MINISTRY OF MINING, BLUE ECONOMY & MARITIME AFFAIRS

STATE DEPARTMENT FOR BLUE ECONOMY AND FISHERIES

KENYA FISHERIES SERVICE

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FISHERIES STATISTICAL BULLETIN

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1.0 INTRODUCTION

Kenya is a country with a rich diversity of marine and inland water resources. The country's marine resources include a coastline along the Indian Ocean, while the inland water resources consist of several large lakes, rivers, and wetlands.

These water resources are vital for supporting various economic activities such as fisheries, tourism, and agriculture, while also providing crucial ecosystem services such as water purification, flood regulation, and biodiversity conservation.

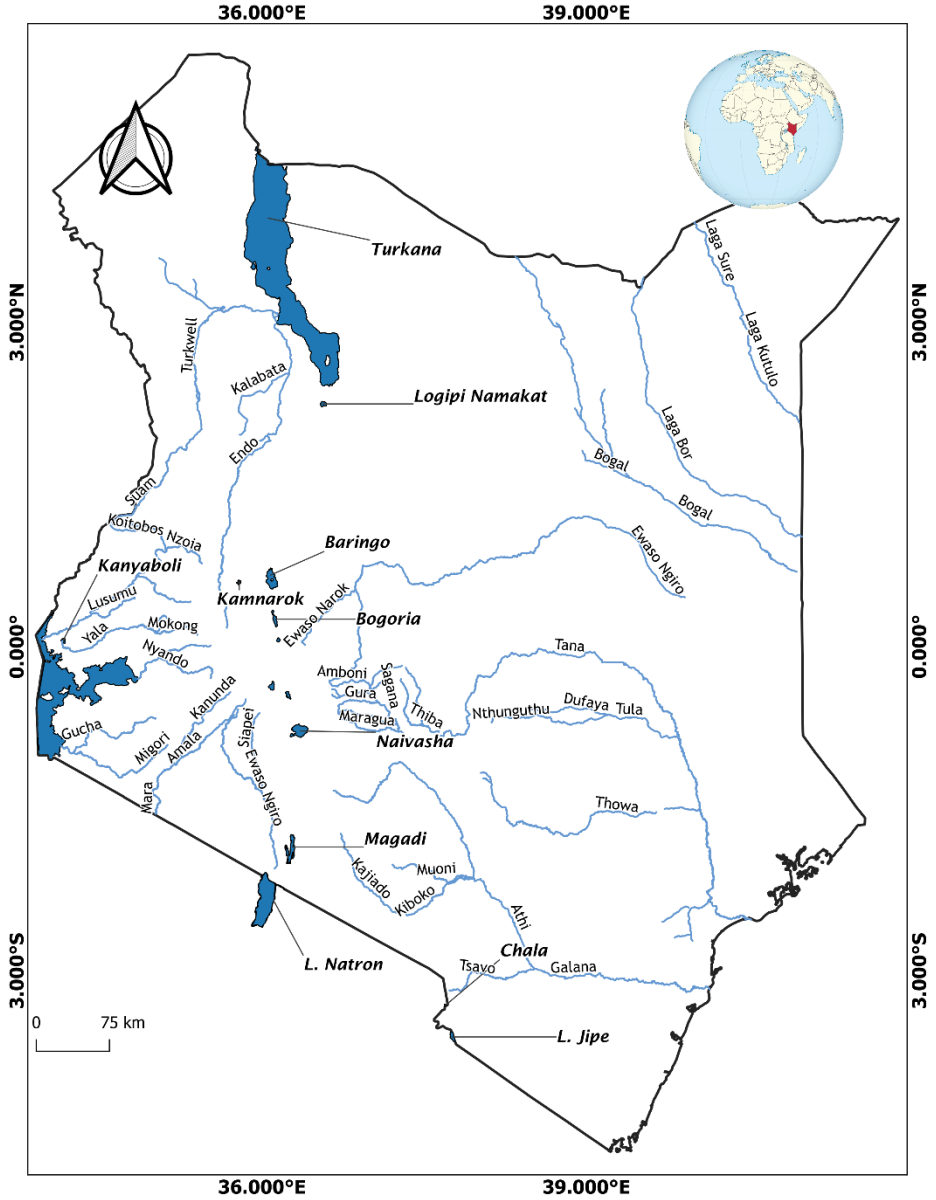


Figure 1. 1 Figure showing the water resources in Kenya.

Fisheries are an important sector in Kenya, with fishing providing livelihoods for over 0.7 million people and contributing significantly to the country's food security and economy. Kenya's marine fisheries are concentrated along the Indian Ocean coastline and include artisanal, industrial, and recreational fisheries. The country's inland fisheries, on the other hand, are centered on the various lakes, rivers, and dams, with Lake Victoria being the most significant.

The Kenyan fishery is mainly artisanal with very few commercial/industrial vessels targeting mainly shallow water shrimps, deep water shrimps and lobsters. The country has been developing the industrial fleet and is currently having twelve longliners, two pot vessels six purse seiners and six trawlers in our Economic Exclusive Zone (EEZ). The artisanal fishery accounts for most of the inland and marine water catches reported here and consequently it is currently the most important fishery in the country, even though our EEZ which is predominately for commercial fishing is under exploited with an estimated potential of between 150,000 to 300,000 metric MT.

The fisheries sector also plays a significant role in employment and income generation. During the year 2022 the sector supported an approximate total of 65,000 people directly as fishermen and 70,000 fish farmers with 149,000 stocked fish ponds.

The sector supports about 1.5 million people directly and indirectly, working as fishers, traders, processors, suppliers and merchants of fishing accessories and employees and their dependents. Besides being a rich source of protein especially for riparian communities, the sector is also important for the preservation of culture, national heritage, and recreational purposes. In 2022, the total fish production was 173,741 MT worth 37.6 billion Kenya shillings. This was a 6.1% increase in production compared to 163,735 MT worth 30.3 billion Kenya shillings landed in 2021. The increase in the value was mainly due to the catches from industrial vessels and the increase in prices for areas with less production based on the demand and supply impacts on the fish prices.

As has been the trend in the past, most of the production was from inland capture fisheries amounting to 108,308 MT with an ex-vessel value of Ksh. 18.5 billion. The fish production from marine and aquaculture was 37,494 and 27,939 MT worth Ksh. 10.3 and 8.7 billion shillings respectively.

Inland capture fisheries contributed 67% of Kenya’s total fish production, with the principal catches coming from Lake Victoria. The lake accounted for 86,394 MT which was an 8% decrease in catch compared to 94,349 MT caught the previous year. Illegal fishing practices, such as the use of unregulated methods like fine mesh nets or seine fishing, have significantly contributed to the decline in fish catch in Lake Victoria. These practices cause severe harm to fish populations and directly contribute to the reduction in overall catch.

Lake Turkana, the world’s largest desert lake, produced 17,251 MT of fish during the year under review. This amounted to a 10% increase compared to 15,644 MT caught in 2020. This increase is mainly as a result of improved recruitment due to raised water level and flooding of Ferguson Gulf and other critical fish habitats in the year 2021. Other freshwater-bodies of commercial importance whose catches increased

in 2021 were lakes Baringo, Jipe, Naivasha and Kanyaboli. The catches from the lakes in 2022 were 442 MT, 280 MT, 2,190MT and 387 MT respectively. Water bodies that recorded a decline catch were Tana River Delta (129) and rivers (393).

Marine artisanal production increased from 25,380 MT worth 5.4 billion in 2021 to 35,596 MT worth 8.7 billion in 2022. Marine industrial fishing increased for the deep-sea longlining, deep water trawling and deep-water crab pottery but decreased for Shallow prawn trawl fishery.

Deep water trawling is undertaken from November to March while shallow water trawling commences from April to October. Deep water trawl catches increased from 1,026 MT to 1,158 MT while deep water crab catches decreased from 137 MT to 104 MT. Shallow water trawling catches decreased to 128 MT from 330 MT while longline catches increased to 508 MT from 432.6 MT (Table 1.1).

Table 1. 1 Quantity and Value of fish landings 2018 – 2022

	2018		2019		2020		2021		2022	
Fresh Water	**M. Tons**	**Value '000 Kshs.**	**M. Tons**	**Value '000 Kshs.**	**M. Tons**	**Value '000 Kshs.**	**M. Tons**	**Value '000 Kshs.**	**M. Tons**	**Value '000 Kshs.**
Lake Victoria	98,150	14,487,650	90,743	11,640,537	88,223	12,687,298	94,349	14,082,375	86,394	14,344,784
Lake Turkana	7,587	564,739	7,031	645,107	13,190	1,177,193	15,644	1,478,953	17,251	3,350,628
Lake Naivasha	2,287	287,194	3,087	391,719	2,216	238,638	1,804	216,974	2,190	263,715
Lake Baringo	145	43,442	203	49,499	162	39,502	406	118,590	442	129,328
Lake Jipe	131	38,260	157	45,957	197	57,549	227	66,051	280	89,124
Lake Kanyaboli	203	29,656	300	43,826	264	60,201	286	70,074	387	63,438
Lake Kenyatta	14	1,330	32	2,725	72	7,295	68	6,816	150	14,205
Tana River Dams	297	37,373	394	60,571	283	50,960	197	28,563	210	30,348
Tana River Delta	46	5,069	202	17,595	158	20,360	135	13,048	129	11,634
Aquaculture	15,120	4,480,875	18,542	5,581,142	19,945	6,303,617	20,973	6,711,360	27,833	8,735,512
Turkwel	34	9,822	50	12,850	107	16,112	98	14,750	100	20,257
Riverine	320	86,400	380	106,371	411	115,049	393	109,454	401	111,643
Small Dams	339	42,015	459	126,455	358	95,022	380	83,465	374	82,381
Total Fresh Water	**124,673**	**20,113,825**	**121,580**	**18,724,354**	**125,586**	**20,868,796**	**136,326**	**23,335,961**	**136,141**	**27,246,997**
Marine (Artisanal)	23,145	4,246,962	25,670	4,477,577	23,684	4,831,948	25,380	5,491,800	35,596	8,709,850
Mariculture	64	1,920	76	1,895	85	2,119	103	2,568	106	2,605
Industrial (Marine)										
Shallow prawn trawl fishery	520	189,605	535	185,900	273	177,446	330	115,231	128	176,403
Deep water trawl fishery	10	42,341	626	170,089	943	518,385	1,026	350,933	1,158	485,425
Deep water crab pottery	1	251	38	19,072	86	71,295	137	119,680	104	132,620
Deep sea longlining	508	20,362	795	30,759	670	26,855	432.6	170,965	508	247,694
Total Industrial	**1,039**	**252,559**	**1,994**	**405,820**	**1,972**	**793,981**	**1,926**	**756,809**	**1,898**	**1,042,142**
Marine Aquarium		42,414		38,575		34,516		809,219	414	565,873
Total Marine	**24,248**	**4,543,855**	**27,740**	**4,923,867**	**25,741**	**5,662,564**	**27,409**	**7,060,396**	**37,600**	**10,320,470**
Grand Total	**148,921**	**24,657,680**	**149,320**	**23,648,221**	**151,327**	**26,531,360**	**163,735**	**30,396,357**	**173,741**	**37,567.467**
EXPORTS										
Fish and fish products	7,250	2,974,980	8,821	3,407,548	8,387	2,740,678	10,782	3,412,116	13,557	5,597,808
Aquarium fish (Numbers)	366,776	34,241	297,367	31,219	272,696	27,583	498,908	609,668	414,924	565,873
Aquarium invertebrates (Numbers)	191,672	8,173	133,844	7,356	124,856	6,933	350,309	199,551	372,996	219,882
TOTAL		**3,017,394**		**3,446,123**		**2,775,194**		**4,221,335**	**801,477**	**6,383,563**
Imports	26,383	2,974,678	22,813	2,798,951	19,892	2,251,861	19,601	2,478,751	12,694	1,819,400
Balance of Trade		**42,716**		**647,172**		**523,333**		**1,742,584**		**4,564,163**

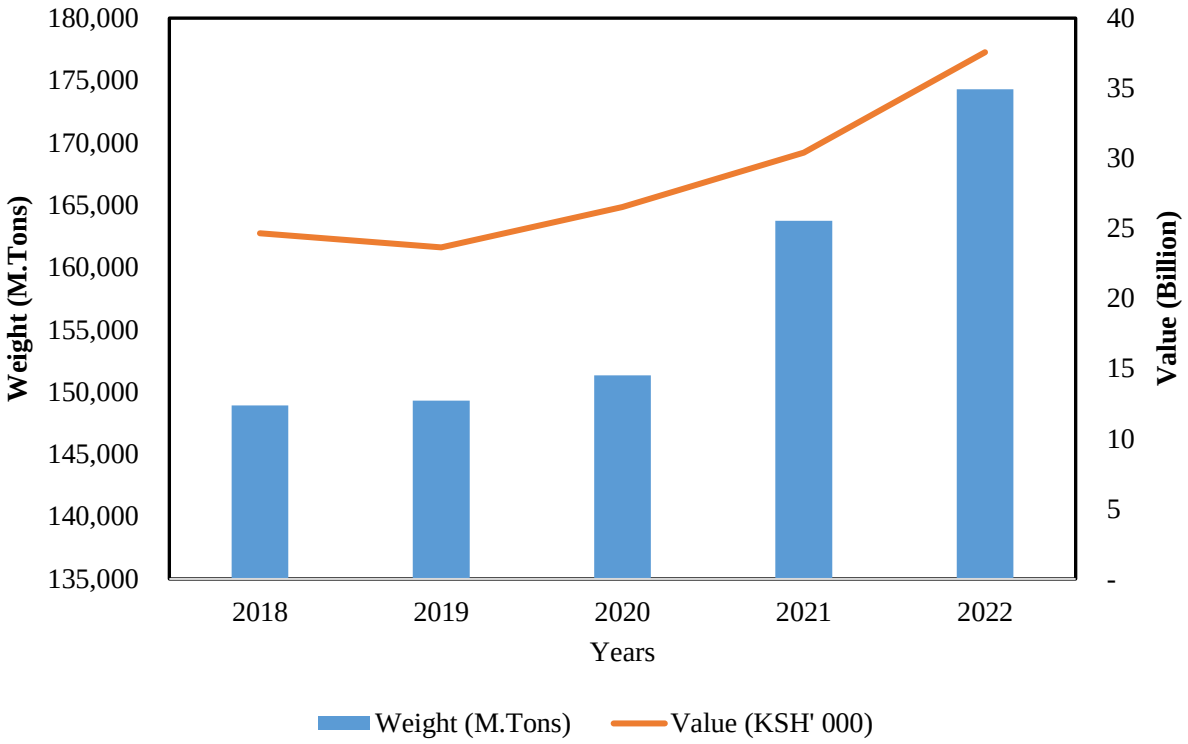


Figure 1. 2 Quantity and Value of fish landings 2018 – 2022

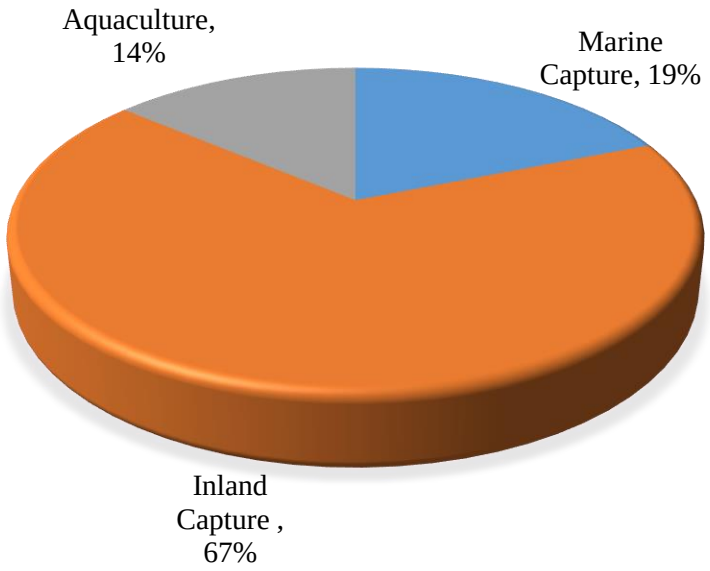


Figure 1. 3 Pie chart showing the proportions of the major types of Fisheries in the country

1.1 LAKE VICTORIA FISHERY

Lake Victoria's Fishery accounted for 86,394 MT (Table 1.1) which was a 8% decrease in catch compared to 94,349 MT recorded in the year 2021. The decrease was attributed to increasing overfishing and illegal fishing practices. Overfishing has been an ongoing issue in the lake for several years. The lake has experienced a rapid increase in fishing activity, driven by population growth and economic factors, which has put immense pressure on fish stocks.

Lake Victoria is a multi-species fishery with many of known species, but only *Rastrineobola argentea* (Omena), *Lates niloticus* (Nile perch) and *Oreochromis niloticus* (Nile tilapia) are of major economic significance.

The catch from the major species was recorded as; *Rastrineobola argentea* at 36,342 MT, *Lates niloticus* at 21,844 MT and *Oreochromis niloticus* at 11,526 MT

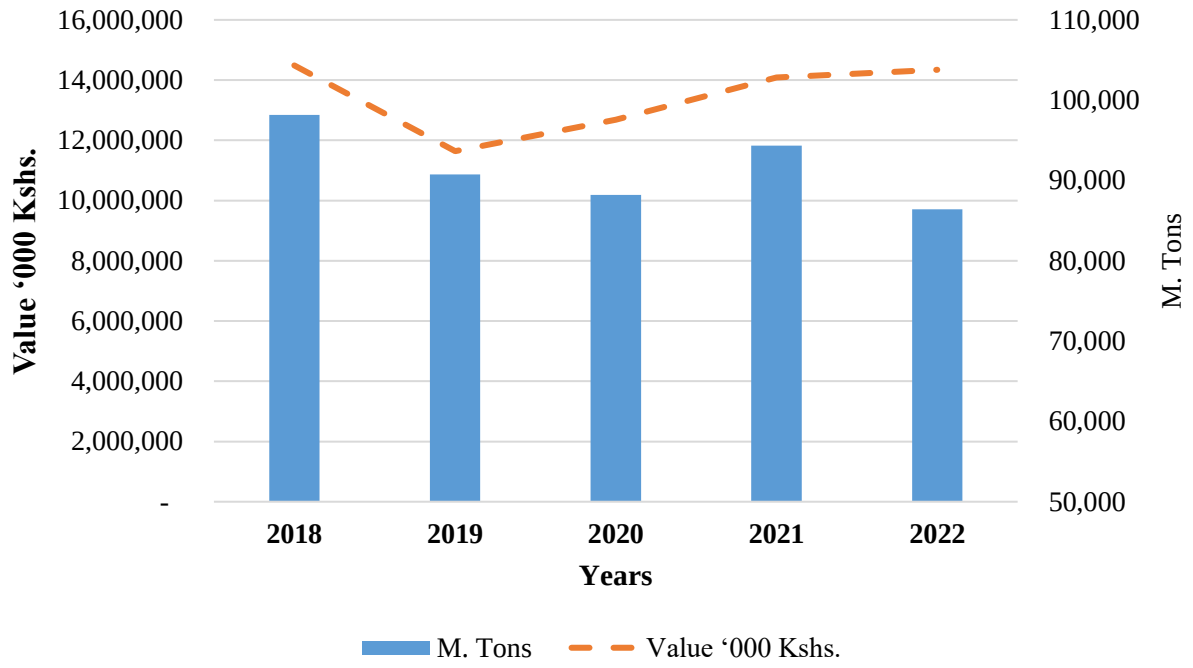


Figure 1. 4 Trends in annual fish landings from Lake Victoria for the year 2018 - 2022

Rastrineobola argentea dominated the way with 42% of the total fish captured from Lake Victoria, then followed by *Lates niloticus* at 25%, *Tilapia niloticus* at 13%, *Caridina niloticus* at 10%, *Clarias* at 3%, *Protopterus* at 2%, *Haplochromines* at 2%, and *Synodontis* at 1% (Figure 1.5).

