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Species Identification and Length-Weight Relationship of Sardine in Southern Coast, Sri Lanka

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Abstract

This study was conducted to identify different sardine species found in the Southern coast of Sri Lanka and to evaluate their relative well-being in the environment. It is important to know the length-weight relationship to facilitate the conversion from one length measurement to another type of length and weight measurement and for stock identification. A total of 136 fish samples were collected from three landing sites in Galle (49), Matara (57), and Hambantota (30) on the Southern coast of Sri Lanka. Species identification was performed up to the species level using morphological characters. Within these three sites, only *Sardinella gibbosa*, *Sardinella fimbriata*, and *Sardinella longiceps* were occurred and they were identified using fish keys. *Sardinella gibbosa* occurred in both Matara and Hambantota while *Sardinella fimbriata* occurred in Matara and Galle. *Sardinella longiceps* occurred only in the Matara. The condition factor (K) and length-weight relationship (LWR) were estimated for 62, *Sardinella gibbosa* obtained from Matara and Hambantota sites, and for 61, *Sardinella fimbriata* obtained from Matara and Galle. The linear regressions for length and weight data of *Sardinella gibbosa* were significant ($P<0.05$) and had a weak positive relationship($r=0.57$) between length and weight, in the Hambantota while a strong positive relationship($r=0.76$) was reported in Matara. The condition factor (K) of *Sardinella gibbosa* in Hambantota was 0.8 while it is 0.9 in Matara. The regression coefficient (b) of weight and length were 1.1639 and 1.1651 respectively in fish obtained from Hambantota and Matara. The linear regressions for data of *Sardinella fimbriata* were significant ($P<0.05$) and had a positive relationship ($r=0.70$) between length and weight, in the Galle while the relationship was not significant ($P>0.05$) in Matara. The condition factor of *Sardinella fimbriata* in Matara was 0.9 while Galle was 0.8. The regression coefficient of weight and length were 0.9038 and 1.0926 respectively in fish obtained from Matara and Galle. The regression coefficient (b) of weight and Condition factor values indicated that *Sardinella gibbosa* obtained from Matara were in good and healthy condition compared to the fish obtained from Hambantota. Student t-test proved that the regression coefficients were statistically different from the value of isometric growth ($b=3$) in both species obtained from different sites and, therefore it is concluded that *Sardinella gibbosa* and *Sardinella fimbriata* collected from different locations on Southern coast show negative allometric growth ($b<3$).

Keywords: *Sardinella gibbosa, Sardinella fimbriata, Sardinella longiceps*, Length-weight relationship, Condition factor