

Life Cycle of the Fairy Shrimp, *Phallocryptus spinosa* Milne Edwards, 1840 (Crustacea: Anostraca) at Different Temperatures

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ABSTRACT

This study was conducted to evaluate a temperature regime ranged from 15 to 30°C on survival, growth, life span and reproductive traits (reproductive period, clutch number, offspring number) of *Phallocryptus spinosa* from Iran. Newly hatched nauplii (N= 200 and 3 replicates per each treatment) were allocated into containers and maintained at various temperature regimes (at 15, 20, 25 and 30°C). During trial, the larvae were fed with unicellular algae *Dunaliella tertiolecta* and Lansy PZ (lipid-enriched yeast). Survival and growth rate of *P. spinosa* with an interval of 3 days to 18 days were examined. After attaining adulthood, 16 pairs of adult *P. spinosa* were transferred from all culture vessels into separate containers supplied with 300 ml of brackish water (5 ppt) and similar temperatures to compare their life span and reproductive traits. Based on results obtained, maximum growth at shortest period (13.2±2.0 mm on day 12) was observed at 30°C; whereas, all *P. spinosa* died before reaching sexual maturity by day 15. Maximum survival (86%) was observed at 15°C; however, minimum growth also was obtained at the same temperature with none of *P. spinosa* reaching sexual adulthood. On the 18th day, *P. spinosa* reached sexual adulthood only at 20 and 25°C. Furthermore, a significant difference was observed in most of the reproductive traits especially in total egg production per female at 20°C. Thus, it seems that 20°C is the suitable temperature to rear this fairy shrimp. Future studies should be focused on the feasibility of mass production of this species as a valuable live feed in the aquaculture industry.

Keywords: Fairy shrimp, Growth, Survival, Life span, Reproductive characteristics.

INTRODUCTION

Anostracans, commonly known as fairy shrimps are typical inhabitants of vernal pools, aquatic environments characterized by strongly variable abiotic conditions (Beladjal *et al.*, 2003a). Like other crustacean species that inhabit vernal pools, the fairy shrimps are adapted to the unpredictable nature of the ponds by developing to maturity quickly and reproducing before the ponds dry. Females produce encysted embryos that remain quiescent until the pools are refilled; the

nauplii are born when exposed to the appropriate environmental cues (Brendonck *et al.*, 1990; Peck, 2004; Pocięcha, 2007). Although much information is available on the ecology of anostracans (Lake 1969; Sluzhevskaya 1975; Sluzhevskaya-Drobysheva, 1982; Anderson and Hsu, 1990; Saiah and Perrin, 1990; Maeda-Martinez *et al.*, 1995), relatively little is known about how populations differ in life history traits (Beladjal *et al.*, 2007; Hawes *et al.*, 2008). A number of studies have been carried out on growth, survival (Peck, 2004, 2005), respiration (Pocięcha, 2007)

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