

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_{∞}), 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_{∞}) and growth coefficient (K) were estimated 27.80 cm and 1.50 yr⁻¹, respectively. Total mortality (Z), natural mortality (M) and fishing mortality (F) were found to be 4.53, 2.46 and 2.07 yr⁻¹, 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