TRANSFORM BOTTOM TRAWLING

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The Impact of Bottom Trawling on Food Security, Sovereignty and Nutrition

Ungwana Bay, Kenya

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This case-study is part of the wider Transform Bottom Trawling Coalition research highlighting the global impact of bottom trawling on food security.

Introduction

Ungwana Bay (Malindi-Ungwana Bay complex) is Kenya's key marine fishing ground and the country's only industrial prawn trawl area. A shallow shelf and Tana/Athi river inputs make the bay productive. Two main fishing grounds (Formosa and Malindi) and a no-trawl zone separate artisanal and industrial fleets. Artisanal fishers rely on shallow waters for food fish and shrimp; industrial trawlers target prawns on the shelf (Munga et al. 2012; Onyango 2003).

Industrial shallow-water trawling began in the 1970s after surveys identified penaeid prawn stocks. Conflict escalated as trawlers fished close to shore, damaging gears and habitats. Kenya's Fisheries Act (1991) restricted trawling beyond 5 nautical miles, with an inshore no-trawl zone extending from 0–3 nautical miles. A 2010 management plan recommended onboard observers, and the 2016 Fisheries Management and Development Act made observers mandatory (Fondo & Omukoto 2021; Thoya et al. 2019).

A trawl ban was imposed in 2006. Artisanal landings fell before the ban but recovered within two years; shrimp landings in the artisanal fishery remained low. Commercial shrimp landings declined from approximately 550 t in 2001 to 250 t in 2006 (Munga et al. 2012). These dynamics frame the food-security debate: interviewees describe the industrial prawn fishery as export-oriented, while local diets depend on nearshore fish, mollusks, and crustaceans.

Key Context

- Ungwana Bay hosts Kenya's only industrial prawn trawl fishery and supports thousands of artisanal livelihoods.
- 1991 rules restrict industrial trawling beyond 5 nm; an observer program was mandated in 2016.
- Bycatch ratios in prawn trawling range 1:3 to 1:9; VMS shifted effort deeper but increased non-target

catch.
- Fishers report gear damage, habitat impacts, and sharp declines in nearshore catch and market supply.
- Key local foods include tuna, rabbitfish, sardines, shrimp/prawns, snapper, parrotfish, crabs, and octopus.

Key Informant Interviews

To deepen the understanding of these impacts, two interviews were conducted with key stakeholders:

- Interview one: A representative from the organization Mariners for Action
- Interview two: Local fishers during an engagement meeting organised by Mariners for Action.

The interviews focused on research questions regarding (1) negative competition; (2) participation in trawling; (3) nutritional impacts;, and (4) prevailing narratives.

Results Based on Interviews

1. Negative competition and impact on small-scale fisheries

Spatial conflict and habitat impacts are central. Interviewees report trawlers operating inside the 3 nm restriction, destroying artisanal nets and contributing to habitat damage, including coral breakage and bycatch of turtles and rays. Reports of trawlers operating during closed periods, combined with limited enforcement, add to distrust and conflict. Fisher engagement emphasizes that high bycatch reduces juvenile fish populations and key food species, and that shrimp depletion has reduced a common food source. Scientific studies corroborate ecological concerns: the Malindi-Ungwana Bay shelf is a productive, shallow ecosystem, and trawling disturbs benthic habitats and contributes to overfishing pressures (Munga et al. 2012).

Observer data from the prawn fishery show bycatch ratios of 1:3 to 1:9 and significant differences between retained and discarded species, underscoring waste and juvenile losses in shallow-water trawling (Fondo et al. 2022). Vessel Monitoring Systems (VMS) analysis shows trawling effort increased between 2011 and 2016, especially in no-trawl areas, and that VMS later pushed effort deeper while increasing non-target catch, indicating persistent compliance and ecosystem challenges (Thoya et al. 2019). These dynamics reduce local availability of food species and intensify competition for nearshore livelihoods.

