

Impact Spotlight

Mai Ndombe REDD+ Project
Q1 2021

**EVER
LAND**

**WILDLIFE
WORKS**





Restoring fish to Lake Mai-Ndombe and local communities



Fish have been a traditional and primary source of food and essential nutrients for communities surrounding Lake Mai-Ndombe. For decades, the lake was teeming with fish caught by local fishermen.

After years of unsustainable fishing practices, however, the lake's fish population is now severely depleted. Things began deteriorating in the 1980s due to economic conditions and got worse in the early '90s when villagers began fishing with mosquito nets provided by NGOs to help fight malaria.

Unlike traditional nets with larger holes that are designed to catch adult fish, mosquito nets have minuscule holes that catch nearly everything in the water. The nets were hauling in juvenile fish and depleting the lake of its population of new breeding stock. Treated with insecticides, these nets also added toxins to the lake's already fragile and stressed ecosystem. Over time, the practice damaged the ecosystem and perversely contributed to less fish being available as a food source and to sell at the market, which in turn increased poverty.

To restore fish as a sustainable source of nutrition and an integral part of Lake Mai-Ndombe, the project has launched a set of initiatives to advance the sustainable practice of fish farming. This practice will help increase food security for local communities and displace decades of damaging fishing practices.

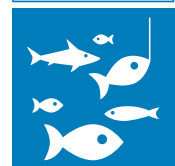


TARGET 14-2



PROTECT AND RESTORE ECOSYSTEMS

TARGET 14-4



SUSTAINABLE FISHING





Building fishponds and studying the lake's water DNA

Two main initiatives are underway in the Mai Ndombe project that are strategically important for achieving its durable conservation goals:

- ✓ Creating fishponds in villages for sustainable fish farming to increase food security
- ✓ Conducting an eDNA study to assess the genetic makeup of the lake's ecosystem as a first step to successfully restock the fish population

Local fishponds were once an abundant source of fish for local families. Villagers in the community are being trained on how to build healthy ponds for sustainable fish farming that can deliver immediate and ongoing benefits to families and the lake's ecosystem.

Improving agriculture productivity in marginal land (secondary forests and fallows close to villages) will help slow deforestation in the primary forest. Besides diverting deforestation activities, fish farming is a vital way to fight hunger in villages.

The eDNA study is a critical first step in the effort to successfully repopulate Lake Mai-Ndombe with different species of fish that are compatible with the water. The campaign will look at the lake's biological diversity by analyzing its residual DNA and matching unknown DNA from water samples to local fish DNA.

Research findings will reveal the types of fish in the lake and their populations, and the qualitative and quantitative analysis will identify species that can live and reproduce in Lake Mai-Ndombe based on the water's natural and chemical properties and makeup.





Built seven new ponds and awaiting final eDNA research findings to restock lake

- ✓ In Loombe, one of the agricultural villages around Mai Ndombe, seven new fishponds have been built. Each pond is being stocked with two types of fish: Clarias, a wildly popular local fish, and local Tilapia imported from Kinshasa.



- ✓ The plan is to stock the ponds with fish, including 1,000 Clarias and 1,000 Tilapia that weigh roughly 2.5 kg each. The ponds will have a minimum of 2.5 tonnes of both types of fish, an amount that far exceeds what is needed to feed the local village. Once the Loombe community and neighboring village needs are met, the remaining fish will be distributed to the larger project and surrounding communities so that they can see how fish ponds are beneficial. Fish will also be sold at markets in Inongo and other cities, with sales proceeds going back to meet Loombe community needs.
- ✓ The seven new ponds are a starting point. The project plans to build ponds in nearby villages and use fish from those ponds and future ones to restock the lake and increase its biodiversity.

One challenge, however, is that some fish species cannot reproduce in ponds. This is being addressed by growing species of these fish in a lab. Villagers are using manure from a chicken and pig farm to feed the fish. When the fish reach a certain size, they are moved to the lake where they can grow and thrive.

Another challenge the community faced--and has been able to overcome--is the dry season when fishponds dry out. Today, villagers now use motors to pump water from the lake to keep ponds full in the dry months and until the rainy season returns.



Stopping deforestation and informing efforts to restock local fish populations

The agriculture village in Loombe has helped slow deforestation in the Bosongo forest in part because new fishponds have been successfully stocked with Tilapia and Clarias. The village has also been provided with highly productive cassava crops that are improving yield. New crops have been cultivated in two hectares and harvested to test for productivity. Improvements in agricultural productivity have reduced the need to clear forests to grow food.

Initial Lake Mai-Ndombe eDNA research has been done, and samples are being analyzed in the UK. So far, research shows that the lake--covering an area of 890 miles--is not homogenous; there is a big difference in the physical and chemical characteristics of the water.

Final eDNA findings will show the extent to which mosquito nets have negatively impacted the lake's ecosystem, specifically the drop in fish populations and the disappearance of species. Results will also inform the steps that need to be taken to restock the lake and rivers with a healthy and sustainable supply of fish.





New agricultural villages, fish hatchery labs, and working with authorities to increase sustainable fishing



More agriculture villages are planned for the project area starting in Nkondi. Villages will have fishponds, enclosures for raising animals, and cassava plantations. The enclosures are one way to keep villagers' animals in a central location and mitigate the damage animals do to crops when grazing. This will support farming in marginal land close to villages. Providing highly productive cassava crops will improve village economies with cassava that is now in high demand.

The project will soon be acting on findings from the eDNA campaign. Knowing the genetic makeup of the lake's water, villagers will be able to determine the ideal breeding and survival conditions for specific fish types.

The plan is to create hatchery labs in Inongo and other locations where artificial reproduction will be done. Artificial reproduction consists of catching fish from the lake, breeding them, letting the juvenile fish grow to a certain size, then bringing them to the lake for restocking.

Results of the eDNA research are being shared with the government to demonstrate the extent of fish stock depletion and the disappearance of species. There is already a law against using mosquito nets for fishing in DRC lakes and rivers. The government will put more effort into enforcing the law.

Work with the government includes participating in activities with the president and advocating for the need to protect Lake Mai-Ndombe and Lake Tumba as vital resources. The project team has started and will continue working with the DRC's Agriculture and Fisheries agencies and host government officials during a visit to the project area.

The government plans to launch an awareness campaign and has created an institution to promote sustainable fishing activities. The new cooperative has a presence in Kinshasa with plans to extend operations next to Mai Ndombe and then throughout the DRC. Around 5,000 fishermen have joined the co-op pledging to fish sustainably and the co-op aims to have 50,000 fishermen signed on in the first six months.