

Grant Recipient Details

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Executive Summary

Victoria tilapia (*Oreochromis variabilis*) is critically endangered native tilapia fish species endemic to lakes Victoria and Kyoga basins as well as satellite lakes like Nawampasa of Lake Kyoga basin. However it disappeared from these main lakes majorly due to environmental degradation, aggressive competition for food, space and mates from introduced tilapias such as Nile tilapia and predatory actions of Nile perch. This project contributed to fostering the survival of Victoria tilapia in Lake Nawampasa through working with fishing communities, researchers and government representatives to establish Victoria Tilapia Conservation Committee (VTCC) to identify, map, monitor and protect critical habitats like breeding and nursery areas of Victoria tilapia. Additionally conservation awareness was created among fishermen and public to uplift their understanding on the need to conserve fish fauna and their habitats. Major project outputs included establishment and commissioning of Victoria Tilapia Conservation Committee operations, all the sites identified as breeding and nursery areas mapped and being protected by VTCC team and increased level of awareness among fishing communities on the need to conserve and protect fish fauna and their habitats. The main conservation importance of the project included increased chances for recovery of the populations of Victoria tilapia as well as other fish species in addition to threatened aquatic birds like Shoebill and Grey Crowned-crane spotted on the catchment areas of Lake Nawampasa.

Introduction

Victoria tilapia (*Oreochromis variabilis*) is critically endangered indigenous tilapiine cichlids (IUCN Red List, 2006), endemic to lakes Victoria and Kyoga basins as well as satellite lakes like Nawampasa of East Africa. This fish species used to be one of the Uganda's key fish species for both commercial and artisanal fisheries in the 19th and 20th Centuries. It has suffered a large reduction in extent of occurrence and is now restricted to a few refuge impoundments and satellite lakes such as Nawampasa of the Victoria and Kyoga lake basins (Ogutuh-Ohwayo, and Balirwa, 2006). Many researchers have documented factors attributing to the decline in the populations of Victoria tilapia including the aggressive competition for food, spawning, and nursery grounds with introduced Nile tilapia (*Oreochromis niloticus*), predatory actions of Nile perch (*Lates niloticus*) and environmental degradation like pollution, habitat modification, fragmentation and loss for projects such as dam construction like Bujagali Hydroelectric power dam (Njiru et al., 2008; Chapman et al., 2008; Dudgeon et al., 2006; Balirwa et al., 2003; Lowe- McConnell, 2009; Ogutu-Ohwayo and Balirwa, 2006) Since this species were assessed and published as critically endangered by IUCN in 2006, no active work has been carried out to revive its populations in the wild. This project was aimed at fostering the survival of critically endangered Victoria tilapia (*Oreochromis variabilis*) in Lake Nawampasa through working with fishing communities to address the following specific objectives (a) foster active participation of fishing communities in conserving Victoria tilapia and its habitats, (b) Create community-focused awareness campaigns about the need to conserve Victoria tilapia and its habitats.

Project Activities

The project was implemented on Lake Nawampasa geographically located at Latitude 1.26736 N and Longitude 33.3608 E in the district of Buyende,

Eastern Uganda. This Lake has unique habitats characteristics dominated by papyrus swamps and marshy areas thus making it suitable for the survival of many threatened aquatic wildlife including fishes like critically endangered Victoria tilapia and birds such as Grey Crowned-crane. Additionally the surrounding catchment areas of the Lake have beautiful mountainous landscape and it's a good site for ecotourism.

Establishment and Training of Victoria Tilapia Conservation Committee (VTCC)

Fishing communities, researchers and local leaders were engaged in commune meetings to select VTCC team to ensure representation of both young and old fishers as well as local leaders. The VTCC team was empowered on the need to conserve and protect fish fauna as well as management of threats like habitats destruction, fragmentation and loss that could jeopardize the ecological integrity of this Lake to continue supporting fish fauna they rely on as their major sources of livelihoods and wellbeing. As part of the training, they (VTCC) were fully involved in mapping of critically habitats (breeding and nursery areas) of Victoria tilapia on Lake Nawampasa.



Local community engagements during selection of Victoria Tilapia Committees (VTCC)



Mapping of Critical Habitats (Breeding and Nursery Areas) of Victoria tilapia

Scouting of Lake Nawampasa was carried out together with researchers and Victoria Tilapia Conservation Committee (VTCC) to identify and map spawning and nursery grounds using Global Positioning System (GPS). These sites were identified using both traditional knowledge of the fishermen and technical skills of research team. The criteria used in mapping of these sites were based on known indicators such as presence of both mature and young Victoria tilapia fish, and characteristics of habitats such shallow muddy bottom, presence of breeding substrates like water lily, river inlets and riverine forest preferred by Victoria tilapia.



