# IDENTIFICATION OF THE POTENTIAL RESERVOIRS FOR GIANT FRESH WATER PRAWN (*Macrobrachium rosenbergii*) CULTURE IN MONERAGALA DISTRICT -A GIS APPROACH

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by

Ranasinghe Arachchilage Chathuri Nisansala

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Faculty of Animal Science and Export Agriculture

Uva Wellassa University

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# Abstract

Being one of the poorest districts in dry zone with low literacy and high vulnerability to malnutrition in Sri Lanka, the Moneragala District needs to be introduced with a practicable employment which is able to alleviate the poverty and to ensure the food security. Culture Based Fishery (CBF) is the best approach to overcome this adverse context since the district is enriched with large number of village reservoirs and minor perennial reservoirs. Introducing a valuable, high demanding and protein rich species such as Giant Fresh Water Prawn (*Macrobrachium rosenbergii*) through CBF is the best way to get the maximum utilization of these natural resources. Current practice of stock enhancement of *Macrobrachium rosenbergii* in almost every reservoir does not seem to be sustainable as heavy loss of stock was observed while being reared in reservoirs. Therefore it needs a careful selection of potential reservoirs prior to stocking of post larvae.

As a tool in decision making, Geographic Information System (GIS) is a new concept for CBF in Sri Lanka for aquaculture planning. The main intent of this study was to highlight the role of GIS in identifying potential reservoirs for stock enhancement of Giant Fresh Water Prawn (*Macrobrachium rosenbergii*) under inland CBF in Moneragala District, Sri Lanka.

Fourteen thematic layers were generated for: climate factors (Rainfall, Temperature), Bio-physical factors (Elevation), Water quality of reservoirs (pH, Temperature, Hardness, Alkalinity, Dissolved Oxygen, transparency) and Socio-economic factors (proximity to roads and village, land use, poverty and population). All these thematic layers were assigned the weights according to their relative influence using the method of "Rank Sum". Finally, all thematic layers were integrated in a GIS environment to generate potential map. Thus, four categories of culture potential zones were identified in respective to DS divisions of the district, "highly suitable" (Badalkumbura, Moneragala, Medagama, Wellawaya and Sevanagala), "suitable" (Thanamalwila, Bibile, Madulla, Buttala, Siyambalanduwa), "moderately suitable" (Latter part of Madulla), "not suitable" (Northeast, West and Southeast area of District). The study thus demonstrates that GIS is a very useful tool for demarcating CBF potential zones.



**Key words**: *Macrobrachium rosenbergii*, Culture Based Fishery, Geographic Information System, Rank Sum, Potential area.