

**NURSERY AND GROW-OUT CULTURE OF MANGROVE
POLYCHAETE *Marphysa* sp.**

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ABSTRACT

Experiments on the polychaete *Marphysa* sp. were conducted to determine the optimum stocking density in indoor nursery as well as the optimum stocking density and culture period in outdoor grow-out ponds that can maximize polychaete biomass production. In the nursery experiment, early metatrocophores at four stocking densities ($10,000\text{ m}^{-2}$; $20,000\text{ m}^{-2}$; $30,000\text{ m}^{-2}$; and $40,000\text{ m}^{-2}$) were tested to determine growth (number of chaetigerous segments) and survival after 7 days in nursery cups. Results showed that the number of segments of early juveniles did not vary significantly ($P>0.05$) in all treatments. Final number of survivors were higher ($P<0.05$) at $40,000\text{ m}^{-2}$ ($33,700 \pm 1,488\text{ ind.}$) than $10,000\text{ m}^{-2}$ ($8,300 \pm 1,097\text{ ind.}$), $20,000\text{ m}^{-2}$ ($16,100 \pm 1,095\text{ ind.}$) and $30,000\text{ m}^{-2}$ ($26,800 \pm 1,489\text{ ind.}$). This suggests that *Marphysa* sp. juveniles can be produced in high numbers despite high stocking densities using the current nursery protocols. The outdoor grow-out experiment was conducted in a brackishwater pond where early juveniles were stocked at four densities (500 m^{-2} ; $1,000\text{ m}^{-2}$; $1,500\text{ m}^{-2}$; and $2,000\text{ ind.m}^{-2}$) at two culture periods (3 and 4 months) to determine the survival and growth of *Marphysa* sp. Results revealed that stocking density of 500 ind.m^{-2} resulted in bigger ($P<0.05$) polychaetes but total length, survival rate, and biomass were not different ($P>0.05$) from those in higher stocking densities. Survival rates of the polychaetes did not differ significantly ($P>0.05$) between 4 months ($18.1 \pm 12.1\%$) and 3 months ($16.1 \pm 9.2\%$) of culture. Body weight, total length, and polychaete biomass were all significantly higher ($P<0.05$) after 4 months of culture compared to just 3 months, suggesting longer culture periods can improve overall yields. The organic matter in sediments decreased from 5% to 4% both in treatments for stocking densities and culture periods indicating the potential of *Marphysa* sp as a bioremediation agent.

Keywords: polychaete, *Marphysa* sp., stocking density, culture period, organic matter