seasons to account for fluctuating environmental conditions and migrations. Since environmental impact studies deal with dynamic natural systems, additional information may come to light at a later stage. Galago Biodiversity and Aquatic Specialists can therefore not accept responsibility for conclusions drawn and mitigation measures suggested in good faith based on own databases or on the information provided at the time of the directive. This report should therefore be viewed and acted upon with these limitations in mind.

## **8. RECOMMENDED MITIGATION MEASURES**

The following mitigation measures are proposed by the specialist:

- If the Southern African hedgehog or any mammal species are encountered or exposed during the construction phase, they should be removed and relocated to natural areas in the vicinity.
- Alien and invasive plants must be removed.

## **9. CONCLUSION**

No sensitive or important topographical feature occurs on the study site. The study site falls in the Cartonville Dolomite Grassland (Gh 15) vegetation type.

Endangered mammal species treat the site as part of their home ranges / territories. Most of these species include bats, which move over huge distances, and a few shrew species. It is very difficult to confirm whether any of these species are present on any study site, but there is a possibility that some individuals of these two groups of species do occur on this particular study site.

In optimum conditions the possibility exists that the Southern African hedgehog may occur on the study site.

The removal of exotic trees and planting of indigenous trees will increase the quality of the habitat.

From a mammal point of view, the site has a low sensitivity (Figure 6).

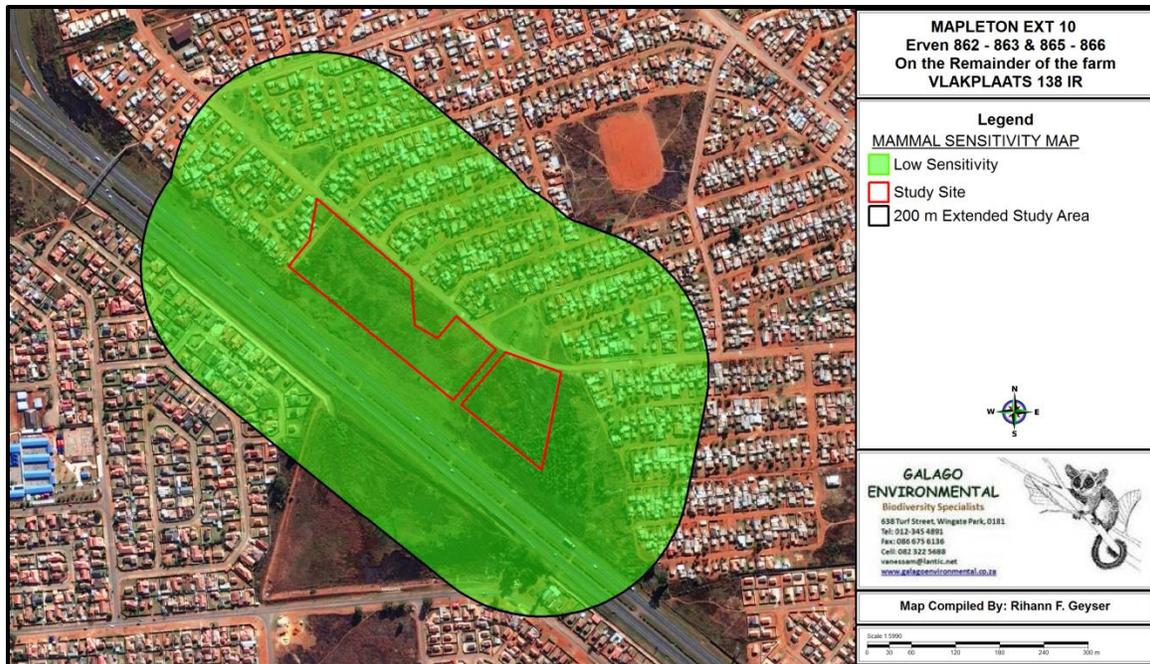


Figure 6: Mammal Sensitivity Map

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