

STAKEHOLDER PERCEPTION ON EXOTIC FISH AND COMMONNESS OF TILAPIA IN INLAND WATERS: A CASE STUDY IN THE NUWARAWEWA TANK SRI LANKA

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Freshwater fish provide comparatively high quality and cheap animal protein source, crucial to the balance of diets in marginally food secure communities. In Sri Lankan context, fresh water fish is mainly produced in irrigation tanks and contributes to the sustenance of rural livelihood. With the view of enhancing livelihoods of fishing communities and expansion of fresh water fish supply, to cater the increasing demand, 22 exotic fish species have been introduced into these tanks over the last few decades¹. These fish species include African cichlids, which are commonly known as Tilapia (*Oreochromis mossambicus*, *O. niloticus* and *Tilapia rendalli*), common carp (*Cyprinus carpio*), Chinese carp, (*Hypophthalmichthys molitrix* and *Aristichthys nobilis*) and Indian carp, (*Catla catla*, *Labeo rohita* and *Cirrhinus mrigala*)². Of them, Tilapia is well established in freshwater bodies in Sri Lanka and commonly found compared to other exotic and indigenous species.

This study was designed to assess the stakeholder perception on exotic fish species and the common occurrence of Tilapia species in Nuwarawewa irrigation tank, in the Nuwara Gampalatha East divisional secretariat area in the Anuradhapura District. Fish breeders (2), fishermen (22), fish retailers (4) and extension officers (2) were identified as the major stakeholders and data were collected by personal interviews, using a structured questionnaire. Four Point Likert scale was used to quantify attitudes and perceptions on exotic fish species and high prevalence of Tilapia species in the tank. Mean, mode, mean ranks and percentages were used as the tools of analyzing data.

Levels of agreement to stated perception statements by stakeholders are given in the Table 1. Higher mean ranks were recorded for very true (VT) agreement level followed by somewhat true (ST), not true (NT) and not at all (NA) for all perception statements. According to all the stakeholders, there has been a gradual development of fishery sector in Nuwarawewa tank during last decade. Fish production of the tank has also been increased over the years as it was believed by the stakeholders, due to annual stocking of fingerlings and aid (boats, fishing gears) provided by the government. The collective activities of the fishery society as it was revealed from the interviews have also equally contributed to these developments. Stakeholders highly agreed (>80%) on the statement that introduction of exotic fish species has been a good method to increase the fish production. Among the exotic species, as it was highly perceived by stakeholders, introduction of Tilapia species has mainly contributed for the increase of fish production in the Nuwarawewa Tank. It was evident from the results that, authorities are more likely to stock hundred thousand of carp fingerlings annually, into the tank. Unlike carp species, Tilapia species are naturally bred in the local environment and 100% of the authorities were of the opinion that stocking of Tilapia species is unnecessary. On the other hand, 90% of the fishermen pursued that introduction of Tilapia species would be more beneficial for them. This disparity of the perceptions between fisherman and authorities holds a conflict relation. All fishermen, the main stakeholder of the Nuwarawewa tank, indicated that even though

authorities try to introduce other exotic species with the opinion of increasing fish production, majority of their catch still confined to *Tilapia* species (about 67% on weight basis) and the rest consisted of other exotic and indigenous species such as common snakehead (*Channa striata*). Furthermore, 90% of the fishermen were willing to catch more *Tilapia* species in a given fishing effort. According to the fisherman the main reason for this is good market demand of *Tilapia*, compared to other exotic species. Fish retailers (100%) were also in consistent with the above perception of the fishermen, stating their high willingness to sell *Tilapia* species owing to a number of positive characteristics of *Tilapia* species such as convenient size, good taste, availability, familiarity and commonness³. Lower preference ranking was given by 80% of fishermen to *Rohu* (*L. rohita*) stating that retailer reluctance to purchase it owing to poor consumer demand due to specific “Y” shape spines in the fish body and incompatible size (more than 2 kg). Almost all the retailers expressed their displeasure to sell *Rohu* and 75% of retailers expressed their displeasure to sell *Catla* in their stalls due to large gut content that produce more offal when these species sell as portions. Further, typically large head, proportionate to the body and oily skin of *Catla* also had a negative effect on this perception. However, many fishermen and retailers were in the perception that unlike *Catla*, *Rohu* can be used in producing smoked dry fish, which has a moderate demand due to its comparatively less oily skin.

Table 01: Mean Ranks of Aggregate Stakeholder Perceptions on Fish Production in the Nuwarawewa Tank

Perception	VT	ST	NT	NA
There is a gradual development in fishery sector in the Nuwarawewa tank during last decade	2.824	0.706	0.353	0.592
There is an increase of fish production compared to previous years	2.588	0.176	0.235	0.176
Introducing exotic fish species is good method to increase fish production	2.353	0.706	0.118	0.118
Introducing <i>Tilapia</i> is better than other exotic species	2.353	0.529	0.118	0.176

VT - very true, ST - somewhat true, NT - not true, NA not at all

It can be concluded that introduction of exotic fish species has been a substantial influencing factor on the perception of inland fisheries of all stakeholder groups in Nuwarawewa tank. Some of the exotic species were not in consistence with stakeholder expectations. Specially, neither *Catla* nor *Rohu* is preferred by either fishermen or retailer though it was introduced regularly by the authorities. *Tilapia* species was identified as more beneficial in many ways by majority of the stakeholders. Therefore, it seems likely that *Tilapia* has a high potential to enhance the livelihood of fishermen/stakeholders. However, keeping a watchful eye on the population dynamics and studying further the impact of these species, particularly the *Tilapia* species on freshwater bio-diversity is proposed before developing strong policy recommendations.

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