Feeding, growth and survival of abalone (Haliotis asinina Linnaeus 1758) reared at different stocking densities in suspended mesh cages in flow-through tanks

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Author
Fermin, Armando C.
Buen, Sheila Mae

Abstract
Feeding, growth and survival of hatchery-bred juvenile abalone, *Haliotis asinina* (mean initial shell lengths: 32 mm) stocked at 25, 50 and 100 m$^2$ of shelter surface area in mesh cages suspended in indoor tanks were determined. Animals were fed the seaweed, *Gracilariopsis bailinae*, to excess given at weekly intervals. After 250 d, average daily growth rate (mean: 122 µm d$^{-1}$ shell length, 156 mg d$^{-1}$ body weight) was highest in abalone reared at the lowest stocking density (25 m$^2$). Abalone stocked at 50 and 100 m$^2$ had similar growth rates that ranged from 96 to 98 µm d$^{-1}$ SL and 123 to 131 mg d$^{-1}$ BW). Daily feeding rates of 29 and 30% were not significantly different for abalone stocked at 25 and 50 m$^2$, respectively, but were higher than abalone stocked at 100 m$^2$. The higher feeding rates of 24-28% day$^{-1}$ of abalone in all treatments starting day-129 until day-160 could be due to the onset of sexual maturation as most abalone are already mature at this size. Survival rates were generally high (91-98%) and were not significantly different among treatments. However, body size (range: 59.3 mm SL, 57-58.4 g BW) at harvest was bigger in animal stocked at 25 m$^2$ than those stocked at 100 m$^2$. Sexual maturation during culture did not hamper growth of abalone. *G. bailinae* proved to be a sufficient food source for abalone grow-out. A stocking density between 50-100 m$^2$ is recommended for tank grow-out of *H. asinina*.

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