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BY JANE KIGUTA

#BeatMarinePollution #TrashFreeSea @KmfriResearch

KMFRI women join blue economy stakeholders in Womesa beach clean-up exercise

Kenya Marine and Fisheries Research Institute (KMFRI) women volunteers participated in a beach clean-up exercise organized by Women in the Maritime Sector in East and Southern Africa (WOMESA) - Kenya Chapter, a move aimed at conserving marine ecosystems. The activity held on 9th April, 2022, started at Copa Cabana Beach in Mtwapa and covered Kanamai landing sites in Kilifi county.

The joint clean-up exercise was also aimed at strengthening KMFRI's collaborations and partnerships, as well as enhance networks with prospective and existing public and private agencies that the institute works with.

The ocean is not only home for fish - a rich source of protein for human diet - but is also a source of oxygen. In this way, it drives global systems that make the earth habitable and boosts livelihoods through employment creation. Regular beach clean-ups, therefore, are critical in boosting the health of the ocean by stopping land-based litter from finding its way to the waterways where it interferes with marine life.

Speaking during the event, WOMESA-Kenya Chapter vice chair Ms Joyce Marangu Awino said the activity was an effort towards conservation and restoration of marine ecosystem.



KMFRI women volunteers during the beach cleanup in Mtwapa



KMFRI volunteers display the amount of litter collected

"I hope that through this exercise we have convinced you of the importance of our beaches that serve multiple uses. Mainly they sustain our livelihoods, are used for sporting activities, tourism and diverse business activities. We therefore must conserve their health by maintaining cleanliness for posterity of coming generations," Ms Awino said.

She urged citizens to avoid littering the environment saying most of the land-based trash end up in the ocean, only to choke the aquatic resources.

Reports show some sea-turtles have suffocated to death after getting entangled in derelict nets.



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About 434kg of trash was collected along Mtwapa and 315kg in Kanamai during the clean-up.

“You can see the amount of trash that has been picked. There is no doubt that most of marine litter originates from land,” Ms Awino noted. It is hoped that regular beach cleanups will reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.

The event also targeted Beach Management Units (BMUs) to equip them with knowledge on how they can help to mitigate the effects of pollution caused by abandoned, lost, or discarded fishing gear (ALDFG) in Kilifi county.

In February this year, KMFRI marine pollution research expert Dr Eric Okuku, in a forum with BMUs at Mombasa headquarters, unveiled plans to replace nylon fishing nets with gears made from biodegradable natural fibres to combat ghost fishing.

This is because fishing gears made from synthetic materials do not rot and hence if lost during fishing activities ‘continue to fish’ - they trap other marine organisms or entangle them leading to deaths.



Beach cleanup activities at Copa Cabana beach in Mtwapa

Representing KMFRI, research scientist Ms Linet Kiteresi acknowledged that KMFRI works closely with fisher communities in executing her research mandate, and the Institute will continue to publish and communicate quality research findings to inform policies in the marine sector.

Whereas harsh effects of climate change contribute to rising water temperatures that have resulted in coral reef bleaching and degradation, marine pollution is partly to blame. This justifies the commitments under the Blue Economy to prevent further decline of the marine resources by taking good care of the ocean, which can be partly achieved by cleaning the beaches regularly, and creating awareness on the importance of the ocean.

And while we applaud regular beach clean-ups as a necessity in reducing marine debris, KMFRI researcher Mr Charles Mitto has in the past warned that it may not be the ultimate solution to microplastic pollution. According to studies conducted by the researcher, plastic debris can be broken further into microplastics and ingested by fish. These particles end up in our plates. Cognizant of this fact, citizens are urged to avoid single-use plastics to minimize littering. BMUs have also been encouraged to erect notices that discourage plastic littering.



KMFRI staff follow proceedings at the arena event.



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KMFRI's participation in the beach clean-up is one way of demonstrating her support to the achievement of the United Nation's Sustainable Development Goal 14 - protecting life below water - which calls nations to conserve and sustainably use the oceans, seas and marine resources.

