THE RUFFORD FOUNDATION

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Conserving Lake Victoria's endangered haplochromine cichlids through mitigating disease risks from cage fish farms (SaveCichlids)

Presented By

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Project type: First Rufford Small Grant

1. Introduction

The SaveCichlids project, funded by the Rufford Foundation, aims to conserve endangered haplochromine cichlids in Lake Victoria by mitigating disease risks originating from cage fish farming. With over 76% of cage fish farmers reporting significant mortalities due to bacterial infections, the project investigates the transmission of pathogens from farmed to wild fish populations. This report summarizes progress made in pathogen identification, sample collection, stakeholder engagement, and awareness-raising activities. Through collaborative research, laboratory diagnostics, and targeted training, the project strives to safeguard critical fish biodiversity while promoting responsible aquaculture practices in the Mwanza and Mara regions of Tanzania.

2. Field visit and sampling

Sampling was conducted between October and November 2024 in Rorya District, Tanzania, focusing on Shirati Bay (with over 60 fish cages) and Masonga Bay (an artisanal fishing area without cages). At each site, beach seine nets (200 m × 4 m, 4 mm mesh) were used to collect fish. Three hauls per site yielded 158 haplochromines at Site 1 and 142 at Site 2. Species of haplochromine were identified using a *Field Guide to the Freshwater Fishes of Tanzania* (Eccles, 1992).

Figure 1: Haplochromine cichlids and other wild fish scavenging feed leftovers around cage fish farms at TAFIRI fish farm in the Shirati Bay, Tanzania (Picture by Magoti Ernest Ndaro, 2024).

Figure 2: Project team member conducting field sampling activities (Picture by Magoti Ernest Ndaro, 2024).

Figure 3: Collection of Haplochromine cichlids around cage fish farms using beach saine net (Picture by Mohamed Toto, 2024).

Figure 4: Project leader Magoti Ernest collecting sample from affected Nile tilapia obtained from cage fish farm (Picture by Mohamed Toto, 2024).

Figure 5: Team member Alex, wearing a water jacket, administering a questionnaire to cage fish farmers in Rorya District to gather information on local fish disease management practices (Picture by Mohamed Toto, 2024).

3. Isolation of Bacteria and Sequencing

Figure 6: Project leader Magoti Ernest conducting bacterial isolation from collected haplochromine cichlids in the Microbiology, Parasitology, and Biotechnology Laboratory at Sokoine University of Agriculture, Morogoro, Tanzania. (Picture by Erick, 2025).

Figure 7: Colonies of isolated bacteria. **(a)** *Pseudomonas* spp., with large irregular colonies produced a yellowish-green florescent pigment on Pseudomonas Lab agar. **(b)** *Aeromonas* spp., on Tryptic soy agar showed yellowish opaque, round, convex, smooth edged and semi-translucent colonies. **(c)** *Streptococcus* spp., Isolates was non-motile, Gram-postive coccus, arranged in chains (Picture by Magoti Ernest, 2025).

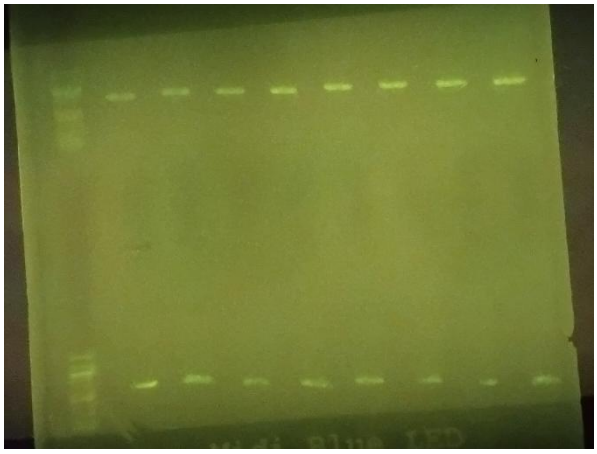

Figure 8: Gel electrophoresis image displaying distinct bands indicating successful PCR amplification of DNA extracts prepared for sequencing.

4. Key findings

Haplochromines near cages showed 85% infection with *Streptococcus agalactiae*, *Aeromonas hydrophila*, and *Pseudomonas aeruginosa*, while those from non-cage areas had 15% infection with *S. agalactiae*.

Figure 9: Photo of Haplochromine cichlids sampled near a cage fish farm in Rorya District, displaying visible skin ulcers (Picture by Magoti Ernest, 2024).

5. Training and awareness

Between May and July 2025, the SaveCichlids project held five training seminars measures in five wards, Sota-Rorya, jkt Musoma farms, luchelele-Nyamagana, Mekisadiki fish farm-Sengerema and zing zong fish farm-Sengerema. A total of 128 stakeholders were trained on fish disease identification, prevention, and biosecurity measures to protect endangered cichlids and promote sustainable aquaculture in Lake Victoria.

Figure 10: Photo of fish farmer at Zingzong Fish Farm in Sengerema following training on fish disease management and spillover prevention (Picture by Saipareki Lendoya, 2025).

Figure 11: Photo of fish farmer following training on fish disease management and spillover prevention (Picture by Saipareki Lendoya, 2025).

Figure 12: Project leader Magoti Ernest conducting a training session on fish disease management and spillover prevention for cage fish farmers in Nyamagana District (Picture by Saipareki Lendoya, 2025).

Conclusion

In conclusion, the SaveCichlids project has made significant progress in achieving its objectives, including field sampling, laboratory analysis, and stakeholder training. To disseminate findings, a manuscript has been submitted to the *Journal of Nature Conservation* Manuscript Number: JNC-D-25-00622, and conference proceedings have been submitted to several platforms, including the Mkwawa International Conference, the World Aquaculture Society Conference in Tunisia, the Third East African Regional Aquaculture Conference (ERAC III), and the Third Fisheries & Aquaculture Research for a Vibrant Blue Economy (FAR4ViBE). These efforts ensure wide visibility and engagement with regional and global stakeholders committed to aquatic biodiversity and sustainable aquaculture practices.

“Practice best management practices to protect endangered haplochromine cichlids from the spillover of pathogenic bacteria from cage fish farms” **Magoti Ernest Ndaro**