



Local Ecological Knowledge in Community-Based Management as Smart Management Options for Coastal Fisheries: A Review of the Sri Lanka Context

K. H. M. ASHOKA DEEPANANDA¹ and UPALI S. AMARASINGHE^{2*}

¹Department of Fisheries and Aquaculture, Faculty of Fisheries and Marine Science & Technology, University of Ruhuna, Matara - 80000, Sri Lanka

²Department of Zoology and Environmental Management
University of Kelaniya, Kelaniya - 11600, Sri Lanka

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Even though small-scale fisheries throughout the globe are based on local ecological knowledge (LEK), it is often not involved in the decision-making process. An attempt is made to review the potential of using LEK of traditional coastal fisher communities in Sri Lanka and self-governing institutions in managing fisheries commons sustainably. Fisheries management in Sri Lanka is mainly a top-down system through the state legislation, while many fishing communities still maintain some level of informal or traditional management systems. The traditional community-based fisheries management (CBFM) systems in coastal fisheries of Sri Lanka, which are essentially based on LEK of fisher communities, hold long history from several decades to centuries. In active fisheries, *i.e.*, beach seining and stilt fishing, traditional fishers accurately use LEK for day-to-day fishing activities for predicting harvests before operating the fishing gear. Long-term viability of beach seining, stilt fishing, brush park fishing, kraal fishing and stake net fishing systems in coastal fisheries of Sri Lanka confirms that CBFM systems in coastal fisheries provide better economic and livelihood standards for fisher communities. Empirical studies confirm that the coastal fisher communities manage fisheries commons through self-governing institutions through which the property rights are vested to fisher communities averting the common pool dilemma. This synthesis confirms that fishers' LEK is an integral part of CBFM systems of coastal fisheries, which strengthen the collective action of the fishers, and is invaluable for sustaining the CBFM systems for the long run. It is clear that CBFM systems governed through robust customary institutions and evoked by traditional authority and LEK of fishers are vital for the sustainability of the coastal fisheries. In conclusion, CBFM systems and LEK can be hailed as smart management options, which can be an alternative to centralized fisheries management in Sri Lanka.

(Key words: Commons, Property rights, Self-governing institutions, Small-scale fisheries, Sustainability, Traditional fishing methods)

Modern human has been exploiting marine resources since they emerged as fishable species. Since then, they have thrived and strongly affected particularly marine coastal species and ecosystems (Watson and Pauly, 2013), especially in the last 150 years through the industrialization of fisheries. World fisheries, either large-scale industrial fisheries or small-scale fisheries are complex social-ecological systems (Pittman *et al.*, 2019). Small-scale fisheries characterized by relatively low levels of capitalization and carried out by a small group of fishers with small-scale vessels in coastal waters, impose lesser impact on ecological systems when managed sustainably and thus have a crucial role in averting overexploitation in the marine environment over the globe (Lowitt *et al.*, 2020). Conspicuously, the small-scale fisheries sector, found mostly in developing

countries (Pittman *et al.*, 2019) accounts for around half of global fish catches, provides food and livelihoods for hundreds of millions of people, and employs more than 90% of the 39 million capture fishers and fish workers around the world (Westlund and Zelasney, 2019; Kalikoski and Franz, 2014). In the marine fisheries sector, there is a rapid adoption of new technologies in a context of finite resource availability, and consequently, resource management has become key to fisheries management that is often assumed as a government responsibility (Gordon, 1954). Nevertheless, the capacity of government agencies to regulate the fishery resources in widely scattered fishing grounds is distinctly limited. Considering continuous degradation of marine and coastal fisheries, states/governments have adopted some directives for fisheries management,

*Corresponding author: E-mail: zoousa@kln.ac.lk