The health status of *Oreochromis mossambicus* and *Tilapia rendalli* in a conservation area of the Phongolo River, South Africa.

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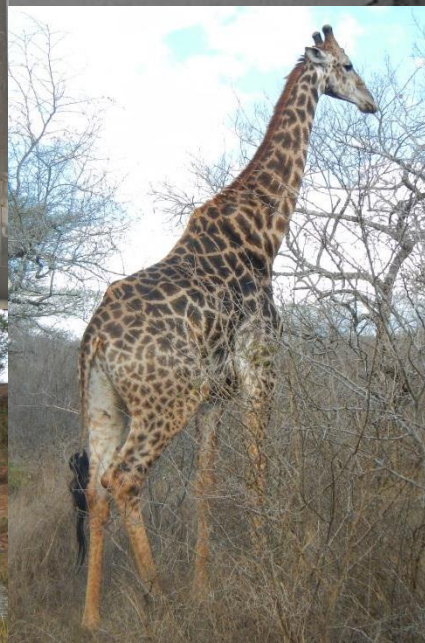
Introduction

- Phongolo River and floodplain's rich biodiversity
- Estimated 100 000 people are dependent on the river
- Indigenous people utilizes fish from the river as one of their main sources of protein.








Introduction

- *Oreochromis mossambicus* and *Tilapia rendalli* are two economically important species
- Ndumo Game Reserve serves as a refuge area for fish
- Health status of these species has never been assessed.

Oreochromis mossambicus

Tilapia rendalli

Hypothesis aim and objectives

- **Hypothesis:**

That fish use Nyamiti as a refugia to breed and that the health of these species will be in a better condition compared to the river

