

**Population dynamics of yellowtail scad, *Atule mate* (Cuvier 1833) in Marudu Bay,  
Sabah, Malaysia**

ABSTRACT

The yellowtail scad, *Atule mate*, forms important fisheries throughout the Indo-Pacific region. To know about the stock status of *A. mate* in Malaysia, various population parameters were measured, by utilizing length-frequency data, that included asymptotic length ( $L_{\infty}$ ), growth coefficient ( $K$ ), mortality rates ( $Z$ ,  $F$  and  $M$ ), exploitation level ( $E$ ) and recruitment pattern of this species from Marudu Bay, Sabah, Malaysia. Total length and body weight relationship was estimated as  $W = 0.007TL^{3.148}$  ( $R^2 = 0.937$ ). The asymptotic length ( $L_{\infty}$ ) and growth coefficient ( $K$ ) were estimated 27.80 cm and 1.50 yr<sup>-1</sup>, respectively. Total mortality ( $Z$ ), natural mortality ( $M$ ) and fishing mortality ( $F$ ) were found to be 4.53, 2.46 and 2.07 yr<sup>-1</sup>, respectively. The exploitation level ( $E$ ) was estimated 0.46. It was showed that the recruitment pattern was continuous with two major peaks per year. Relative yield per recruit predicted a maximum exploitation rate ( $E_{max}$ ) which was 0.55. The current  $E$  value (0.46) is lower than the optimum exploitation ( $E = 0.50$ ) as well predicted  $E_{max}$ . Therefore, it could be concluded that stock of *A. mate* in the investigated area of Marudu Bay, Sabah is under exploited.

**Keyword:** *Atule mate*; Marudu Bay; Malaysia; Population dynamics; Sabah