

Frog Specialist Report for Wetland Areas Adjacent To Eastbury Drive and possible Impact of Phase 4 of The Northern Aqueduct Augmentation (Naa Ph4): Determining The Presence Of The Critically Endangered Pickersgill's Reed Frog, *Hyperolius pickersgilli*.

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EXECUTIVE SUMMARY

Based on recommendations given in the basic vegetation assessment for NAA Phase 4, an assessment was conducted to ascertain the presence of the Critically Endangered Pickersgill's Reed Frog, *Hyperolius pickersgilli*, in wetland areas in proximity to the proposed construction site. The area is within the historical range of this species. As a result of high levels of habitat transformation over the past three decades, ideal habitat for Pickersgill's Reed Frog is no longer present in the area. Pickersgill's Reed Frog was not detected during the survey, however it is important to consider that the breeding season for this species is almost over at this time of year and it may be that none were calling at the time of the assessment. A total of 10 other frog species (Least Concern) were detected in the area during the survey. It is recommended that despite Pickersgill's Reed Frog not being detected during the survey, that wetland areas as described in the vegetation report are not impacted on by the proposed construction activities given their Endangered status and support of a high diversity of frog species in general.

INTRODUCTION

Following recommendations made by Dr. Granger in the Basic Assessment of plant communities intersected by phase 4 of the northern aqueduct augmentation (NAA phase 4) Jeanne Tarrant was approached by Knight Piésold to confirm the presence of the Red List (Critically Endangered) species, Pickersgill's Reed Frog, *Hyperolius pickersgilli*, in *Phragmites* and *Typha spp.* wetland habitat in the proposed area of construction. This recommendation is well-founded in the light that this species was originally discovered extremely close (1.2 km) to the area in which the pipeline is proposed to run (see Figure 2 under Methods) (Raw 1982). The presence of this species would require carefully thought-out mitigation plans, however, even in the absence of Red List species, measures to avoid or reduce impact on wetland areas as a result of the construction phase will need to be enforced.

Species Status

Pickersgill's Reed Frog, *H. pickersgilli*, is listed as Critically Endangered B2ab(ii, iii) (IUCN 2010; SA-FRoG & IUCN 2011) due to its small area of occupancy, severe fragmentation of its habitat and continuing decline in the area of occupancy, extent and quality of habitat and number of locations (IUCN 2011; Measey 2011). In addition, it is a specially protected species under the KwaZulu-Natal Conservation Management Amendment Act (1999), and is considered to be a species of importance in KwaZulu-Natal (Goodman 2000). Few populations are known from formally protected areas (Armstrong 2001). Harrison *et al.* (2001) recognised the need to identify and protect remaining breeding *H. pickersgilli* habitats. The species has been prioritised for conservation research (Measey 2011) and is also be the first Threatened frog species in South Africa to be used in a captive breeding program (Visser 2011). Currently only two populations of *H. pickersgilli* are officially protected, at Umlalazi Nature Reserve, and at St Lucia (part of iSimangaliso Wetland Heritage Site). Currently, the species is known from only 17 sites between Sezela in the south and St Lucia in the north (Tarrant & Armstrong, *In Press*).

The species is threatened primarily by habitat loss caused by urbanisation, afforestation and drainage for agricultural and urban development (Measey 2011). Many of the historically known sites have been eliminated

by either sugar cane or eucalyptus plantations (Raw 1987; Bishop 2004; Tarrant & Armstrong, in press). The remaining subpopulations are small and severely fragmented and are thus subject to genetic depletion, which may be reflected in lowered larval fitness, ultimately resulting in local extinction. Only a small percentage of the populations are protected and as such, protection of the species at the remaining unprotected sites is critical.

Species Description

Hyperolius pickersgilli (Pickersgill's Reed Frog) is a small (max size 29 mm in females) reed frog with variable colouration (Raw 1982). Males and juveniles are usually brown in colour and are characterised by having a dark-edged light dorso-lateral band running from the snout to the hind quarters (du Preez & Carruthers 2009). Females typically lack the dorso-lateral stripe and are usually light green in colour (Figure 1). The underside is smooth and pale and the concealed body surfaces (inner thighs, toes and fingers) lack pigmentation. The snout extends only just beyond the nostrils and is slightly pointed. The call is a soft insect-like chirp issued intermittently (Bishop 2004). The behaviour and call of this species are cryptic, often making it difficult to detect even when present.



Figure 1: Female Pickersgill's Reed Frog, *Hyperolius pickersgilli* from Mtunzini area, north coast, KwaZulu-Natal.