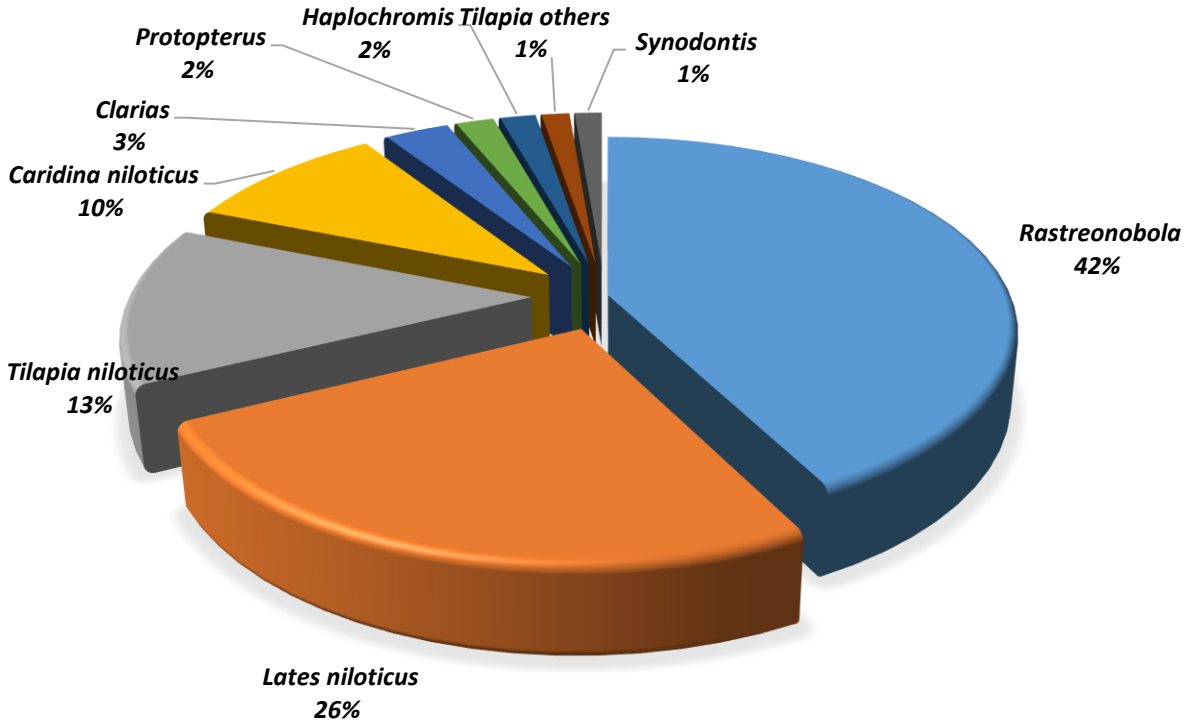


Figure 1. 5 Lake Victoria fish landings by species 2022

Analysis was done to compare the fish catch from Lake Victoria per riparian County (Table 1.2). Homa Bay County recorded the highest catch at 58%, Siaya 32%, Kisumu 4%, while Busia and Migori recorded the lowest catch at 3% (Figure 1.6).

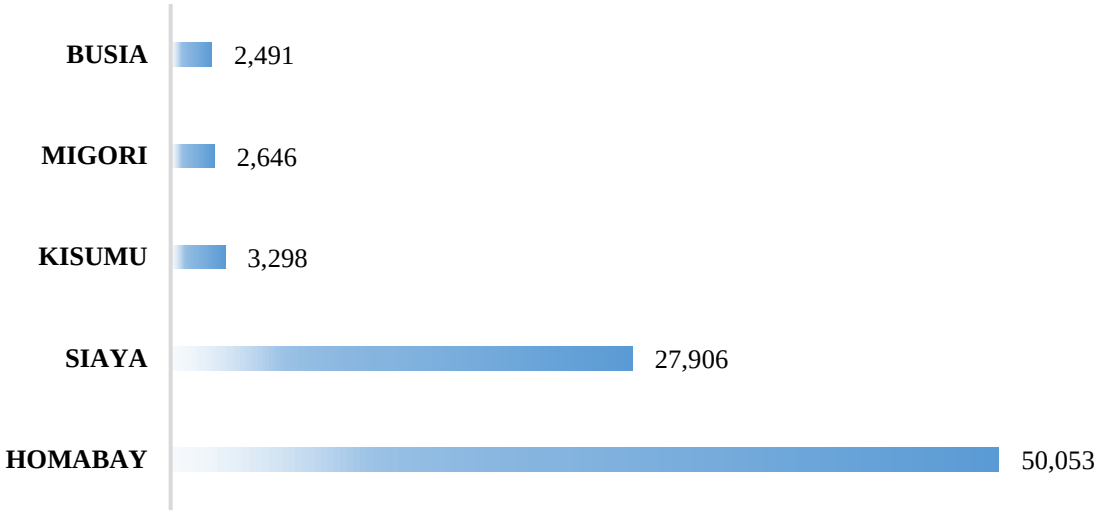


Figure 1. 6 Fish weight (M. MT) caught per Lake Victoria riparian county during 2022

Table 1. 2 Lake Victoria Annual fish landings by Counties by Weight 2013 - 2022

COUNTY	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
BUSIA	5,079	5,468	4,515	4,670	7,010	4,878	5,004	3,216	3,434	2,491
SIAYA	24,509	28,385	29,257	28,255	36,171	32,084	25,164	28,273	30,489	27,906
KISUMU	5,550	5,556	4,354	4,149	5,004	4,115	2,013	1,938	3,932	3,298
HOMABAY	80,150	81,399	66,598	54,540	42,532	53,989	55,523	52,375	53,347	50,053
MIGORI	9,400	7,899	5,178	6,553	2,003	3,082	3,036	2,422	3,144	2,646

Table 1. 3 Lake Victoria Monthly fish landings by Species and Weight (Kgs) in 2022

SPECIES	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
Alestes	2,382	11,794	437	782	6,750	1,421	1,385	675	3,834	2,499	524	513	32,996
Bagrus	589	529	3,102	1,080	715	3,669	594	383	551	470	336	47	12,065
Barbus	-	-	38	13	51	98	213	23	18	5	-	-	459
Clarias	131,729	137,065	141,789	208,132	207,723	183,530	148,543	636,926	167,249	190,293	307,424	165,062	2,625,467
Rastreonobola	2,586,832	1,989,662	2,915,197	4,054,767	3,228,817	3,748,761	3,063,379	4,221,084	2,925,507	2,542,947	2,475,006	2,590,559	36,342,518
Labeo	2,208	1,808	1,268	2,004	1,703	28,851	5,181	1,340	993	17,332	715	2,866	66,268
Haplochromis	76,893	98,668	133,903	116,087	156,758	105,500	107,548	150,394	107,163	136,531	167,388	106,490	1,463,322
Lates niloticus	2,048,547	2,516,194	1,702,734	1,683,078	2,121,695	2,145,347	1,910,503	1,858,496	1,789,510	1,821,181	1,300,437	946,434	21,844,156
Momyrus	476	260	500	376	439	403	430	379	497	1,414	807	683	6,663
Protopterus	91,958	193,522	92,809	97,063	109,489	95,063	89,893	97,417	112,815	394,510	114,645	72,082	1,561,266
Synodontis	130,976	95,082	123,298	111,170	110,704	109,402	82,433	110,312	62,589	58,941	71,923	47,738	1,114,570
Tilapia niloticus	909,988	1,318,041	969,079	802,420	891,502	874,693	1,002,116	927,741	1,117,576	719,351	968,178	1,026,185	11,526,869
Tilapia others	71,004	61,849	65,724	104,646	114,180	81,839	122,668	121,028	122,836	121,573	78,588	78,028	1,143,963
Unspecified	16,994	18,845	21,101	20,266	21,294	19,230	18,710	13,771	15,849	22,852	14,488	15,299	218,700
Caridina niloticus	810,253	603,150	451,600	435,919	459,205	895,752	580,139	837,232	858,909	1,075,342	629,455	679,647	8,316,605
Schilbe mystes	50,358	8,678	2,057	7,960	3,445	3,097	3,814	15,064	6,309	7,548	7,685	2,098	118,114
TOTAL	**6,931,187**	**7,055,148**	**6,624,635**	**7,645,764**	**7,434,469**	**8,296,656**	**7,137,548**	**8,992,266**	**7,292,205**	**7,112,792**	**6,137,599**	**5,733,731**	**86,394,213**

1.2 LAKE TURKANA FISHERY

The lake has about 48 species of fish with a dozen supporting a commercial fishery. The species exploited commercially include, Nile perch (*Lates niloticus*), Tilapia (*Oreochromis niloticus*), Catfish (*Clarias gariepinus), synodontis schall, Hydrocynus forskalii, Labeo horie, Bagrus spp, Distichodus niloticus, Citharinus spp, Barbus spp* and *Alestes spp*. The fishery is characterized by bust cycles in fish landings associated with fluctuations in lake levels due to the dynamics of the climatic conditions especially precipitation leading to filling or drying up of the Ferguson's gulf.

During the year under review, 17,251 MT of fish was landed with an ex-vessel value of 3.4 billion Kshs. from both sides (Turkana and Marsabit Counties) of the lake. There was an increase in quantity from 15,644 MT in the previous year to 17,251 MT this year. This translates to a 10% increase. The trends in annual fish catches from Lake Turkana are determined by the lake's water level due to which the catches have been unpredictable for a long time.

Table 1. 4 Lake Turkana Annual fish landings (Weight) by Species in 2022

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Alestes	32	38	172	132	358	144	167	86	174	78	77	46	1,503
Clarias	3	3	82	12	329	16	22	18	16	8	7	6	521
Labeo	57	52	45	57	62	63	47	55	48	72	74	60	693
Lates Niloticus	103	111	222	149	116	244	150	135	151	185	149	94	1,808
Synodontis	-	-	-	1	-	-	-	-	-	230	-	-	231
Tilapia Niloticus	69	833	2,192	846	1,324	978	1,216	637	742	1,349	1,161	1,149	12,494
Total	**264**	**1,037**	**2,713**	**1,196**	**2,190**	**1,444**	**1,602**	**931**	**1,130**	**1,921**	**1,468**	**1,355**	**17,251**

Table 1. 5 Lake Turkana Annual fish landings (Value) by Species in 2022

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Alestes	3,143	3,774	16,733	13,306	23,844	10,439	18,501	8,922	18,725	6,213	6,768	4,654	135,023
Clarias	405	410	12,278	1,754	49,403	2,469	3,325	2,641	2,382	1,145	1,087	891	78,190
Labeo	5,514	5,188	4,523	5,740	6,122	6,103	4,655	5,487	4,702	6,730	7,068	6,017	67,848
Lates Niloticus	24,637	26,690	53,380	35,773	27,852	58,459	35,991	32,426	36,268	44,287	35,674	22,506	433,943
Synodontis	-	-	-	53	-	-	-	-	-	11750	-	-	11,803
Tilapia Niloticus	14,575	174,957	460,220	177,585	278,043	205,289	255,356	133,713	155,780	283,192	243,767	241,344	2,623,821
Total	**48,274**	**211,019**	**547,134**	**234,211**	**385,264**	**282,760**	**317,828**	**183,188**	**217,857**	**353,317**	**294,364**	**275,412**	**3,350,628**

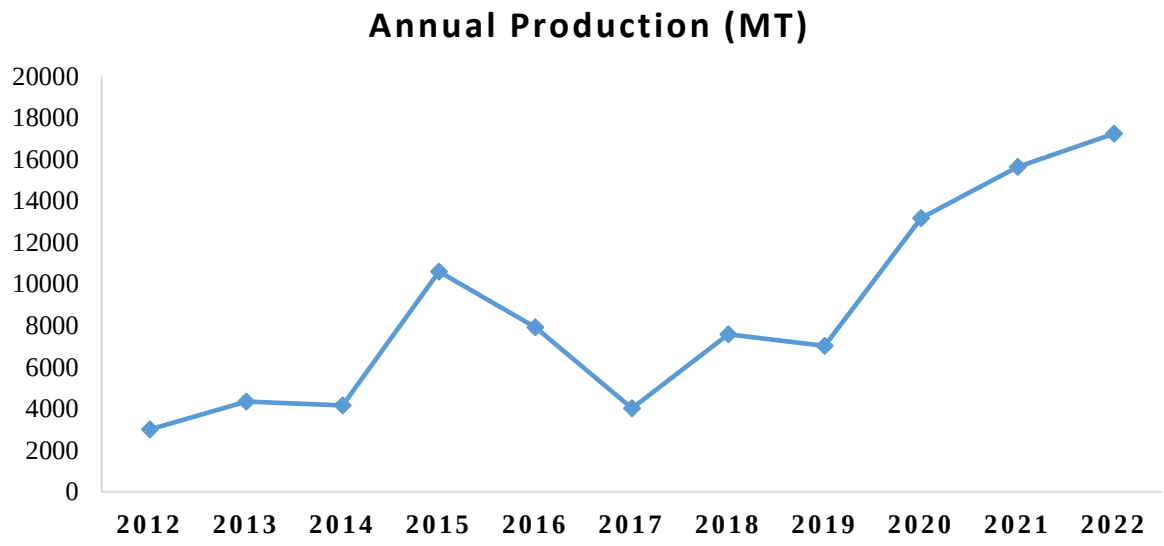


Figure 1. 7 Trends in annual fish landings from Lake Turkana fishery 2012-2022

1.2.1 SPECIES COMPOSITION

In terms of species contribution to the total weight of fish landed from the lake, *Tilapia niloticus* took the lead with 72%, *Lates niloticus* 11%, *Alestes* 9%, *Labeo* 4%, *Clarias* 3%, and *Synodontis* 1%, as shown in figure 1.8 below.

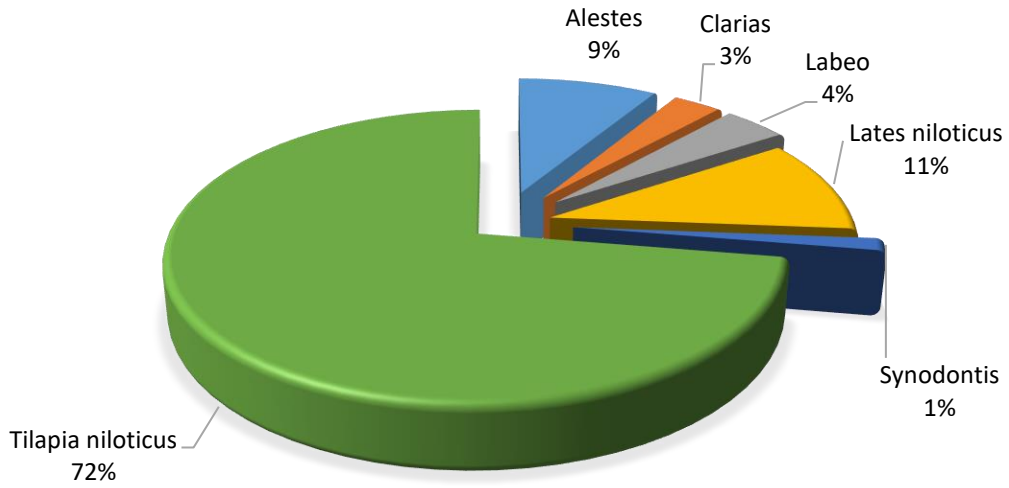


Figure 1. 8 Species composition (Kgs) in catches of Lake Turkana Fishery 2022

1.3 LAKE BARINGO FISHERY

The fishery of Lake Baringo is currently based on four species including *Oreochromis niloticus* (Tilapia), *Barbus gregorii*, *Clarias mossambicus* and *Protopterus aethiopicus* which was introduced in the lake.

During the year under review a total of 422 MT of fish with an ex-vessel value of Kshs 129 million were landed. This was a 4% increase in quantity compared to last year's production of 406 MT with an ex-vessel value of Kshs. 118 million. The monthly landings by species, weight and value for lake Baringo are as shown in table 1.5 below.

Table 1. 6 Lake Baringo Monthly fish landings by Species, Weight and Value in 2022

Month	Species	Barbus	Clarias	Protopterus	Tilapia Niloticus	Total
JAN	Wt (Kg)	1,707	3,875	13,214	13,670	**32,466**
	Value (Ksh)	341,235	1,937,361	3,302,972	4,101,130	**9,682,698**
FEB	Wt (Kg)	1,418	7,915	12,348	9,557	**31,238**
	Value (Ksh)	283,535	3,957,834	3,087,072	2,867,065	**10,195,507**
MAR	Wt (Kg)	1,317	9,443	12,937	11,603	**35,299**
	Value (Ksh)	263,282	4,721,124	3,234,190	3,446,554	**11,665,150**
APR	Wt (Kg)	959	8,235	13,468	12,297	**34,958**
	Value (Ksh)	191,826	411,737	3,366,977	3,689,011	**7,659,551**
MAY	Wt (Kg)	1,050	7,337	14,007	10,172	**32,566**
	Value (Ksh)	210,167	3,284,343	3,501,675	3,051,631	**10,047,816**
JUN	Wt (Kg)	1,284	7,725	13,953	9,484	**32,446**
	Value (Ksh)	256,786	3,862,303	3,488,301	2,845,284	**10,452,675**
JUL	Wt (Kg)	1,148	9,937	13,275	9,364	**33,724**
	Value (Ksh)	229,656	4,968,548	331,873	2,809,174	**8,339,251**
AUG	Wt (Kg)	1,360	10,015	12,746	13,319	**37,440**
	Value (Ksh)	272,071	5,007,716	3,186,424	3,995,664	**12,461,875**
SEP	Wt (Kg)	1,309	9,503	11,634	13,376	**35,822**
	Value (Ksh)	261,754	4,751,694	2,908,430	4,016,299	**11,938,177**
OCT	Wt (Kg)	1,502	7,663	12,130	13,837	**35,132**
	Value (Ksh)	300,348	3,831,734	3,032,620	4,150,997	**11,315,699**
NOV	Wt (Kg)	1,043	8,103	14,696	13,130	**36,972**
	Value (Ksh)	208,639	4,051,454	3,674,108	3,938,919	**11,873,120**
DEC	Wt (Kg)	1,863	9,614	16,082	16,106	**43,665**
	Value (Ksh)	37,257	4,807,101	4,020,407	4,831,939	**13,696,704**
TOTAL	**Wt (Kg)**	**15,961**	**99,365**	**160,490**	**145,915**	**421,731**
	Value (Ksh)	**2,856,557**	**45,592,950**	**37,135,049**	**43,743,668**	**129,328,223**

The annual landings for Lake Baringo from 2015 to 2022 are shown below (fig. 1.9).

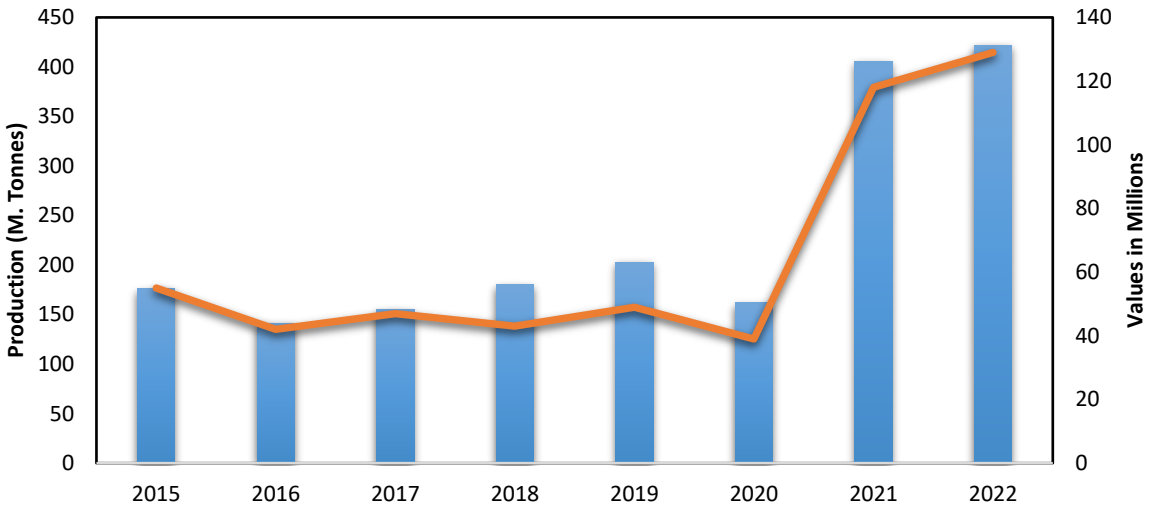


Figure 1. 9 Trends in annual fish landings from Lake Baringo fishery 2015-2022

The species catch composition was dominated by *Proptopterus aethiopicus* contributing 38% followed by *Tilapia niloticus* 35 %, *Clarias with* 23% and *Barbus 4*% as shown below by Fig 1.10

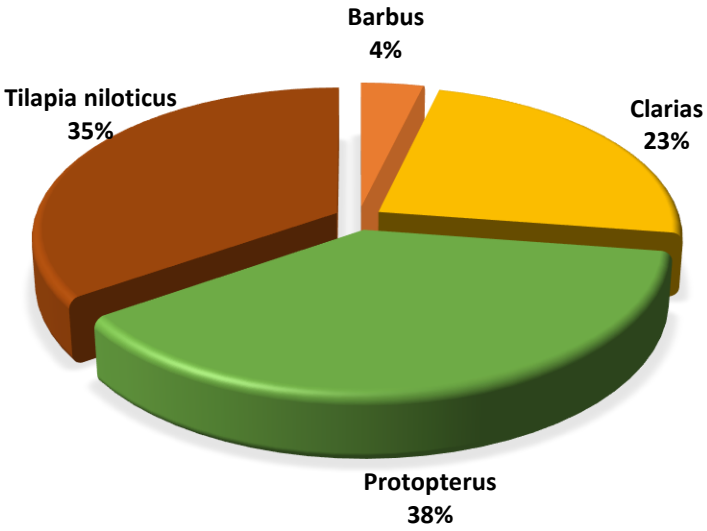


Figure 1. 10 Species composition in catches of Lake Baringo Fishery 2022

1.4 LAKE NAIVASHA FISHERY

The present fish population of Lake Naivasha comprises of the introduced species which includes; largemouth bass (*Micropterus salmoides*), *Tilapia zilli*, *Oreochromis leucostictus* and other tilapine species. The exotic rainbow trout (*Onchorhynchus mykiss*) also occasionally strays into the lake from river Malewa while, *Barbus amphigramma* migrates between the lake and river Malewa.

