

Population size and stocking contribution rates for marked and recaptured black porgy *Acanthopagrus schlegelli*, in Northwestern Taiwan, 2005–2008

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Abstract

Hatchery-reared fry have been used to enhance the natural fishery stocks in Taiwan since the 1970s. In the past, the stocking contributions were rarely assessed due to the large number of fry, the small size of the fry, and the difficulty to recapture the specimens. Between July and September 2005, 105,543 black porgy fry that were 4.6–8.4cm in length were released into the sea in Northwestern Taiwan. The present study estimated their population size, individual growth, weight-to-length relationship and stocking contribution rate by spraying fluorescent pigment onto the skin of the fry after they were fed with oxytetracycline, creating a double mass-marking method. The estimated number of individuals in the cohort population that was close to the released, marked size was between 263,437 and 2,081,136, and the estimated stocking contribution rate was between 2.00 and 9.31% from 2005 to 2008. The released fish grew from an initial length of approximately 5.0cm (2.1 g) to a mean of 30.6cm (578.1 g) between 2005 and 2008. These results could provide understanding of the population status and resource anagement implications. It is also suggested that the hatchery-reared stocks could be used to enhance the natural resource populations.

Keyword : Oxytetracycline Fluorescent dye Weight-to-length Double mass marking