

Project update: August 2023

- We are currently collecting *Oreochromis karomo* samples for heavy metal and molecular analysis. In addition, we are conducting social surveys to identify human activities that contribute to the decline of *Oreochromis karomo*.
- 100 karomo tilapia samples were collected from five sampling sites along the Malagarasi River (Ilagala, Musoma, Mliya Bibi, Kavumangabo, and Mtego wa Noti). At least 20 fish samples were collected for heavy metal and molecular analysis from each sampling site.
- Sediments have been collected from all sample sites for heavy metal analysis.
- Questionnaires and interviews are being administered to fishermen, local leaders, and fisheries officers in the Uvinza district and the surrounding areas where the Malagarasi River flows into Lake Tanganyika.
- As we continue to sample, we discovered that some human activities along the Malagarasi River may be contributing to habitat deterioration and, as a result, a decrease in fish catch (Photo 8 -10)

The photos below were collected during the first sampling campaign along the Malagarasi River:



Photo 1: The Principal investigator (Mr. Umbayda), Research Assistant (Dr. Alex Nehemia), and fishermen carrying a few fish caught at Ilagala, at the mouth of the Malagarasi River, where it meets Lake Tanganyika.



Photo 2: Mr. Umbayda and Dr. Nehemia with villagers fishing in Ilagala.



Photo 3: Mr. Umbayda, Dr. Alex, and fishermen with fish samples collected at the Mvanganya landing site along the Malagarasi River.



Photo 4: Mr. Umbayda, Dr. Nehemia, and the village chairman of Mliya Bibi (right) with *O. karomo* tilapia fish samples taken at the Mliya Bibi landing site.



Photo 5: Dr. Alex with children who caught fish with fishing hooks in the Musoma-Malagarasi River.



Photo 6: Mr. Umbayda labeling collected fin clips of *O. karomo*. Fin clips from *Oreochromis karomo* were obtained from each fish for DNA molecular analysis, and other fish samples were collected for heavy metal analysis. The collected fins were kept in 99.9% ethanol.



Photo 7: Mr. Umbayda and Dr. Nehemia at a sampling site (Musoma) along the Malagarasi River, carrying karomo tilapia.



Photo 8: Small mesh fishing gear used by some Malagarasi River fisherman.



Photo 9: Tomato farming taking place along Malagarasi River. **Photo 10:** The *Cyperus papyrus* L. collected from fish spawning areas along the Malagarasi River.

- One of the economic activities carried out by youth along the Malagarasi River, Lake Tanganyika, and Lake Nyamagoma is the sale of *Cyperus papyrus* L.
- The *Cyperus papyrus* L. is used to make matting, roofing materials, and animal feed. This economic activity may be responsible for the destruction of fish habitats.