Under the Kenya's Blue Economy Agenda, a healthy ocean is vital in boosting livelihoods. This is through exploitation of marine resources to generate more wealth to improve the overall economy of the country. But this will remain a mirage if appropriate actions are not taken to reverse the decline of ocean resources.



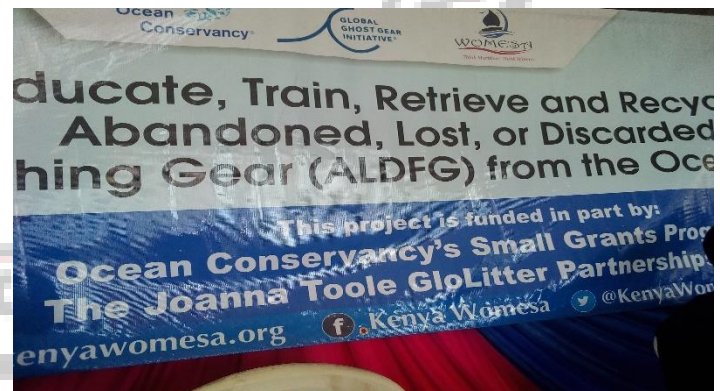
Beach cleanup exercise along Mtwapa beach

WOMESA was initiated by the International Maritime Organization (IMO) and launched in December 2007, in Mombasa, Kenya. The WOMESA-Kenya beach clean-up is part of the GloLitter Partnerships (GLP), a Project funded by the Norwegian Agency for Development Cooperation (Norad), and led by the IMO in partnership with the Food and Agriculture Organization of the United Nations (FAO) and Ocean Conservancy.



Participants gather trash collected.

Other blue economy stakeholders that KMFRI works closely with that took part in the clean-up supported by the Kilifi County Government included representatives from various Beach Management Units (BMUs), Kenya Ports Authority (KPA), Kenya Maritime Authority (KMA), Kenya Coast Guard Services (KCGS) and Wild Wide Fund for Nature (WWF). Oceans Alive also attended the function.



A banner displayed at the event



BY MIRIAM WAINAINA, SHEBAN HINZANO & MORINE MUKAMI *Edits: Phionalorna Nzikwa*
#Aquaculture #GiantFreshwaterPrawns

Unlocking the potential of giant freshwater prawn farming through hatchery based seed production

The average national per capita consumption of fish in Kenya is poor (3.7kg/person/year) compared to the global average rate nearing 20kg/person/year. Increased demand for food fish due to population increase is likely to worsen the current situation.

To meet the rising demand, aquaculture needs to grow and expand to support food security efforts and provide quality nutritious food. Diversification of aquatic organisms under aquaculture will help the sector in two folds; provision of more options to consumers as well as the creation of sustainable livelihoods needed for job creation.

What is Giant freshwater prawn (GFWP)?

The giant freshwater prawn is the largest member of *Macrobrachium*, a genus of freshwater prawn meaning “large arm” and is found together with crabs, shrimp, crayfish, and lobsters in the order *Decapoda*. The genus *Macrobrachium* is represented in the tropics and sub-tropics. Most members of the genus are amphidromous meaning their larvae are born in freshwater, migrate to estuaries, and return to freshwater to grow to the adult stage.

Wild GFWP supply dynamics and challenges

KMFRI mariculture team made a maiden study in Kilifi County to assess the needs for GFWP aquaculture to guide production developments. The need assessment study focused on; fish farmers to examine their interest, create awareness, and investigate their



GFWP brooders; male with elongated cheliped

aquaculture competency status needed to adopt GFWP. Further, the study engaged GFWP fishermen predominately at river Sabaki to aid in understanding the dynamics of the fishery.



Left, KMFRI team undertaking a rapid survey of the freshwater prawn landings at Sabaki river landing point. Right, researchers evaluating the farmer's competency levels and training needs for uptake of GFWP

The team noted that GFWP landings have distinct seasonality patterns for May and June peaks for postlarvae in July. The main fishing ground in the county is near the river Sabaki mouth. The fishermen recorded that GFWP fishing is predominately unselective where mixed sizes are landed (adults, postlarvae, beered females). However, the shrimp mongers (main player in the value chain) prefer large



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size due to customer preference. Unfortunately, they are compelled to buy what fishermen land to make ends meet.

