Growth Performance of *Holothuria scabra* (Sand Fish) with Different Stocking Density in Open Sea Pen Culture in Jaffna, Sri Lanka

V. Mahishalini[1], J.M. Athula[1] and B. Nirooparaj[2]

[1] *Department of Animal science, Uva Wellassa University, Badulla, Sri Lanka*
[2] *National Aquaculture Development Authority of Sri Lanka, Kilinochchi, Sri Lanka*

Sea cucumber, *Holothuria scabra* is over exploited species in worldwide due to the high fishing intensity from the wild stocks. Sea cucumber pen culture practices are being expanded in Northern Province of Sri Lanka and presently operated more than 57 pen culture farms in the region. This research is intended to investigate the growth performance of *H. scabra* pen culture with different stocking densities to find out the most appropriate stocking density to introduce the farmers. This research was carried out in coast of Mankumpan village in Jaffna district, Sri Lanka. Early matured *H. Scabra* with average weight 49.78 g and average length 11.28 cm were collected from the Sea cucumber farmers. Four pens were constructed by using 5 mm mesh size high density polyethylene nets and wooden planks. The size of each pen was 25 m^2. Early matured *H. scabra* was reared with stocking densities of 1, 2, 3 and 4 individual m^2. Thirty percentage sample size was randomly collected in each pens to measure the growth parameter. Average length, weight and water quality parameters were measured twice a month and finally, survival rate was calculated. After 60 days of the culture period average specific growth rates were calculated twice a month and it shows 2.53 $\pm$ 0.56 $gday^{-1}$, 1.98 $\pm$ 0.20 $gday^{-1}$, 1.95 $\pm$ 0.21 $gday^{-1}$ and 1.08 $\pm$ 0.27 $gday^{-1}$ for pen 1, pen 2, pen 3 and pen 4 respectively. Data was analyzed using Minitab17 version by one-way ANOVA test. Average survival rates for pen 1 and pen 2 were recorded as 100% and for pen 3 and pen 4 were recorded as 85.33% and 85% respectively. Temperature, Salinity, P^H, Nitrate and Phosphate were ranged 27−31^oC, 35−40 ppt, 7.3−8.8, 0.25−2.5 mgL^{-1} and 0.38−0.44 mgL^{-1} respectively. The results show that, there were significant difference ($p > 0.05$) between Specific growth rate and stocking density. The result indicated that the specific growth rate and survival rate were higher in pen 1 and pen 2 than pen 3 and pen 4 and applicable for the implementation.

Keywords: Holothuria scabra, Pen culture, Growth performance, Stocking density