Project Update: September 2021

Introduction

The interest of this project is around the impacts of unsustainable fishing, destructive fishing practices on aquatic biodiversity and habitats, and secondly, elements of fisheries governance aiming at the mitigation, reduction, and, where possible, elimination of the impacts of fisheries on biodiversity and habitats.

The detrimental ecosystem effects of overfishing tend to become more acute with the increase in fishing pressure. Illegal, unreported, and unregulated (IUU) fishing, which is a source of underestimating the fishing pressure, can contribute to or aggravate overfishing. For example, in Tana Delta, IUU fishing is more focused on high-value species that are also highly vulnerable to fishing, and where the risk of extinction may be of most significant concern like *Labeo* sp. nov. *'Baomo.'*

Fisheries are major stressing factors on aquatic ecosystems in Tana Delta, and the problems relate to weak governance, excessive fishing capacity, and inappropriate gear and practices. The impacts of overfishing on fish species diversity can be expressed in the following forms:

1. The modification of community structure (e.g., trophic structure).
2. The reduction in species richness or other taxonomic diversity indices.
3. Risk of local extinction (i.e., severe reduction of the impacted populations to the extent that they become threatened, endangered, or even locally extinct).

The paradox is that fishers cannot exist without a healthy resource system, and the fishery sector is of high importance for the livelihood of a large community of users highly dependent on fishing and food security.

Tana Delta's marshes, estuary, and floodplain lakes are habitats or spawning/rearing areas for species later caught in the main River Tana channel. These ecosystems are also the most affected by nutrient and pollution runoff from land resulting from unregulated farming practices. This has a probably substantial and yet un-assessed impact on fisheries productivity and fish quality. In addition, many fishing impacts on aquatic systems are indeed exacerbated by an often irreversible environmental degradation.

Objectives

The objectives for the first field activity conducted on 5 – 15 August 2021 were as follows:

1. Field sampling of fish to collect scientific information on Labeo redtail species assemblage, population status, and distribution patterns in lower River Tana, Kenya.
2. Improving community knowledge on the importance of the species and creating awareness through participatory workshops and training on conservation measures.
3. Fishers empowerment through distribution of appropriate fishing gears.

Fieldwork planning
Planning for the project implementation started in July 2021 after the national government reduced measures and restrictions due to Covid-19. Two project team members conducted a preliminary field site visit in Tana Delta from July 23-25 2021 to ascertain the requirements for the first field activity in August 2021.

The project team then embarked on preparing presentations and communication material for use in community awareness workshops. These were designed to capture: 1) local ecological knowledge of the floodplain habitats and species, 2) importance to their daily livelihoods, and 3) threats. A formal request for funds was also made to the National Museums of Kenya through the ichthyology department in the first week of August 2021.

Objective 1: Field Sampling of fish
Fish sampling was carried out at Lake Shakababo floodplain lake on 6th and 7th August 2021. Sampling was carried out monofilament gillnets 1 x 30 m long and of 0.5, 1.0- and 2.5-inch mesh sizes. During each sampling, details of each sample, such as date, size, and manner of collection, were recorded. Furthermore, the number of each fish species captured was recorded. The specimens collected were identified to species level using established freshwater fish taxonomic keys in the Ichthyology Section, National Museums of Kenya (NMK).

Similarly, the identified species were compared against the annotated checklist of the freshwater fishes of Kenya (Seegers et al., 2003), guide to common freshwater fishes of Kenya (Nyingi, 2013), and fish specimen collection available at NMK. Fish specimens considered unique or not curated at the NMK collection were photographed in situ and released back to the water. We also conducted opportunistic sampling of fishers' catch that we encountered at the lake. Fish sampling aimed at generating new scientific information on the target species, *Labeo* sp. nov. 'Baomo', population status and distribution patterns in around the floodplain lakes.

There were no samples of *Labeo* sp. nov. 'Baomo' caught by the monofilament fish sampling nets. However, fishers reported that the species is occasionally caught at the lake. They attributed its rarity to overfishing and high eutrophication and sedimentation from recession farming activities around the lake.

Table 1: Type, number and conservation status of fish species sampled at Lake Shakababo

Local name	English name	Scientific name	IUCN Status	Number sampled
Borode/Chika	Gregori's Labeo	*Labeo gregorii*	LC	92
Borode/Chika	Labeo redtail	*Labeo* sp.	VU	0
Ngogo/Korokoro	East coast/Tana squeaker	*Synodontis* sp.	DD	9
Pawa	Silver Catfish	*Schilbe intermedius*	LC	13
Parapara/Ntuku	Sabaki Tilapia	*Oreochromis spirulus*	LC	128

Tonzi	Sharp-tooth catfish	*Clarias gariepinus*	LC	5
Mbelewele	Tana Bulldog	*Marcusenius devosi*	DD	1
Kwakwa	Red-fin robber	*Brycinus* sp.	LC	7


Left: Project team, David, Tom, Ronnie, and Justus wading through L. Shakababo to set up fish sampling nets. Right: Setting up monofilament gillnets for fish sampling.




