

Reproductive biology of the shorthead anchovy (*Encrasicholina heteroloba*) in the coastal waters off Negombo, Sri Lanka

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The reproductive biology of *Encrasicholina heteroloba* (shorthead anchovy) was studied in the coastal waters off Negombo, Sri Lanka. Anchovy samples were collected randomly from landed boats at Negombo, Kuttiduwa fish landing site by fortnightly, from February to December 2015. Reproductive activity was assessed using macroscopic and microscopic observations of gonad characteristics, trends of gonad indices, size at first sexual maturity and differences in the monthly sex ratio. Sex ratio of *E. heteroloba* population fluctuated seasonally and significantly high male to female sex ratio was observed in April, May, June, October and November (χ² test). Though the average (±SD) total length (7.34 ± 0.81 cm) and total weight (2.95 ± 0.90 g) of *E. heteroloba* females were higher than the males (7.26 ± 0.75 cm, 2.7 ± 0.82 g respectively), these values were not significantly different (Mann-Whitney test, P > 0.05). *E. heteroloba* females spawn throughout the year in the coastal waters off Negombo, with a peak in August. Gonadosomatic index (GSI) of *E. heteroloba* males ranged from 0.97 ± 0.65 to 2.55 ± 1.38 and females from 1.75 ± 0.73 to 3.05 ± 0.80. *E. heteroloba* females reported higher GSI than the males, but these morphometric parameters were not significantly different (t-test, P > 0.05). The highest GSI of males (2.22 ± 0.98) was observed in the length range of 7.0-7.2 cm but for females, the highest GSI (3.05 ± 0.80) was in the length range of 9.1-9.3 cm. The estimated size at first sexual maturity of male and female *E. heteroloba* were 7.4 cm and 7.6 cm respectively. Three stages of oocytes; stage I (unfolked), stage II (partially folked and folked) and stage III (hydrated) were observed in mature gonads and the mean diameter (mm) of eggs in each stage was 0.07 ± 0.03, 0.31 ± 0.07, 0.55 ± 0.06, respectively. *E. heteroloba* was found to be a batch spawner and the average fecundity ranged from 5,380 ± 491 to 18,800 ± 105. As this is the first detailed study of reproductive biology of any anchovy species in Sri Lanka, the findings of this study will be useful when preparing measures to manage the anchovy fishery in Sri Lanka.

Keywords: *Encrasicholina heteroloba*, Fecundity, Gonadosomatic Index