

KNOW THE RISKS: RESEARCHING INVASIVE CRAYFISH IN ZAMBIA LEADS TO A FUTURE CAREER IN AQUACULTURE RESEARCH

By Chibwe Katapa and Marjatta Eilitta

Chibwe Katapa did not know about the existence of the Australian red claw crayfish, an invasive species in Zambian waterbodies, until she was recruited to conduct her Master of Science research with the Feed the Future Innovation Lab for Fish activity to investigate population ecology of the invasive crayfish in the Kafue floodplain and Lake Kariba. The activity is a collaboration with the University of Zambia, University of Rhode Island, and Cultivating New Frontiers in Agriculture (CNFA), and it aims to identify crayfish distribution in the region in order to mitigate the risks the species might pose toward native species in Zambia. Katapa is a 39-year-old Zambian secondary school teacher and student at the University of Zambia, and she wanted to learn about aquaculture to make a difference in the lives of her people. Although fish is a delicacy in the country, overfishing is making it difficult for ordinary Zambians to enjoy fish.



Katapa (right) is measuring crayfish in Siavonga at Lake Kariba with Gordon Mudenda of the University of Zambia (left) and Hazembe of the Department of Fisheries (center). (Photo by Hilltop Lodge)

The objective of Katapa's research, "Abundance and Growth of Crayfish, *Cherax quadricarinatus*, in the Kafue Floodplain and Lake Kariba, Zambia," is to investigate crayfish in the two fisheries to determine whether they are conducive for its growth. As the continued population growth and spread of the invasive crayfish threatens the integrity of these two freshwater ecosystems, monitoring and quantifying their distribution and abundance will be essential to develop long-term management solutions. The study will assess relative abundance by catch per unit effort. Growth will be determined using the Von Bertalanffy growth parameters (i.e., a growth curve to show results over a period of time) and water quality parameters such as pH, temperature, and conductivity will be assessed onsite using portable water quality meters.

Although Katapa grew up in Ndola, a large city in Zambia's Copperbelt, her parents hail from the Luapula Province where the local ethnic group, Bemba, relish fish. She discovered how much during her first visit, at age 25, to the family's hometown, Mwanabombwi, in the District of Kawambwa.

"During the seven-day visit, we ate fish for breakfast, lunch, and dinner," Katapa said.

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As a result of the visit, Katapa understood the importance of fish but also saw how much the fish stocks in the Luapula Province have been overexploited, including the stocks of the local giraffe catfish, which used to be abundant in Lake Mweru but is becoming increasingly rare. She therefore started her master's in Tropical Ecology and Biodiversity in 2020 at the University of Zambia after having completed—a decade earlier—her bachelor's in Natural Resources Management with a focus on geography and biology.

Katapa has been teaching biology and chemistry to students in grade 10–12 in Shifwankula School, but after graduating in May 2023, she hopes to continue research in aquaculture with an ultimate goal of researching whether Luapula Province's local giraffe catfish could be reared in cages.

Unfortunately, as the crayfish expands its habitat in Zambia, it may also reach northern water bodies such as Lake Mweru or Lake Bangweulu, both of which are important habitats of the giraffe catfish. Incidentally, crayfish compete with the giraffe catfish for food and space, making crayfish a potential threat to the giraffe catfish population if crayfish gets introduced into Lake Mweru.

Katapa believes that the skills she has acquired working on the Zambia crayfish activity will be useful in her future work as an aquaculture researcher, with a goal of rearing giraffe catfish to provide livelihoods for fishers in her native Luapula Province and beyond and to keep markets supplied with fish for all Zambians. Therefore, understanding the biology of crayfish in the Kafue Floodplain and Lake Kariba will also help her to understand potential biological and socioeconomic impacts in those water bodies. Katapa is excited about her work and future.

"A Master of Science was going to be too expensive for me to pursue," Katapa said. "Thanks to the USAID-funded Fish Innovation Lab activity, my dreams of becoming a college lecturer and doing further research in aquaculture in Zambia are now coming true."

ABOUT THE FISH INNOVATION LAB

The Fish Innovation Lab supports the United States Agency for International Development's agricultural research and capacity building work under Feed the Future, the U.S. Government's global hunger and food security initiative. Mississippi State University is the program's management entity. The University of Rhode Island, Texas State University, Washington University in St. Louis, and RTI International serve as management partners.

www.feedthefuture.gov
www.fishinnovationlab.msstate.edu