During the year under review, a total of 2190 tons of fish with an ex-vessel value of Kshs. 263 million were landed from Lake Naivasha. This was an increase of 21% in quantity compared to 2021 landings of 1804 tons which was valued at Kshs.216 million as shown in (Fig 1.11) which compares the landings and ex-vessel values from 2015 to 2022.

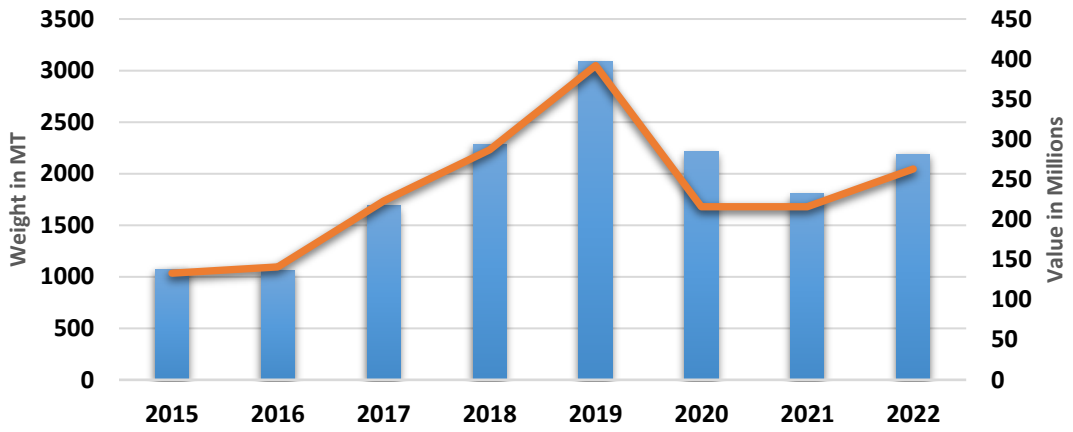


Figure 1. 11 Trends of landings from Lake Naivasha from 2015 to 2022

The monthly landings by species, weight and value for Lake Naivasha are as shown in table 1.6 below.

Table 1. 7 Lake Naivasha Monthly fish landings by Species, Weight and Value 2022

Months	Species	Black Bass	Clarias	Tilapia Niloticus	Tilapia Others	Carps	Total
JAN	Wt (Kg)	10	12,615	138,982	38	79,452	**231,098**
	Value (Ksh)	2,082	1,015,805	18,110,148	6,038	6,802,754	**25,936,827**
FEB	Wt (Kg)	17	17,181	128,128	1	85,232	**230,560**
	Value (Ksh)	2,892	1,408,956	36,444,902	156	6,504,162	**44,361,068**
MAR	Wt (Kg)	12	8,104	66,521	2	61,214	**135,853**
	Value (Ksh)	1,966	386,094	7,082,350	301	4,073,011	**11,543,722**
APR	Wt (Kg)	12	10,789	80,718	5	118,395	**209,918**
	Value (Ksh)	1,157	790,989	11,344,967	694	9,384,749	**21,522,556**
MAY	Wt (Kg)	14	9,518	95,995	21	124,202	**229,749**
	Value (Ksh)	1,388	708,074	12,638,063	2,498	28,733,198	**42,083,221**
JUN	Wt (Kg)	5	8,878	98,160	29	159,308	**266,380**
	Value (Ksh)	671	625,110	13,562,562	3,083	10,192,423	**24,383,849**
JUL	Wt (Kg)	50	9,792	55,277	6	145,187	**210,311**
	Value (Ksh)	4,476	649,107	7,130,905	879	11,399,000	**19,184,367**
AUG	Wt (Kg)	62	8,563	65,501	-	94,407	**168,533**
	Value (Ksh)	5,483	497,908	7,124,950	-	9,143,533	**16,771,874**
SEP	Wt (Kg)	3	3,894	88,207	3	13,777	**105,885**
	Value (Ksh)	463	192,751	11,619,066	347	1,415,060	**13,227,687**

OCT	Wt (Kg)	50	15,997	75,171	-	78,456	**169,675**
	Value (Ksh)	7,589	484,868	12,408,458	-	8,038,343	**20,939,258**
NOV	Wt (Kg)	4	21,359	67822.02397	1	41,201	**130,387**
	Value (Ksh)	925	1,381,141	10118363.31	214	4,368,356	**15,868,999**
DEC	Wt (Kg)	2	10,734	56,126	9	34,781	**101,652**
	Value (Ksh)	405	448,668	4,000,206	36	3,442,341	**7,891,656**
TOTAL	Wt (Kg)	**242**	**137,423**	**1,016,607**	**116**	**1,035,612**	**2,190,000**
	Value (Ksh)	**29,496**	**8,589,470**	**151,584,942**	**14,245**	**103,496,930**	**263,715,084**

Species composition in catches from the lake has changed over the years, as there has been restocking of the lake with tilapia whereby the species has regained its prominence in the landings almost being at same proportion with *Cyprinus carpio* which had previously dominated the fishery. Currently, species contribution to the total weight of fish landed are; Nile Tilapia (*Oreochromis niloticus*) contributed 49% of the total catch. Carps (*Cyprinus carpio*) was the next most dominant species accounting for 45% and *Clarias gariepinus* had 6% of the total catch as shown in (Fig 1.12) while the monthly fish catches peaked in the month of June 2022 as shown in (Fig. 1.13).

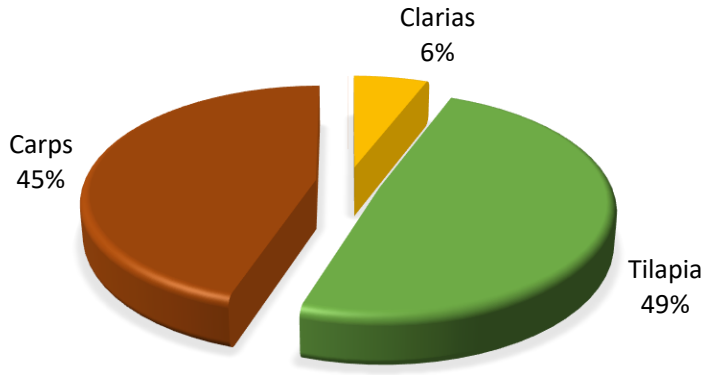


Figure 1. 12 Lake Naivasha species composition landings in metric MT 2022

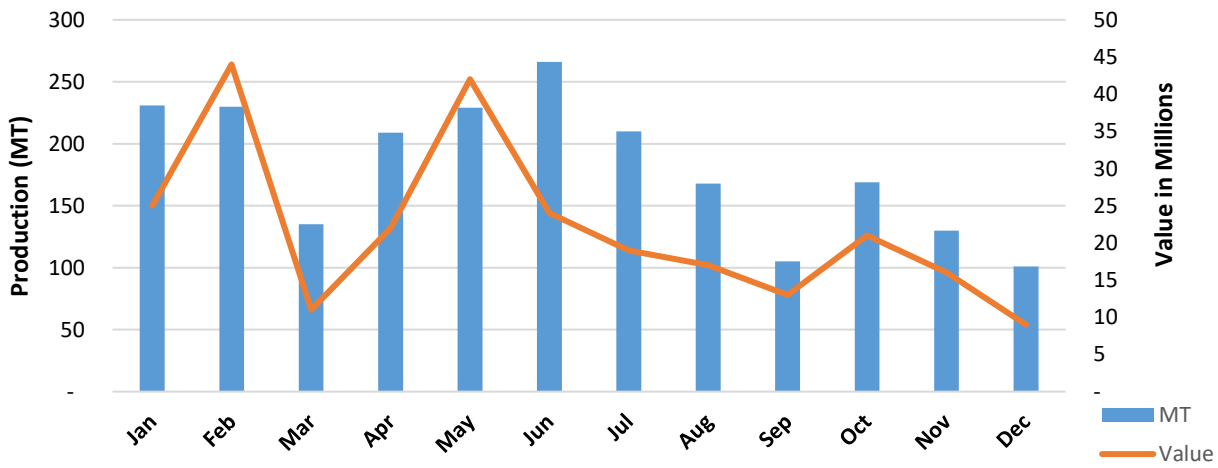


Figure 1. 13 Lake Naivasha monthly catches in Kgs 2022

1.5 LAKE JIPE AND CHALLA FISHERY

Lake Jipe watershed is an important transboundary wetland ecosystem between Kenya and Tanzania. The lake is fed by river Limu which originates from Mt Kilimanjaro slopes and River Muvulani from Pare Mountains. The lake Outflows into River Ruvu. Lake Jipe is experiencing severe catchment degradation mainly due to anthropogenic activities that lead to eutrophication, siltation and pollution.

During the year 2022, a total of 280 MT of both Tilapia and Clarias with an ex-vessel value of Kshs 89 million were landed whereby Lake Jipe contributed 209 MT while Lake Challa contributed 71 MT (Table 1.7). The combined trends of fish landing of both Lake Jipe and Challa from 2013 to 2022 (Figure 1.14).

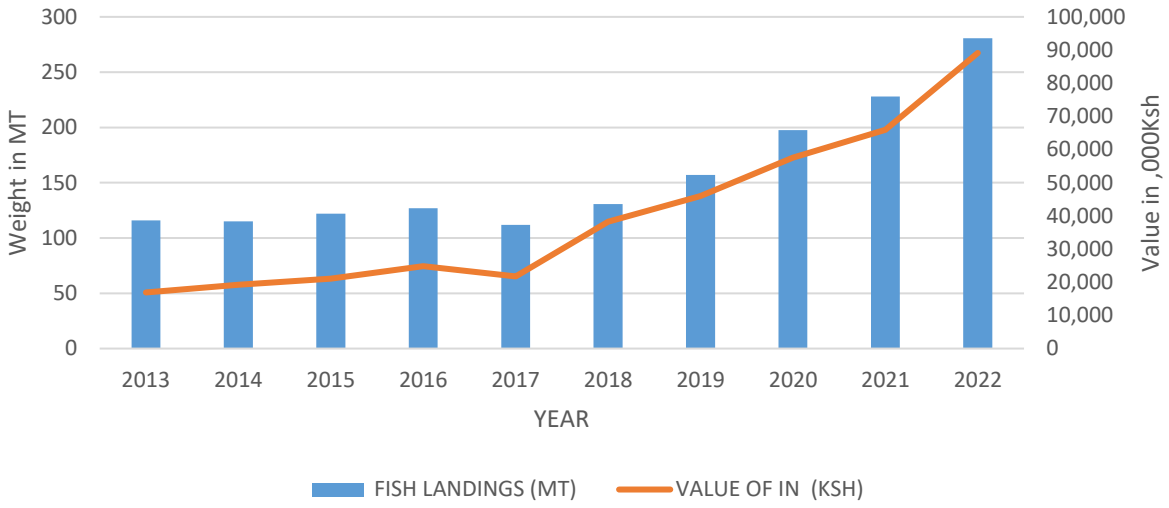


Figure 1. 14 Combined Trends of landings from Lake Jipe and Challa from 2013 to 2022

Table 1. 8 Lake Jipe and Challa Monthly fish landings by Species, Weight and Value 2022

Species	Units	Clarias (Jipe)	Tilapia Niloticus (Jipe)	Tilapia Others (Challa)	Total
Jan	Wt (Kg)	2,717	16,552	5,802	**25,071**
	Value (Ksh)	679,250	4,965,600	2,320,800	**7,965,650**
Feb	Wt (Kg)	3,245	15,734	6,523	**25,502**
	Value (Ksh)	811,250	4,720,200	2,609,200	**8,140,650**
Mar	Wt (Kg)	2,870	15,782	5,986	**24,638**
	Value (Ksh)	717,500	4,734,900	2,370,200	**7,822,600**
Apr	Wt (Kg)	5,821	12,900	5,786	**24,507**
	Value (Ksh)	1,455,250	3,870,000	2,314,400	**7,639,650**
May	Wt (Kg)	6,763	10,160	5,400	**22,323**
	Value (Ksh)	1,690,750	3,048,000	2,160,000	**6,898,750**
Jun	Wt (Kg)	2,536	15,514	6,168	**24,218**
	Value (Ksh)	634,000	4,654,200	2,467,200	**7,755,400**
Jul	Wt (Kg)	2,186	10,903	6,190	**19,279**
	Value (Ksh)	546,500	3,270,900	2,476,000	**6,293,400**
Aug	Wt (Kg)	2,531	10,800	6,324	**19,655**
	Value (Ksh)	632,750	3,240,000	2,524,600	**6,397,350**
Sep	Wt (Kg)	2,350	12,600	6,210	**21,160**

	Value (Ksh)	587,500	3,780,000	2,484,000	**6,851,500**
Oct	Wt (Kg)	3,420	12,400	5,901	**21,721**
	Value (Ksh)	855,000	3,720,000	2,360,400	**6,935,400**
Nov	Wt (Kg)	4,582	14,862	5,823	**25,267**
	Value (Ksh)	1,145,500	4,458,600	2,329,200	**7,933,300**
Dec	Wt (Kg)	5,232	16,203	5,802	**27,237**
	Value (Ksh)	1,309,250	4,860,900	2,320,800	**8,490,950**
Total	Wt (Kg)	44,253	164,410	71,915	**280,578**
	Value (Ksh)	11,064,500	49,323,300	28,736,800	**89,124,600**

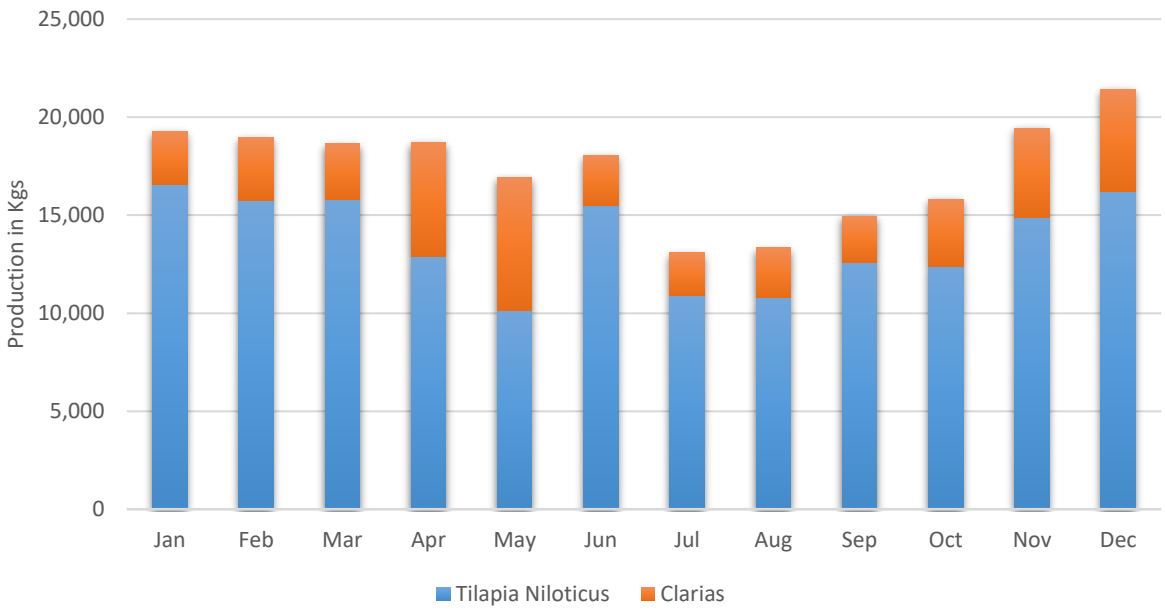


Figure 1. 15 Lake Jipe monthly fish production in Kgs 2022

There are only two species caught in Lake Jipe namely; Jipe Tilapia and Clarias species with a species composition; Tilapia 79% and Clarias 21% while Lake Challa contributed 100% tilapia as shown in Figure1.15 and Figure 1.16 below.

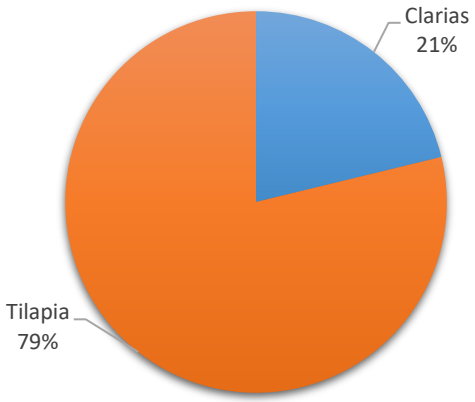


Figure 1. 16 Lake Jipe species composition landings in metric Kgs 2022

1.6 TURKWEL DAM

Turkwel Dam is one of the major hydro-electric power stations in Kenya. It is situated in Northwest of Kenya, in the border of Turkana, West Pokot Counties. During 2022 a total of 100 MT of fish with an ex-vessel value of Kshs 20.3 million were landed from the dam. The fisheries of the dam are comprised of two species: Tilapia *(Oreochromis niloticus)* and *Clarias spp*. Tilapia landings contributed 91% (91.6MT) while Clarias contributed 9% (8.7 MT) during the review period. The month of August recorded a high catch in comparison to December which recorded the lowest catch in 2022, as shown in the monthly fish landings as shown in Table 1.8. Percentages composition of species catch as shown in figure 1.20, monthly clarias landing trends in figure 1.21, monthly Tilapa landing trends in figure 1.17, and monthly combined weight and value of Tilapia and Clarias landing trends in figure 1.18 respectively as follows here below.

Table 1. 9 Turkwel dam Monthly fish landings by Species 2022

Species		Clarias	Tilapia Niloticus	Total
Jan	Wt (Kg)	864	7,776	**8,640**
	Value (Ksh)	190,080	1,555,200	**1,745,280**
Feb	Wt (Kg)	714	7,709	**8,423**
	Value (Ksh)	201,080	1,541,800	**1,742,880**
Mar	Wt (Kg)	616	7,680	**8,296**
	Value (Ksh)	135,520	1,536,000	**1,671,520**
Apr	Wt (Kg)	522	7,802	**8,324**
	Value (Ksh)	114,840	1,560,400	**1,675,240**
May	Wt (Kg)	606	7,614	**8,220**
	Value (Ksh)	133,320	1,522,800	**1,656,120**
Jun	Wt (Kg)	767	7,284	**8,051**
	Value (Ksh)	146,740	1,456,800	**1,603,540**
Jul	Wt (Kg)	828	7,734	**8,562**
	Value (Ksh)	182,160	1,546,800	**1,728,960**
Aug	Wt (Kg)	908	8,361	**9,269**
	Value (Ksh)	199,760	1,672,200	**1,871,960**
Sep	Wt (Kg)	965	7,836	**8,801**
	Value (Ksh)	212,300	1,567,200	**1,779,500**
Oct	Wt (Kg)	722	7,954	**8,676**
	Value (Ksh)	158,840	1,590,800	**1,749,640**
Nov	Wt (Kg)	646	7,230	**7,876**
	Value (Ksh)	142,120	1,446,000	**1,588,120**
Dec	Wt (Kg)	553	6,614	**7,167**
	Value (Ksh)	121,660	1,322,800	**1,444,460**
Total	**Wt (Kg)**	**8,711**	**91,594**	**100,305**
	Value (Ksh)	**1,938,420**	**18,318,800**	**20,257,220**

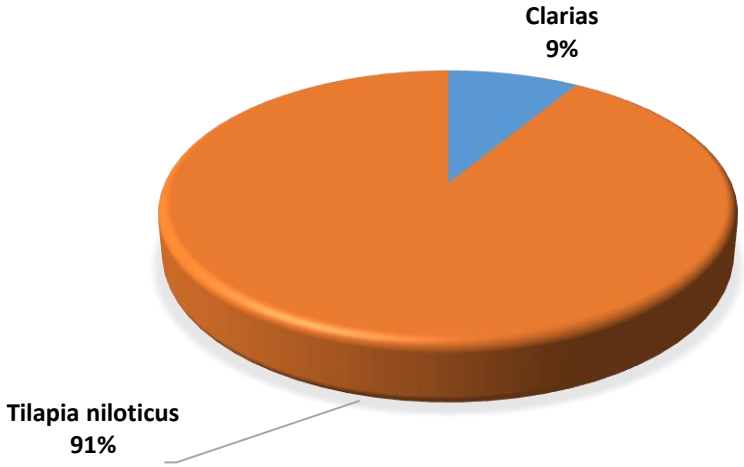


Figure 1. 17 Percentages composition of species catch in Turkwel dam 2022

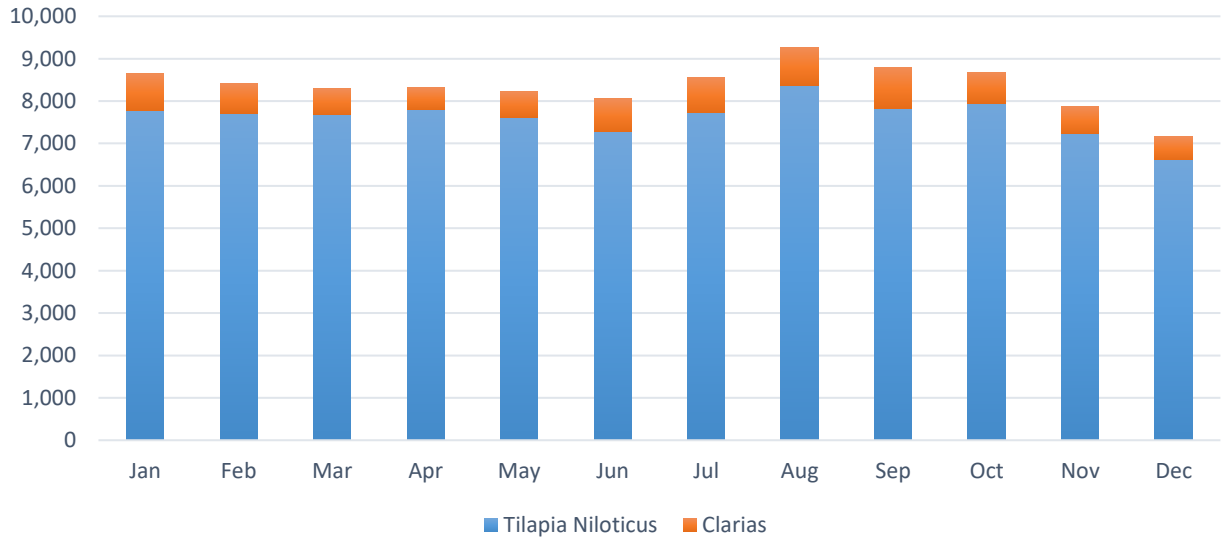


Figure 1. 18 Turkwel Dam monthly landings trends in 2022

1.7 RIVERINE

During the year 2022, fish landings from Riverine amounted to 401 tons with an ex-vessel value of Kshs 111.6 million. The riverine fishery consists of both permanent and seasonal river network in the country. *Clarias spp* and tilapia **(***Oreochromis niloticus)* were the most landed species from the riverine fishery contributing 95% of the total landings. Trout and carps contributed 3.4% of the total landings as shown in both table 1.9 and Figure 1.19 as follows.

