KENYA MARINE AND FISHERIES RESEARCH INSTITUTE

FRESH WATER SYSTEMS

FACT SHEET

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A Technical Report on Catch Assessment Survey (CAS) of Lake Turkana and Prepare a Technical Report to Inform Management



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Summary: This technical report shows that Sesse motorized boat had the highest catch per unit effort (CPUE) at 48.2 Kg Boat^{-1} Day^{-1} , while raft fishers the lowest at less than 21.5 ± 12.3 Kg boat^{-1}.

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ABSTRACT

Lake Turkana has a combined surface of 7,560 km^2, roughly located within Latitudes 2º 27′ - 4º 40′ North and Longitude 35º 50′ - 36º 40′ East. The fishery of Lake Turkana is very dynamic, and changes occur not only at the lake-wide level but also at specific locations. These variations require the use of various fishing vessel and gears adapted to the specific habitats, which also lead to a varied assortment of fish species requiring constant assessment, monitoring and recordings. This would ensure that the volume of fish landed, its ex-vessel value and effort put in the fishing be known so that a reliable estimate of the status of the fishery can be arrived at. We therefore present the preliminary results of catch assessment survey (CAS) carried out at 8 fish landing beaches located in 6 Beach Management Units (BMUs) along the western and eastern sides of Lake Turkana. The purpose was to update by enumerating the number of fishing vessels, fishing gears, and fishing crew at these locations, Fish species caught and total landings were recorded and the value of the fishery estimated. Data was collected from July 2025 to May 2026 and analysed using standard operating procedures for CAS. Preliminary results showed that fishers used mainly 3 types of fishing vessels in the visited landing beaches. These were oar propelled wooden boats (OPWB), engine propelled wooden boats (EPWB), engine propelled fiberglass boats (EPFB) and oar propelled fiberglass boats (OPFB). The total number of fishing crafts was estimated at 456, comprising of 324 oar propelled wooden boats, 61 engine propelled wooden boats, 53 engine propelled fiber glass boats and 18 oar propelled fiberglass boats. Boat sizes ranged from No dugout canoes (DOC) and traditional rafts were recorded. The fishers attributed their absence to strong winds, instability and inability to venture into deeper waters. The number of fishers operating these vessels were estimated at 1858 fishers who spent an average of 4.7 ± 1.1 days per week fishing. The study further recorded 11 fish species being landed bwhich were dominated by *Alestes baremose* (Silverfish). *A. baremose* accounted for 63% of all the fish landed followed by *Hydrocynus forskahlii* (Tiger fish), *Oreochromis niloticus* (Nile tilapia) and *Lates niloticus*. Catch per unit effort (CPUE) measured as per boat varied per BMUs, varied with vessel type, number and method of deployment. Sesse motorized boat had the highest catch per unit effort (CPUE) at 48.2 Kg $Boat^{-1}$ Day^{-1} , while raft fishers the lowest at less than 21.5 ± 12.3 Kg $boat^{-1}$. At Todonyang and Kanamkuny CPUE was estimated for wooden boats (Oar propelled with sail or engine propelled) at 24.2 ± 4.7 kg $boat^{-1}$ day^{-1}. This translated into KSh 2,340 $boat^{-1}$ day^{-1}. The study noted increased use of the destructive monofilament nets and small mesh sized nets targeting small and often immature fish. Recommendations to inform management include increased engagement with fishers, introduction of model bandas to support quantification of catches, enhanced monitoring, control and surveillance (MCS) to remove the use of inappropriate gear and the practice of illegal, unreported, and unregulated (IUU) fishing activities. Finally increased investment in research infrastructure and human capital through additional funding will improve manpower and research capability in Lake Turkana.

Keywords: Vessels, Gears. Species composition, CPUE, fish prices, Lake Turkana.

Background information

Lake Turkana is the world's largest permanent desert lake and the largest alkaline lake in Africa, supporting one of Kenya's most important inland fisheries. The lake provides critical ecosystem services, including food security, livelihoods, and income generation for riparian communities in Turkana and Marsabit counties. Fishery resources from the lake underpin artisanal and small-scale fisheries that are central to local economies and increasingly

important to regional and national fish markets. However, like many tropical inland fisheries, Lake Turkana's fish resources are subject to pronounced short-term and long-term changes driven by a complex interplay of hydrological variability, climatic processes, and anthropogenic pressures.