Habitat requirements

The species is a habitat specialist requiring perennial wetlands comprised of very dense reed beds in Coastal Bushveld-Grassveld (Mucina & Rutherford 2006) at altitudes below 380 m.a.s.l. (Raw 1982; Armstrong 2001; Bishop 2004). It requires an understory of thick vegetation such as Snakeroot (*Persicaria attenuata*), from which males call, and taller reed vegetation, including the Common Reed (*Phragmites australis*), Bulrushes (*Typha capensis*), and sedges (including *Cyperus dives* and *C. papyrus*) (Bowman 2011; pers. obs.). The species requires perennial standing water of between 20 and 60 cm in depth.

TERMS OF REFERENCE

Following the recommendations regarding Red-flag areas (in particular, *Typha capensis* & *Phragmites australis*, Stream & Streambanks) designated in the basic biodiversity assessment vegetation report by Dr. Granger, the terms of reference for this study where to:

- Determine the presence/absence of the Critically Endangered Pickersgill's Reed Frog, *Hyperolius pickersgilli*, at these Red-flag areas;
- Discuss the significance of their presence if present;
- If present, make recommendations regarding mitigation measures concerning the proposed pipeline;
- Give a species list of other frog species detected at the site.

METHODS

Wetland areas north of Eastbury Drive in the vicinity of Ghandi-Luthuli Peace Park (Figure 2: 29 42'36.79"S, 31 1' 3.30" E; 29 43' 05.5"S, 31 00' 15.8" E and 29 42' 41.9" S, 31 00' 42.1" E) were visited on 6 February 2013 between 17:00 hr and 21:00 hr. Conditions were optimal – a warm day (26°C) followed by brief rain in the early evening. The site was surveyed during daylight to assess habitat suitability and identify areas for the night survey. Since Pickersgill's Reed Frog calls from dusk until the early hours of the morning, this was the optimal time to detect the species if present. Species detection was primarily assessed by means of aural surveys (male advertisement calls) and active searching for adults and juveniles by means of torchlight.

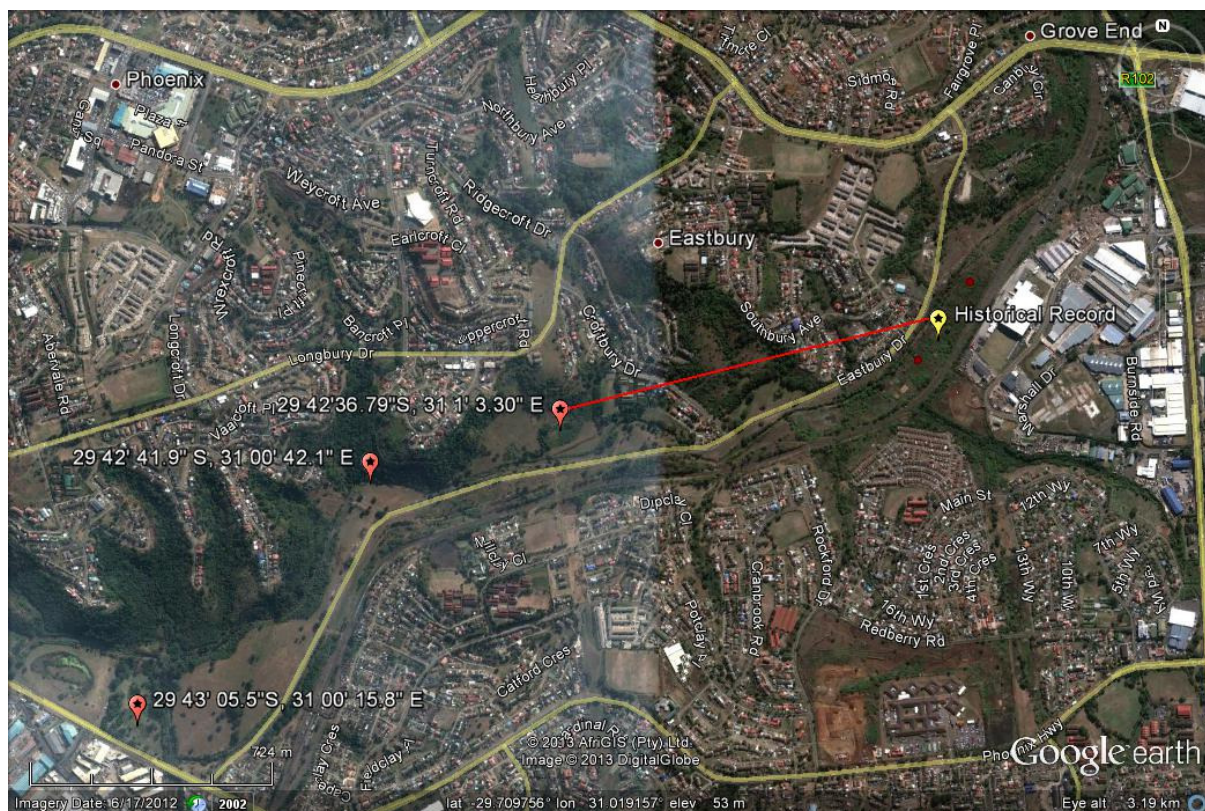


Figure 2: Wetland areas surveyed during this assessment (Red flag). The proposed pipeline will run closest to the wetland in the centre. This is within close proximity to historical records to the east for Pickersgill's Reed Frog (Yellow flag) – approximately 1.2 km as indicated by the red line.