Table 1. 10 Riverine fish catch weight and value by species in Kgs 2022

Rivers	Units	*Clarias Spp.*	*Oreochromis Niloticus*	Trout	Carps	Others	Totals
R. Mathioya	Kgs	0	0	22.44	0	0	22
	Kshs	0	0	8,908	0	0	8908
R. Mert & Garb(Kerio)	Kgs	1,517	0	0	0	0	1517
	Kshs	442,415	0	0	0	0	442415
R. Ewaso Nyiro	Kgs	1,153	1,532	338.64	0	0	3023
	Kshs	695,444	618,705	306,783	0	0	1620933
R. Tana.	Kgs	8,925	29,000	1,646	1,314	551.82	41436
	Kshs	2,693,731	8,753,341	1,159,473	396,712	277,492	13280749
Athi River	Kgs	42,470	130,538	0	5,916	0	178923
	Kshs	8,546,421	39,402,884	0	1,309,524	0	49258828
River Nzoia	Kgs	14,427	44,341	0	2,008	0	60777
	Kshs	3,628,812	13,384,380	0	464,885	0	17478077
Sondu/Kuja	Kgs	3,783	11,626	0	526.32	0	15935
	Kshs	951,524	3,509,250	0	132,324	0	4593098
Turkwel	Kgs	4,971	15,278	0	0	692.58	20942
	Kshs	1,250,428	4,611,512	0	0	0	5861940
Nyando	Kgs	6,163	18,941	0	857.82	0	25962
	Kshs	1,550,189	5,717,364	0	215,827	0	7483380
Yala	Kgs	2,461	7,568	0	344.76	0	10374
	Kshs	620,075	2,286,742	0	86,502	0	2993320
Kerio	Kgs	3,396	10,433	0	0	4,733	18561
	Kshs	853,884	0	0	0	952,381	1806265
Others	Kgs	5,613	17,252	0	781.32	0	23647
	Kshs	1,411,871	5,207,606	0	196,557	0	6816034
Total	**Kgs**	**94,878**	**286,509**	**2,007**	**11,748**	**5,977**	**401,120**
	Kshs	**22,644,795**	**83,491,784**	**1,475,164**	**2,802,331**	**1,229,873**	**111,643,946**

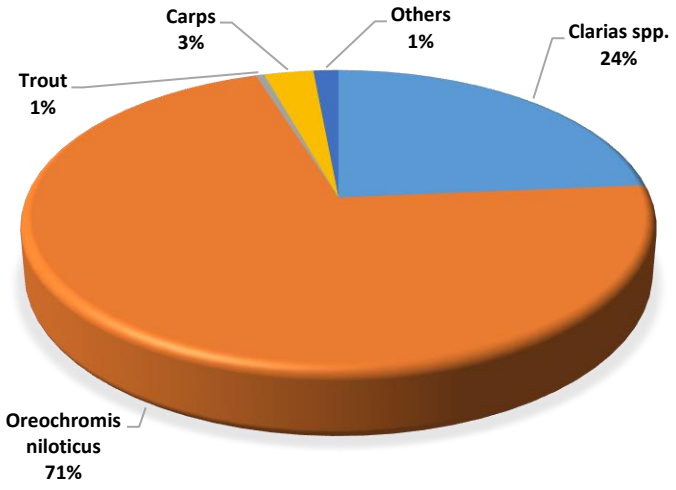


Figure 1. 19 Percentages composition of species catch in Riverine fishery 2022

1.8 TANA RIVER DELTA

Fresh water fish landings from Tana River delta in Tana River County during the year under review amounted to 129 MT with an ex-vessel value of Kshs11.6 million. This was a 158% increase in quantity and a 140% increase in ex-vessel value compared to 50 MT with an ex-vessel value of Kshs.5 million landed in 2021. The 2015 to 2022 landings from Tana River Delta are shown in table 1.10, figure 1.20

Table 1. 11 Tana River Delta catch weight and value by species in Kgs 2022

Months	Species	Alestes	Clarias	Labeo	Protopterus	Synodontis	Tilapia Niloticus	Tilapia Others	Unspecified	Total
JAN	Wt (Kg)	1,257	1,436	846	1,154	1,180	821	975	1,283	**8,952**
	Value (Ksh)	87,980	143,640	59,252	102,600	94,392	98,496	97,470	128,250	**812,079**
FEB	Wt (Kg)	1,103	1,411	718	1,283	1,026	795	1,077	1,347	**8,759**
	Value (Ksh)	77,207	141,075	50,274	102,600	82,080	95,418	107,730	134,663	**791,046**
MAR	Wt (Kg)	1,231	1,385	641	1,411	1,359	641	1,064	1,318	**9,052**
	Value (Ksh)	86,184	138,510	44,888	112,860	108,756	76,950	106,448	131,841	**806,436**
APR	Wt (Kg)	1,924	1,539	770	1,539	1,462	975	1,129	1,359	**10,696**
	Value (Ksh)	134,663	153,900	53,865	123,120	116,964	116,964	112,860	135,945	**948,281**
MAY	Wt (Kg)	1,847	1,719	898	1,616	1,539	1,077	1,436	1,411	**11,543**
	Value (Ksh)	129,276	171,855	62,843	129,276	123,120	129,276	143,640	141,075	**1,030,361**
JUNE	Wt (Kg)	2,026	2,052	975	2,129	1,667	1,411	1,308	1,488	**13,056**
	Value (Ksh)	141,845	205,200	68,229	170,316	133,380	169,290	130,815	148,770	**1,167,845**
JUL	Wt (Kg)	1,847	2,437	1,026	1,924	1,616	1,359	1,103	1,565	**12,876**
	Value (Ksh)	129,276	243,675	71,820	153,900	129,276	163,134	110,295	156,465	**1,157,841**
AUG	Wt (Kg)	1,436	2,052	1,000	1,898	1,488	1,436	1,000	1,590	**11,902**
	Value (Ksh)	77,463	205,200	70,025	151,848	119,016	172,368	100,035	159,030	**1,054,985**
SEPT	Wt (Kg)	1,488	2,001	821	1,796	1,283	1,590	1,154	1,667	**11,799**
	Value (Ksh)	104,139	200,070	57,456	143,640	102,600	190,836	115,425	166,725	**1,080,891**
OCT	Wt (Kg)	1,359	2,052	744	1,667	1,359	1,154	1,026	1,539	**10,901**
	Value (Ksh)	95,162	205,200	52,070	133,380	108,756	138,510	102,600	153,900	**989,577**
NOV	Wt (Kg)	1,231	1,719	808	1,359	1,257	1,026	1,052	1,411	**9,862**
	Value (Ksh)	86,184	171,855	56,558	108,756	100,548	123,120	105,165	141,075	**893,261**
DEC	Wt (Kg)	1,334	1,770	834	1,411	1,308	975	1,026	1,359	**10,016**
	Value (Ksh)	93,366	176,985	58,354	112,860	104,652	116,964	102,600	135,945	**901,726**
TOTAL	Wt (Kg)	**18,083**	**21,572**	**10,080**	**19,186**	**16,544**	**13,261**	**13,351**	**17,337**	**129,415**
	Value (Ksh)	**1,242,743**	**2,157,165**	**705,632**	**1,545,156**	**1,323,540**	**1,591,326**	**1,335,083**	**1,733,684**	**11,634,327**

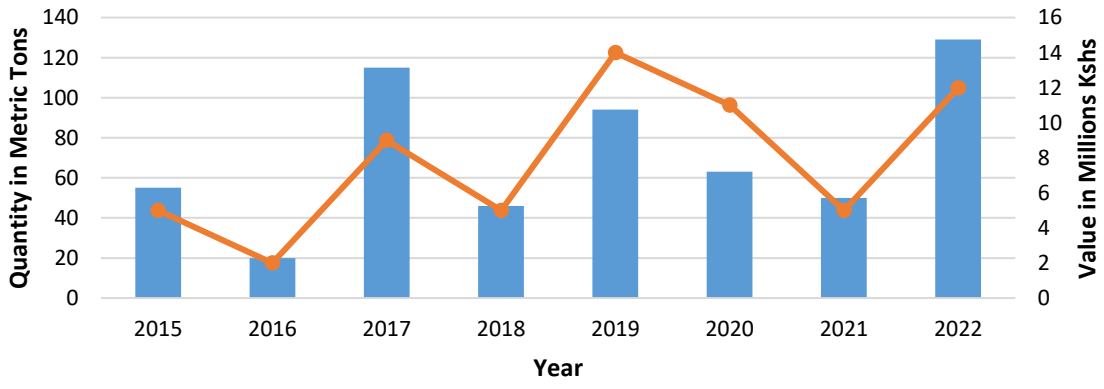


Figure 1. 20 Trends in annual fish landings from Tana River Delta fishery 2015-2022

Clarias was the most common species with 17%, while *Protopterus* had 15%, *Alestes* 14%, *Synodontis*13%, Tilapia 10%, *Labeo* 8%, Tilapia others 10% and other unspecified species contributed 13% to the total catch as shown in Figure 1.21.

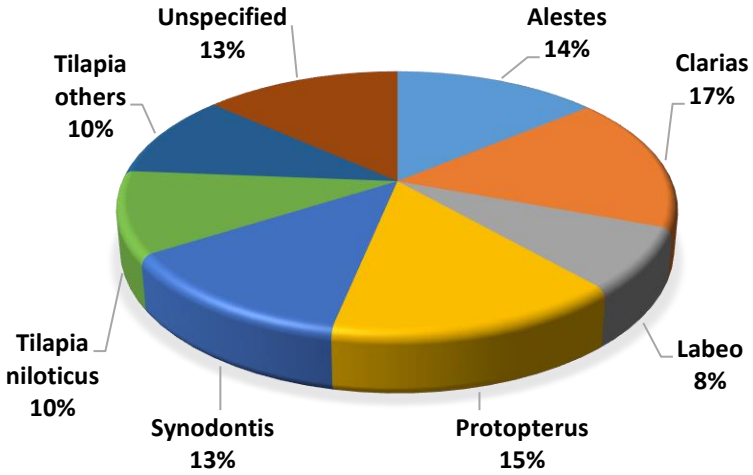


Figure 1. 21 Tana River Delta species composition 2022

1.9 LAKE KENYATTA FISHERY

During the year under review a total of 150 tons of fish with an ex-vessel value of Kshs. 14.2 million were landed from Lake Kenyatta in Lamu County of the coast province. This was a 2 % decrease in quantity of the fish landed compared with 2021 figures of 153 tons with an ex-vessel value of Kshs 15.33 Million. Figure 1.22 shows the Lake Kenyatta fish landing trends from 2016 to 2022 and the monthly trend is shown in table 1.11

Table 1. 12 Lake Kenyatta Monthly fish landings by Species 2022

Month	Species	Tilapia	Clarias	Protopterus	Total
January	Wt(Kgs)	5,210	3,066	2,450	10,726
	VAL(SHS)	78,146	153,300	110,250	341,696
Feb	Wt(Kgs)	4,211	5,376	3,953	13,540
	VAL(SHS)	421,050	537,600	395,325	1,353,975
March	Wt(Kgs)	3,815	3,752	2,615	10,182
	VAL(SHS)	381,500	375,200	261,450	1,018,150
April	Wt(Kgs)	2,867	3,703	2,811	9,380
	VAL(SHS)	286,650	370,300	281,085	938,035
May	Wt(Kgs)	10,586	5,405	7,093	23,084
	VAL(SHS)	1,058,610	540,505	709,275	2,308,390
June	Wt(Kgs)	10,586	5,405	7,093	23,084
	VAL(SHS)	1,058,610	540,505	709,275	2,308,390
July	Wt(Kgs)	10,586	5,405	7,093	23,084
	VAL(SHS)	1,058,610	540,505	709,275	2,308,390
August	Wt(Kgs)	3,776	3,460	2,548	9,784
	VAL(SHS)	377,580	346,010	254,765	978,355
Sept	Wt(Kgs)	2,626	3,418	2,129	8,173
	VAL(SHS)	262,570	341,775	212,940	817,285
October	Wt(Kgs)	2,342	2,057	1,404	5,802
	VAL(SHS)	234,150	205,660	140,350	580,160
November	Wt(Kgs)	2,272	2,443	1,904	6,619
	VAL(SHS)	195,650	228,550	179,375	603,575
December	Wt(Kgs)	2,378	2,456	1,660	6,495
	VAL(SHS)	237,790	245,630	166,040	649,460
Totals	WT(KGS)	**61,252**	**45,946**	**42,752**	**149,950**
	VAL(SHS)	**5,650,916**	**4,425,540**	**4,129,405**	**14,205,861**

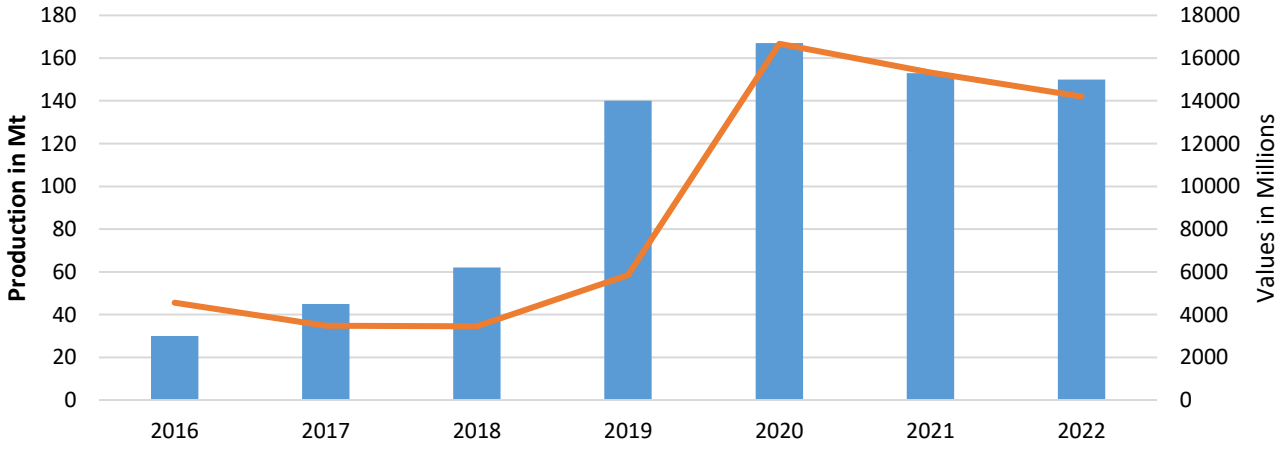


Figure 1. 22 Lake Kenyatta fish catch trends in MT 2016 – 2022

Tilapia landings contributed 41% (175MT) while *Clarias* contributed 31% (131 MT), and *Protopterus* contributed 28% (122MT) to the total catch during the review period as shown in Figure 1.23. The monthly catches for Tilapia, Clarias and Protopterus are as shown in figure 1.24 below;

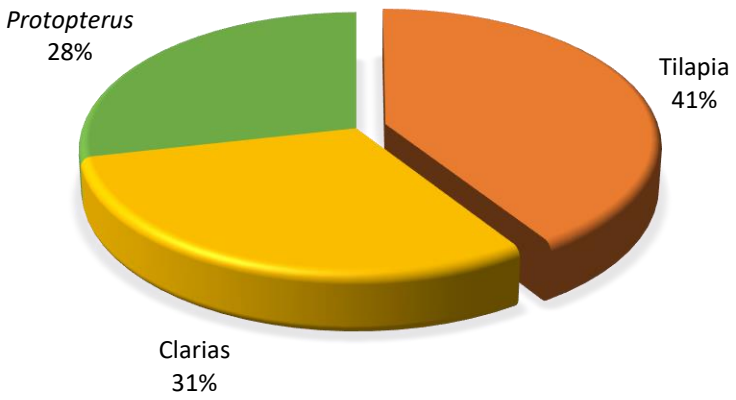


Figure 1. 23 Lake Kenyatta Species composition 2022

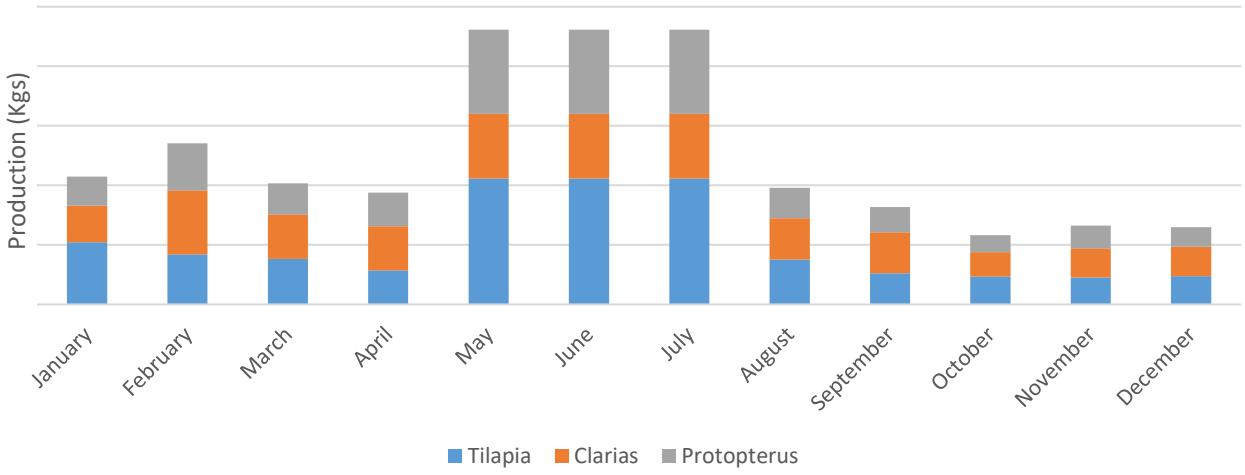


Figure 1. 24 Monthly Tilapia Landings of Lake Kenyatta for the year 2022

1.10 TANA RIVER DAMS FISHERY

In 2022, a total of 210 MT of fish with an ex-vessel value of Kshs 30.3 million were landed from the main fishery water bodies of the Tana River dams of Masinga, Kamburu, and Kiambere. This was 7% increase in quantity compared to 2021 landings of 197 MT valued at Kshs 29 million. The monthly catches for 2022 are shown in table 1.12 and it can be noted that the month of February recorded highest landings while August had the lowest landings. Additionally, Figure 1.25 shows the annual trends of Tana River Dams landings from 2015 to 2022.

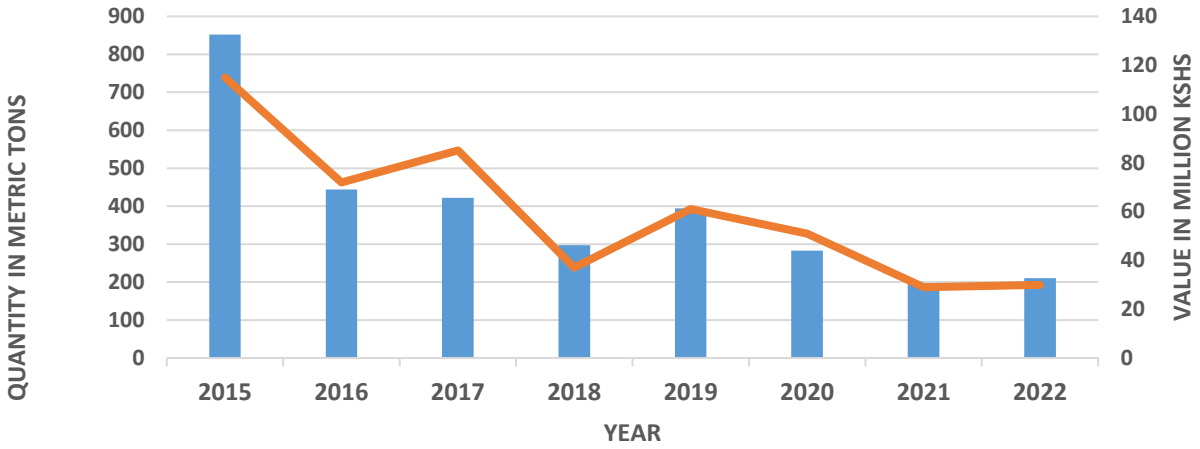


Figure 1. 25 Tana River Dams fish catch trends in MT 2015 – 2022.