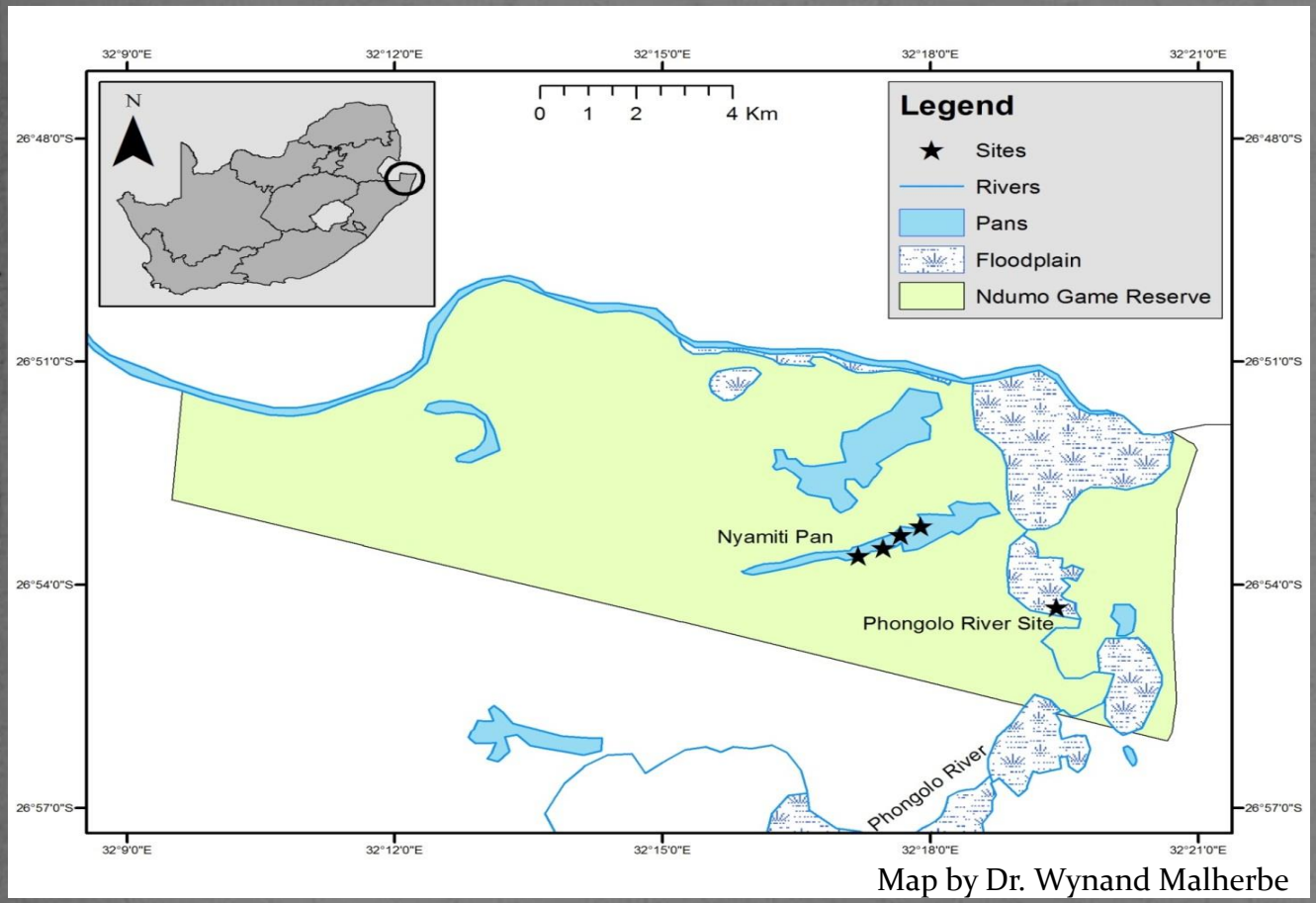
- **Aim:**

To assess the health status of both these species in a protected part of the Phongolo floodplain, the Ndumo Game Reserve

- **Objectives:**
  - Target *O. mossambicus* and *T. rendalli* using a variety of methods
  - To compare the fish health status of *O. mossambicus* and *T. rendalli* in Nyamiti Pan (NP) in the Ndumo Game Reserve with that of fish in the Phongolo River (PR).

Methods and materials

Study area



Two surveys:

- April 2013 (High flow)
- September 2013 (Low flow)

Figure 1: Map of Ndumo Game Reserve and sites used in this study.

Methods and materials

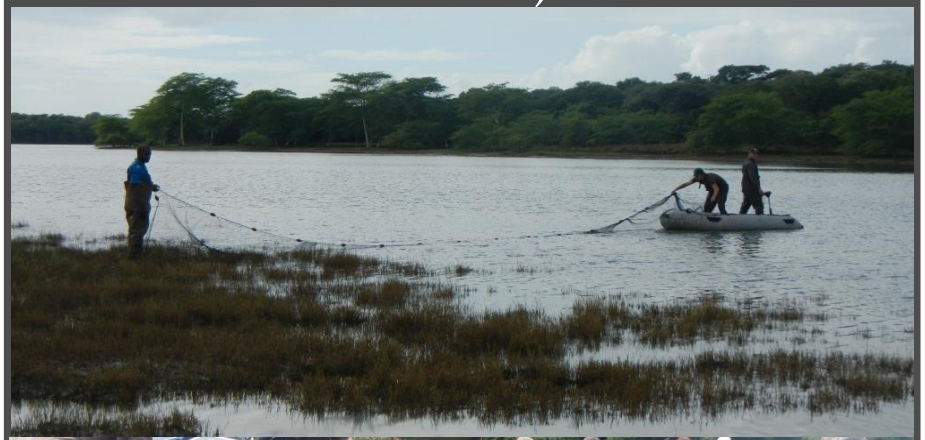
Fish sampling methods

- **River:**

80cm & 150cm fyke nets

- **Pan:**

35m seine net (stretched mesh 10mm)



Methods and materials

Dissection

- Weight, measured, photographed
- Drawing the blood
- External assessment
- Removing and weighing of liver, gonads and spleen
- Internal assessment

- ANOVA were used to process the data

(Tukey HSD and Dunnett T3)

