

## Content

01: Education forums on microplastic pollution

### Microplastic assessment #ResultDissemination

## KMFRI researchers release findings on microplastic survey to Gazi, Kilifi and Malindi fisheries residents

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**K**MFRI microplastic research scientist Mr Charles Mitto has released findings following the completion of a survey conducted on Kenya's coastal and marine waters to assess the level of microplastics in the aquatic environment.

In conducting the study, two commercially important fish species, *Lethrinus harak* and *Siganus sutor* locally known as Changu doa and Tafi respectively were purchased directly from the local fishermen at the landing sites. Samples were stored in a cool box at 4°C and transported to the laboratory where the fish biometrics; total, length, and body weight were recorded.

The gastrointestinal tracks (GITs) were then removed, weighed, and subjected to a digestion process to extract the microplastics. The microplastics were

sorted under a dissecting microscope and characterized according to their types, sizes and colours.



Recording of fish biometrics



Removal of gastrointestinal tracks

According to the results, four fish out of 30 samples in Gazi Bay had ingested microplastics with the majority-45% - having swallowed green particles followed by grey particles at 33%.

The findings revealed that there is a possibility of microplastics to enter the food chain in Gazi Bay and finally reach the human through consumption of contaminated fish.

Addressing participants in Gazi who had attended a dissemination forum held in February this year, Mr Mitto indicated that the type, size and colour of the plastic fragments determine whether plastics will be ingested by fish. Similar forums were also held in Kilifi and Malindi.

During the sessions also attended by Fisheries research scientist Ms Fatuma Mzingirwa, a section of fisheries stakeholders were also sensitized on the harmful effects of microplastics in the marine environment and cautioned against improper disposal

of plastics in the



*KMFRI's Mr Charles Mitto makes his presentation*

environment. Participants comprised of county officials, BMUs representatives, fishers and fisheries officers were educated on the nexus between the fisheries resources and marine pollution.



*Gazi participants after the forum*

Mitto told the participants to be wary of untreated sewage, garbage, fertilizers, pesticides, industrial chemicals and plastics, saying most of the pollutants from human activities will eventually make their way into the ocean. This is through deliberate dumping or entering from water run-off and the atmosphere.

This pollution, the researcher said, is harming the entire marine food chain - all the way up to humans. Research has revealed that more than five trillion pieces of plastic pollution are afloat in the oceans.

“For every pound of tuna we are taking out of the ocean, we are putting two pounds of plastic back in,” said Mitto.



*Top and bottom, KMFRI's researcher Mr Charles Mitto during the dissemination forums*

Mzingirwa reminded the attentive stakeholders that fish accounts for almost 16 per cent of all animal protein consumed globally. “Of course, there’s more to seafood than fish, crustacean and other edible creatures. We therefore must conserve and protect our

fisheries resources to achieve food security and right nourishment,” she said.

Concise and accessible information on the status, opportunities and challenges of microplastic pollution is key to informing sustainable fisheries development.



Top and bottom, Ms Fatuma Mzingirwa makes her presentation

## What are microplastics?

Plastics are light weight, durable and multipurpose nature, and non-degradable. This makes them so appealing, popular and useful. It is for this reason that plastics persist in the environment for centuries to break down, creating various environmental, economic and social impacts

which could harm biodiversity and deplete the ecosystem services and the natural resources needed to support life.

When present in the marine and aquatic environments, the UV light can break plastics into microplastics.

**M**icroplastics are particles smaller than 5mm in diameter and can be divided further into small (0.1 – 1 mm) and larger (2 – 5 mm) microplastics. They are found both on our beaches and in our oceans and mostly emanate from plastics that are usually broken into tiny particles (secondary microplastics) that can be ingested by marine organisms such as fish. Microplastics adsorb toxic chemical components in the water around them and are then ingested by animals such as fish. These fish are then eaten by bigger fish, which end up on our plate.

When ingested by fish, microplastic particles affect growth, reproduction, damage cells and cause inflammation.

Speaking on the sidelines of the forum, Mitto said plastic debris, thus provide an alternate means of introducing pollutants into freshwater and marine food webs.

## What to do...

**M**itto urged the fisheries stakeholders to put up notices, especially on the beaches that discourage littering. “Regular beach cleanups are also a good way of reducing plastic debris from our marine environment,” Mitto said, adding that although recycling increases circularity and minimizes the chances of plastic containers ending in the waterways, it may not be the ultimate solution to microplastic pollution. He, however, appealed to the public to be responsible and avoid single-use plastics to reduce the irresponsible disposal plastic trash.



Other measures to consider include establishing waste management systems aimed at reducing the waste at the source. Mr Mitto said researchers will continue carrying out dedicated research on microplastics, and champion for deterrent legislative rules and policies that discourage littering. He encouraged residents to consider the use of biodegradable materials as the best alternative.

Mr Mitto observed that with the plastic production worldwide expected to reach 644 MT by 2035, according to Plastic Europe, the situation will render plastic waste an emerging environmental issue.

Participants also received KMFRI's information, education and communication materials. They were also sensitized on redress mechanisms in the event the quality of products and services received from the Institute does not conform to the prescribed standards.



Participants peruse KMFRI's IEC materials shortly before the forum.



Fisheries stakeholders being sensitized on KMFRI's products and services

## Service delivery charter sensitization...

**D**uring the forum, participants were also educated on KMFRI's products and services delivery standards as provided for in the Institute's Corporate Citizen Delivery charter. Some of the services and products available at the Institute include aquaculture consultancy services, fish feeds, lab analysis tests and fingerlings, among others.