VTCC team and Researchers mapping breeding and nursery areas of Victoria tilapia



Awareness Creation about the Need to Conserve and Protect Victoria Tilapia

Fishing communities, Victoria Tilapia Conservation Committee (VTCC) as well as local leaders were engaged in various activities including landing site talk, direct involvement in mapping of breeding and nursery sites of Victoria tilapia to uplift the level of their understanding about the need to conserve Victoria tilapia and good practices like use of recommended fishing techniques and avoid digging up to the Lake shores. VTCC team was also given the opportunity to share their experiences vital for conservation and protection of fish fauna and their habitats.



Researcher creating awareness among fishers VTCC scouting critical habitats on Lake Nawampasa as part of awareness

Project outputs and outcomes Recorded

- a) Victoria Tilapia Conservation Committee (VTCC) consisting of fishers (old and youth) established to conserve and protect critically endangered native tilapia fishes and its habitats
- b) All the critical habitats (breeding and nursery areas) vital for the survival of critically endangered Victoria tilapia was mapped by researchers



together with VTCC team. These habitats are characterized by known indicators such as presence of breeding substrates like waterweeds, shallow muddy bottoms and rocky areas which are majorly preferred by Victoria tilapia. The sites were named according to the local names and these includes; Namalogue- Ngagga Bay, Butooli, Nkodokodo, Buyumba-Nakatye, Kyanzile, Bupioko and Nadiope-Naika. These critical sites are being protected by VTCC team to increase the chances for recovery of the population of not only Victoria fish species but also other depleted fish species as well as threatened birds like Grey Crowned-crane supporting livelihoods of millions of people in Uganda.

- c) Increased level of awareness among local communities, youths and fishers about the key threats namely; habitat destruction, fragmentation and loss due to poor agricultural practices, presence of invasive species particularly weeds like Kariba weed that could jeopardized ecological integrity of this Lake to continue supporting survival of threatened aquatic wildlife.



Kariba weed (*Salvinia molesta*) and Lake shore Cultivation



d) The awareness creation also resulted into increased commitments and enthusiasm of local communities especially fishermen in conserving fish fauna and their habitats. This was witnessed by their active participation in implementing project activities such as mapping of critical habitats of Victoria tilapia and willingness to form Victoria Tilapia Conservation Committee (VTCC). They were impressed by the efforts being undertaken to revive fish populations which are declining drastically, and this could in turn help them to improve on their livelihoods and wellbeing. During mapping of the critical habitats (Breeding and Nursery sites) of Victoria tilapia, we noticed that the catchment areas of this lake is also playing a big role in the conservation of other threatened birds such as Shoebill, one of the key bird species for tourist attraction not only in Uganda but globally.



Shoebill (*Balaeniceps rex*)



Challenges encountered during the implementations of project activities.

- a) It was somewhat challenging to make local communities especially fishermen, local leaders and government representatives to understand the essence of the whole project particularly mapping of the breeding and nursery sites and how these sites will be protected by the committees without compromising on their daily fishing activities which form the primary components of their livelihoods and wellbeing. However through awareness creation and engagements of local communities and other stakeholders, they welcomed and appreciated the interventions since it will help in reviving the populations of the fish that supports their livelihoods and wellbeing.
- b) Use of destructive fishing techniques like Cast netting at critical habitats vital for the survival of not only Victoria tilapia but other fishes observed by VTCC team during monitoring operations. The VTCC team is working together with relevant authorities as well as other fishers to curb down destructive fishing methods on Lake Nawampasa.



Cast Netting- Illegal Fishing Techniques being used by Fishermen

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- c) Lack of dedicated motorized boat to be used by VTCC team for monitoring illegal and unwarranted activities on the Lake. However the VTCC team managed this challenge by using non-motorized boats
- d) Presence of floating vegetation and an invasive Kariba weed (*Salvinia molesta*) on the lake made navigation and accessibility of some sites critical sites of Victoria tilapia very difficult, however with the help experienced fishermen, we managed to navigate and map these sites.



VTCC team and Researchers navigating through dense Kariba weed

Conclusions and Recommendations

The involvements of all stakeholders' particularly both direct and indirect users of fisheries resources are critical to the success of any conservation efforts. This project contributed immensely to reviving traditional conservation techniques where local communities particularly fishers are engaged in good practices aimed at promoting recovery of the populations of threatened fish fauna as well as protection of their habitats. However, the following recommendations should be implemented to ensure sustainability of these interventions.

- a. The Victoria Tilapia Conservation Committee should be continuously supported and empowered to monitor and protect critical habitats of Victoria tilapia
- b. The Mapped Critical habitats should be zoned off and established as No-Take Zones (NZTs) to create safe havens needed to facilitate the recovery of the populations of Victoria tilapia and other threatened aquatic wildlife.
- c. More conservation awareness should be conducted to uplift the understanding of relevant stakeholders particularly VTCC and fishing communities about the need to conserve Victoria tilapia and its habitats.
- d. VTCC operations should be included under priority settings of the Buyende district local government to secure financial support for their day-today operations.