Results

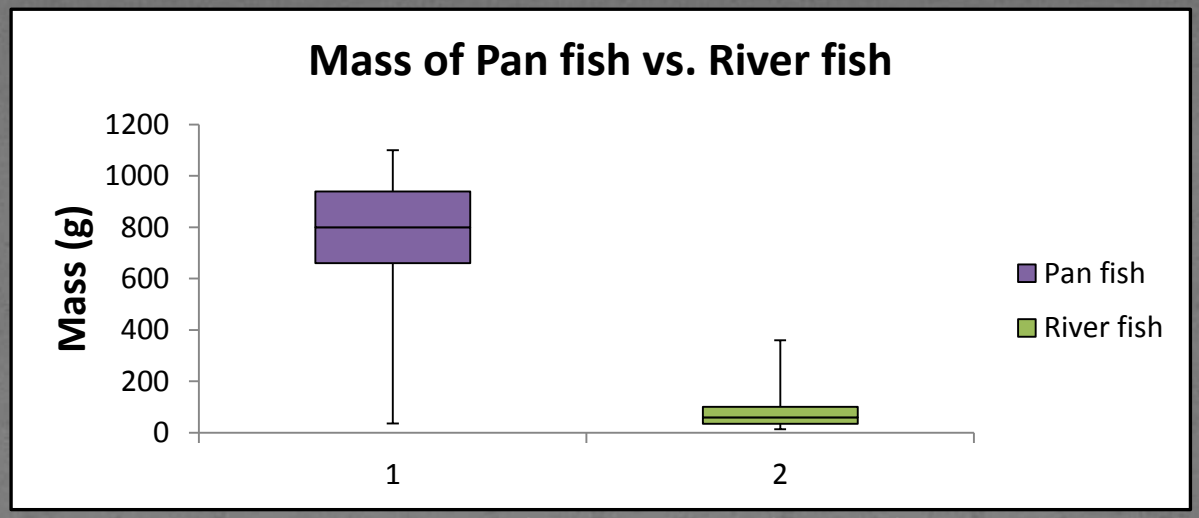


Figure 2: Box and whiskers plot of the mass from fish collected in the NP vs. PR.

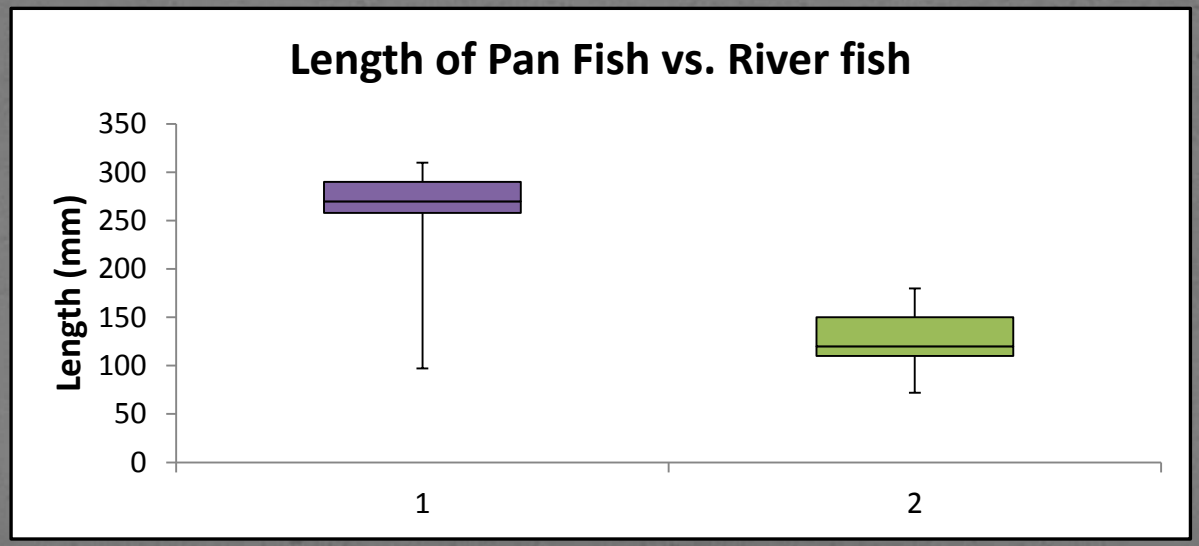


Figure 3: Box and whiskers plot of the standard length from fish collected in the NP vs. PR.