Objectives of the Study

Overall objective

The overall objective of the study was to conduct a comprehensive fish Catch Assessment Survey (CAS) for Lake Turkana and to prepare a technical report to inform fisheries management and decision-making.

Specific objectives

The specific objectives were to:

1. Enumerate the various types of fishing vessels and gears operational in Lake Turkana.
2. Estimate catch per unit effort (CPUE) for different fishing effort groups to derive total catch estimates.
3. Determine the spatial distribution of fish catches by species, gear type, and vessel category.
4. Estimate prices and earnings associated with different fish species harvested from Lake Turkana.
5. Recommend evidence-based management guidelines for the sustainable exploitation of the Lake Turkana fishery.

Study Area

The assessment was undertaken at various fish landing beaches selected from the various Beach Management Units (BMUs) along both the western and eastern sides of Lake Turkana and Turkana Marsabit Counties respectively (Figure 1). These represented various fishing grounds adjacent to a National Park (Illeret, Kampi Turkana and Kotela), area close to the Omo River delta (Todonyang and Selicho), areas with high concentration of fishers (Kanamkuny and Illeret), the Ferguson's gulf and the rest of the fishing grounds.

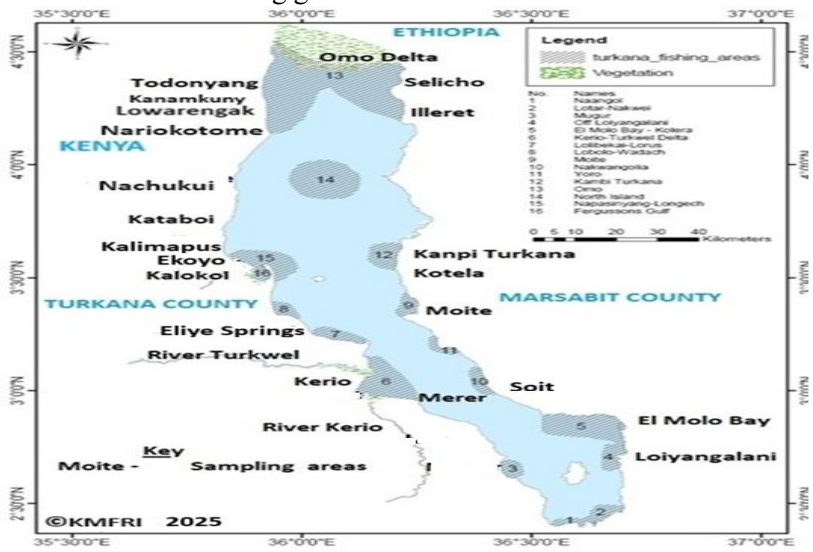


Figure 1. Data collection sites of Lake Turkana

Field data collection were undertaken between July 2025 and May 2026 (Figure 2).



(a)



(b)

Figure 2. Field data collection at various fish landing beaches between July 2025-May 2026: (a) assessing dry fish catches, (b) assessing fresh fish catches

Results and Discusion

Type, number and distribution of fishing vessels

Four types of fishing crafts were deployed and categorized as oar propelled wooden boats (OPWB), engine propelled wooden boats (EPWB), engine propelled fiberglass boat (EPFB) and oar propelled fiberglass boat (OPFB). The mean sizes are indicated in Table 1.

Table 1. Size range of the various fishing vessel types encountered along the northwestern side of Lake Turkana. The vessel types were: - oar propelled wooden boats (OPWB), engine propelled wooden boats (EPWB), engine propelled fiberglass boat (EPFB) and oar propelled fiberglass boat (OPFB).

Vessel type	**OPWB**	**EPWB**	**EPFB**	**OPFB**
Size range (m)	6.53-8.63	6.59-7.84	6.71-7.22	4.22

The number of fishing vessels encountered in selected fish landing beaches in Noth western Lake Turkana totaling 456, comprising of 324 oar propelled wooden boats, 61 engine propelled wooden boats, 53 engine propelled fiber glass boats and 18 oar propelled fiberglass boats. The vessels were operated by an estimated 1,858 fishers who spent an average of 4.7 ± 1.1 days per week fishing . Detailed measurements and characteristics will be presented in the final report.



