Estimates of age, growth and mortality of spotted catfish, *Arius maculatus* (Thunberg, 1792), off the Coast of Yunlin, Southwestern Taiwan

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Spotted catfish is a benthic species that can be found abundantly off the coast of Yunlin in southwestern Taiwan. Its biological parameters are little known. In this study, life history parameters of this species were estimated using samples caught by bottom trawling. The spotted catfish was the major bycatch species which comprised 32% of the total catch. The growth parameters estimated by length frequency analysis were: asymptotic fork length ($L_\infty = 34.4$ cm), growth constant ($k = 0.28$ year$^{-1}$) and age at length 0 ($t_0 = -0.57$ year$^{-1}$). The total mortality, natural mortality, fishing mortality and the exploitation ratio were 1.29, 0.86, 0.43 year$^{-1}$ and 0.24, respectively. Although spotted catfish is not a target species of bottom trawling, the high fishing mortality and exploitation ratio suggest that they are the major by-catch species, and hence more attention should be paid to the dynamics of this stock.

According to the monthly length distribution, the smallest fish (median = 2 cm) appeared in July 2009, which implies that the spawning season of spotted catfish is in June or July. However, the results of this study are preliminary, therefore other methods, such as ring reading of hard tissue, should be utilized to verify the growth parameters of spotted catfish.

**Key words:** Age and growth, mortality, exploitation rate, spotted catfish.

INTRODUCTION

Spotted catfish, *Arius maculatus* (Thunberg, 1792), is a benthic species in tropical and subtropical waters, inhabiting the bottom of estuaries, rivers and coasts. However, few studies have been conducted on the biology of spotted catfish (Mazlan et al., 2008). The age and growth of fish are an important basis for stock assessment, and relative estimators are dependent on the growth parameters such as mortality. Methods such as hard tissue reading, tagging-recapture and length frequency analyses can be used to study age and growth. However, hard tissue reading requires a considerable amount of time and money, as the periodicity of mark formation is validated before the growth parameters can be accurately estimated (Beamish and McFarlane, 1983). Tagging-recapture experiment is also expensive, and the recovery rate is very low (Rickter, 1973). Also, for length frequency analyses, although the length samples are easily collected and the cost is relatively low, length modes merge as fish grow, and this can be a bias in the analyses.

The objective of this study was to estimate the life history parameters of spotted catfish including the age and growth, mortality, exploitation rate and reproduction periods. The results derived from this study can be used as input data for further stock assessment of the spotted catfish off the coast of southwestern of Taiwan.