Left: Justus, National Museums, technologist at Ichthyology Section, explaining differences in fish species sampled. Right: Sabaki Tilapia, Oreochromis spirulus, caught by fishers at L. Shakababo.

Objective 2: Community Education and Awareness Workshops

The awareness workshop was conducted in Methodist Church Hall at Tarassa trading Centre, Tana River County, on August 8, 2021. This activity was conducted from 8-9 August to improve community knowledge on the importance of the species and create awareness through participatory workshops and conservation measures training. Attendance to the workshop was limited to 30 community members to adhere to COVID-19 restrictions. The workshop representation included floodplain recession farmers, livestock herders/pastoralists, fishers, women traders, and Tana River County Government representatives and local administration.

The workshop started at 10.00 am with opening remarks from Mr. Kennedy Otoi, the Kenya Wetlands Biodiversity Research Team (KENWEB) community liaison officer. Kennedy highlighted the significance of community-based natural resource management projects, adding that they instill community ownership. He mentioned that Tana Delta has over the years witnessed conflicts emanating from natural resource use. Kennedy said the support given to young researchers by The Rufford Foundation is crucial in building their capacity in promoting conservation dialogue and protecting biodiversity in fragile ecosystems like the Tana Delta. He emphasised the importance of the community coming together and sustainably utilising the natural resources to accommodate the diverse needs of the people.

The project team leader, David Ouma, introduced the project, mentioning its aims and expected outputs. He went ahead and presented on fish diversity in Tana Delta. David's presentation illustrated how seasonality of the floodplain has affected fisheries. The presentation also highlighted the importance of floods in maintaining hydrological connectivity between the floodplain lake and the main river channel and how this is important in fisheries and livelihoods. He concluded by urging the community to come together through the Fisheries Beach Management Units (BMU) and conserve Lake Shakababo.

Tana Delta Fisheries Officer, Mr. Siso Israel, representing Tana River County Department of Fisheries and Environment, highlighted the importance of strengthening governance through BMU. Siso urged Lake Shakababo BMU leadership to formally register itself as provided for in the Fisheries Management and Conservation Act 2016. The BMU would then be supported in building its capacity around monitoring, control, and surveillance (MCS). The BMU would be responsible for addressing existing challenges such as bycatches and the use of inappropriate gears (small mesh size fishing nets and use of mosquito nets). Participants also reported that they experience itching skins when using water from Lake Shakababo. This was attributed to the high level of eutrophication in the lake caused by reducing water level and recession farming activities around the lake. Community members were highly discouraged from using the lake water at home.

The officer urged the different resource users at the workshop to cooperate in conserving the lake. He mentioned that the lake offered multiple benefits to the residents of Tarassa and beyond. The lake is also rich in biodiversity, mostly fish species; hence was an important area for conservation. All fishers were urged to register with the BMU and report fisheries data at L. Shakababo beach landing. The officer noted that the lack of data on the fisheries of Tana Delta was hindering decision-making and interventions from the

government. He concluded by emphasising collaboration among recession farmers, fishers, pastoralists, and traders in conserving the fisheries resources, an important source of proteins for the residents.

Thomas Odeyo, the project team members presented on wetland habitat restoration. His presentation highlighted how the Tana Delta community benefits from floodplain wetlands, why the community should care about the wetlands, threats, and opportunities available to restore and protect Lake Shakababo – the last remaining floodplain lake in the southern part of the delta.

The community members raised several issues in the plenary.

- The fishermen often resort to farming after the lakes catch dwindle or the lakes dry. Unsustainable fishing was rampant, with fishers using small-meshed fishing nets.
- Pastoralists and recession farmers regularly clash over access to the floodplain wetlands.
- The invasive *Prosopis juliflora*, popularly known as Mathenge, has caused more degradation to the ecosystem than the benefits reported.
- A suggestion was made to dig up the lake area to reduce sediment loads brought in by floods.
- Most of the fishers are not registered with the BMU, so there is limited reporting of fish catch data.
- Suggested solutions by the community participants.
- Fully register the BMU.
- Build the capacity of BMU officials in monitoring, control, and surveillance (MCS) and in resolving resource conflicts.
- Empower the small-scale fishers in the community with appropriate fishing gear.

Left: Project Team Leader, David Ouma, introducing the project. Right: Tana Delta Fisheries Officer addressing community participants.

Community participants at Methodist Church Hall at Tarassa Trading Centre with participants following the presentations and Project Team Member, Thomas Odeyo, making his presentation.

Awareness in the villages

Left: Kennedy Otoi and Ronnie Mwangi assessing the nets used by fishers. Right: Creating awareness within community on important biodiversity in the area.

