



ISSUE 2 • DECEMBER 2023

HADAQ

KFUPM "MEWA FISHING METHODS PROJECT" NEWSLETTER



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Fishing baits: A key component for effective fishing

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Researcher

Fishing baits play a pivotal role in fishing, functioning as an attractant to induce fish to bite or strike at a fishing hook. The primary aim when using fishing bait [WAI] is to mimic the prey of the specific fish species targeted, thereby stimulating them to consume the bait. The types of bait are broad, encompassing natural options, such as live worms, insects, or small fish, strategically selected to mirror the preferred prey of the targeted fish. Artificial baits meticulously emulate the visual, movement, and olfactory attributes of natural prey. Notably, lures, a prominent form of artificial bait, have diverse types, ranging from realistic fish imitations to pliant soft baits simulating the characteristics of worms.

The efficiency of fishing heavily relies on the appropriate selection and presentation of bait, establishing an important connection between the fisherman and the target fish. With the wide variety of materials to manufacture artificial baits, fishermen can experiment with an assortment of colors, sizes, and styles, thereby facilitating adaptability to dynamic fishing conditions.

The environmental impact of fishing baits extends beyond its role in fishing, with potential consequences for aquatic ecosystems. Commonly used bait, such as live or cut baitfish, can introduce non-native species when discarded into water bodies, disrupting local ecosystems and outcompeting native species. Additionally, the extraction and production of bait, especially when unsustainable practices are employed, can lead to overfishing. The use of certain bait types, like lead sinkers, may result in the release of harmful heavy metals into aquatic environments, posing threats to both aquatic life and the wider ecosystem. As awareness of environmental conservation grows, fishermen are encouraged to adopt sustainable and eco-friendly bait as an alternative to minimize their impact on delicate aquatic ecosystems.



Search for lost fishing gear begins in the Arabian Gulf

Dr. Neelavannan Kannaiyan

Postdoc Researcher

The project's search for abandoned, lost, or otherwise discarded fishing gears (ALDFG) in the Arabian Gulf and the Red Sea has commenced with the first search conducted on November 29, 2023 in the mangrove forests of Saihat in the Eastern Province of Saudi Arabia. It is assumed that over 10% of the ghost nets discovered in the Saihat mangrove may have come from nearby fishing areas, such as Tarut, Dareen, and Dammam in Saudi Arabia. Lost or abandoned fishing nets in the Arabian Gulf could be transported by currents and monsoonal winds to nearby coastal regions and nations, endangering marine life and communities.





Workshop on the use of TED with trawl net and its effect on catch efficiency

Mr. Muaadh A. Alnuwairah

Researcher, Fisheries Group

The National Center for Wildlife of the Kingdom of Saudi Arabia, in collaboration with the Al Emad Company, organized a workshop on December 25-26, 2023, to raise fishermen's awareness about installing turtle exclusion devices (TEDs) in bottom trawl nets. The workshop was organized to familiarize the fishermen with the use of TED and to discuss the advantages of utilizing them in the bottom trawlers operating in the Eastern Province. The major aim of introducing TED is to reduce the impact of fishing on marine wildlife. The workshop also aimed to educate local fishermen on the importance and application of TEDs in sustainable fishing practices.

The workshop emphasized the importance of using TED in marine conservation and demonstrated the sharp variation in the retention of bycatch between traditional fishing nets and those equipped with TED. The organizers demonstrated the TED design, rigging, function, and regulatory requirements to the participants, followed by hands-on training on attaching the TED to the trawl net. An interactive session concluded the event, fostering dialogue on best practices and challenges on TED application. This initiative aims to enhance sustainable fishing practices while safeguarding marine wildlife, including sea turtles and other marine megafauna, marking a significant stride in environmental stewardship among the fishing community.

The workshop was notably attended by researchers from KFUPM who are members of the KFUPM-MEWA Fishing Methods Project, namely Muaad A. Alnuwairah, Premal Panickan, and Mr. Yasir Asiri. The KFUPM team participated in two experimental fishing trips using TED along with the organizers on 26 and 28 December 2023. The team observed and documented the functionalities of TED and observed the significant reduction of bycatch in a one-hour trawl duration. They documented more than fifteen species of bony fish and crustaceans.



Preparing the TED before deploying the net.