Table 1. 13 Tana River Dams Monthly fish landings by Species 2022

Months	Species	Clarias	Tilapia Niloticus	Carps	Total
JAN	Kgs	5,914	6,537	4,669	**17,119**
	Kshs	833,800	921,569	658,263	**2,413,632**
FEB	Kgs	7,470	9,027	9,649	**26,146**
	Kshs	1,053,222	1,272,643	1,360,411	**3,686,277**
MAR	Kgs	7,782	2,802	9,337	**19,921**
	Kshs	1,097,107	394,958	1,316,527	**2,808,591**
APR	Kgs	9,649	5,914	9,960	**25,522**
	Kshs	1,360,411	833,800	1,404,296	**3,598,507**
MAY	Kgs	5,603	3,423	9,960	**18,986**
	Kshs	789,917	482,727	1,404,296	**2,676,939**
JUN	Kgs	4,202	4,669	9,027	**17,898**
	Kshs	590,974	658,263	1,272,643	**2,521,881**
JUL	Kgs	2,802	3,423	7,159	**13,384**
	Kshs	473,950	1,079,552	2,018,675	**3,572,177**
AUG	Kgs	4,202	2,988	3,455	**10,645**
	Kshs	590,974	421,289	487,115	**1,499,378**
SEP	Kgs	6,381	4,202	2,491	**13,074**
	Kshs	899,627	592,437	351,074	**1,843,139**
OCT	Kgs	5,291	3,735	6,847	**15,873**
	Kshs	747,495	526,611	4,388	**1,278,495**
NOV	Kgs	4,669	4,047	7,470	**16,186**
	Kshs	658,263	570,495	1,053,222	**2,281,980**
DEC	Kgs	2,459	4,825	8,092	**15,375**
	Kshs	346,685	680,206	1,140,990	**2,167,881**
TOTAL	Kgs	**66,423**	**55,591**	**88,115**	**210,130**
	Kshs	**9,442,427**	**8,434,550**	**12,471,900**	**30,348,877**

The fisheries of the dam are comprised of three species: Tilapia *(Oreochromis niloticus)*, Carps and *Clarias spp*. Carps landings contributed 42% (70.49MT) while Clarias contributed 32% 53.14 MT). Tilapia had the lowest landings with a contribution of 26% of the total catch during the review period Figure 1.26. The monthly landing trends for the Carps, Clarias, and Tilapia are shown in Figure 1.27 for the three species in the year of 2022.

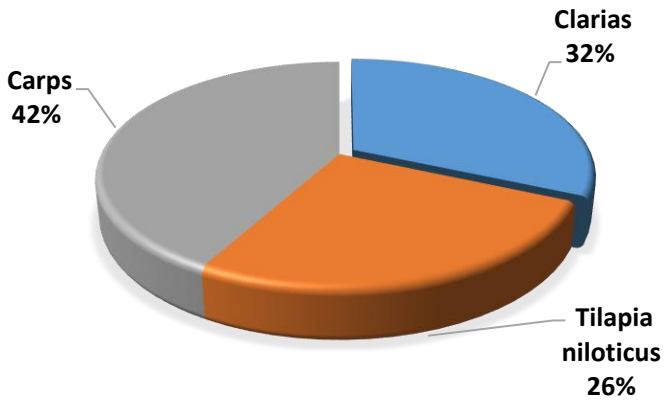


Figure 1. 26 Lake Kenyatta Species composition 2022

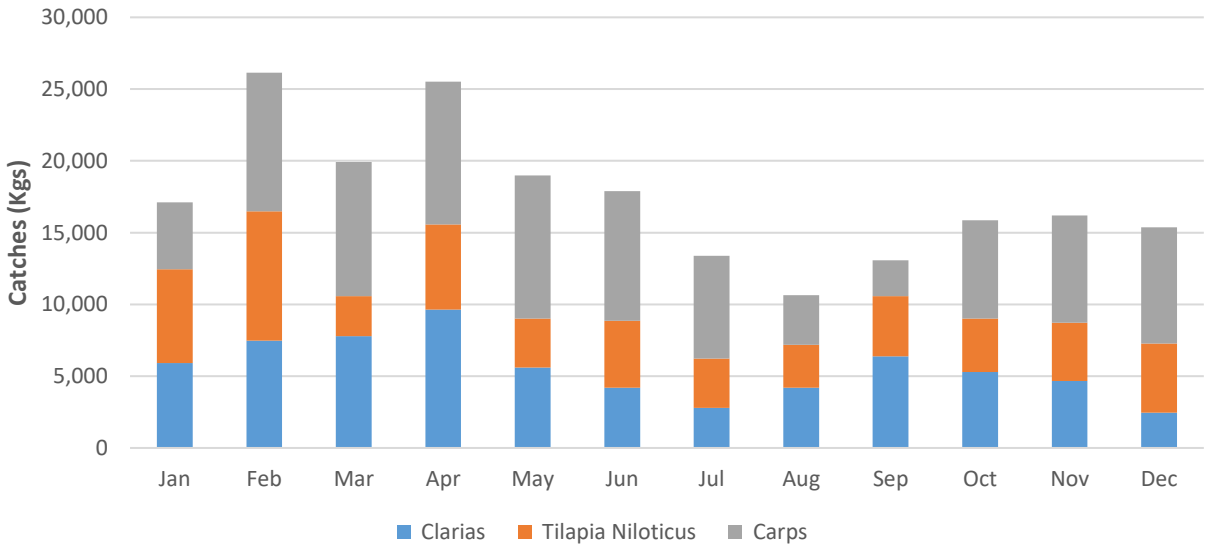


Figure 1. 27 Tana River Dams Monthly Landings in the Year 2022

1.11 LAKE KANYABOLI FISHERY

Lake Kanyaboli is one of the satellite lakes of Lake Victoria and it is located in Siaya County. The fisheries of the lake are comprised of the following fish species: *Oreochromis niloticus, Protopterus aethiopicus, Haplochromis* and *Clarias spp*.

During the year under review, a total of 387 MT were landed from the lake. This was a massive 35% increase in quantity of the fish landed compared with 2021 figures of 286 MT.

The catches from 2015 to 2022, monthly catches for 2022 and species composition in 2022 are shown in Figures 1.28, 1.29 and 1.30 respectively.

Table 1. 14 Lake Kanyaboli Monthly fish landings by Species 2022

Months	***Species***	***Clarias***	***Haplochromis***	***Protopterus***	***Tilapia Others***	***Total***
JAN	*Wt (Kg)*	*516*	*575*	*1,667*	*27,412*	*30,171*
	Value (Ksh)	*173,426*	*76,422*	*117,927*	*4,446,552*	*4,814,327*
FEB	*Wt (Kg)*	*582*	*802*	*2,206*	*33,229*	*36,819*
	Value (Ksh)	*136,310*	*104,193*	*138,789*	*5,125,016*	*5,504,308*
MAR	*Wt (Kg)*	*734*	*677*	*2,643*	*27,982*	*32,037*
	Value (Ksh)	*226,427*	*85,562*	*182,570*	*4,505,321*	*4,999,879*
APR	*Wt (Kg)*	*1,288*	*765*	*3,412*	*24,233*	*29,697*
	Value (Ksh)	*354,110*	*104,135*	*767,173*	*3,529,817*	*4,755,235*
MAY	*Wt (Kg)*	*1,126*	*802*	*2,665*	*33,559*	*38,152*
	Value (Ksh)	*294,945*	*106,944*	*444,772*	*5,302,514*	*6,149,174*
JUN	*Wt (Kg)*	*645*	*1,812*	*3,728*	*27,422*	*33,607*
	Value (Ksh)	*151,166*	*241,319*	*4,108,142*	*4,426,898*	*8,927,525*
JUL	*Wt (Kg)*	*903*	*559*	*3,850*	*31,588*	*36,900*
	Value (Ksh)	*211,377*	*74,355*	*450,995*	*5,085,681*	*5,822,408*
AUG	*Wt (Kg)*	*1,138*	*916*	*3,740*	*18,815*	*24,609*
	Value (Ksh)	*266,283*	*121,902*	*327,811*	*3,029,239*	*3,745,235*
SEP	*Wt (Kg)*	*1,191*	*594*	*3,612*	*25,099*	*30,497*
	Value (Ksh)	*278,742*	*79,031*	*299,716*	*4,040,984*	*4,698,472*
OCT	*Wt (Kg)*	*940*	*904*	*3,859*	*22,293*	*27,995*
	Value (Ksh)	*219,988*	*120,205*	*353,907*	*3,589,159*	*4,283,260*
NOV	*Wt (Kg)*	*661*	*600*	*3,292*	*26,376*	*30,929*
	Value (Ksh)	*154,639*	*79,860*	*229,171*	*4,246,586*	*4,710,257*
DEC	*Wt (Kg)*	*812*	*627*	*5,320*	*28,410*	*35,169*
	Value (Ksh)	*190,123*	*83,404*	*180,421*	*4,574,001*	*5,027,949*
TOTAL	***Wt (Kg)***	***10,536.5***	***9,633.6***	***39,993.5***	***326,417.4***	***386,581.1***
	Value (Ksh)	***2,657,535***	***1,277,332***	***7,601,394***	***51,901,768***	***63,438,028***

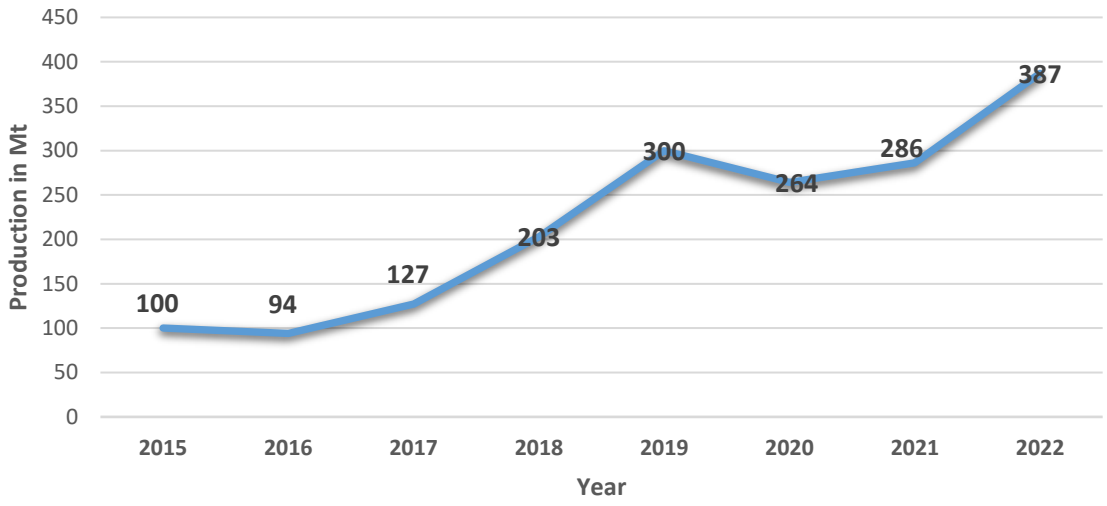


Figure 1. 28 Lake Kanyaboli fish catch trends in MT 2015-2022

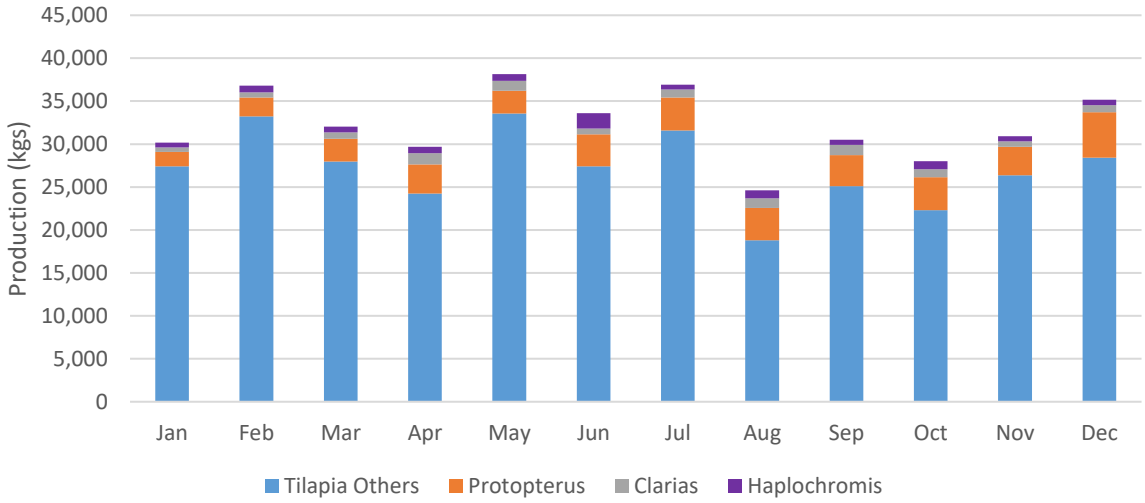


Figure 1. 29 Lake Kanyaboli Monthly Landings by Weight for the Year 2022

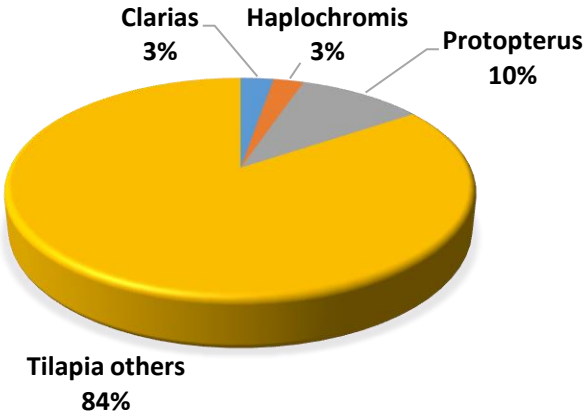


Figure 1. 30 Lake Kanyaboli species composition by weight (kgs)

1.12 SMALL DAMS

Dams are standing waters that have been created as a result of erected barriers to stop or restrict flow of water or underground streams. In terms of size, dams are usually greater than 1.0 ha, but less than 100 ha. Kenya has numerous dams, which have great potential for significant fish production and aquaculture. However, the role of dams in aquaculture has been largely neglected, and the current national fish production statistics does not include dams. Also, the role of dams in reducing rural poverty has not been adequately explored.

Nile Tilapia (*Oreochromis niloticus*) and Clarias were the most dominant species each contributing 49% to the total catch. Black Bass and unspecified species each accounted 1% of the total landings as shown below; The monthly catch landings from the small Dams per species in Kenya are as shown in table 1.14 below. Monthly catches for 2022 and species composition in 2022 are shown in Figures 1.31 and 1.32 respectively.

Table 1. 15 Small Dams Monthly fish landings by Species 2022

Month	Species	Black Bass	Clarias	Tilapia Niloticus	Tilapia Others	Unspecified	Total
Jan	Kgs	148	17,991	11,357	10	30	**24,613**
	Kshs	148,052	5,243,299	2,936,468	2,961	14,805	**6,954,655**
Feb	Kgs	118	17,595	10,646	15	-	**23,645**
	Kshs	118,442	5,216,038	2,841,391	4,442	-	**6,816,927**
Mar	Kgs	197	7,858	9,097	22	10	**14,320**
	Kshs	197,403	2,240,810	2,429,034	6,514	5,133	**4,065,745**
Apr	Kgs	401	7,891	10,092	6	-	**15,325**
	Kshs	397,175	2,124,332	2,799,796	1,777	-	**4,435,900**
May	Kgs	197	15,480	61,227	20	72	**64,163**
	Kshs	197,403	2,032,609	2,650,770	7,896	1,481	**4,075,133**
Jun	Kgs	51	8,858	11,448	10	-	**16,973**
	Kshs	44,218	2,288,739	3,028,922	3,948	-	**4,471,523**
Jul	Kgs	77	9,250	11,333	12	-	**17,227**
	Kshs	66,327	2,376,929	2,996,715	4,738	-	**4,537,258**
Aug	Kgs	395	17,356	12,120	2	12	**27,361**
	Kshs	394,806	4,928,501	3,229,029	790	2,961	**7,127,604**
Sep	Kgs	30	17,208	11,982	6	12	**24,365**
	Kshs	29,610	4,973,390	2,645,743	2,369	5,922	**6,380,862**
Oct	Kgs	49	17,164	10,640	17	5	**23,229**
	Kshs	49,351	4,900,923	2,759,160	6,712	2,468	**6,432,178**
Nov	Kgs	87	18,929	11,429	3	-	**25,373**
	Kshs	58,431	5,397,116	2,679,084	1,184	-	**6,779,846**
DEC	**Kgs**	505	28,202	14,327	2	-	**35,863**
	Kshs	498,245	3,393,989	3,995,495	790	-	**6,573,766**
TOTAL	**Kgs**	**2,256**	**183,782**	**185,697**	**123**	**3,089**	**374,948**
	Kshs	**2,199,464**	**45,116,676**	**34,991,607**	**44,119**	**29,808**	**82,381,674**

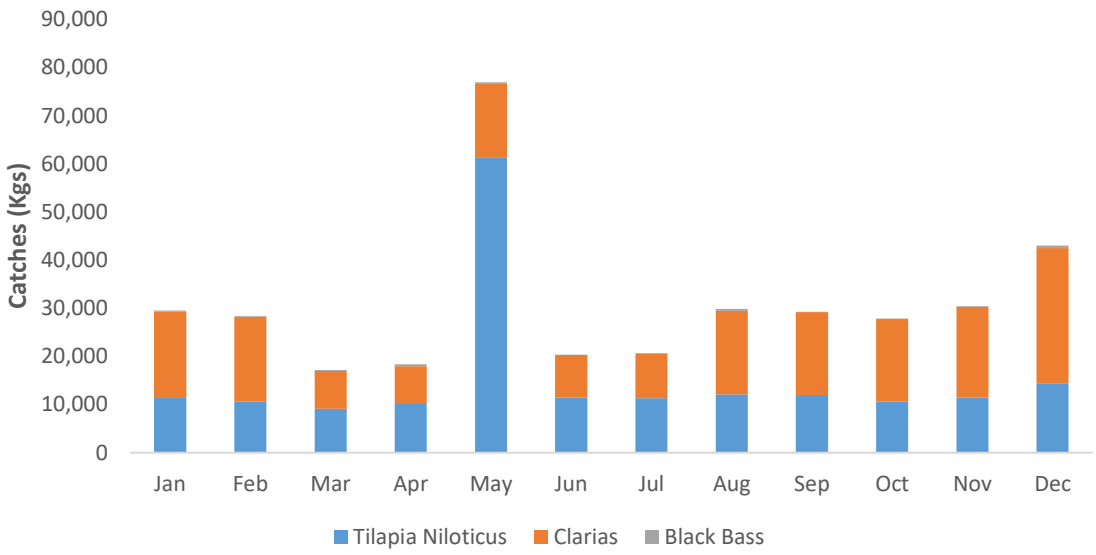


Figure 1. 31 Small Dams Monthly Landings by Weight for the Year 2022

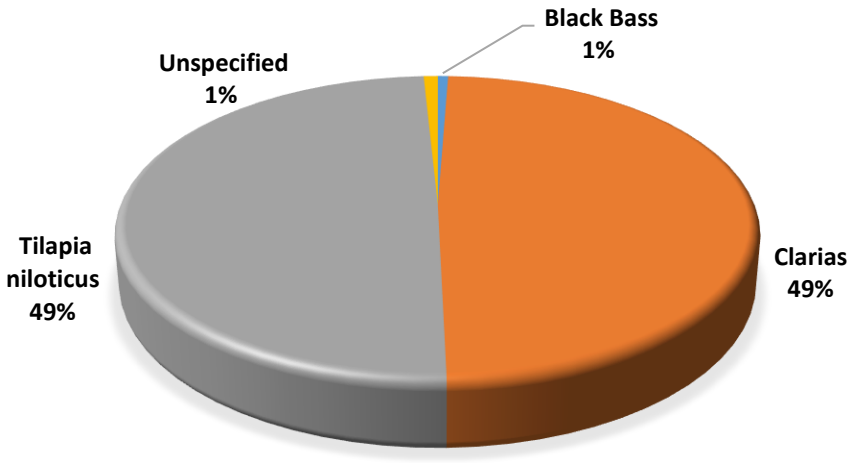


Figure 1. 32 Small dam's species composition by weight (kgs)

2.0 AQUACULTURE (FISH FARMING)

Worldwide, most capture fisheries have been extensively exploited, reaching their maximum potential, while fish farming production has been increasing to compensate for the declining capture production. According to FAO Statistics, global capture production has remained stagnant, but the aquaculture sector is gaining momentum to meet the growing demand for fish due to population growth. Excluding algae, the combined production from fisheries and aquaculture has shown a significant growth of 41 percent between 2000 and 2020, reaching 178 million MT in 2020, slightly below the record of 179 million MT in 2018. This represents a total expansion of 52 million MT compared to the year 2000. In 2020, the overall fisheries and aquaculture production (excluding algae) experienced a slight increase of 0.2 percent compared to 2019.