RESULTS

Wetland areas assessed during the site visit did not appear to be ideally suited to Pickersgill's Reed Frog. While tall reed *Phragmites* and *Typha* vegetation is present, the required understory of lower vegetation is not present, or sufficient water is not present. This is as a result of major transformation in the area due to wetland drainage for cultivation and urbanisation purposes. Prior surveys in the area (Tarrant & Armstrong, *In Press*) on the south of Eastbury Drive have also failed to locate (yellow flag, Figure 2) suitable habitat and the species. During this assessment, despite good calling conditions, Pickersgill's Reed Frog was not detected at the site. It is very likely that the species used to occur throughout the immediate area, but the level of habitat transformation has now excluded it.

A total of 10 other frog species were detected during the assessment (both visually and by means of call surveys) as listed in Table 1 below. Some of these species are shown in Figures 3 and 4.

Table 1: Species List of frog species at or near wetland areas within the proposed development area

Common Name	Latin Name	Red List Status (IUCN 2010)
Bush Squeaker	<i>Arthroleptis wahlbergi</i>	Least Concern
Guttural Toad	<i>Amietophrynus gutturalis</i>	Least Concern
Red Toad	<i>Schismaderma carens</i>	Least Concern
Greater Leaf-Folding Frog	<i>Afrixalus fornasinii</i>	Least Concern
Painted Reed Frog	<i>Hyperolius marmoratus</i>	Least Concern
Water-lily Reed Frog	<i>Hyperolius pusillus</i>	Least Concern
Tinker Reed Frog	<i>Hyperolius tuberilinguis</i>	Least Concern
Sharp-nosed Grass Frog	<i>Ptychadena oxyrhynchus</i>	Least Concern
Snoring Puddle Frog	<i>Phrynobatrachus natalensis</i>	Least Concern
Platanna (African Clawed Frog)	<i>Xenopus laevis</i>	Least Concern



A

B

Figure 3: A) The Greater Leaf-folding frog (*Afrixalus fornasinii*) and B) Water-lily Reed Frog (*Hyperolius pusillus*) occur in abundance in wetland areas near the proposed pipeline site.



A

B

Figure 4: A) The Painted Reed Frog (*Hyperolius marmoratus*) and B) Tinker Reed Frog (*Hyperolius tuberilinguis*) were detected in various wetland a river areas in the vicinity of the site.

RECOMMENDATIONS

The proposed development site hosts a few wetland areas which provide not only key habitat to the majority of amphibian species that occur on site, but also important ecosystem services, such as improving water quality through natural filtration and flood attenuation (Kotze 2000; Nel & Driver 2012). Given that the majority of South Africa's wetlands have already been lost or destroyed, development that affects wetlands should not result in further loss of habitat (Driver et al. 2009; Nel & Driver 2012). The terrestrial habitat surrounding wetlands is also critical to the management of natural resources and for providing over-wintering and foraging habitat to amphibians, and thus the biological interdependence between aquatic and terrestrial habitats that is essential for the persistence of populations (Semlitsch & Bodie 2003).

The wetland areas north of Eastbury Drive are already highly transformed, but provide habitat to multiple animal species, including frogs, birds and reptiles (Fig. 5).



Figure 5: Flap-necked chameleon and juvenile reed frog using the wetland fringes for foraging and dispersal. Photographs courtesy Nick Evans.

All of the wetland areas are heavily littered, and some even appear to be dumping grounds for garden refuse. As per the above, it is recommended that further disturbance to these areas, during both the construction phase and beyond, is avoided as per recommendations given in the vegetation assessment.

- Care should be taken during the construction phase to not impact on the wetland areas;
- Ideally wetland areas that face possible impact should be rehabilitated according to historical knowledge of the area;
- A minimum of 30m buffers (Boyd 2001) of grassland fringe should be left intact surrounding wetland areas to provide terrestrial habitat for foraging and dispersal;
- The area should be managed more carefully by the land-owners/municipality to prevent litter and refuse entering the system.

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