Objective 3: Fishers Empowerment - Distribution of Fishing nets

Another significant output of this field activity was to incentivise fishers with appropriate fishing gear**.** The aim was to ensure that fishers use sustainable fishing methods and appropriate gears to protect the ecosystem and control the harvesting of fish species. BMUs in Tana River County must report their daily catch, an activity that Lake Shakababo BMU had not been doing over the past years. We sensitised the fishers on the importance of recording daily fish landings. These daily reports will help the county government formulate the proper governing policies that will ensure a sustainable fishing programme in the Tana River delta. These reports also act as a monitoring programme that helps keep track of the fish species found in the lakes and the main river. During the sensitisation workshops, the BMU was tasked to develop proper reporting plans for fish landings. Fishers were sensitised on the importance of returning to water low value/small-sized fish and bycatch.

The project team distributed 20 standard gauged gill nets alongside other fishing net accessories to incentivize fishers to take up these measures. Each fishing net was 2 ½" mesh size, 150 m long as recommended by Kenya Fisheries Service. These were granted to 20 carefully selected members of L. Shakababo BMU. The leadership of the BMU lauded this support from The Rufford Foundation, noting that it would go a long way in motivating fishers to adopt sustainable fishing practices and protecting the ecosystem upon which they rely for their daily livelihoods.


Project team sorting fishing accessories in readiness for distribution.


Left: Tana Delta Fisheries Officer distributing fishing accessories to beneficiaries. Right: A section of beneficiaries pose for a group photo.


Project team, from left, David, Ronnie, Tom, and Justus

Emerging issues

- Recession farmers are actively taking up the lake area as water recedes.
- Over the last year, 2020, there has not been enough rain in River Tana's catchment. This has caused reduced water levels in the floodplain lakes, with some like Lake Gumba completely drying up.

- Since Lake Shakababo was refilled with floodwater in 2018, its fishery has greatly improved. Fishers reported catching high-value species that even necessitated establishing a fishing camp next to the lake.

A water pump abstracting water at L. Shakababo to irrigate farms.

Left: Flourishing irrigated farms around L. Shakababo. Right: Dry floodplains of Tana Delta.

Left: A dried-up lake area in Gumba village in Tana Delta. Such areas are targeted by farmers due to the high fertility of the flood deposited soils. Right: A fish trader frying fish at a fishing camp next to L. Shakababo.

Challenges encountered

- All BMU members wanted to attend the education and awareness workshops.
- Lake Gumba, a target site for this project, had completely dried up and the lake area taken up for grazing livestock by the pastoralist community.

Next steps

- In the next field activities, the project will conduct habitat restoration activities at Lake Shakababo. This will involve uprooting stumps of *Prosopis juliflora* in the lake.
- The project aims to support Lake Shakababo BMU to register itself with the relevant entity and enhance leaders' and members' capacity in instituting strong governance in fisheries resource management.
- The project will continue with the efforts in creating awareness amongst the fishing community on sustainable fishing methods to ensure that viable fish population is maintained to protect threatened species such as *Labeo* sp. nov. 'Baomo'.

Annex 1: List of Participants at the Community Workshop

Name		Gender	Occupation	I.D NO.	Phone No.
1.	Yona Makondini	M	Fisherman	21427551	0722510772
2.	David T. Chengo	M	Fisherman	12727588	0715152502
3.	John. Y. Haro	M	Farmer	26173340	0757374699
4.	Peter Otieno	M	Fisherman	33172494	0115136558
5.	Mwanaharusi Omar	F	Fish trader	11891461	0719737375
6.	Charo Kahidi	M	Farmer	3901576	0727579479
7.	Roshine Kadogo	F	Fish trader	23190317	0708078377
8.	Elida Habachura	F	Fish gear sales	26163339	0707302598
9.	Judy Silas	F	Farmer	26173525	0716961815
10.	Naomi Z. Philip	F	Fish trader	27365478	0717365441
11.	Magret Koshi	F	Fisher woman	4647852	0725944667
12.	Magret Abio	F	Fish trader	28593975	0718452371
13.	Kitsao Balozi	M	Fisherman	2092428	0788938543
14.	Mathew J. Jillo	M	Pastoralist	21717132	0715108518
15.	William Juma	M	Farmer	31173088	0717403347
16.	Nelson Haro	M	Pastoralist	30005422	0703933533
17.	Sleven Philip	M	Fisherman	21797422	0708191115
18.	Yezina Shari	F	Fisherman	3916835	0729958887
19.	Stephen Gafe	M	Pastoralist	27360190	0703985127
20.	Bakari Komora Bute	M	Fisherman	20931627	0796263631
21.	Matata Shindi	M	Fisherman	8467850	0715145683
22.	Kazungi Chengo	M	BMU chairperson	5534577	0721447894
23.	Florence Jillo	F	Businesswoman	36730213	0111706252
24.	Purity Zawadi	F	Fish trader	2007362	076838460

Project Team members

25.	David Ouma	Project team leader
26.	Justus Ochong'	Technologist, Ichthyology section – National Museums of Kenya
27.	Thomas Odeyo	Project team member
28.	Ronnie Mwangi	Project team member
29.	Kennedy Otoi	Community Liaison officer, Kenya Wetlands Biodiversity Research Group
30.	Silas Israel	Fisheries Officer, Tana Delta region – Tana River County Government