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The Effects of Salinity on Postlarval Growth and Survival of Penaeus semisulcatus (Decapoda: Penaeidae)

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Abstract: P. semisulcatus post-larvae (PLs) had higher survival and better growth at high rather than low salinities between PL20 and PL60. Final survivals at high salinities (30-40 ppt) (19-23%) were significantly higher than those (3-12%) below 25 ppt ($P<0.05$). Final total length (TL) at 10 ppt (17.12 mm) and 15 ppt (17.12 mm) was significantly lower than at 35 ppt (20.46 mm) or 40 ppt (19.62 mm) ($P < 0.05$). PLs grown at 10 and 15 ppt displayed growth rates between 0.053 and 0.068 mm day^{-1} as compared to 0.115 - 0.137 mm day^{-1} at higher salinities (35-40 ppt). Daily growth rates at salinities above 30 ppt (0.114-0.137 mm day^{-1}) were about 2-2.5-fold higher than those obtained at 10 ppt (0.053 mm day^{-1}). PLs grown at 10 and 15 ppt attained the lowest individual wet weight (0.020 - 0.037 g) while those at 35 and 40 ppt had the highest mean weight (0.050-0.051 g) at the end of the 40-day culture period ($P < 0.05$). The results showed that the mean weight obtained at 40 ppt was twice that at 10 ppt. PLs grown at 15, 20 and 25 ppt exhibited intermediate growth in weight ($P > 0.05$). A rise in salinity resulted in an increase in the biomass from 0.020 g at 10 ppt to 0.317 g at 40 ppt ($P < 0.05$). Optimum salinity for the nursery culture of P. semisulcatus PLs appeared to be about 40 ppt at 28 °C. Hence, the results of this study demonstrate that P. semisulcatus inhabiting the Mediterranean Sea is not a good candidate for culture in waters of low salinity.

Key Words: Penaeus semisulcatus, salinity, post-larvae, growth, survival

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