

## HIGHER PROPAGATION SUCCESS OF *POECILIA RETICULATA* (LIVE BEARER) THAN *BETTA SPLENDENS* (EGG LAYER) IN HARD WATER ENVIRONMENT IN SEMI-NATURAL AQUARIA

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Ornamental fish farming is one of the important economic activities in Sri Lanka because of its natural resources. Minerals and nutrients are playing a crucial role in the survival of fishes. Among the minerals, Calcium ( $\text{Ca}^{2+}$ ) is plays a significant role in the growth and reproduction of ornamental fishes. Calcium in the form of hardness ( $\text{CaCO}_3$ ) in aquifers of Vavuniya (Northern province) is more enriched than Southern Sri Lanka. This natural resource of water is suitable for some ornamental fish farming in this region. Therefore, the main focus of this study is to find out the high propagation probability of live bearer and/or egg layer fish along with varying water hardness. Virgin *Poecilia reticulata* (live bearer,  $n=360$ ) and *Betta splendens* (egg layer,  $n=240$ ) of both sexes were randomly selected and reared for 8 weeks at 150 mg/L (control), 320 mg/L, 540 mg/L & 900 mg/L  $\text{CaCO}_3$  (hardness) in semi-natural aquaria with 3 replicates. Propagation studies were conducted to find gonadosomatic index (GSI), fecundity, fertility and hatchability of both species in each set up. Propagation of *P. reticulata* was significantly greater than ( $p = 0.016$ ) *B. splendens* in hard water (900 mg/L). Supportively, GSI and fecundity were boosted in high water hardness (540 & 900 mg/L) in *P. reticulata*. However, *B. splendens* did not show any significant variation with increasing water hardness. The bubble nest size and hatchability are the unique reproduction potential of *B. splendens* and it was severely affected by increasing hardness (540 & 900 mg/L). Larval growth performance and survival rate also higher in *P. reticulata* than *B. splendens* up to 900 mg/L. Therefore, *P. reticulata* is the suitable ornamental fish for propagation compared to *B. splendens*. As *P. reticulata* utilize the benefit of water hardness in a positive way, ornamental trade of live bearers like *P. reticulata* will aid to uplift the socioeconomic status of the local people in Vavuniya. However, the fate of egg layers should be monitored in specific hard waters systems for viable propagation. Thus, the role of Vavuniya Campus is necessary to train the students for accelerating extension service to the society.

**Keywords:** water hardness, propagation, ornamental fish, live bearers, Vavuniya.