# Salinity tolerance of the mud crab larvae, *Scylla tranquebarica*

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# ABSTRACT

The salinity tolerance of the larvae *Scylla tranquebarica* from zoea 1 to megalopa stage was determined. The salinity levels tested were 15, 20, 25, 30, 35, 40, and 45 ppt for the zoeal stages. While, 5 and 10 ppt were added for the megalopa stage. The experiment was conducted in 3.5 L plastic container filled with 3 L of water. There were three replicates per treatment. The survival and metamorphosis of the larvae were monitored daily. Two experimental set-ups were utilized: the direct transfer and gradual transfer. In the first set-up, the larvae were directly transferred from ambient salinity (28-34 ppt) to different salinity levels and reared continuously until larvae developed to next stage. In the gradual transfer set-up, the larvae were gradually transferred from the ambient salinity to higher and lower salinity and then continuously reared at 45 and 15 ppt, respectively.

The results on the abrupt transfer experiment showed that that each larval stage of *Scylla tranquebarica* had optimum salinity tolerance. Z1 larvae maintained high survival in salinity levels of 20-45 ppt and significantly high metamorphosis occurred in 30 ppt. Z2 were able to survive in salinity level of 20-35 ppt with significantly highest molting in 25 ppt. Z3 had wider tolerable salinity range of 15-40 ppt and 25-30 ppt favored molting. Salinity range of 20-40 ppt was tolerable for both Z4 and Z5 larvae. But for Z4, high molting occurred at salinity 30-35 ppt. While in the salinity range of 25-30 ppt had significantly high molting of Z5 to megalopa. As for megalopa, survival was not significantly different at 15-40 ppt and salinity range of 20-35 had the highest metamorphosis to crablet instar 1.

Larvae abruptly transferred to lower salinity of 15 ppt treatment resulted to low survival at Z1 (3.3%) Z2 (32.2%), Z3 (23.3%), Z4 (2.2%), Z5 (50%) and megalopa (36.7%). No metamorphosis took place in Z1, Z2, Z4 and very low at Z3 (2.2 %) and megalopa (13.3%).On the other hand, survival of the larvae gradually transferred to lowest salinity of 15 ppt was greatly improved which was Z1 (90.0%), Z2 (60%), Z3 (21.1%), Z4 (78.9%), Z5 (92.2%) and Megalopa (70%). There was no metamorphosis in Z1 & Z2 with very low at Z3 (1.1%), Z4 (18.9%) Z5 (3.3%) and megalopa (20%).

No trend was observed for the abrupt transfer into higher salinity treatment of 45 ppt where survival at Z1 (91.1%), Z2 (0%), Z3 (0%), Z4 (26.7%), Z5 (40%) and Megalopa (3.3%) but survival has greatly improved in the gradual transfer which are: Z1 (93.3%), Z2 (41.1%), Z3 (2.2%), Z4 (64.4%), Z5 (64.4%) and Megalopa (30%). There was no metamorphosis from Z1 to Z5, and very low at megalopa (33.3%) for the abrupt transfer. In the gradual, only Z4 molted to next stage (1.1%).

For hatchery operation, it is recommended that Z1 and Z2 larvae should be reared in water with salinity that range from 25 to 35 ppt. While for Z3, Z4, and Z5, the salinity of the water should range from 25 to 30 ppt. For megalopa, the larvae could be reared in a salinity range of 20 to 40 ppt.