KFUPM launches survey on abandoned fishing gear impacting offshore Arabian Gulf waters: Unveiling the unseen threats of ALDFG

Rajeesh Kumar, RH Maneja, AVB Flandez, J Gopalan & YA Yasir

Abandoned, lost, or discarded fishing gear (ALDFG) represents a significant percentage of global plastic pollution and is currently considered one of the major environmental threats. ALDFG is more harmful than marine litter, as it has the potential to continue catching marine fauna through the act of 'ghost fishing.' Introduced into the marine environment through fisheries-related activities, ALDFG contributes substantially to adverse environmental and socioeconomic impacts. Despite being a major global concern, adequate data still needs to be collected to characterize and quantify ALDFG in the sea and its wide range of environmental impacts. As part of the KFUPM MEWA Fishing Methods Project,

the research team has conducted an initial survey of ALDFG along the reef flats of Jana Island in the Saudi waters of the Arabian Gulf on December 7-9, 2023 (Fig. 1). Most of the ALDFG, which included anchors (manshal-gargoor traps), weights, cables, plastic ropes, and buoys, were assumed to be related to the local gill net fishery in the region. A deleterious impact of ALDFG was encountered in this survey with the observation of an entangled juvenile green turtle (*Chelonia mydas*) in an abandoned gill net along the southwest reef flat of Jana island. The magnitude of the impact of discarded fishing gear on the offshore reef flats must be further investigated as the area acts as an essential habitat for juvenile sea turtles as well as other marine fauna.

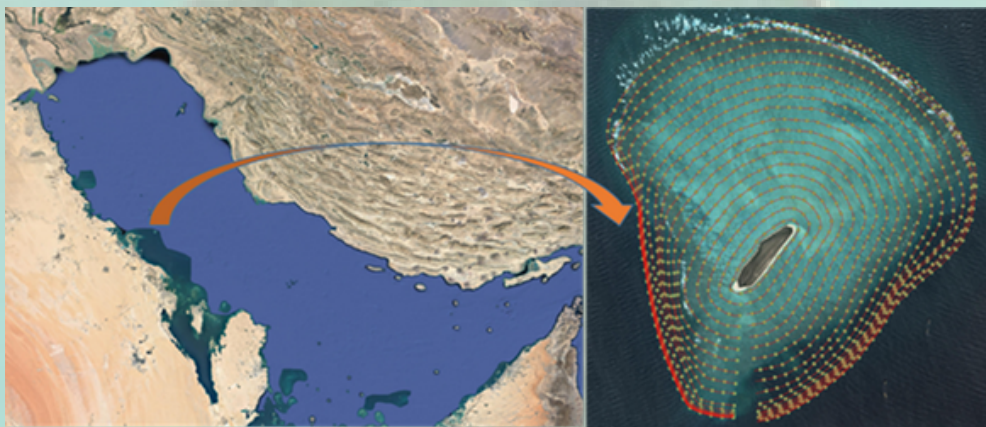
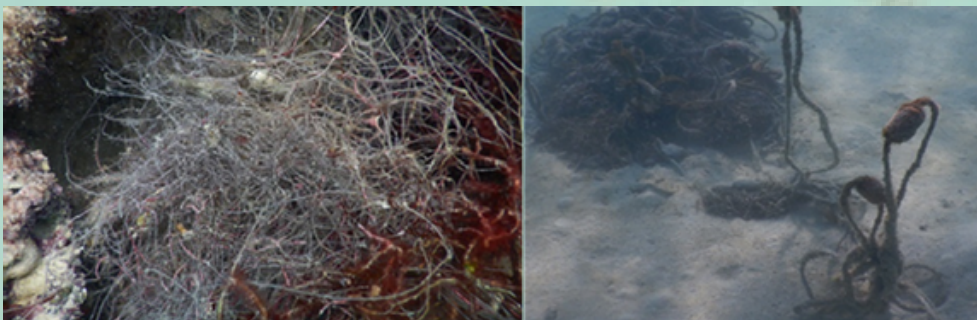


Figure 1. Jana Island (Survey area-13.027 Sq Km; Survey points-1219)

"The first initiative of an ALDFG survey in the Arabian Gulf"

- 45% of the IUCN Red List of Threatened Species has interactions with derelict fishing gears.
- 90% of species caught in ghost gear are of commercial value.
- 5-30% of globally harvested fish stocks are accidentally killed ghost fishing.





KFUPM team conducts monthly progress meeting with MEWA Fisheries

Mr. Yasir Asiri

Researcher, Fisheries Group

In the framework of fruitful cooperation between the KFUPM and (the Ministry of Environment, Water, and Agriculture) (MEWA), the first meeting was held on December 19, 2023, bringing together the representatives from both sides to discuss the plans, coordination, support requirements, and establishment of collaborations among the project stakeholders. MEWA was represented by Engineer Khaled Al-Shaia, Director-General of the Fisheries Administration, and the KFUPM research group led by Dr. Rommel H. Maneja, the project manager. This meeting represents a major step in the commencement of the project entitled "Study of the Assessment of Fishing Gears and Fishing Methods in the Arabian Gulf and the Red Sea", which is a vital partnership between the academic and government sectors to support environmental sustainability, particularly in the sustainable exploitation of the marine fisheries resources.