2. Participating in trawling and food security

Interviews describe bottom trawling in Ungwana Bay as contributing little to local food security relative to the artisanal sector. Bottom trawlers target prawns and retain some bycatch, but interviewees report that higher-value bycatch is processed and exported, and that trawler catches are often sold outside local communities. While some local crew and dockside laborers benefit from trawler operations, participation is

uneven. Beach Management Unit (BMU) members on the open coastline sometimes work on trawlers, but older fishers and long-term artisanal fishers often avoid trawler employment.

Fisher engagement feedback indicates that artisanal fishers do not feel meaningfully involved in trawl fisheries and that governance frameworks have not ensured local participation in decision-making. These accounts suggest that the trawl sector's provisioning benefits are limited for local diets, while most food-security value continues to come from nearshore artisanal catches.

3. Nutritional impacts and consumers

Local diets in Ungwana Bay depend on a diverse mix of fish and invertebrates. BMU engagement identified key food species as tuna, rabbitfish, shrimp/prawns, sardines, emperor fish, parrotfish, snapper, crabs, clams, cockles, oysters, and octopus. One interviewee also noted reliance on groupers, mackerels, and some shark species in specific communities. Small-scale fishers often retain portions of their catch for household consumption. Interviewees reported declining nearshore catches, less reliable seasonal availability, and higher market prices, with some species (including groupers) becoming scarce and local markets relying on fish from other regions. The fisher engagement summary also linked food and health concerns to the loss of crabs and oysters for young children, and noted that Ngomeni fishers increasingly prioritize sales over consumption as catches decline. By contrast, the 2006 trawl ban was associated with rapid recovery of artisanal landings, suggesting that limiting trawling can improve local protein availability even when shrimp catches remain low (Munga et al. 2012).

4. Narratives and policy framing

Policy narratives emphasize managed trawling through spatial zoning, observers, and VMS as the path to sustainability, reflected in Kenya's 1991 trawl limits and the 2016 observer mandate (Fondo & Omukoto 2021; Thoya et al. 2019). In practice, interviewees describe a counter-narrative centered on weak enforcement, illegal nearshore trawling, and ecological harm. They argue that trawlers "sweep everything," damage habitats, and capture juvenile fish, while governance structures fail to protect local food systems. Interviewees highlighted that food security is not an explicit policy objective. The BMU engagement reinforced these narratives, linking trawling to declining food availability, rising prices, and disproportionate impacts on women fish vendors and low-capacity artisanal fishers. Overall, narratives in Ungwana Bay are polarized between a compliance-and-management frame and a community frame emphasizing livelihood and food-security losses.

Conclusion

Ungwana Bay illustrates how bottom trawling can undermine coastal food security through spatial competition, bycatch, and habitat damage, even where formal regulations exist. The bay hosts Kenya's only industrial prawn trawl fishery, but local diets and livelihoods remain anchored in artisanal, nearshore fisheries. Scientific evidence shows that trawl restrictions and bans can allow artisanal landings to recover, while interviews indicate that enforcement gaps and persistent encroachment continue to erode local food access. Fishers report declining catches, higher prices, and reduced availability of key food species, with women vendors and low-capacity fishers most affected. The overall evidence suggests that stronger compliance

with nearshore protections, transparent monitoring, and meaningful BMU participation are essential to align trawl management with food security and food sovereignty in Ungwana Bay.

Priority actions emerging from the evidence include:

1. Strengthen enforcement of nearshore trawl restrictions to prevent industrial encroachment into artisanal fishing areas.
2. Improve monitoring and transparency in the prawn trawl fishery, including better tracking of bycatch and compliance.
3. Protect and prioritise artisanal fisheries that underpin local diets, livelihoods, and coastal food security.
4. Enhance the role of Beach Management Units (BMUs) in fisheries governance and decision-making.
5. Address the social impacts of trawling on vulnerable groups, particularly women fish vendors and low-capacity fishers who rely on local fish supply.

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