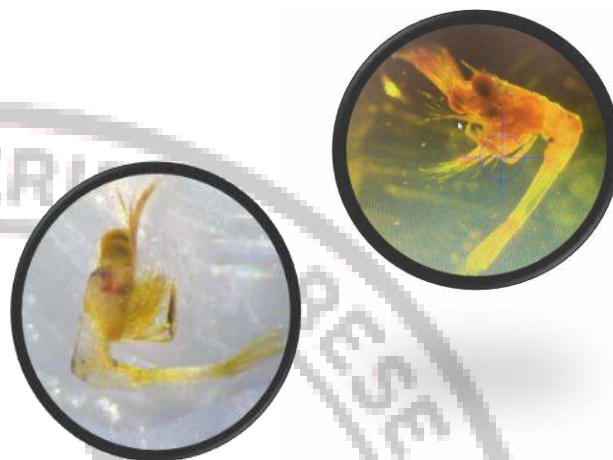
The GFWP fishery has not been immune to the effects of climate change; for instance, unpredictable weather patterns such as flooding and prolonged drought have affected postlarvae (PL) recruitment leading to reduced landings according to the fishermen.

GFWP in aquaculture

The GFWP has been prioritized as an excellent candidate for aquaculture to supplement marine prawns landed in the wild. Though Penaeids shrimp are still more popular in Kenya compared to GFWP, difficulties in domestication, and unique hatchery and larviculture needs have slowed down production in mariculture.

The aquaculture interest in GFWP is based on studies that show that their nutrition, culture, and hatchery needs are not as complicated as marine Penaeids shrimp.

hatchery conditions is crucial. Working closely with the live feed scientists the team is focused on developing and closing the larval phase.



KMFRI hatchery bred GFWP larvae undergoing larviculture phase

GFWP has great production potential and can be integrated with other farmed species such as tilapia to boost farmers' income and aquaculture production as seen in most Asian countries. Besides, GFWP has high export potential and an established market niche.



Left, larvae experimental set-up. Right, macrobranchium



Left, feeding larvae macrobranchium. Right, stocking macrobranchium larvae

Further, the availability of brackish water in the Coast region offers the best water quality settings required for GFWP larvae production.

For aquaculture to grow and expand, the ability to close the life cycle of an aquatic organism under

The team is hopeful that farmers in Kilifi and other counties will directly benefit from the mass seed production initiative once this has been achieved.



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PICTORIAL PAGE

Compiled by Nancy Mwiti



KMFRI Director General Prof. James Njiru delivering the keynote on the role of Blue Economy in Kenya's Economic Growth at the Kisii University Agritech International Conference and Expo where he explained KMFRI's position in Kenya's Blue Economy.



Behind the scene during the Norwegian Embassy and Norwegian Agency for Development Cooperation (NORAD) visit. KMFRI Director General Prof. James Njiru (L) preparing a courtesy package to hand to the NORAD officials (R)



Engagement activities at KMFRI Exhibition tent pitched at the Kisii University AgriTech conference and Expo.



KMFRI's team of Women during a beach clean-up activity organized by Association for Women in Maritime in Eastern and Southern Africa



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Blue Empowerment (BE) team during a visit at KMFRI Headquarter in company of KMFRI's Researcher and President of WIOMSA Dr. Uku (4th L), to extend invitation for BE project Kick-off

KMFRI Center Director Dr. Eric Okuku with The Regional Managing Director of The Nature Conservancy (TNC) Africa during a high delegates meeting for enhancement of the collaborations between the two Organizations



KMFRI staff at Kisumu Research Center following through the interactive session on Health awareness that was conducted by doctors from Tumaini la maisha Health Services and Jaramogi Oginga Odinga Teaching and Referral Hospital



A moment of staff interaction at Kegati Station after a disability mainstreaming sensitization session.

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