TUNA FISHERY IN KENY
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In Kenya, Tuna fishery is carried out artisanally and industrially. Artisanal fishermen sell their catch to the domestic market while Industrial fishermen process and export to the European Union market. Fishing is mainly confined to the coastal waters up to 50 meters depth. At Ungwana Bay, fishing has been extended to groups up to 200 meters for deep-water lobsters, prawns and demersal fishes. The larger pelagic fishes comprise the tuna and tuna-like species and the larger carangids, which are caught in large numbers between 15–200 meters depth mostly in June and July.

Surveys on marine fisheries resources of Kenya dates back from 1951 when the East African Marine Fisheries Research Organization was formed, during which time the emphasis was on pelagic species. During the surveys on pelagic fishes between 1951 and 1954 catches of 0.52 kg/line/hr were obtained. 22% of the total catch was *Scomberomorus commerson* (Williams, 1956). In the same survey it was observed that tunas, especially the yellow fin tuna *Thunnus albacares* was present throughout the year, but with marked increase during the Southeast monsoon and very close to the shore up to 4 km off-shore. Other tunas that were found in the area were Albacare *Thunnus alalunga*, the dogtooth tuna *Gymnosarda unicolor*, small tuna *Euthynnus affinis* and skipjack *Katsuwonus pelamis*. Although these species were found within the Kenya waters they are unexploited.

The Norad report states that Tunas are unique among fishes in having limited thermo-regulatory capacity. Blood can be shunted through vessels close to the skin, or along the vertebrae in order to conserve or dissipate heat. Their preferred temperature range is however fairly limited (Table 1) and prolonged excursion outside this range can result in death.

Table 1: Temperature preference and Oxygen tolerance of main SWIO tunas.

Common name	Scientific name	Temperature preference	Oxygen tolerance (10 minute) 50–70cm tuna
a) Skipjack	-*Katsuwonus pelamis*	20–32°C	2.5–3.0 ml/L
b) Yellowfin	-*Thunnus albacares*	23–32	1.5–2.5
c) Big-eye	-*T. obesus*	11–23	0.5–1.0
d) Albacore	-*T. alalunga*	15–22	1.7–1.4
e) Little tuna	-*Euthynnus*	18–29	

(Kawakawa)	*affinis*		

Another characteristic of the tunas is the limited development of their swim bladders. Skipjack have no swim bladder, while in the other species, only the older individuals develop one; concurrently with an increase in body fat which reduces density.

As a consequence, tuna have to swim continuously to avoid sinking. This effect is particularly marked for skipjack and juveniles of the other species. Their metabolic requirements are therefore very high, and in consequence, their requirements for food and oxygen

Tuna are not primarily surface-dwelling species, they generally inhabitat the temperature oxygen stratum which suits them - often close to the thermocline - and make more-or-less brief excursions to the surface or to greater depths, despite possibly stressful temperature or anoxic conditions in one case or the other.

It has been proved, nevertheless, that there is a direct relationship between the productivity of purse seining and the emergence of the 15°C and 23°C isotherms above the maximum and minimum immersion depths of purse seines. This may be related to the more frequent presence of tuna schools at the surface under these conditions, as there are many examples of tuna diving out of seines through the thermocline, and early results from the SWIO purse seine fishery indicate that many successful sets are made despite a deep thermocline. This is also confirmed by the co-existence in this area of longline and purse seine fisheries, which had previously thought to be mutually exclusive in that longlines, fishing typically between 50 and 200m deep, would normally be in conditions inhospitable to tunas where the thermocline is shallow and structured.

THE ARTISANAL TUNA FISHERY

The fishermen are estimated to spend 6 to 9 hours a day to fish and land the catch. In the annual fisheries reports by the Ministry of Fisheries, Tuna are put together with Bonitos because they ate never identified individually. The different species are also not isolated. Among the districts bordering the Indian Ocean, the lowest tonnage of Tuna is landed at Mombasa while the highest tonnage is landed at Kwale on the border of Tanzania. Tuna landing has shown variation up to 2008 as shown in the Table 2.

Table 2: Tuna landing by artisanal fishermen in Kenya.

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Metric Tons	57	57	70	72	150	116	108	114	114	107

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008

Metric Tonnes	86	184	165	267	397	337	233	185	320

Artisanal fishermen use ring nets whose number has increased from two in 2006 to 15 in 2008.

THE INDUSTRIAL TUNA FISHERY

Kenya has licensed the vessels listed below to fish for Tuna in the EEZ. They are mainly purse seiners and long liners.

1. Albaca
2. Via Euros
3. Via Misra
4. Inter Tuna UNO
5. Playa De Aritzatxu
6. Albatun Dos
7. Txori toki
8. Xixili
9. Demiku
10. Via Avenir
11. Albacora cuatro
12. Doniene
13. Zuberoa
14. Izurdia
15. Elai elai
16. Erroxape
17. Campolibre Alai
18. Alakrana
19. Almadraba Dos

Some of these vessels send their catch to the processors in Kenya through the following merchant ships.

1. Nikerie
2. Terso
3. Marspora
4. Green Ocean
5. Serene reefer

In Kenya Wanainchi Marine Products Industries are the main Tuna loin processors. Other licenced industries processing Tuna loins include Shimko, Trans Africa and Sea Harvest.

Tuna loins exports have gradually increased but seems to fluctuate as shown below:

Year	Metric Tonnes
2000	4,058
2002	2,697
2003	3,747
2004	10,651
2005	17,997
2008	15,000