

**Comparative Analysis of Physico-chemical Properties
and Intra specific morphological variation of Tumid
Venus Calm *Gafrarium tumidum* populations along
North Western Coastline in Jaffna District**

A dissertation submitted to the
Faculty of Animal Science and Export Agriculture
Uva Wellassa University
in partial fulfillment of the requirement of
the degree of
Bachelor of Animal Science

By
Suntharesan Jeyaamuthan

**Department of Animal Science
Faculty of Animal Science and Export Agriculture
Uva Wellassa University**

2017

ABSTRACT

Tumid Venus clam (*Gafrarium tumidum*) is one of the readily available coastal bivalves consumed by local residents in Jaffna district of Sri Lanka. Scientific data on physicochemical, sensory attributes of this species and investigate the intra-specific variations among clam populations is however scarce. Therefore, the objective of this study was to determine population structure, physicochemical and sensory attributes of Tumid Venus clam in four different sites of Jaffna lagoon at two different maturity stages. Randomly collected 200 clams from each different sites: Karainagar (9.7481°N, 79.8829°E), Mandaitivu (9.6165°N, 79.9920°E), Kayts (9.6526°N, 79.9081°E) and Navanthurai (9.6687°N, 80.0007°E) of Jaffna lagoon were graded into two maturity stages as mature (≥ 35 mm) and immature (< 35 mm) based on the shell length. The composite samples were then subjected to analysis of physicochemical and organoleptic attributes using standard analytical protocols. Standardized morphometric parametric parameters were subjected to discriminant function analysis (DFA). Results revealed that there was a significant difference in color a^* (redness), b^* (yellowness), L^* (lightness), pH value, water holding capacity, moisture and ash contents with the location ($p < 0.05$). However, maturity stage had significant effects only on color a^* , b^* and L^* values and water holding capacity. Based on sensory evaluation, the appearance and taste of cooked clams were varied with the location and maturity stage because of the changes in water temperature, food source availability. The highest consumer acceptance was recorded for immature bivalve samples of Navanthurai. Current study showed the suitability of low cost bivalve resources as substitute for conventional, expensive seafood sources. The highest mean length for total shell length (VL), shell length (VH), length of hinge plate (HL) and width of hinge plate (HW) were 4.03 ± 0.02 , 3.19 ± 0.02 , 1.23 ± 0.01 and 0.45 ± 0.03 respectively for populations sampled from Navanthurai (Site 2). Results of

DFA showed that morphological similarity among four populations of clams. In conclusion, location and maturity stage had a significant effect on physicochemical and sensory attributes of Tumid Venus clam.

Key words: Jaffna lagoon, Morphological variations, Physicochemical attributes, Sensory, Tumid Venus Clam