In Kenya, there is already a substantial disparity between the projected demand for fish and its current production, and this gap is expected to widen further. If Kenya was to achieve the African average per capita consumption of 10 kgs and considering the estimated population of 51 million people by 2022, the expected consumption should be 510,000 MT meaning that the deficit is still very high. This insufficient supply has led to a rise in prices in the country. This highlights the significant growth potential of the aquaculture sector within the country. The Government of Kenya (GoK) is actively exploring methods to promote aquaculture and utilize fish products for food relief programs, aiming to enhance food security and improve overall health.

Aquaculture fish production has been on the rise since 2017, indicating a positive trend in fish farming. The main increase has been from the Lake Victoria cages which in 2022 produced 14,029 MT (Fig 2.2). After a considerable rise in the production for the past five years, there was a slight increase in production in 2022 with fish production reaching 27,939 MT compared to 27,498 MT recorded in 2021 (Fig. 2.1). This slight increase in growth can be attributed to the drought conditions experienced in 2022 and the fish kills in Lake Victoria cages, which affected fish farming operations and productivity during the year.

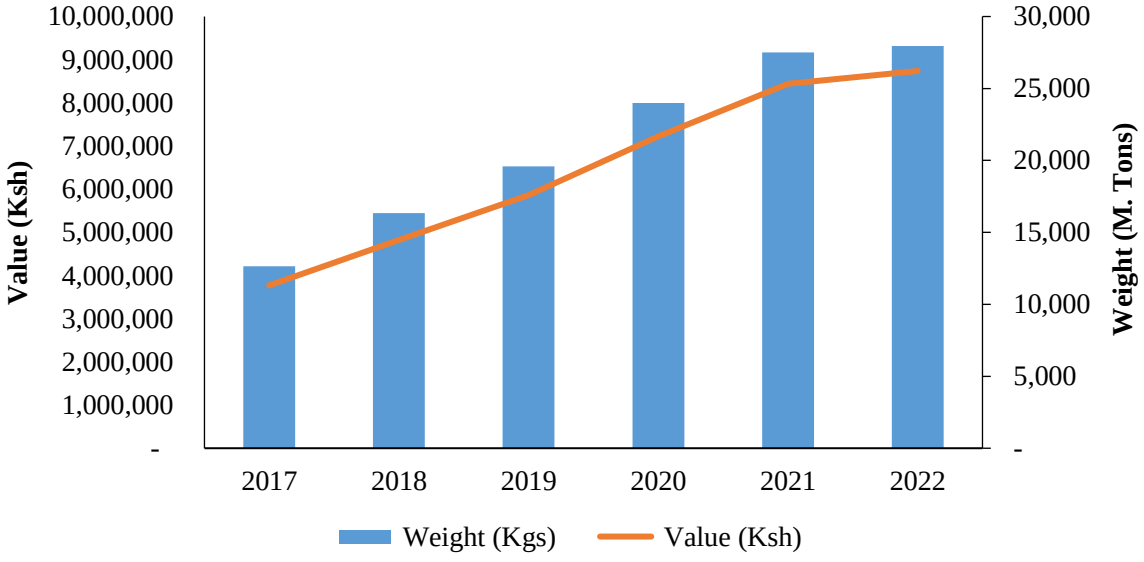
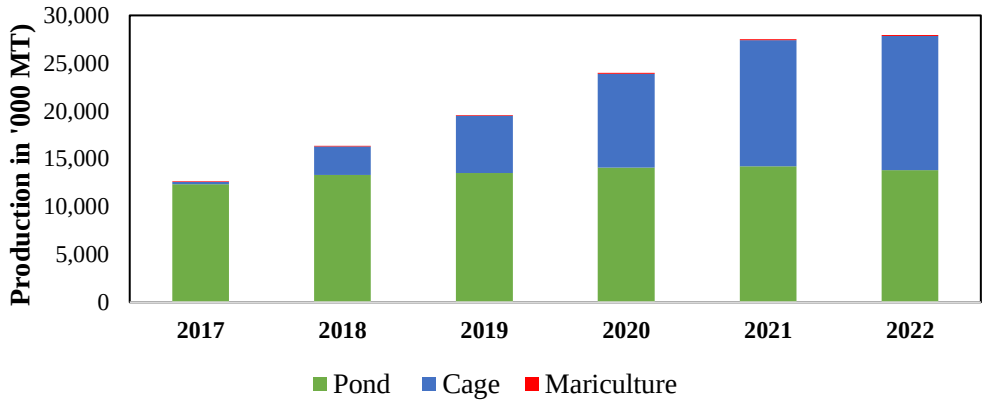


Figure 2. 1 Trends of Aquaculture, cage culture and mariculture fishery 2017-2022



Commercial mariculture production of seaweeds is currently practiced in ponds and pens in Kenya, particularly in Gazi, Kibuyuni, Mwazaro, and Mkwiro, located on the south coast. These areas have shown successful results in seaweed production, prompting plans for expansion to other regions in the country. The uptake of mariculture for seaweed production highlights the potential for this industry to thrive in Kenya.

The total production from Mariculture in 2022 was 106 metric MT (MT), with a corresponding value of 2.605 million Kenyan Shillings. This production represents a slight increase of 2% compared to the previous year's (2021) production, which amounted to 103 MT and was valued at Ksh 2.568 million (Table 2.1).

Table 2. 1 Fish landings by Weight and Value from Aquaculture, mariculture and cage culture 2017-2022

Years	Aquaculture		Mariculture		Cage culture		Total	
	Weight in MT	Value in '000 Kshs.	Weight in MT	Value in '000 Kshs.	Weight in MT	Value in '000 Kshs.	Weight in MT	Value in '000 Kshs.
2017	12,356	3,691,046	51	1,530	228	79,656	12,635	3,772,232
2018	13,320	4,022,640	64	1,920	2,963	800,010	16,347	4,824,570
2019	13,530	4,194,300	76	1,895	5,975	1,661,050	19,581	5,857,245
2020	14,090	4,438,350	85	2,119	9,818	2,788,312	23,993	7,228,781
2021	14,221	4,621,825	103	2,568	13,174	3,820,460	27,498	8,444,853
2022	13,804	4,582,928	106	2,605	14,029	4,152,584	27,939	8,738,117

In various fresh aquaculture establishments, the species composition of harvested fish was follows: *Oreochromis niloticus* accounted for 75% of the total quantity harvested, *Clarius gariepinus* comprised 17%, and *Onchorynchus mykiss* represented 5% of the total quantity harvested Figure 2.2.

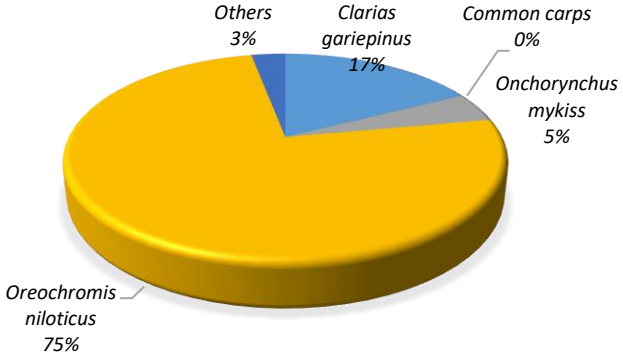


Figure 2. 2 Aquaculture production by Species 2022

3.0 MARINE FISHERY

INTRODUCTION

During the year 2022 total production of marine landings was 37,494 MT with an ex-vessel value of 10,318 million Kenya shillings. Artisanal fishery contributed 35,596 MT while industrial fishery contributed 1,898 MT. Marine production increased by 38% in terms of quantity and 65% in value compared to 2021 figures of 27,176 MT with an ex-vessel value of 6,248 million Kenya shillings. The marine production data has seen a significant increase due to the implementation of improved data collection and deployment of more staff.

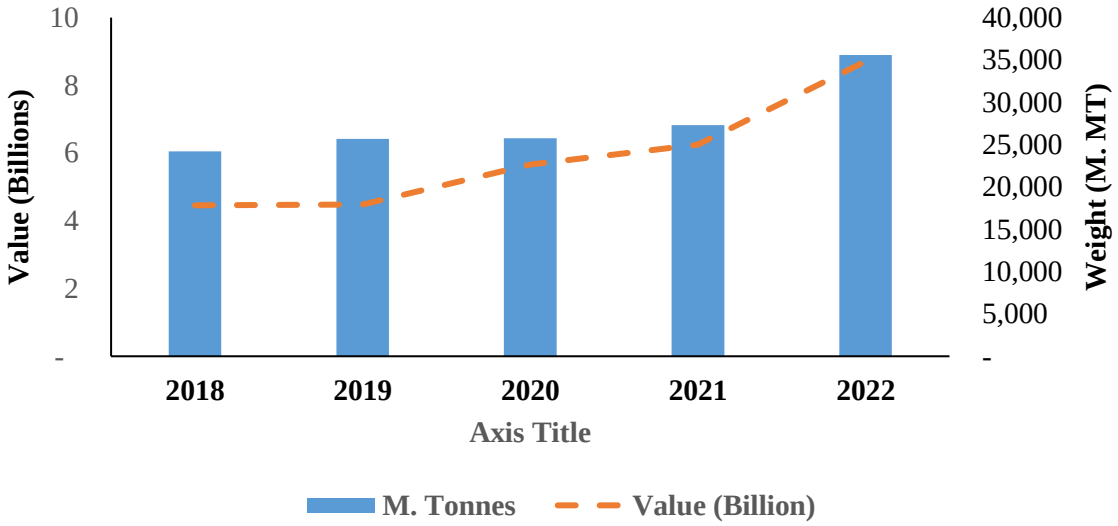


Figure 3. 1 Value and Production of Marine Fishery from 2018-2022

3.1 MARINE ARTISANAL LANDINGS

In 2022, Demersals dominated artisanal marine fisheries catch accounting for 45% (16,129 MT) of the total artisanal landings. Pelagics contributed 35% (12,489 MT), Crustaceans contributed 6% (2,193 MT) and Sharks &Rays and mixed others accounted for 4% (1,430 MT) while molluscs and sea cucumbers accounted for 9% (3,353 MT).

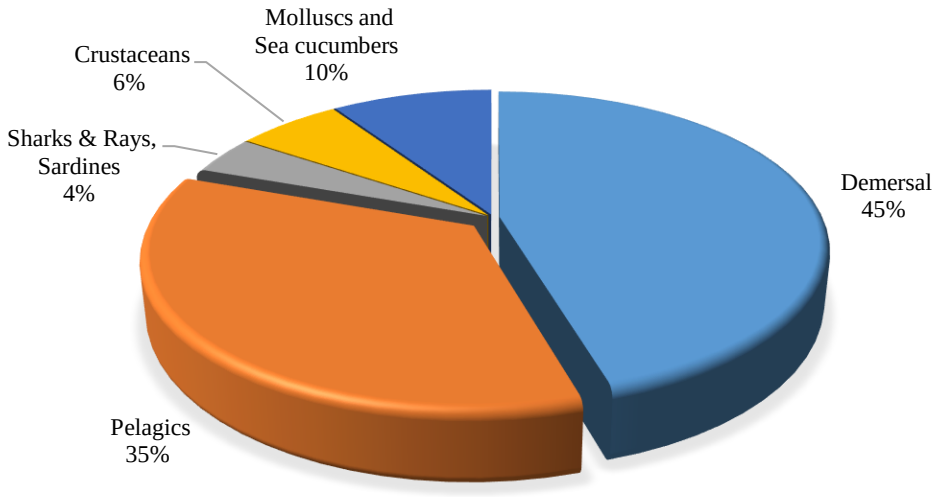


Figure 3. 2 Percentage contribution of marine fish species groups 2022

During the reporting period, Kwale County accounted for the highest quantity of marine artisanal landings, with a total of 14,794 MT (42% of the total landings). The corresponding ex-vessel value for Kwale County was Ksh. 3.3 billion. Kilifi County contributed 9,306 MT (26%) with an ex-vessel value of Ksh. 2.4 billion. Lamu County followed with 6,536 MT (18%) and an ex-vessel value of Ksh. 1.6 billion. Mombasa contributed 3,148 MT (9%) with an ex-vessel value of Ksh. 990 million. Tana River County had the lowest contribution, with 1,809 MT (5%) and an ex-vessel value of Ksh. 380 million.

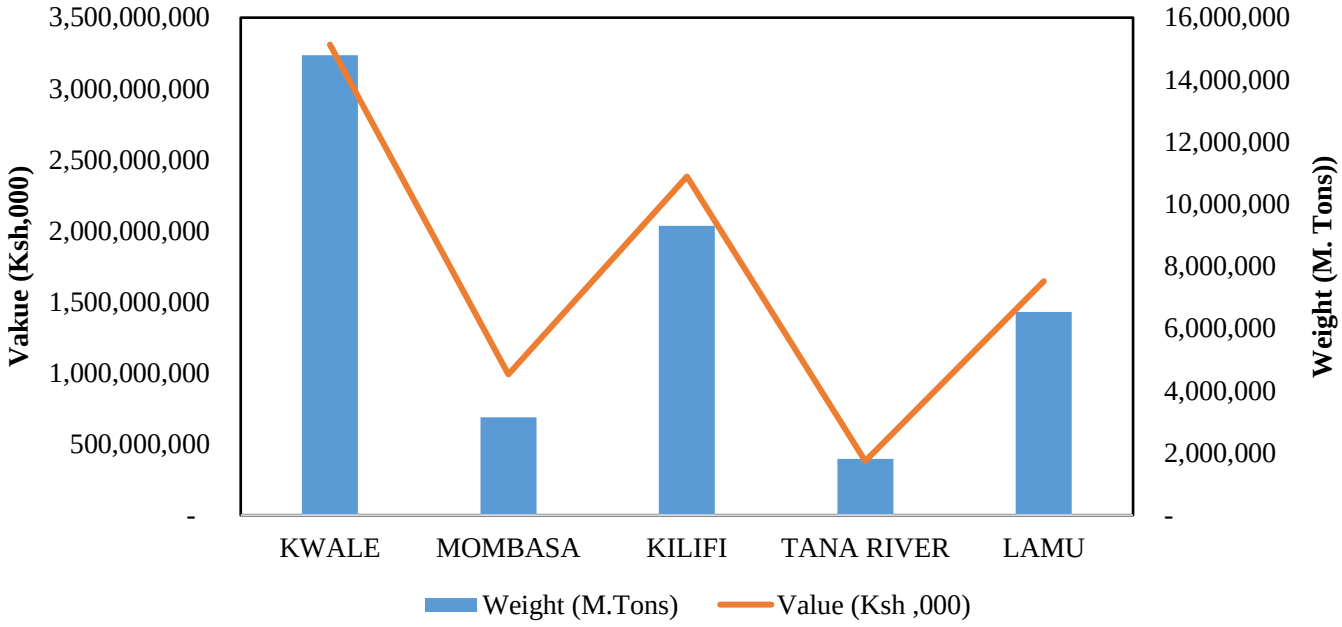


Figure 3. 3 Marine fish production by Quantity, Value and Counties 2022

Table 3. 1 Marine fish landing by species, weight and value 2018-2022

SPECIES	Common Name	2018		2019		2020		2021		2022	
Demersals		**Catch (Mt)**	**000 Kshs**	**Catch (Mt)**	**000 Kshs**	**Catch (Mt)**	**000 Kshs**	**Catch (Mt)**	**000 Kshs**	**Catch (Mt)**	**000 Kshs**
Siganidae	Rabbit fish	2,006	268,879	1,859	288,036	2,479	395,660	2,354	453,487	3,455	694,766
Lutjanidae	Scavenger	1,369	193,956	726	113,280	1,984	276,776	2,030	360,966	2,528	503,655
Lethrinidae	Snapper	1,959	235,797	1,849	258,568	1,196	152,614	1,324	203,633	1,658	323,542
Scaridae	Parrot fish	1,770	185,077	1,483	162,695	1,937	222,499	1,839	258,214	2,079	329,854
Serranidae	Rock cod	631	104,598	479	86,805	708	85,533	557	109,795	907	194,980
Haemulidae	Black skin/grunters	1,306	197,975	1,013	167,094	1,009	158,546	1,012	180,877	1,226	233,181
Mugilidae	Mullets	624	77,011	698	88,565	683	155,638	342	49,145	333	58,438
Acanthuridae	Surgeon fish/Unicorn	840	142,587	649	108,047	790	72,909	695	109,189	919	161,741
Mullidae	Goat fish	329	54,824	280	49,300	393	60,650	322	62,534	577	120,078
Mixed demersal	Mixed demersal	2,021	301,890	2,126	230,845	1,041	190,531	1,346	297,458	1,633	300,606
Gerreidae	Pouter	379	67,570	380	73,941	570	70,294	300	62,574	571	99,371
Scatophagidae	Streaker	313	74,094	258	72,505	89	7,888	236	40,373	124	25,234
Ariidae	Cat fish	179	22,708	194	22,898	347	45,326	250	32,087	453	72,339
TOTAL		13,727	1,926,966	11,994	1,722,579	13,228	1,894,864	12,605	2,220,331	16,129	3,059,347
PELAGICS											
Scombridae	Little Mackerels/Kingfish/tuna	1,894	323,292	2,737	363,699	1,953	444,091	1,613	270,112	6,160	1,361,382
Carangidae	Cavalla jacks/queenfish	943	174,412	1,553	170,879	820	174,894	1,011	183,079	1,412	331,997
Sphyraenidae	Barracudas	610	141,506	1,187	98,456	487	104,054	722	146,644	875	179,912
Clupeidae	Sardines	634	70,108	2,015	148,480	1,152	81,556	1,895	90,026	2,049	277,517
Istiophoridae	Sail fish	176	28,552	201	25,858	123	31,236	263	53,250	388	85,524
Xiphiidae	Swordfishes	-	-	-	-	137	23,153	-	-		
	Mixed Pelagic	610	95,182	756	154,276	959	189,502	904	189,170	1,253	210,990
Chanidae	Milk fish	266	51,348	292	31,932	154	34,188	140	31,745	212	40,153
Coryphaenidae	Dolphin fish	248	36,347	191	20,991	83	14,932	64	10,201	139	30,540
TOTAL		5,381	920,747	8,932	1,014,571	5,866	1,097,607	6,612	974,226	12,489	2,518,014
SHARKS &RAYS		770	128,870	564	103,399	758	156,170	1,260	185,739	1,080	218,530
Mixed species		253	39,363	179	24,770	278	60,920	393	68,880	350	46,891
TOTAL		1,024	168,233	743	128,169	1,037	217,090	1,652	254,619	1,430	265,420
CRUSTACEANS											
Palinuridae	Lobsters	424	407,971	347	426,966	449	391,072	582	492,843	567	1,120,284
Penaeidae	Crabs	664	266,601	641	287,424	667	289,377	800	353,602	1,012	438,382
Portunidae	Prawns	899	377,962	946	412,343	475	238,317	563	259,306	614	369,088
TOTAL		1,987	1,052,534	1,934	1,126,733	1,591	918,766	1,945	1,105,751	2,194	1,927,755
MOLLUSCS AND OTHERS											
Octopodidae	Octopus	1,430	261,686	939	224,547	962	186,794	1,358	263,977	2,220	591,477
Loliginidae	Squids	554	148,880	614	147,290	441	107,907	576	130,540	921	230,340
Sepiidae	Cuttlefish	-	-	-	-	-	-	-	-		
Holothuridae	Beche-de-mer	82	28,276	356	96,212	217	230,472	347	310,196	135	90,050
Bivalvia	Oysters	36	3,819	155	17,474	189	40,165	122	22,430	78	27,177
	Marine shells	-	-	-	-	117	142,046	162	209,729		
TOTAL		2,101	442,660	2,064	485,523	1,925	707,384	2,565	936,873	3,354	939,044
TOTAL MARINE		24,221	4,511,141	25,667	4,477,575	23,647	4,835,711	25,380	5,491,800	35,596	8,709,580

