

## ABSTRACT

Optimal foragers target prey with superior energetic returns, and such metrics underlie most management interventions. However, tropical artisanal bait harvested by intertidal excavation and collection, enhance fish landings, and hence determinants to choice remain conjectural. Fisher interview were used to infer bait preference, and monitoring bait and fish landings, to compute energetic and fishery profitability. Harvesting of hermit crabs, mangrove whelk and polychaetes from mangrove and mudflat, and subsequent fish landings, were quantified at Mida creek, Kenya. Deshelled hermit crab weight was estimated by regression, and documented energy content and fishing fixed costs, were used to compute energetic and fishery profitability. Results show that despite whelks being least targeted (<5%), they had significantly ( $P < 0.0001$ ), higher harvesting ( $0.87 \text{ kg}\cdot\text{hr}^{-1}$ ) and energetic returns (9750 kcal), compared to more popular, polychaete and hermit crabs. Mudflat polychaetes (preference > 25%), recorded the lowest harvest return ( $0.13 \text{ kg}\cdot\text{hr}^{-1}$ ) and harvest energetic conversion (0.87). Nonetheless, polychaete and hermit harvesters, had higher fish landings ( $>2 \text{ kg}\cdot\text{d}^{-1}$ ), corresponding to higher income ( $>3\$ \cdot \text{d}^{-1}$ ) and profitability ( $>2.0$ ), compared to whelk fishers. Therefore, fishery returns, rather than conventional harvesting metrics (e.g. energy), are important determinants to bait choice and harvesters may pursue preferred bait, due to perceived fishery gains, irrespective of harvesting constrains, with consequences on biota and ecosystem integrity. Bait management interventions that not only ignore the interrelatedness of the foraging and fishing grounds, but also the realities of fishery profitability, will inevitably impact lifestyle.