

Spatial variation in the length – weight relationship and Fulton’s condition factor of two commercially important demersal fish species in Sri Lankan waters

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Fulton’s condition factor (K) and length-weight relationship (LWR) are widely used in fisheries biology for comparing the condition, fatness, well-being of fish and to determine the growth characteristics. The present study aimed to understand the spatial variation in the LWR and the K of *Lethrinus olivaceus* (Valenciennes, 1830) and *Lutjanus lutjanus* (Bloch, 1790) in Sri Lankan waters. The samples of *L. olivaceus* (n=260) and *L. lutjanus* (n=181) were collected from the ecosystem survey conducted in Sri Lankan coastal waters by R/V Dr Fridtjof Nansen from 24th June to 16th July, 2018. The LWR was estimated using the equation: $W=aL^b$ and K was determined using the equation: $K=100W/L^3$. The estimated LWR for *L. olivaceus* in the West and South regions were $W = 0.02L^{2.85}$ and $W = 0.02L^{2.87}$ and for *L. lutjanus* in the Northwest and West regions were $W = 0.01L^{3.03}$ and $W = 0.02L^{2.84}$ respectively. The mean K value was estimated at 1.31 ± 0.17 and 1.34 ± 0.12 ; 1.45 ± 0.16 and 1.57 ± 0.13 for the combinations of species and regions respectively as indicated above. The mean K of *L. lutjanus* population in the West region ($t_{153.20} = -5.51$; $p < 0.01$; CI = 95%) was significantly higher than their counterparts in the Northwest region. However, there was no significant difference in the K value for *L. olivaceus* ($t_{196.22} = -1.84$; $p = 0.07$; CI = 95%) in the two regions. Therefore, it can be concluded that there were better environmental conditions for the survival of *L. lutjanus* in the West region of Sri Lanka. The b values of LWRs suggested that *L. olivaceus* in both regions ($p < 0.01$) and *L. lutjanus* in the West region ($p < 0.01$) exhibited a ‘negative allometric growth’ while *L. lutjanus* in the Northwest region ($p < 0.01$) exhibited a ‘positive allometric growth’ pattern.

Keywords: allometric growth, Fulton’s condition factor, length-weight relationship, *Lethrinus olivaceus*, *Lutjanus lutjanus*

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