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Herpetofauna Habitat Scan

**Kutalo Robert Strachan Station,
South Germiston X 25 on Portion 103
of the farm Driefontein 91-IR**

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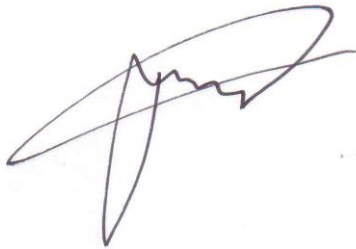
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Declaration of Independence:

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 “Herpetofauna Habitat Scan on Portion 103 of the farm DRIEFONTEIN 87 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 Herpetofaunal Scan on Portion 103 of the farm DRIEFONTEIN 87 IR, Gauteng Province (the study site), also known as Kutalo Robert Strachan Station (South Germiston X25), which is scheduled for Low Cost Housing Development.

This report focuses on the reigning status of threatened and sensitive reptiles and amphibians (herpetofauna) likely to occur on the proposed development site and whose conservation status should be considered in the decision-making process. Special attention was paid to the qualitative and quantitative habitat conditions for Red Data species deemed present on the site, and mitigation measures to ameliorate the effect of the proposed development. The secondary objective of the investigation was to gauge which herpetofauna might still reside on the site and comment on the herpetofauna diversity of the study area.

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 reptile and amphibian 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 2628AA (Johannesburg). The site is situated south of the M46 (Lower Boksburg Road). To the west of the study site lies the railway line and further west is Germiston. East of the site is Kutalo Township. The entire area is 4.769 hectares in extent and is spatially more accurately defined by 26°13'4.9545"S; 28°11'27.7705"E.

The study site lies inside the Soweto Highveld Grassland (Gm 8) vegetation type (Mucina & Rutherford, 2006), but this is only of academic interest since the entire site is severely disturbed.

The entire site has been transformed by a railway line, fences, invasive plants, indiscriminate dumping of rubbish, squatters, a soccer field, power lines, several foot paths and gravel roads.

A few sweet thorn trees, (*Acacia karroo*), grow on the site. Most of the plants on the site are exotic and invasive such as fruit trees, syringa, *Eucalyptus*, castor-oil plants, morning glory and tall khaki weed.

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

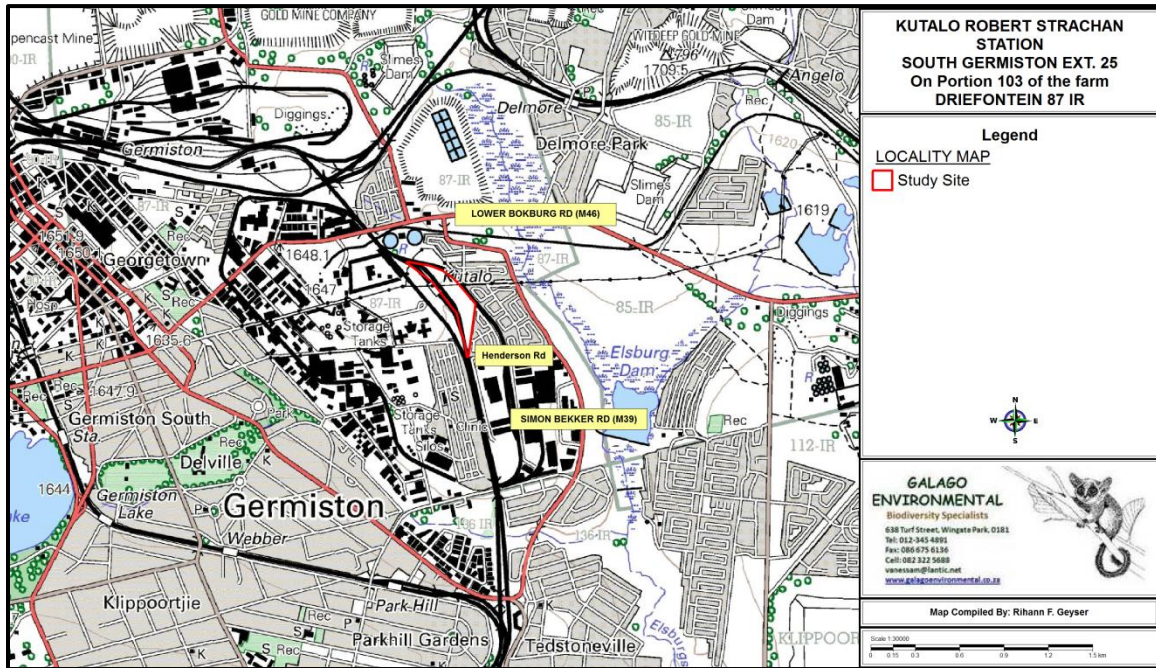


Figure 1: Locality map of the study area

4. METHOD

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

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

4.1 Field Surveys

During the site visit, reptiles and amphibians were identified by visual sightings through random transect walks. Amphibian diversity was also established by means of acoustic identification. No trapping was conducted, as the terms of reference did not require such intensive work.