Figure 3. Oar propelled wooden fishing vessels fitted with sail deployed in Lake Turkana.



Figure 4. Oar propelled wooden fishing vessels without sail deployed in Lake Turkana.

Type, number, size and distribution of fishing gears

In the northern beaches the fishers deployed 2 types of fishing gears, namely longlines (Hooks and line) and gillnets (multifilament or monofilament). Multifilament nets accounted for 73% while monofilaments accounted for the rest. Three mesh sizes dominated namely 2.5″ (84 mm) and 4″ (101 mm) stretched mesh 2.5 ″ (84 mm) nets were the most deployed (63.4%) followed by the 4″ (101 mm) mesh. Majority were single panel fleets of nets were joined together from head rope to the sinkers and comprised of up to 60 sets of nets. We continue to express concern on the increased usage of monofilament nets in Lake Turkana as they actively to in discriminatively catch fish, thus are a threat to the sustainability of Lake Turkana fishery.



Figure 5. Types of fishing gears deployed in Lake Turkana.



Figure 6. Monofilament gill net (GN) awaiting deployment at one of the northwestern beaches Lake Turkana in October 2025

Hook sizes 4-5 were mostly mounted and targeted *Lates niloticus* and *Bagrus* spp. The number of hooks per long line varied with length of the line but ranged between 50-100 hooks.

Catch per unit effort (CPUE) in the area

Catch per unit effort was estimated for the various effort groups (fishing craft or vessel) and per species especially for the open water s of the northwestern part of the lake. It considered the number of days fished and the gears deployed (Table 3 and 4). Sesse motorized boat had the highest catch per unit effort (CPUE) at 48.2 Kg $Boat^{-1}$ Day^{-1} , while raft fishers the lowest at less than 21.5 ± 12.3 Kg $boat^{-1}$. At Todonyang and Kanamkuny CPUE was estimated for wooden boats (Oar propelled with sail or engine propelled) at 24.2 ± 4.7 kg $boat^{-1}$ day^{-1}. This translated into KSh 2,340 $boat^{-1}$ day^{-1} during low catches and 64.2 ± 2.4 kg $boat^{-1}$ day^{-1} and translated into KSh 6, 120 $boat^{-1}$ day^{-1} during low catches during abundant catches for a fishing boat equipped with 25 pieces of nets.



Figure 7. Typical catch commonly transported by boat from the eastern shores offloaded at Nariokotome beach awaiting transportation by motorcycle.

Detailed report and implications for fishing in the various sectors will be presented at the conclusion of the data collection and analysis

Table 2. Some preliminary characteristics of Lake Turkana fisheries along the northwestern beaches.

	OPWB	**EPWB**	**EPFB**
Days fished $week^{-1}$ Mean	4.5	4.6	4.9
Hours fished Day^{-1} Mean	9	8	6
Crew $Boat^{-1}$ Modal	4	4	4

3.4 Fish species composition of landed fish

Table 4 shows the main fish species landed by the fishers during the survey. Atotal of 11 species were landed either fresh or salted for sundrying. These were dominated by *Alestes baremose*, followed by *Hydrocynus* sp, *Oreochromis niloticus* and *Bagrus bajad*. The rest appeared in the catches in small quantities. Large sized *Lates niloticus* (Nile perch) was never recorded as it is filleted in the lake and fillets not included in the landing statistics.

The north western part of the lake was a good fishing ground for both *Heterobranchus longifilis* (Vundu) and *Clarias gariepinus* (Mudfish).

Table 3. Main commercial fish species encountered in Northwestern BMUs along Lake Turkana during the current CAS Study.

No.	Species	Turkana name	Common name
1.	*Alestes baremose*	Delete (Juse)	Silverside
2.	*Bagrus bayad*	Loruk	Catfish
3.	*Bagrus docmac*	Lis	Catfish. 7.
4.	*Heterotis niloticus*	Dese	African bony tongue
5.	*Clarias gariepinus*	Kopito	Mudfish
6.	*Distichodus 2nefasch*	Golo	Cowfish
7.	*Heterbranchus longifilis*	Labe	
8.	*Labeo horie*	Chubule	Turkana carp
9.	*Hydrocynus forskalii*	Lokel	Tiger fish
10.	*Lates niloticus*	Iji	Nile Perch
11.	*Oreochromis niloticus*	Kokine	Nile tilapia

Fish prices and earnings

Average price per kilogram of fresh, salted sundried fish and fish products from northern part of Lake Turkana in October 2025-May in October 2026 (Table 2).

