

Impact of three invasive alien fish species on the survival of tadpoles of Asian common toad, *Duttaphrynus melanostictus* under laboratory condition

De Silva, T.W.J.T. and Epa, U.P.K.

Department of Zoology, University of Kelaniya, Kelaniya

Corresponding author: epa@kln.ac.lk

On a global scale, alien invasive species have been identified as being one of the five most important direct causes of the world wide decline in biodiversity and ecosystem services. Large number of exotic species has deliberately been introduced to increase food security, to develop cash crop production, as biological control agents and for the ornamental purposes. However the impacts of these introductions are least studied. This laboratory study was conducted to investigate the impact of three introduced fish species, *Oreochromis niloticus*, *Helostoma teminkii*, and *Trichogaster trichopterus* on the survival of tadpoles of *Duttaphrynus melanostictus*. Study was conducted from July to September, 2014 in twelve glass aquaria with a size of 90 x 30 x 30 cm. Five, healthy tadpoles with an average length of 1.2 ± 0.21 cm and 20g of *Hydrilla* plant were introduced to all experimental tanks. Experimental design: Experiment I (E1): *H. teminkii* (length 15.5 ± 0.43 cm and width 7.1 ± 0.17 cm), one fish in each treatment tank; Experiment 2 (E2): *T. trichopterus* (length 6.5 ± 0.5 cm; width 3.4 ± 0.3 cm); three fishes in each treatment tank; Experiment 3 (E3): *O. niloticus* (length 8.5 ± 0.7 cm; width 5.2 ± 0.3 cm); three fishes in each treatment tank. All the experiments were conducted in triplicate. Three tanks served as controls which only with tadpoles. Water quality parameters such as DO, temperature and pH were measured in all the tanks once a week. Fish were fed twice a day using a commercial fish feed and excess feed and fish excreta were siphoned out. Half of the water in tanks was exchanged with aged tap water twice a week. Fish behavior and number of tadpoles were carefully monitored daily. Tadpoles were reintroduced once a week up to five times into all the treatment tanks. Water quality parameters measured were not significantly different among tanks (one way ANOVA, $p > 0.05$). Average DO, pH and temperature were 8.4 ± 0.32 mg/L, 7.7 ± 0.12 and 28.7 ± 0.3 °C, respectively. *O. niloticus* started to chase tadpoles once they were introduced in to the tanks in E3. They took tadpoles into the mouth and spitted out 1-3 times before they were swallowed. None of the tadpoles in E3 survived due to predation after 2 hrs of introduction. Number of tadpole mortalities in E1, E2 and control were 2, 3 and 2, respectively. Tadpole mortality counts were not significantly different among E1, E2 and control tanks (One way ANOVA, $p < 0.05$). According to the results presence of *H. teminkii* and *T. trichopterus* did not pose a threat to the existence of tadpoles. The existence of *O. niloticus* in fresh water habitats may be a great threat to the survival of tadpoles of *D. melanostictus*. A further study to investigate the predation of *O. niloticus* on the tadpoles of other species of amphibians in Sri Lanka is warranted.

Keywords: tadpoles, invasive, *Oreochromis*, *Helostoma*, *Trichogaster*, predation

Acknowledgement: Ministry of Agriculture & Council for Agricultural Research Policy (CARP) for the financial support.