4.2 Desktop Surveys

As the majority of reptiles and amphibians are secretive, nocturnal and/or poikilothermic 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.

The probability of the occurrence of reptile and amphibian species was based on their respective geographical distributional ranges and the suitability of on-site habitats.

Conclusions were drawn based on the impressions gathered during the site visit, as well as publications such as FitzSimons' Snakes of Southern Africa (Broadley, 1990), Field Guide to Snakes and other Reptiles of Southern Africa (Branch, 1998), A Guide to the Reptiles of Southern Africa (Alexander & Marais, 2007), Atlas and Red List of the Reptiles of South Africa, Lesotho and Swaziland (Bates, Branch, Bauer, Burger, Marais, Alexander & De Villiers, 2014), Amphibians of Central and Southern Africa (Channing 2001), Atlas and Red Data Book of the Frogs of South Africa, Lesotho and Swaziland (Minter, Burger, Harrison, Braack, Bishop & Kloepfer, 2004, 2004) and A Complete Guide to the Frogs of Southern Africa (Du Preez & Carruthers, 2009). 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 in Gauteng (Alexander & Marais, 2007; Minter, *et al*, 2004, Du Preez & Carruthers, 2009 and Bates, *et al*, 2014) such as:

- Nile Crocodile (*Crocodylus niloticus*);
- Giant Bullfrogs (*Pyxicephalus adspersus*);
- Coppery Grass Lizard (*Chamaeasaura aenea*);
- Striped Harlequin Snake (*Homoroselaps dorsalis*);
- The Southern African Python (*Python natalensis*).

5. RESULTS

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

Herpetofaunal Habitat Assessment:

The local occurrences of reptiles and amphibians 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 reptile and amphibian species by evaluating the habitat types within the context of global distribution ranges. From a herpetological 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. These structures are good indicators of the occurrence of small herpetofauna. Accordingly, it is estimated that the reptile and amphibian population density for the study site is lower.

The entire site has been transformed by a railway line, fences, invasive plants (Figure 2), indiscriminate dumping of rubbish, squatters, a soccer field (Figure 3), power lines, several foot paths and gravel roads.



Figure 2: A north-easterly view of the study site. Note the township in the background.



Figure 3: A northerly view of the study site with the soccer field in the foreground.

There are no natural rupicolous habitats on the study site, but manmade rupicolous habitat exists in the form of building rubble (Figure 3). These man-made habitats offer nooks and crannies as refuge for some common rupicolous herpetofauna. Due to the absence of natural rupicolous habitat, some species such as yellow-throated plated lizard, common girdled lizard and rock agama should not occur on the study site.

Only a few sweet thorn trees occur on the site (Figure 4), but they are not enough to create natural arboreal habitat. Due to the absence of natural arboreal habitat, some species such as the flap-neck chameleon should not occur on the study site. Due to the presence of squatters, who need firewood near the study site, there are no dead logs, which could have provided shelter and food for some herpetofauna.



Figure 4: A few sweet thorn trees on the site between all the invasive plants species.

No aquatic habitat or wetland-associated vegetation cover occur on the study site.

Connectivity on the study site is poor. The study site is surrounded by a railway line, informal dwellings, townships and busy roads.

Sight records were also used to compile this herpetofauna report.

Threatened and Red listed Reptile and Amphibian Species:

The study site falls outside the natural range of the Nile crocodile and the Southern African python and these species should not occur on the study site.

The striped harlequin snake has been recorded on this quarter degree square (TVL Museum Records or Ditsong Museum of Natural History), but no moribund termitaria, where this species is most likely to be found, are present on the study site. It is very difficult to confirm whether this cryptic snake is present on any site, but this species should not occur on this severely degrade study site.

The Coppery grass lizard (*Chamaesaura aenea*) has not been recorded on this quarter degree square (TVL Museum Records or Ditsong Museum of Natural History). There is no indigenous grass veld on the study and this species should not occur on the study site.

The study site is either unsuitable for any Red Data reptile species or falls outside their natural distribution range.

The study site and the 500 metre surrounding area contain no temporary dams, which are potential breeding places for giant bullfrogs. This species should not occur on the study site.

