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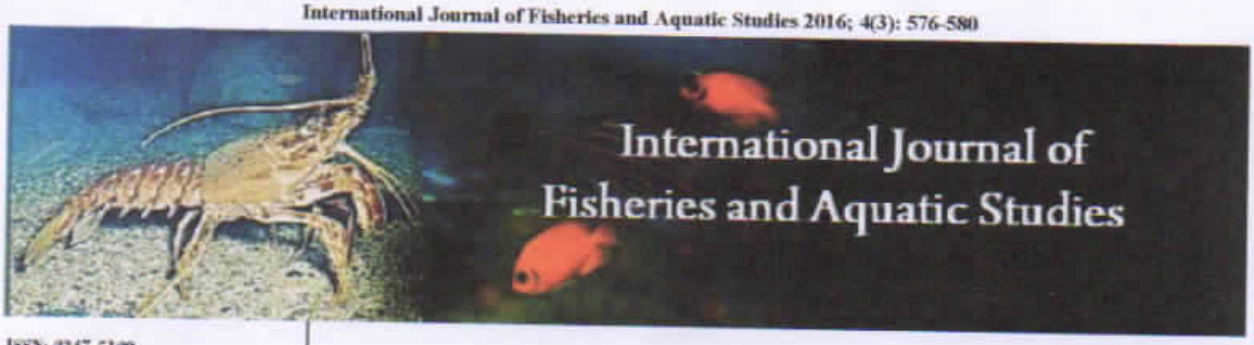

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The Combined effects of Salinity and Temperature on the survival of Zoeae and postlarvae of *Macrobrachium rosenbergii* at hatchery condition in Odisha, India

Abhaya Kumar Mohanty, Swati Sucharita Mohanty and Debansu Sekhar Pramanik

Abstract
Present study was carried out to observe the effect of various ranges of temperature (25 °C, 31 °C and 35 °C) and salinity (6, 9, 12, 15, 18 ppt.) on survival of *Macrobrachium rosenbergii* larvae. The survival rate ranged between 6.54-64.52% at 25 °C in 9-12 ppt. whereas it was between 2.63-52.38% when reared at 25 °C in 15-18ppt. Post larvae (PL) showed maximum survivability i.e. 44.29% at 25 °C, 89.61% at 31 °C and 42.70% at 35 °C with the same salinity condition of 12ppt.which were also significantly different from each other ($P>0.05$).Water quality parameters recorded throughout the study period were found within the tolerable ranges (dissolved oxygen 7.3 ±0.06 mg/L, pH 8.0 ±0.04, ammonia from 0.10 ±0.02 mg/L etc).Present result showed that 12 ppt. salinity and 31 °C temperature is better for the maximum survivability of larvae (Zoeae) and post larvae of *Macrobrachium rosenbergii* at hatchery condition.

Keywords: *Macrobrachium rosenbergii*, zoeae, post larva, salinity, hatchery.

1. Introduction
The giant fresh water prawn *Macrobrachium rosenbergii* has been acquired global value because of its delicacies and easy culture. Hence many countries of the world are now focusing on freshwater prawn culture and raising foreign exchange of the country through international freshwater prawn trade. In India Odisha state plays a major role in fresh water prawn culture and trade. Besides brackish water shrimp farming, especially *M. rosenbergii* is considered important and valuable for farming. Intensive and extensive culture practices of this giant freshwater prawn are being adopted in some of the regions [1]. of the state which include a hatchery phase performed in tanks stocked in high densities. Although reared in captivity from time immemorial, modern farming of this species originated in the early 1960s when FAO expert Shao-Wen Ling working in Malaysia found that fresh water prawn (*M. rosenbergii*) larvae required brackish conditions for survival. This leads to larval rearing on an experimental basis. Further various workers have experimented with seed production of *Macrobrachium* spp. using brine or salt solution [2]. Aquaculture production in 37 countries is more than 30,000 ton /annum and now production has risen up to $1billion annually. However over 98% of production occurs only in Asia [3]. In India the largest species of interest for aquaculture are *Macrobrachium rosenbergii* and *Macrobrachium malcomsoni* respectively. During the past decade the overall production of giant river prawn *M. rosenbergii* attained 195000 t in 2002 [3]. Early life stages are the most sensitive phase in the complex life cycle of marine invertebrates and to maximize their survival, larvae should reared close to optimal conditions. Both salinity and temperature are the major abiotic factors which affect survival percent and growth of the larvae. The studies on the growth of larvae of fresh water prawn with combined effect of temperature and salinity would lead to a greater understanding of the significance of these factors on survival of larvae. Thus it is important to determine optimum salinity and temperature level for rearing of *Macrobrachium rosenbergii* larvae with the capabilities of withstanding changes during the course of larval development [4-6]. According to Prequeux [7] optimal salinity level is required for growth, survival and production competence which is also species specific [8, 9]. In tropics fluctuation of salinity and temperature reported frequently where The climate is characterized by wet and dry seasons.

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