

Content: Underutilized gems in our Kenyan waters

#NORTH KENYA BANKS #Food Security

## KMFRI oceanographer puts into context Lamu's rare Sardine run phenomenon

BY JANE KIGUTA

A rare phenomenal spectacle at the North Kenyan Banks (NKB) in Lamu County might just be the latest sensation among the residents. The region experienced sardine run early July this year, an incident which is usually characterised by dozens of pelagic fish that swim to shallow waters for safety in a dramatic escape from innumerable marine predators that usually converge to feast on them.

And who knows, just like the great wildebeest migration, it might as well become a major attraction in Lamu besides the county's rich Swahili culture, stunning beaches, breath-taking architecture, lyrical Taarab music and hordes of donkeys that crisscross through the town's narrow pathways.



Donkeys in Lamu Town are the main mode of transport



Beached sardine and predator fish in Lamu / Photo Courtesy

Before I bring you up to speed, you probably watched the footage - an exhilarating short video that was doing rounds on Twitter and WhatsApp groups early July this year, showing small and large fish stranded on a beach in Lamu. In the video clip, fishermen could not help but collect the landed 'catch' that could only be likened to manna from heaven.

And as the broad range of online users shared the clip, they had varied explanations of the rare happening. While some held that the fish were a bountiful harvest by fishermen, others were of the view they could have been swept ashore by strong currents.

### Marine creatures got beached...

So, what is this all about sardine run and how did the fish end up beached? "The North Kenya Bank region experienced a sardine run in July this year that beached at Lamu, home to North Kenya Banks," confirms KMFRI's Oceanography and Hydrography Assistant Director Dr Joseph Kamau.

"When sardines flee from their predators to shallow waters they deplete oxygen due to their enormous numbers, become stranded, and are unable to escape the falling tide," explains Dr Kamau.

And during the sardines' escape, the marauding fish give chase only to end up stranded out of the waters

together with their prey. “Beaching causes even the large predators to suffocate and die in the melee,” the research scientist adds.



Top, KMFRI's Dr Kamau pays a courtesy call on Lamu Chief Fisheries Officer Mr Simon Komu. Below, a brief presentation.

## High fish productivity at North Kenya Banks...

The research scientist says the high windy season experienced in June and July provide for much higher productivity in fishery.

“The River Tana discharges about 7 million tonnes of sediments into the ocean annually. These sediments are deposited in the area around the North Kenya Bank (NKB). It is this mountain of Tana River sediments that are perturbed during the South East Monsoon as the East African Coastal Current (EACC) gains its northerly momentum, thereby causing the seeding of the NKB system with nutrients deposited by

the Tana River from the fertile catchment area, enhancing productivity and the fishery stocks,” Dr Kamau explains. According to research findings, he says the sediments also support a thriving deep-water crab fishery.



Ngomeni fisherman displays freshly caught lobsters /Photo by Milton Apollo

“The high productivity during the South East Monsoon season enhance the occurrence of small pelagic fish drawing predators such as the tunas, sharks, and marlines which round up the sardines,” says the Chemical Oceanographer. “The increased numbers of sardine create a feeding frenzy for higher predators,” adds Dr Kamau.

## Reduced fishing by artisanal fishers...



Ngomeni fishermen at dawn get ready to sail / Photo by Milton Apollo



Artisanal boats used for fishing in Lamu

“Ironically the South East Monsoon season is associated with low artisanal fishing activity despite its high fishery potential, this being mainly attributed to rough seas and inappropriate fishing gears,” says Dr Kamau.

He observed that boats used by artisanal fishermen are therefore not able to venture deep into the waters. “As such, fishermen are not able to effectively harness this bounty at its peak,” he says. “Some fishers use wooden boats that are wind-propelled and cannot sail beyond 5 nautical miles within the 15 nautical miles of Kenya’s territorial waters,” adds Lamu County’s Chief Fisheries Officer Mr Simon Komu.

According to Dr Kamau, reduced fishing activities increases the number of pelagic fish such as sardines, which are usually prey to the larger fish.

“The fishing gears vary with fishing zones and fish species. In Faza, fishermen use beach seine, whereas hand lines and longlines are used in Amu, Shella and Kiwayu. In Kizingitini, fishermen snorkel to catch lobsters and big meshed nets are used to capture big fish such as sharks and rays in Kiwayu,” says Mr Komu.

The North Kenyan Bank has been identified as an important emerging fishery that is expected to spur economic growth for the local fishing communities and boost food security.

This is so because artisanal fishers have depleted fish stocks in the narrow continental shelf waters, and are now advancing towards the North Kenyan Banks, which is largely unexploited, in search of fish.

Common fish species found in Lamu include sailfish, kingfish, snappers, and tuna. Tunas are elongated, streamlined, rounded body, slender tail, and generally dark and silverish.



Top, a fisherman gets his share of red snappers shortly after the catch landed at Ngomeni. Below, a loader shows off a huge tuna before loading it into a truck. Tunas are high-value fish in Lamu.