During the meeting, activities and achievements made during the first month of the project were discussed, which included collecting essential data for the project, conducting internal training sessions for team members, and testing seabed imaging devices. Mr. Yahya Asiri, the project communications liaison, briefed the MEWA team on the progress of the project. The outcome of the productive meetings by the KFUPM team with the Fisheries Wealth Research Center in Qatif and the Fishermen Cooperative Association in Qatif and Safwa were also presented. These meetings are essential steps towards improving collaboration with local stakeholders and managers of the governing authorities.

The most notable achievement during the month was the commencement of the survey for lost fishing gear and equipment along the coasts of Dammam, Dareen, Saihat, Al-Zour, and Jana Island. This work contributes to assessing the environmental impact of lost fishing gear and taking necessary steps to preserve marine wealth. In addition, a survey on recreational fishing was conducted in Al-Khobar, reflecting the interest in the environmental impact of this type of fishing.

In the context of communication and environmental awareness, a monthly newsletter was issued covering the activities and achievements of the scientific team. The fruitful discussions between the KFUPM and MEWA personnel reflect the positive outlook of this cooperation.





Gargoor (Trap) Fishing: A Sustainable Fishing Method in Saudi Arabia

Mr. Jinoy Gopalan

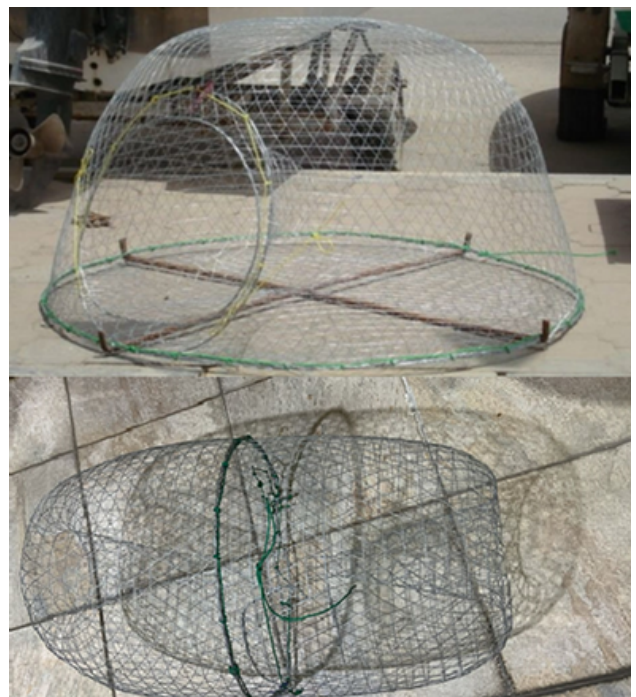
Researcher, Fisheries Group

Trap fishing has been a traditional fishing method in Saudi Arabia for centuries. It has been a fundamental part of the coastal communities' livelihood, along the Arabian Gulf and the Red Sea.

Historically, the most common type of trap used in Saudi Arabian waters is the 'Gargoor', a typical dome-shaped structure deployed in the seas to capture fish, having a funnel-shaped opening at the side through which the fish enters and remains trapped inside. From its historic roots, the Gargoor has witnessed a remarkable evolution. Initially crafted from natural materials like palm fronds, it symbolized a profound respect for nature and an intuitive understanding of sustainable practices. As times changed, so did the materials and designs of these traps, transitioning to more resilient materials like wire and metal. This evolution signifies an adaptation to changing environmental conditions and a quest for greater efficiency and sustainability in fishing methods. These traps are designed to capture a variety of fish species.

In the Arabian Gulf, which forms the eastern seaboard of Saudi Arabia, trap fishing is a predominant method in small-scale fisheries. Recently, there has been a significant increase in the use of traps along the Saudi Red Sea coast, which spans about 1800 km (11% of the country's coastline), compared to the 120 km (29%) coastline in the Saudi Arabian Gulf region.

The traps mainly target to catch species such as groupers (Serranidae), emperors (Lethrinidae), parrotfishes (Scaridae), scads and trevallies (Carangidae), snappers (Lutjanidae), Siganidae (Rabbitfishes), Portunidae (Crabs), Sparidae (Seabreams), Mullidae (Goatfishes), Platycephalidae (Bartails) and Sepiidae (Cuttlefish). A targeted fishery for crabs and cuttlefish



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