Expected and Observed Herpetofauna Species Richness:

The species richness is poor due to the small size of the study site, the disturbed nature of most of the site and the fact that no permanent or temporary water ponds are found on the actual study site. One reptile species was confirmed during the site visit (Table 1).

The American red-eared terrapin (*Trachemys scripta elegans*) and the Brahminy blind snake (*Ramphotyphlops braminus*) are the only two feral reptile or amphibian species known to occur in South Africa (De Moor and Bruton, 1988; Picker and Griffiths, 2011), but with only a few populations, they are not expected to occur on this particular site.

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 (viz. the common house snake, mole snake, speckled rock skink, guttural toad, red toad and Boettger's Caco).

Table 1: Reptile and Amphibian species positively confirmed on the study site, observed indicators and habitat.

SCIENTIFIC NAME	ENGLISH NAME	OBSERVATION INDICATOR	HABITAT
<i>Trachylepis punctatissima</i>	Speckled Rock Skink	Sight record of few individuals on buildings, building rubble and a road.	Man-made rupicolous habitat

The speckled rock skink listed in Table 1 should be abundant on the study site and elsewhere in its range.

6. FINDINGS AND POTENTIAL IMPLICATIONS

No important topographical feature occurs on the study site. The entire site has been transformed by a railway line, fences, invasive plants, indiscriminate dumping of rubbish, squatters, a soccer field, power lines, 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.

Endangered species: No Red Data herpetofauna should be found on this study site.

Sensitive species and/or areas (Conservation ranking): The study site falls in the Soweto Highveld Grassland (Gm 8) vegetation type, which is considered as Endangered (Mucina & Rutherford, 2006), but this is only of academic interest since the whole site is severely disturbed. Nothing is sensitive on the site.

Habitat(s) quality and extent: The entire site has been transformed by a railway line, fences, invasive plants, indiscriminate dumping of rubbish, squatters, a soccer field, power lines, 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.

Management recommendation: Alien and invasive plants must be removed.

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 any herpetological 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 areas or Red Data herpetofauna are found on the site.

The removal of invasive plants, rubbish and building rubble will greatly improve the area.

From a herpetological perspective, the site has a low sensitivity.

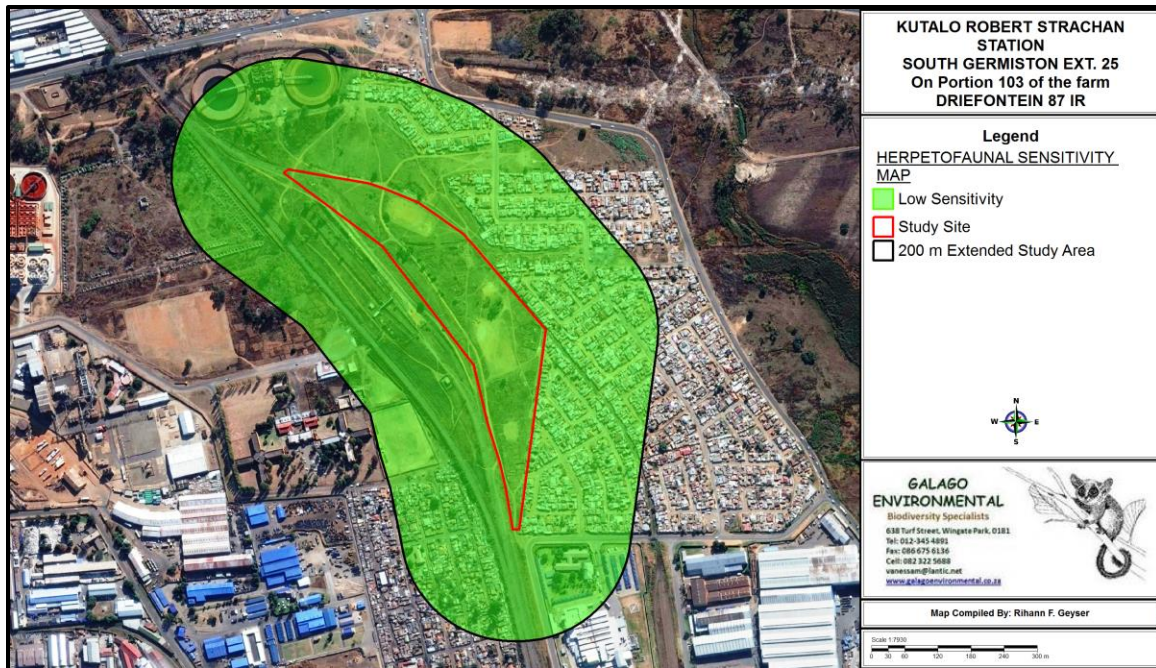


Figure 5: Herpetofaunal Sensitivity Map

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