

# The combined effects of temperature and salinity on survival of larvae and juveniles of tropical abalone *Haliotis asinina* under laboratory conditions

**Authors:**

Nilnaj Chaitanawisuti<sup>1</sup>,  
Sirinun Nunim<sup>2</sup> and  
Wannanee Santhaweesuk<sup>1</sup>.

**Institution:**

1. Aquatic Resources  
Research Institute,  
Chulalongkorn University,  
Bangkok, Thailand 10330.

2. Department of  
Environmental Science,  
Graduate School,  
Chulalongkorn University,  
Bangkok, Thailand 10330.

**Corresponding author:**  
Nilnaj Chaitanawisuti.

**ABSTRACT:**

This paper reports on a 3 x 3 factorial design experiment conducted to examine the combined effects of temperature and salinity on survival of larvae and juveniles of tropical abalone *Haliotis asinina* under laboratory conditions for 96 h. The temperatures used were 25, 30 and 35°C and the salinities were 27, 30 and 33 ppt. Response surface contour diagrams were generated from the survival data to estimate optimal conditions. The highest survival of newly-hatched larvae, newly-settled juvenile and fully juveniles of *H. asinina* was obtained at the lowest temperature tested (25°C) with the highest salinity tested (33 ppt), while the lowest survival was obtained at the highest temperature tested (35°C) with the lowest salinity tested (27 ppt). Two - way ANOVA showed that survival of larvae, newly - settled juveniles and fully juveniles were significantly affected by temperature and salinity. A significant interaction between both factors occurred in newly - settled juveniles and fully juveniles but not for larvae. Multiple regression analysis indicated a higher correlation between salinity and survival of larvae *H. asinina* but a higher correlation between temperature and survival for newly - settled juveniles and fully juveniles. This study indicated that the optimal conditions for maximum survival of larval, newly - settled juvenile and fully juveniles were 27-30°C and 31-33 ppt, 26-29°C and 27-33 ppt, and 26-27°C and 31-33 ppt, respectively.

**Keywords:**

Tropical abalone, *H. asinina*, temperature, salinity, survival, early life stages.