

## **High mortality and poor growth of green mussels, *Perna viridis*, in high chlorophyll-a environment**

### **Abstract**

The current study was carried out from May 2014 to April 2015 to estimate the stock status of *P. viridis* in Marudu Bay. The gonad development was monitored by histological examination, while the population parameters including asymptotic length ( $L_{\infty}$ ), growth coefficient ( $K$ ), mortality rate ( $Z$ ,  $F$  and  $M$ ), exploitation level ( $E$ ) and recruitment of *P. viridis* were estimated using the length-frequency data. Results of the current study demonstrated that *P. viridis* in Marudu Bay spawned throughout the year with two major peaks, one in April to May and another one in October to December. The recruitment pattern was continuous with the peak in May to June 2014, which corresponded to the first spawning peak in April. However, no significant recruitment was observed from the second spawning peak due to the difference in spawning timing between male and female populations. The estimated asymptotic length ( $L_{\infty}$ ), growth coefficient ( $K$ ), total mortality ( $Z$ ), natural mortality ( $M$ ), fishing mortality ( $F$ ) and growth performance ( $\phi$ ) of *P. viridis* in Marudu Bay were estimated to be 117 mm,  $0.97 \text{ yr}^{-1}$ ,  $4.39 \text{ yr}^{-1}$ ,  $1.23 \text{ yr}^{-1}$ ,  $3.16 \text{ yr}^{-1}$  and 4.123, respectively. The exponent  $b$  of the length-weight relationship was 2.4 and exploitation level ( $E$ ) was 0.72. The high mortality, low condition indices and negative allometric of *P. viridis* in Marudu Bay is caused by a lack of suitable food in the surrounding water.