Table 3. 2 Marine fish landing by County in 2022

	KWALE		MOMBASA		KILIFI		TANA RIVER		LAMU		TOTAL	
DEMERSAL	**Kgs**	**'000 Kshs**	**Kgs**	**'000 Kshs**	**Kgs**	**'000 Kshs**	**Kgs**	**'000 Kshs**	**WT(KGS)**	**'000 Kshs**	**WT(KGS)**	**'000 Kshs**
Rabbit fish	1,517,489	338,515,132	415,587	126,218,346	350,079	97,126,659	15,136	2,331,480	1,156,500	130,574,815	3,454,791	694,766,432
Scarvenger	979,053	235,644,963	201,035	65,927,386	264,930	71,543,187	81,324	16,046,475	1,001,491	114,492,849	2,527,833	503,654,860
Snapper	474,163	86,251,334	91,687	28,834,280	391,369	105,531,386	296,367	56,973,722	404,366	45,951,139	1,657,953	323,541,861
Parrot fish	686,145	118,220,037	96,936	29,184,598	356,385	69,665,287	41,211	11,071,477	898,422	101,712,606	2,079,098	329,854,004
Surgeon fish	205,213	27,110,362	82,312	28,045,624	101,274	16,839,148	13,678	3,586,513	54,884	7,247,983	457,361	82,829,629
Unicorn fish	277,203	41,513,251	62,428	19,149,967	78,800	12,499,222	634	88,815	42,697	5,660,514	461,761	78,911,769
Grunter	79,931	17,770,178	75,816	21,496,353	35,251	7,656,780	936	134,918	184,988	22,783,588	376,923	69,841,817
Pouter	298,209	57,607,092	33,029	9,746,890	52,161	10,074,521	-	-	187,281	21,942,248	570,679	99,370,751
Black skin	252,748	40,577,886	145,919	49,499,649	187,371	39,750,057	20,743	4,814,673	242,606	28,697,360	849,387	163,339,625
Goat fishr	298,941	71,220,604	63,902	15,143,601	87,425	18,474,829	1,403	39,696	124,981	15,198,923	576,652	120,077,653
Steaker	76,923	17,530,316	853	220,584	18,543	4,016,133	1,115	125,426	26,373	3,341,857	123,808	25,234,316
Rock cod	318,769	68,173,290	75,608	24,287,621	304,517	73,186,719	41,477	8,097,197	166,673	21,235,320	907,044	194,980,147
Cat fish	156,079	29,906,401	30,186	6,194,784	127,179	18,510,518	37,226	5,411,078	102,716	12,316,215	453,387	72,338,996
Mixed dermasal	209,622	37,734,226	48,163	14,735,675	1,199,235	224,869,977	19,644	3,566,478	155,984	19,699,166	1,632,649	300,605,523
TOTAL	**5,830,489**	**1,187,775,072**	**1,423,461**	**438,685,358**	**3,554,520**	**769,744,423**	**570,895**	**112,287,948**	**4,749,961**	**550,854,581**	**16,129,326**	**3,059,347,383**
PELAGICS	-	-	-	-	-	-	-	-	-	-	-	-
Cavalla jacks	684,648	176,710,460	80,017	22,505,407	218,231	58,118,982	63,810	15,582,351	87,047	9,582,117	1,133,753	282,499,316
Mullets	107,946	20,329,159	30,489	8,777,969	61,377	12,883,616	3,271	526,248	129,481	15,921,256	332,564	58,438,247
Little mackerels	470,569	72,804,745	65,361	18,893,721	1,056,881	217,191,442	5,617	892,899	-	-	1,598,428	309,782,807
Barracudas	366,167	63,522,294	60,659	16,815,358	366,070	89,444,813	9,763	2,132,755	72,802	7,996,392	875,460	179,911,612
Milk fish	73,270	11,169,560	11,387	3,255,870	41,095	8,478,151	39,625	11,887,358	46,915	5,362,044	212,291	40,152,983
King fish	172,868	46,737,792	39,359	10,543,783	493,855	154,809,332	40,565	3,339,813	24,792	2,971,164	771,439	218,401,883
Queen fish	72,108	12,352,448	39,650	10,427,986	109,676	18,119,977	21,475	4,658,907	35,625	3,938,103	278,534	49,497,422
Sail fish	97,905	22,729,741	4,241	1,259,293	197,017	49,345,286	75,459	10,609,027	13,781	1,580,525	388,403	85,523,872
Bonitos/Tunas	767,091	157,645,962	365,922	92,440,142	1,353,265	336,038,369	767,091	173,740,929	536,698	73,331,839	3,790,066	833,197,242
Dolphin Fish	92,885	20,225,410	-	-	46,577	10,314,502	-	-	-	-	139,463	30,539,913
Mixed Pelagics	347,992	55,609,805	21,619	6,268,441	475,231	80,670,210	12,229	1,856,182	63,065	8,147,405	920,136	152,552,042
TOTAL	3,253,448	659,837,377	718,703	191,187,970	4,419,274	1,035,414,681	1,038,906	225,226,468	1,010,206	128,830,843	10,440,537	2,240,497,339
Sharks &Rays	593,058	116,127,406	133,319	32,477,351	243,332	40,709,991	33,390	3,173,037	77,208	26,041,719	1,080,308	218,529,503
Sardines	1,569,041	198,659,530	169,771	30,519,445	301,655	47,079,888	8,402	1,258,252	-	-	2,048,869	277,517,115
mixed fish/Others	158,103	11,612,418	110,563	23,901,985	-	-	27,787	2,884,465	53,583	8,491,851	350,036	46,890,719
TOTAL	2,320,202	326,399,354	413,653	86,898,781	544,987	87,789,878	69,579	7,315,754	130,791	34,533,571	3,479,212	542,937,337
CRUSTACEANS	-	-	-	-	-	-	-	-	-	-	-	-
Lobsters	235,044	195,821,452	26,022	46,778,458	96,592	215,252,365	15,456	9,795,790	193,926	652,636,356	567,040	1,120,284,422
Prawns	526,439	234,939,696	317,155	144,769,425	105,269	45,520,734	10,953	3,897,536	52,296	9,254,566	1,012,113	438,381,958
Crabs	**248,850**	**93,719,524**	**46,844**	**16,952,407**	**94,555**	**68,052,644**	**6,484**	**3,647,802**	**217,720**	**186,715,795**	**614,454**	**369,088,172**
TOTAL	**1,010,333**	**524,480,673**	**390,022**	**208,500,291**	**296,416**	**328,825,742**	**32,893**	**17,341,128**	**463,942**	**848,606,717**	**2,193,607**	**1,927,754,552**
MOLLUSCS AND OTHERS	-	-	-	-	-	-	-	-	-	-	-	-
Oysters	69,376	24,841,719	-	-	8,406	2,334,809	-	-	-	-	77,781	27,176,528
Beche-de-mer	80,152	24,623,426	-	-	15,658	5,901,465	4,892	1,467,487	34,090	58,057,481	134,791	90,049,859
Octopus	**1,579,057**	**414,085,061**	**103,582**	**32,703,990**	**343,513**	**107,867,834**	**63,728**	**14,947,589**	**130,343**	**21,872,783**	**2,220,224**	**591,477,256**
Squids	**651,728**	**148,397,382**	**99,300**	**32,784,300**	**124,095**	**44,084,007**	**28,593**	**2,328,894**	**17,163**	**2,745,416**	**920,880**	**230,340,000**
TOTAL	2,380,313	611,947,587	202,882	65,488,290	491,671	160,188,115	97,213	18,743,970	181,596	82,675,681	3,353,676	939,043,643
TOTAL MARINE	14,794,787	3,310,440,062	3,148,721	990,760,690	9,306,868	2,381,962,840	1,809,486	380,915,268	6,536,495	1,645,501,393	35,596,357	8,709,580,254

3.2 MARINE ARTISANAL LANDINGS

Fish catch by fishing gear in the marine fishery

The marine artisanal catch proportion by gear type in the year 2022 was dominated by Monofilament with 23% of the total catch. Ringnet, handline, gillnet beach seine and basket trap extracted 21%, 16%, 12%, and 9% of the total catch respectively.

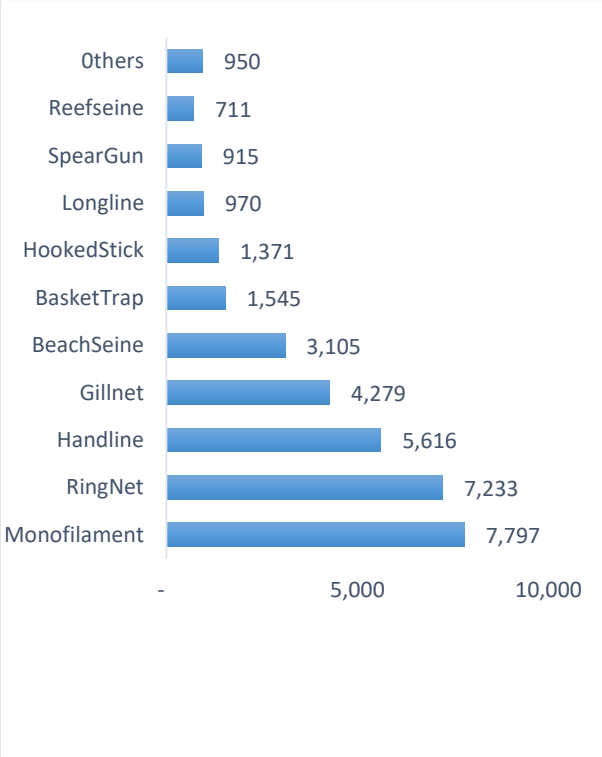


Figure 3. 4 Proportion of fish catches by gear type in 2022

In Kwale county, the top 5 gear that contributed highest proportion to the annual catches were ringnet, Monofilament, Beach seine, basket trap and hooked stick at 36%, 32%, 8%, 6% and 5% respectively. While the least contributor was cast net, scoop net, harpoon and dropline with less than 1% each

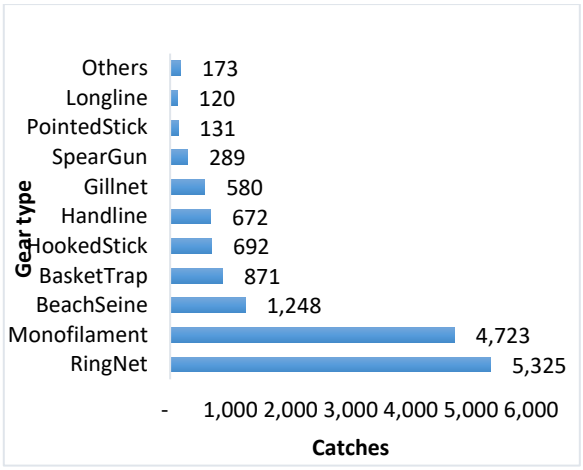


Figure 3. 5 Kwale county proportion of fish catches by gear type in 2022

In Kilifi, catch proportion by gear type in the year 2022 was dominated by Monofilament with 26% of the total catch. While handline, ringnet, gillnet, reef seine and basket trap extracted 24%, 16%, 13%, 6% and 4% of the total catch respectively.

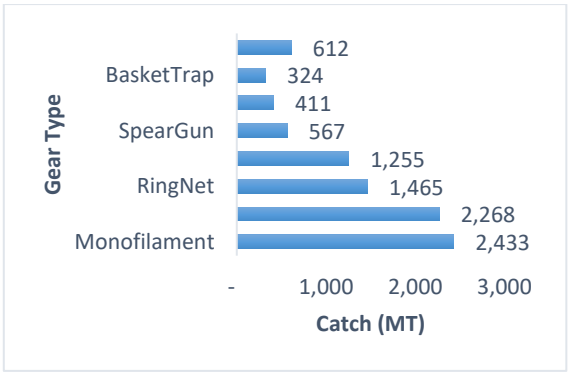


Figure 3. 6 Kilifi County proportion of fish catches by gear type in 2022

In Lamu County, the top 5 gear that contributed highest proportion to the annual catches were beach seine, gillnet, handline, Monofilament and

Hooked stick at 29%, 26%, 22%, 9% and 7% respectively.

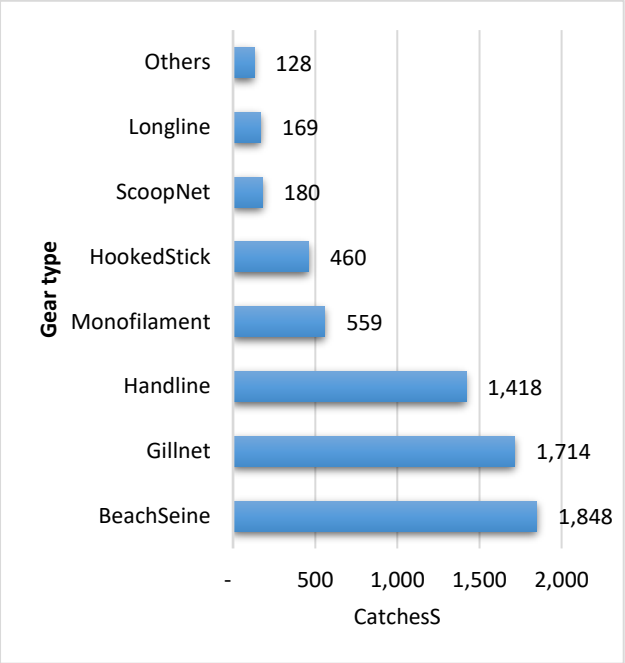


Figure 3. 7 Lamu county proportion of fish catches by gear type in 2022

In Mombasa County, the top 5 gear that contributed highest proportion to the annual catches were Handlines, longlines, gillnet, basket trap and cast nets at 31%, 18%, 13%, 10% and 10% respectively. While the least contributor was hand gatherers, scoop nets, hooked sticks and beach seine with less than 1% each

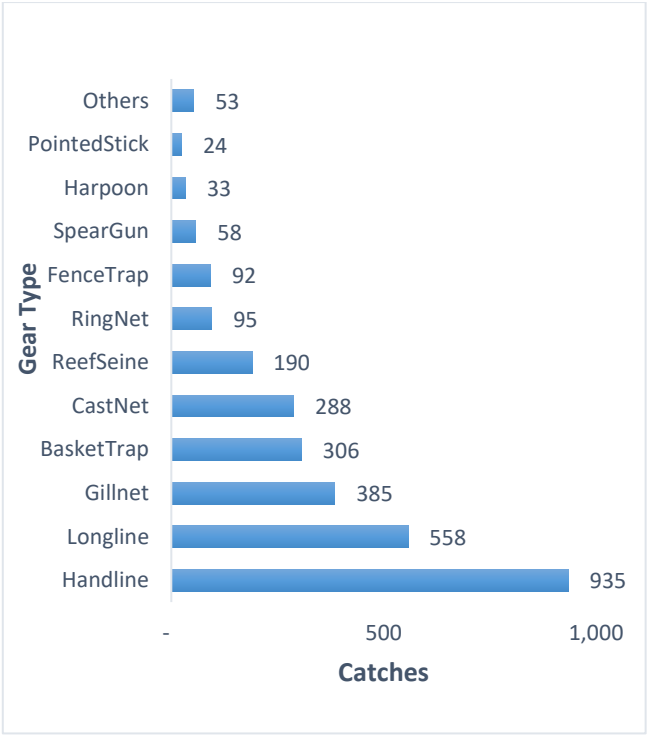


Figure 3. 8 Mombasa County proportion of fish catches by gear type in 2022

In Tana River County, of 1,195 mt of fish landed, ringnet and Gillnet contributed 29% each, while handline, monofilament reef seine and longline landed 27%, 7%, 4% and 4% of the total catch.

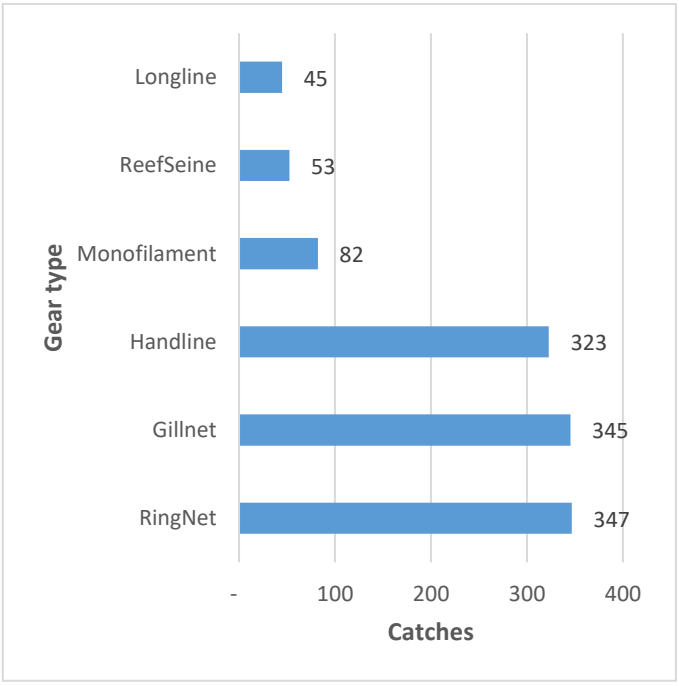


Figure 3. 9 Tana River County proportion of fish catches by gear type in 2022

3.4 MARINE INDUSTRIAL LANDINGS

The total landings from marine industrial fishery in the year 2022 was 1,898 MT. Data showed that from the total catch, 67% came from the trawlers while long liners and crabbers contributed 28% and 5% of the total catches respectively (Fig 1.3).

Table 1. 16 Total landings from marine Industrial Fishery in 2022

Fishery	Weight (Kg)	% Weight
Trawler	1,286,954.00	68%
Longliner	507,788.50	27%
Pot vessels	103,961.00	5%
	1,898,703.50	**100%**

Trawl Fishery

During the year under review, the industrial fleet had six (6) licensed and active trawlers.

A total of 1,286 M.tons of catch were landed by the industrial trawlers (Table 1.3).

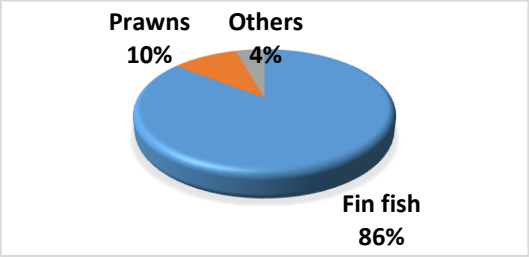


Figure 3. 10 Pie chart showing proportion of the major fish species caught through trawling

Table 3. 3 Table showing Trawl fishery production in 2022

Fish Species	Weight (Kg)	% Weight
Fin fish	1,101,519.00	86%
Prawns	128,700.00	10%
Others	56,735.00	4%
Grand Total	**1,286,954.00**	**100%**

The catch by the trawlers was composed of Finfish, Prawns and Others

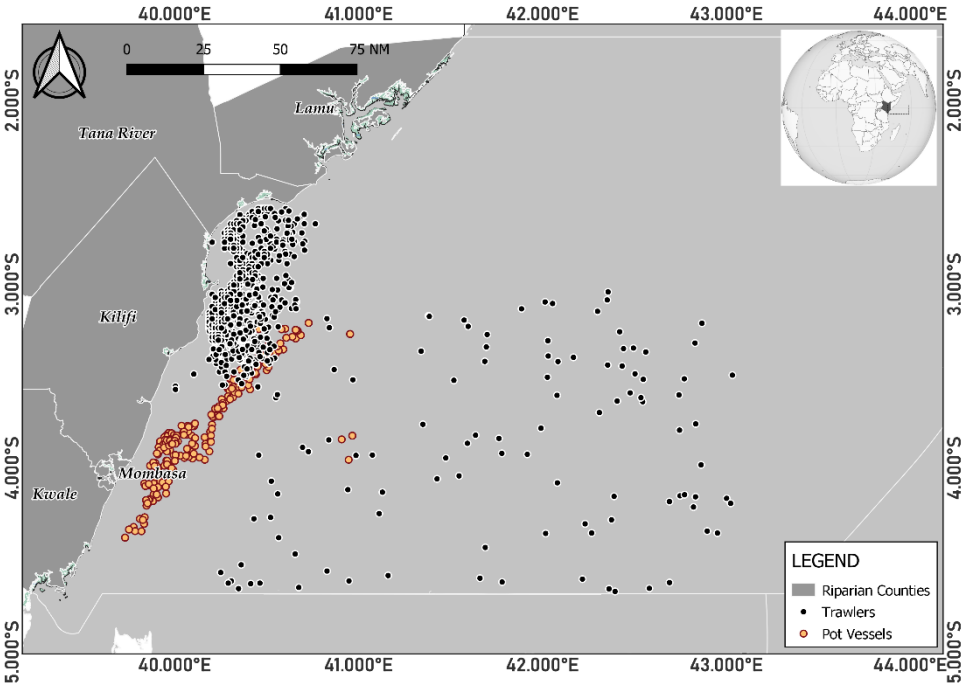


Figure 3. 11 Map showing fishing areas for Trawlers and Pot vessels

Deepwater crab pot fishery

Two (2) deep water crab pot vessels were licensed and active to fish beyond 12 nm in Kenyan waters. These vessels included the Diamond Ace 1 and MV Akhnaton. Both of the vessels targeted a crab fishery of the species *Chaceon fenneri*. During the year 2022, a total of 103 MT of crab was caught.

Table 3. 4 Total catch from the deep-sea pot-crab fishery, 2021

Vessel Name	Weight of Catch (Kgs)
Akhnaton	245
Diamond Ace 1	103,716
Total	**103,961**

Industrial longline fishery

The longline fishery mostly occurs beyond the 12 nautical miles, within the 200 nautical miles in the Kenya's Exclusive Economic Zone (EEZ) and the high seas. In 2022, three industrial longline vessels (Miss Jane, Newfoundland Alert and Seamar II) were active in the Kenya EEZ.

The fishing effort was based on number of days fished, the number of hooked deployed, average length of setline and hours fished per set. During the year 2022, 508 MT of assorted fish was landed 2020 (Table 3.5).