Results

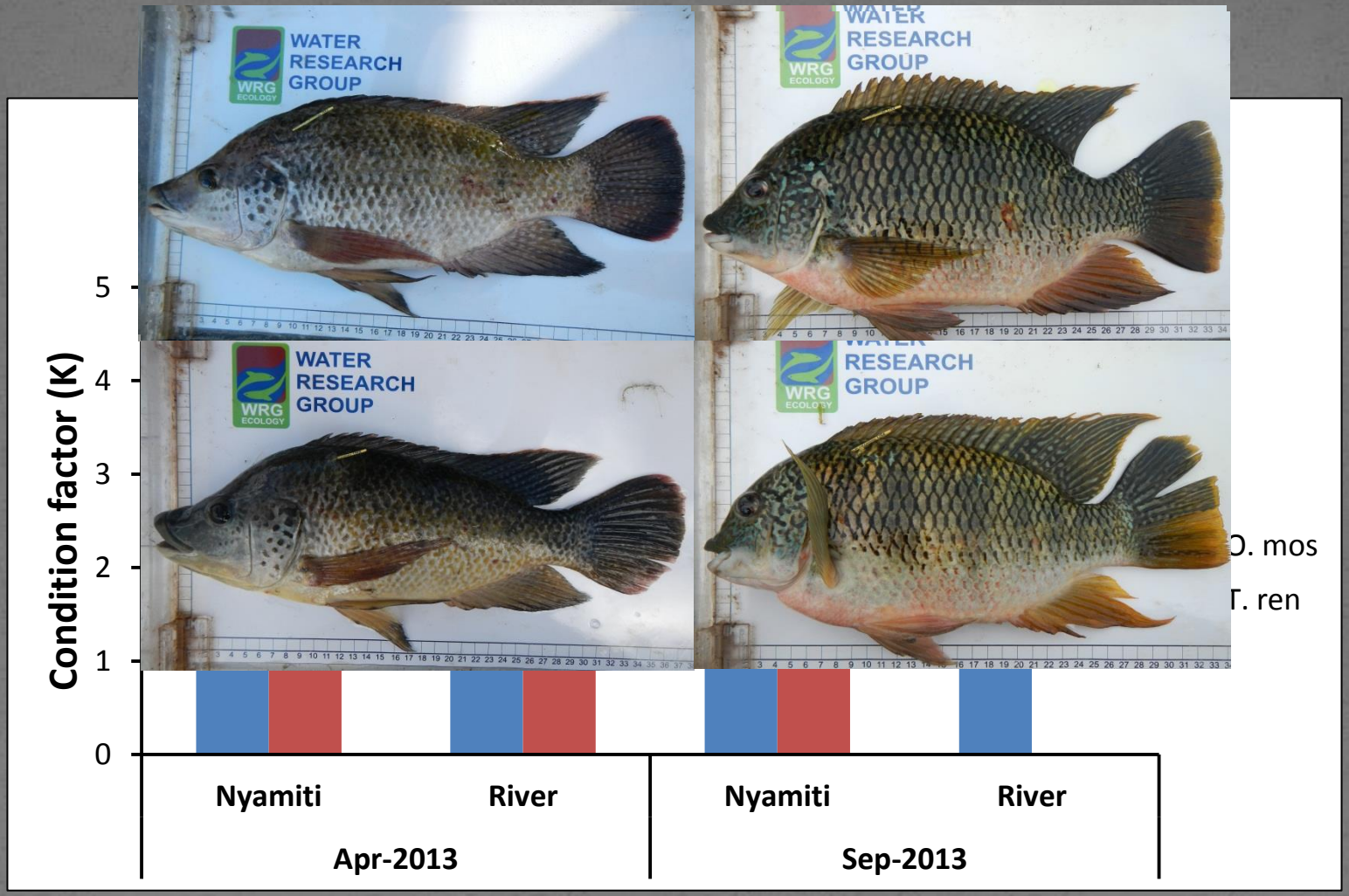


Figure 4: A comparison of the CF of *O. mossambicus* and *T. rendalli* from two sites during two surveys.

Discussion

- **April 2013 (High flow)**

- CF of cichlids in NP were higher in high flow when compared to low flow.
- *O. mossambicus* infected by *Lernaea cyprinacaea*
- Both cichlids from PR had lower CF during high flow compared to NP



Photos by: C. Griffiths and L. de Necker

Discussion

- **September 2013 (Low flow)**

- *O. mossambicus* severely infected with *Lernaea cyprinacaea* as well as nematode parasites
- Very few parasites were found on *T. rendalli*
- Both cichlids from NP had a lower CF during low flow
- Pan is cut-off from river during low flow
- NP is largely populated by adult cichlids and Gonado-somatic index (GSI) suggest they are preparing to breed.

Parasite infestation !!!

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Conclusion

- **Hypothesis:**

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- Nyamiti Pan serves as a refugia for adult cichlids
- Health status of *T. rendalli* are in a good condition
- *T. rendalli* from the Phongolo River?
- *O. mossambicus* in a poor health condition and under stress due to high parasite infestation

What are the concerns?

- Alien invasive species and parasites
- Flow requirements
- Health status of *Oreochromis mossambicus*
- Recruitment
- Human health concerns

Thank you