Table 2 Fish prices and earnings

S/No	Species	Type	Price range (KSh) Kg^{-1}
1	*Lates niloticus* (Nileperch)	Swim bladder	10, 000-45,000
		Sundried fillets	500-1200
		Sundried small fish	200-250
		Whole fish	500-800
2	*Oreochromis niloticus* (Tilapia)	Fresh	200-300
		Salted sundried	150-280
3	*Clarias gariepinus* (Mudfish)	Mudfish fresh	150-400
		Sundried	200-250
4	*Alestes* spp (Silverside)	Fresh	-
		Salted sundried	100-120
5	*Synodontis schall* (Afrcan Squacker fish)	Fresh	80-100
6	*Hydrocynus forskahlii* (Tiger fish)	Salted sundried	100-200
		Fresh	-

7	*Labeo horie* (Turkana carp)	Fresh	100-150
		Salted sundried	80- 240
8	Bagrus sp	Sundried salted	200-240

For all salted sundried fish. All prices were fixed at KSh 30.00 -34.00 per a singe fish of salted sundried *A. baremose* (grade1) weighing roughly 260g-300g for grade 2, two pieces of fish were bundled together and sold at the same price range for grade one fish. Similarly for grade 3 fish 3 pieces were put together and sold as grade 1 fish. All salted sundried fish at these beaches targeted the external market in the Democratic Republic of Congo (DRC). Prices for non salted sundried fish will be given in a later detailed report.

CONCLUSION AND RECOMMENDATIONS

CONCLUSION

- Based on the preliminary findings of the study, it can be concluded that fish catches from the northern part of the lake principally relies on the deployment of oar propelled wooden boats fitted with sail followed by engine propelled wooden boats.
- Engine propelled plastic boats were preferably used for transportation of people and goods in addition to long distance fishing expedition.
- Use of rafts and dugout canoes were never used due to instability, strong winds and violent waves.
- Long distance offshore fishing taking 4 t0 7 days were preferred to enable aggregation of adequate number of fish. All landed fish were processed, salted and later brought ashore for thorough sun-drying.
- Daily and seasonal fluctuations in fish catches were recorded per boat. Fish catches were dominated by *Alestes baremose* and *Hydrocynus forkahlii.*
- The dominant fishing gear was multifilament gillnets of 2-2.5 inches stretched mesh, but 4 inch stretched mesh was also used.
- Increased use of monofilament in the northern beaches was also recorded.
- The increased use of small mesh sized nets resulted in most fish caught catches being immature This calls for proper monitoring, control and surveillance (MCS) as increased use of such gear may lead to Illegal, unreported, and unregulated (IUU) fishing activities.
- The number of nets installed per boat ranged from between 20-50 pieces with all being single panel.
- landings are not weighed but graded by size and sold per piece or in small batches.
- For a more reliable conclusion additional data is planned for collection in far off beaches, close to the national parks and the Ferguson's gulf.
- Increased funding to enable researchers reach far flung areas. Lake Turkana has a combined shoreline of over 600 km with fishers and landing beaches scattered along it. This will ensure adequately coverage of a bigger portion of the lake much needed management information availed.
- Invest in more infrastructure and human capital. The station lacks a spacious vehicle, stable boat and fleet of motorcycles to support research in far flung areas.

4.2 RECOMMENDATIONS

Based on the above conclusions, the following are the preliminary recommendations of the findings: -

- Initiation of dialogue between the fishers and managers on the discontinuation of the use of monofilament nets and small mesh sizes to allow fish to grow to bigger sizes and fetch better prices.
- Introduction of model Bandas equipped with the necessary infrastructure that supports post-harvest management of fish .
- This will enhance better catch data collection and management of fish and fish products postproduction.
- Instituting proper monitoring, control and surveillance (MCS) as a way to stem the use of illegal, unreported, and unregulated (IUU) fishing activities which violate fishing regulations as they are a threat to aquatic ecosystem and sustainable fisheries.