Table 3. 5 Quantity of fish landed by industrial longlining (2022)

Species	Weight (Kgs)	% Weight
Sword fish	260,962.00	51.4%
Fin fish	128,985.00	25.4%
Blue Shark	61,919.00	12.2%
Yellow fin Tuna	18,720.00	3.7%
Big eye Tuna	11,606.00	2.3%
Mako shark	9,137.00	1.8%
Silky shark	5,789.00	1.1%
Long Fin Mako	2,016.00	0.4%
Short fin Mako	1,901.00	0.4%
Others	5,269.50	1.0%
Black marlin	1,484.00	0.3%

Of the 508 MT landed, 51.4 % of the catch was composed of Swordfish while 25.4% was from Fin fish. Based on the catches reported, it's clear that most of the fishing was undertaken at night when the catches of swordfish outweigh those of the yellowfin and bigeye tuna, mainly caught during the day. Such targeting is mainly marketing based meaning swordfish market for the Kenyan long liners is more preferably compared to the tuna market. Bigeye 2.3%, Mako sharks 1.8%, yellow fin tuna 3.7%, silky shark 1.1% while others included; longfin Mako, black marlin, shortfin Mako, sailfish and oil fish as per figure 3 below.

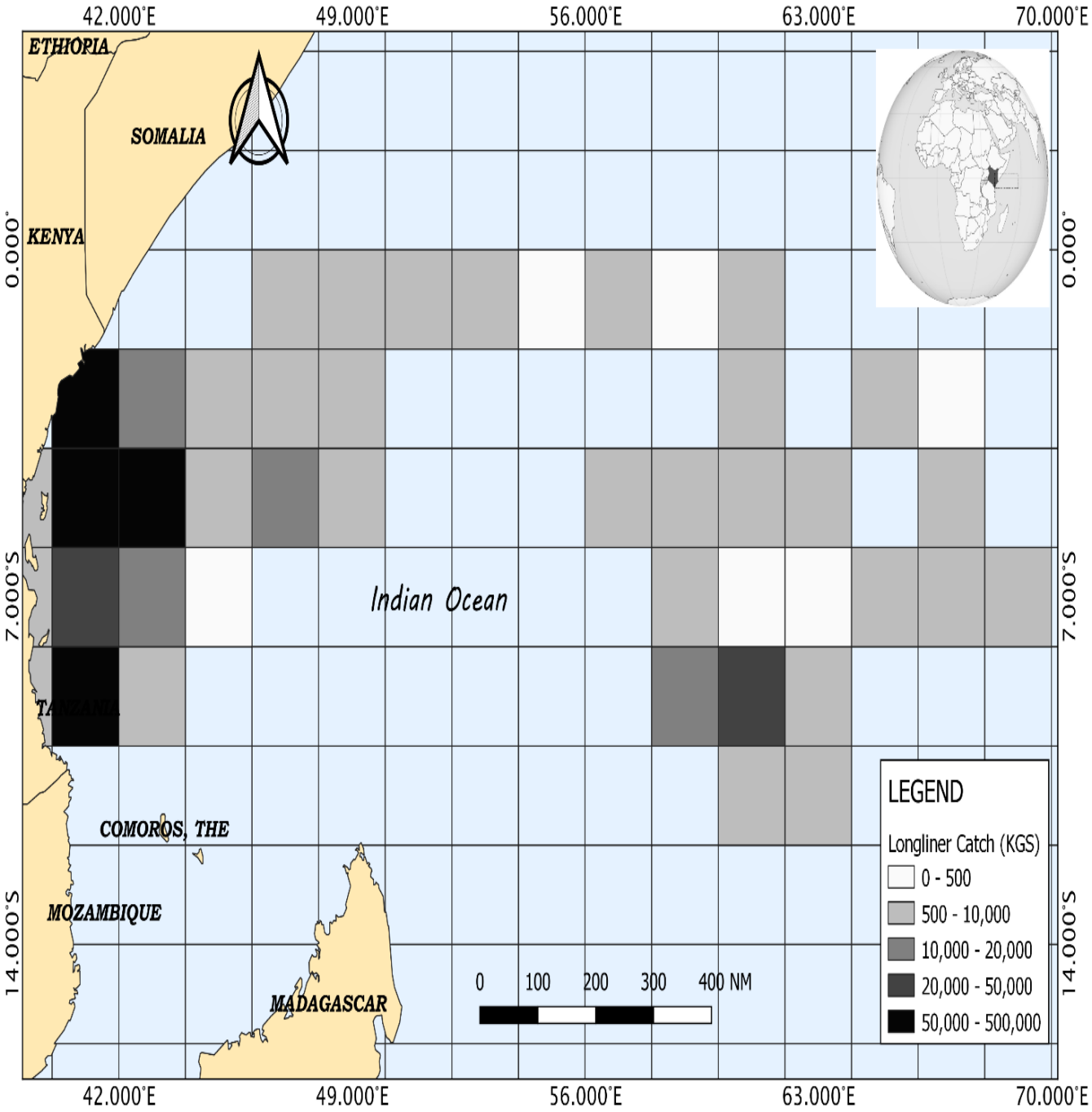


Figure 3. 12 Map showing grids (2º) of fishing areas and fishing intensity for long liners

4.0 EXPORTS OF FISH AND FISHERY PRODUCTS

During the period under review, a total of 13,557 MT of fish and fishery products were exported earning the country Ksh. 5.6 billion in foreign exchange. This represents 25.7% increase in volume of fish and fishery products exported in comparison to 10,782 MT in 2021. The main markets for the marine ornamental fishes were the EU, USA, China and Japan

Table 4. 1 Fish and fish products export by weight and value

Commodities	Weight in Kgs	Value in KSh
Mixed fish	9,115,345	1,672,875,603
Nile Perch	2,516,888	1,643,616,585
Swordfish	382,835	235,423,073
Crabs	378,824	143,481,845
Frozen fish Meat	290,040	103,988,989
Tilapia	282,928	8,061,670
Lobsters	268,248	257,837,331
Fish heads, tails and maws	128,980	1,424,071,303
Dogfish and other sharks	81,528	13,878,381
Live, fresh or chilled	34,252	25,982,782
Shrimps and prawns	32,030	46,853,865
Yellowfin tunas	11,324	5,190,646
Catfish	10,272	5,132,506
Bigeye tunas	9,223	3,895,511
Fishmeals	7,763	2,388,648
Shark fins	6,401	5,013,820
Mackerel	171	110,390
Hake	32	3,001
Sea snails	6	100
Skipjack/bonito	5	2,500
Grand Total	**13,557,095**	**5,597,808,547**

4.1 Aquarium fish exports

In 2022, 414,924 aquarium fish valued at Ksh. 565,873,015 were exported compared with an average of 498,908 aquarium fish valued at Ksh. 609,668,000 exported in 2021. This represented an 16.8% decline in the volumes of aquarium fish exported. The top 5 species in terms of value were Acanthururs spp, Chromis spp, *Zebrasoma sp.*, *Pomacanthus spp.*, *Pseudanthias Spp.*, *Chaeetodon spp. and Paracanthurus hepatus* (Table 4.2)

Table 4. 2 The composition of the top 30 most exported marine aquarium fish species in 2022

Aquarium Fish	Pieces	Value (Ksh.)
Acanthururs Spp.	17,915.0	82,924,364.4
Chromis Spp.	52,041.0	57,179,970.7
Zebrasoma Spp.	14,283.0	56,384,017.9
Pomacanthus Spp.	7,532.0	52,567,024.8
Pseudanthias Spp.	24,977.0	28,250,935.2
Chaeetodon Spp.	9,102.0	27,386,220.0
Paracanthurus Hepatus	16,337.0	27,163,007.1
Centropyge Spp.	16,797.0	24,177,794.1
Rhina Ancyclostoma	2,805.0	22,050,546.7
Valenciena Spp.	15,120.0	20,420,635.0
Ecenius Midas	13,260.0	16,602,130.0
Halichoeres Spp.	9,707.0	13,958,567.0
Nemanthias Spp.	15,691.0	13,541,674.3
Ctenochaetus Spp.	6,757.0	13,047,703.8
Salarias Fasciatus	16,886.0	10,503,328.4
Pseudocheilinus Spp.	10,948.0	9,521,420.9
Anthias Squannipinnis	20,300.0	9,416,104.3
Paracheilinus Spp.	7,648.0	9,042,498.1
Labroides Dimidiatus	14,262.0	8,709,444.0
Macropharyngodon Spp.	6,808.0	8,128,275.4
Anampses Spp.	5,129.0	7,010,499.3
Coris Spp.	4,325.0	5,767,998.4
Amphiprion Spp.	7,694.0	5,633,015.1
Ptereleotris Spp.	5,582.0	4,946,761.7
Doryhamphus Spp.	8,974.0	4,147,868.1
Canthigaster Spp.	4,801.0	3,837,061.9
Cirrhilabrus Spp.	5,259.0	3,709,288.4
Naso Spp.	2,898.0	2,983,800.4
Ostracio Cubicus	3,803.0	2,538,467.5
Others	67,283.0	14,322,592.1
GRAND TOTAL	414,924	565,873,015

4.2 Aquarium Invertebrate

The number of marine invertebrates' pieces exported in the year 2022, was 372,996 valued at Ksh. 21,988,220 as compared to 350,309 valued at Ksh. 19,955,100 which was a 43.7% increase volume.

The top 5 species being Lysmata grabhanii, *Nerita Polita*, *cerithium caeruleum*, Hippolysmata grabhanii, *and calibanus africanus*, (table 4.3)

Table 4. 3 The annual composition of the top 30 most exported marine invertebrate species in 2022

Aquarium Invertebrate	*Pieces*	*Total Value (Ksh.)*

Lysmata Grabhanii	24,225	3,213,530.00
Nerita Sp.	56,511	2,357,930.00
Cerithium Sp.	47,294	2,036,660.00
Hippolysmata Grabhanii	26,319	1,709,230.00
Calcinus Laevimanus	27,988	1,599,230.00
Calibanarius Africanus	27,018	1,012,610.00
Lunella Coronata	11,857	568,560.00
Lybia Tesselata	8,159	546,790.00
Tectus Pyramis	11,810	499,080.00
Heteractis Magnifica	2,770	489,420.00
Hymenocera Spp.	6,163	486,240.00
Dolabella Spp	8,229	463,740.00
Cypraea Moneta	11,420	444,490.00
Sarcophyton Spp.	1,751	423,680.00
Protula Superba	1,980	376,960.00
Clibanarius Africanus	23,445	373,900.00
Trochus Maculatus	6,628	330,910.00
Radianthus Spp.	1,884	324,950.00
Zoohantus Sp.	1,175	308,970.00
Stenopus Spp.	3,395	271,840.00
Lemnalia Spp.	1,468	222,590.00
Thor Amboinensis	4,846	220,530.00
Diadema Sp.	4,593	193,530.00
Stichodacryla Hellianthus	952	181,280.00
Neopetrolistes Sp.	3,680	175,340.00
Strombus Decarus	2,800	136,900.00
Rhynchocinetes Uritai	2,672	136,850.00
Sinularia Spp.	562	136,600.00
Cespitularia Sp.	640	130,850.00
Palythoa Natalensis	361	104,720.00
Others	40,401	2,510,310.00
GRAND TOTAL	**372,996**	**21,988,220**

4.3 Live Species Export

Table 4. 4 The annual marine live species exports in 2022

TYPE	QUANTITY (KG)	VALUE ($)
Live Clams	600	600
Live Crayfish	30	120
Live Deep-Sea Crabs	94,424	469,596
Live Lobsters	142,171	1,146,680
Live Mud Crabs	102,620	429,388
Live Sea Urchins	20	100
GRAND TOTAL	**339,865**	**2,046,484**

The fresh water aquarium fin fish species were harvested mainly from Lake Turkana and Tana River and included species such as Polypterus spp, Heterobranchus longifilis and Scatophagus tetracanthus.

Table 4. 5 The exported live freshwater species in 2022

FRESHWATER SPECIES	PIECES	TOTAL WEIGHT (KG)	TOTAL VALUE (USD)
Heterobranchus Longifilis	2	2	3
Polypterus Spp	308	57	414
Scatophagus Tetracanchus	90	0.9	90
GRAND TOTAL	**400**	**59.9**	**507**

5.0 IMPORTS OF FISH AND FISHERY PRODUCTS

In 2022, Kenya imported 12,694 MT of fish and fishery products worth Ksh 1.82 billion this being a 36 % reduction of quantities imported compared with 19,891 MT of fish and fishery products worth Ksh 2.5 billion imported in 2021. This is attributed to increased cost of freight and insurance in the aftermath of covid-19 pandemic. The imports were mainly composed of *Tilapia* 4,420 MT (35%), *Mackerel* 4,068 MT (32%) and *Nile perch* 991 MT (8%) of the total fish and fishery products imported during the year.

Generally, there was drastic decline in importation of all types of fish and products. The imports originated largely from China (67%), Tanzania (24%), Oman (4%) and Norway (2%) with most of the *Oreochromis niloticus* was imported from China, Tanzania and Uganda

Table 5. 1 Fish Imports by weight and value

Commodities	Weight (Kgs)	Value (Kshs)
Tilapias	4,420,570	818,643,867
Mackerel	4,068,182	547,690,271
Mixed Fish	2,878,637	165,666,052
Nile Perch	992,374	66,533,854
Atlantic Salmon	160,317	130,617,115
Sardines	54,000	5,928,758
Fish Heads, Tails and Maws	23,740	14,828,788
Fish Meals	20,452	210,939
Pacific Salmon	18,810	29,801,875
Catfish	18,426	9,235,095
Shrimps and Prawns	11,852	12,286,828
Frozen Fillets	7,498	5,205,160
Lobsters	6,402	4,041,784
Herrings	4,736	1,025,923
Hake	4,143	2,423,228
Trout	2,138	2,807,537
Anchovies	1,631	1,928,894
Crabs	790	496,628
Cods	5	27,442
Grand Totals	**12,694,703**	**1,819,400,038**

Table 5. 2 Origin of Fish imports by weight and value

Origin	WEIGHT (KGS)	VALUE IN KSH
China	8,533,036	1,379,746,585
Tanzania	3,026,323	78,062,534
Oman	518,072	69,384,484
Norway	192,322	175,518,812
Uganda	163,000	48,455,574
United Arab Emirates	62,415	7,543,695
India	51,399	6,064,574
Mauritius	26,000	4,682,968
Japan	24,345	4,719,084
South Africa	23,170	6,332,843
Vietnam	20,731	11,271,675
Somalia	20,215	4,817,164
Denmark	18,568	5,277,240
Namibia	3,995	4,741,292
Madagascar	2,992	1,275,887
France	2,457	5,434,581
Italy	1,623	1,919,481
Thailand	1,464	1,022,901
Saudi Arabia	999	818,528
Sudan	804	1,333,366
Singapore	244	359,981
Israel	194	343,096
Sri Lanka	191	97,621
Indonesia	132	165,739
United States Of America	7	6,180
Nigeria	6	4,153
Grand Total	**12,694,703**	**1,819,400,038**

ANNEXES

ANNEX 1 Fish species caught by gear type

NEM		***SEM***	
Species	**Common name**	**Species**	**Common name**
BASKET TRAP			
Siganus sutor	Shoemaker spinefoot	*Leptoscarus vaigiensis*	Marbled parrotfish
Leptoscarus vaigiensis	Marbled parrotfish	*Siganus sutor*	Shoemaker spinefoot
Scarus ghobban	Blue-barred parrotfish	*Scarus ghobban*	Blue-barred parrotfish
Siganus canaliculatus	White-spotted spinefoot	*Lutjanus fulviflamma*	Dory snapper
Lutjanus fulviflamma	Dory snapper	*Lethrinus borbonicus*	Snubnose emperor
MONOFILAMENT			
Chirocentrus nudus	Whitefin wolf-herring	*Rastrelliger kanagurta*	Indian mackerel
Rastrelliger kanagurta	Indian mackerel	*Siganus sutor*	Shoemaker spinefoot
Selar crumenophthalmus	Bigeye scad	*Lethrinus lentjan*	Pink ear emperor
Lutjanus fulviflamma	Dory snapper	*Lutjanus fulviflamma*	Dory snapper
Siganus sutor	Shoemaker spinefoot	*Selar crumenophthalmus*	Bigeye scad
GILLNET			
Thunnus albacares	Yellowfin tuna	*Scomberomorus plurilineatus*	Kanadi kingfish
Lethrinus harak	Thumbprint emperor	*Lethrinus mahsena*	Sky emperor
Scomberomorus plurilineatus	Kanadi kingfish	*Lobotes surinamensis*	Tripletail
Chirocentrus nudus	Whitefin wolf-herring	*Siganus sutor*	Shoemaker spinefoot
Panulirus ornatus	Ornate spiny lobster	*Leptoscarus vaigiensis*	Marbled parrotfish
HANDLINE			
Selar crumenophthalmus	Bigeye scad	*Selar crumenophthalmus*	Bigeye scad
Rastrelliger kanagurta	Indian mackerel	*Siganus sutor*	Shoemaker spinefoot
Scomberomorus commerson	Kanadi kingfish	*Uroteuthis (Photololigo) duvaucelii*	Indian squid
Sphyraena jello	Pickhandle barracuda	*Scomberomorus commerson*	Kanadi kingfish
Lethrinus rubrioperculatus	Spotcheek emperor	*Lutjanus fulviflamma*	Dory snapper
LONGLINE			
Pristipomoides filamentosus	Crimson jobfish	*Sphyraena obtusata*	Obtuse barracuda
Chirocentrus nudus	Whitefin wolf-herring	*Parupeneus macronemus*	Long-barbel goatfish
Scomberomorus commerson	Kanadi kingfish	*Cheilio inermis*	Kanadi kingfish
Epinephelus undulosus	Wavy-lined grouper	*Parupeneus barberinus*	Dash-and-dot goatfish
Pomadasys multimaculatus	Cock grunter	*Arius africanus*	African sea catfish
RINGNET			
Selar crumenophthalmus	Bigeye scad	*Selar crumenophthalmus*	Bigeye scad
Sphyraena flavicauda	Yellowtail barracuda	*Hemiramphus lutkei*	Lutke's halfbeak
Rastrelliger kanagurta	Indian mackerel	*Sphyraena obtusata*	Obtuse barracuda
Hemiramphus lutkei	Lutke's halfbeak	*Euthynnus affinis*	Mackerel tuna
Sphyraena obtusata	Obtuse barracuda	*Auxis thazard*	Frigate tuna
BEACH SEINE			
Penaeus indicus	Indian white prawn	*Leptoscarus vaigiensis*	Marbled parrotfish
Lethrinus lentjan	Pink ear emperor	*Pelates quadrilineatus*	Fourlined terapon

Leptoscarus vaigiensis	Marbled parrotfish	*Siganus sutor*	Shoemaker spinefoot
Siganus sutor	Shoemaker spinefoot	*Lethrinus lentjan*	Pink ear emperor
Pelates quadrilineatus	Fourlined terapon	*Gerres oyena*	Common silver-biddy
REEFSEINE			
Selar crumenophthalmus	Bigeye scad	*Siganus sutor*	Shoemaker spinefoot
Rastrelliger kanagurta	Indian mackerel	*Leptoscarus vaigiensis*	Marbled parrotfish
Sphyraena flavicauda	Yellowtail barracuda	*Euthynnus affinis*	Mackerel tuna
Sphyraena obtusata	Obtuse barracuda	*Lethrinus harak*	Thumbprint emperor
Decapterus macarellus	Mackerel scad	*Siganus stellatus*	Brown-spotted spinefoot
TROLLING LINE			
Thunnus albacares	Yellowfin tuna	*Thunnus albacares*	Yellowfin tuna
Scomberomorus commerson	Narrow-barred Spanish mackerel	*Katsuwonus pelamis*	Skipjack tuna
Caranx sexfasciatus	Bigeye trevally		
Coryphaena hippurus	Common dolphinfish		
Caranx papuensis	Brassy trevally		
HARPOONS			
Rastrelliger kanagurta	Indian mackerel	*Octopus vulgaris*	Common octopus
Octopus vulgaris	Common octopus	*Sphyraena obtusata*	Obtuse barracuda
Leptoscarus vaigiensis	Marbled parrotfish	*Hyporhamphus dussumieri*	Dussumier's halfbeak
Siganus sutor	Shoemaker spinefoot	*Leptoscarus vaigiensis*	Marbled parrotfish
Scomberoides tol	Needlescaled queenfish	*Siganus sutor*	Shoemaker spinefoot
TRAPS			
Siganus sutor	Shoemaker spinefoot	*Leptoscarus vaigiensis*	Marbled parrotfish
Leptoscarus vaigiensis	Marbled parrotfish	*Scarus ghobban*	Blue-barred parrotfish
PRAWN SEINE			
Penaeus indicus	Indian white prawn		
Pellona ditchela	Indian pellona		
Trichiurus lepturus	Largehead hairtail		
Bagrus docmak	Semutundu		
Otolithes ruber	Tigertooth croaker		
HOOK AND STICK			
Octopus vulgaris	Common octopus		
Acanthurus nigrofuscus	Brown tang		
Parupeneus barberinus	Dash-and-dot goatfish		
Leptoscarus vaigiensis	Marbled parrotfish		
Lethrinus lentjan	Pink ear emperor		
CASTNET			
Scarus ghobban	Blue-barred parrotfish		
Leptoscarus vaigiensis	Marbled parrotfish		
Lutjanus fulviflamma	Dorry snapper		
Siganus sutor	Shoemaker spinefoot		
Parupeneus barberinus	Dash-and-dot goatfish		
SCOOPNET			
Panulirus penicillatus	Pronghorn spiny lobster		
Epinephelus flavocaeruleus	Blue-and-yellow grouper		