• Africa = mega continent
• 1600+ spp of reptile in Africa
• Past research = morphologically orientated
• Genetically understudied
Taxonomy

- Conventional taxonomists can miss it
- Scale counts, colour and size = ‘plastic traits’
- Genetics can work with morphology & ecology
- ‘Unified species concept’
Snake taxonomy
Psammophylax (Fitzinger 1843)

- ‘Skaapstekers’
- Small-medium sized
- Seven species
- Terrestrial
- Diurnal
- Active hunters
- Mildly venomous
- Multiple sub-species

• P. acutus
• P. variabilis
• P. r. rhombeatus
• P. multisquamis
• P. tritaeniatus
• P. r. occelatus
Methods

- Collect tissue samples
- Extract DNA using salt extraction
- Amplify four genes
  - ND4
  - CYTB
  - 16S
  - CMOS
- Produce molecular trees
  - Bayesian Inference
  - Maximum Likelihood
  - Bayesian Codon
- P-distance analysis
- Barcoding
- bGMYC
- 2D Morphometrics Ongoing
Psammophylax phylogenetic tree

- *P. rhombeatus* and *P. ocellatus* are sister
- Sub-species within *P. variabilis* is not a viable species
Psammophylax acutus

Psammophylax multisquamis 2
(Tanzania)

Psammophylax rhombeatus

Psammophylax ocellatus
Psammophylax multisquamis 2 (Tanzania)

Psammophylax rhombeatus

Psammophylax ocellatus

Psammophylax tritaeniatus

Psammophylax multisquamis 1 (Kenya & Ethiopia)
Figure 3: Uncorrected Pairwise Distances from Table 2 used to illustrate the barcode gap between intra- and inter-species sequence divergences values. A- Cytb with currently accepted taxonomy of the genus; B- Cytb with newly proposed taxonomy of the genus; C- ND4 with currently accepted taxonomy of the genus; D- ND4 with newly proposed taxonomy of the genus. The grey bar denotes the barcode gap, the gap between the intra- and inter-species variation.
Conclusion

• Improved understanding of *Psammophylax* interspecies relationships
• Uncovered new species
• Resolved taxonomy
THANK YOU

A big thank you to everyone who has helped with sample collection thus far.