Photos by Milton Apollo



Fishermen offload iced red snappers from storage boxes in the fishing boats / **Photo by Milton Apollo**

## Fish productivity is key...

Kenya's rich marine fishery grounds are mainly located in the Northern and Southern regions. The southern region borders the Pemba channel whose interaction with the features on Pemba Island helps to drive the surrounding marine waters productivity, research shows. The Island's geophysical features interaction with currents develop local eddies and wakes enhancing nutrients mineralization.



Ngomeni residents wait for the catch to land / **Photo by Milton Apollo**

"Whereas the Southern region's productivity is presumed to be enhanced by its proximity to the Pemba Island, the Northern region is located in a

complex system prone to a multitude of factors that may cause, or influence the strength of the shelf-edge upwelling," says Dr Kamau.



A girl prepares fish for cooking/ **Photo by Milton Apollo**



Youths gut landed fish / **Photo by Milton Apollo**

"More so the wind field, and the interaction of the current with the topography which may synergistically cause the upwelling to occur," Dr Kamau adds. The South East Monsoon and North east Monsoon seasons predominantly determine the physical processes the area experiences.

Research indicates the East African Coastal Current (EACC) and the Somali Current are two major currents that influence the physical processes within Kenyan waters. Depending on the monsoon season, the interaction of these two currents either synergise or antagonise each other.

Further, during the North East monsoon, the Somali current reverses to flow southwards meeting with the northerly flowing EACC, forcing water mass outflow in a south easterly direction via the South Equatorial Counter Current (SECC).

The outflow of water mass triggers cold nutrient rich waters to fill in the void enhancing productivity.

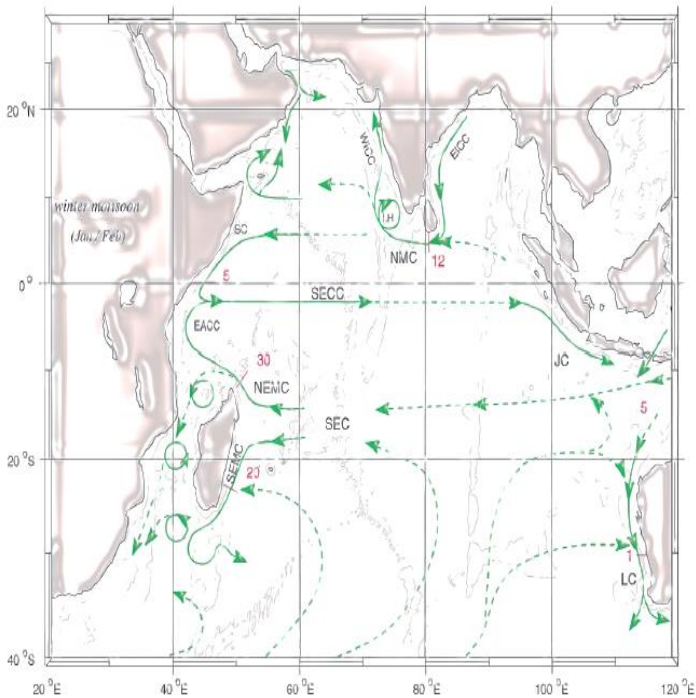
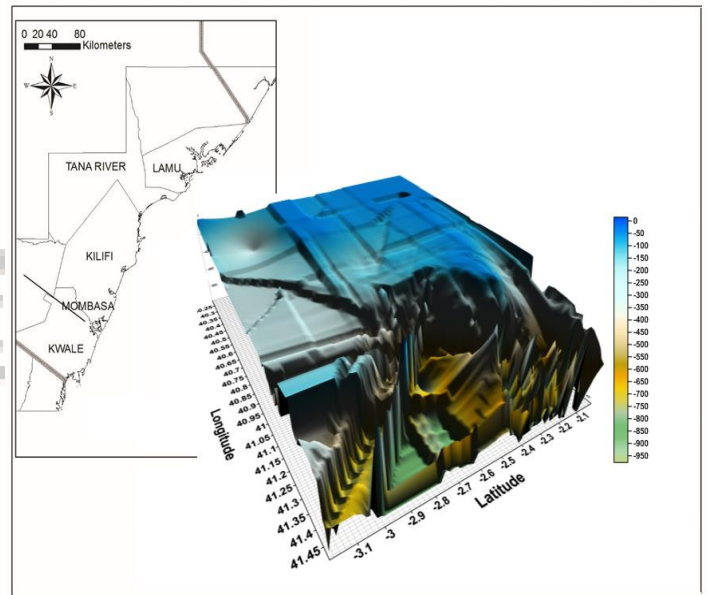


Figure showing currents during the North East monsoon season

Lamu is on the north of Kenya's Indian Ocean coast. It borders Tana River and Garissa counties and shares the Indian Ocean coastline with four other counties to the south — Kilifi, Kwale, Mombasa and Tana River.



Topographic feature of the North Kenya Bank generated by acoustic soundings on board RV. Mtafari.

Data obtained by a team of experts from KMFRI suggest the fate of Tana River sediments might be at the deep edges of the NKB. It has now emerged that the recent crab fishery thriving on the deposited sediments is located along the deep edges of the NKB.



Lobsters caught at the North Kenya Bank / Photo by Milton Apollo