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Assessment of variations of egg size and fecundity of female Nile Tilapia *Oreochromis niloticus* (Linnaeus, 1757) reared under controlled and wild conditions

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Abstract

Fecundity estimation is the main approach used in fisheries management to predict the reproductive potential of a fish population. Studies related to this aspect of Nile Tilapia, *Oreochromis niloticus* are lacking in Sri Lanka. The present study was carried out to compare the reproductive potential of female Nile Tilapia with respect to fecundity and egg size in controlled and wild conditions. Nile Tilapia from Tilapia Breeding Centre at Udawalawa, NAQDA were selected as the fish reared in controlled conditions whilst the wild fish were collected from fish stalls near the Nilwala River at Bandaththara. Fifteen egg bearing female fish were collected from each site. Mean total length and weights of fish were 26.23±0.77 cm and 275.99±25.89 g in Udawalawa and 25.04±0.56 cm and 252.1±11.10 g in Nilwala river respectively. Ten morphometric parameters of each fish were measured. After dissecting, the total no. number of eggs was counted, and the diameters of eggs were measured. The data were analyzed using one sample t-test. Fish collected from Udawalawa had a significantly higher ($p<0.05$) mean total weight of eggs/fish than that of Bandaththara. Fish from Udawalawa had higher mean total fecundity (1746.67±238.65) when compared with the fish from the wild (1366.67±104.65). Furthermore, fish from Udawalawa had higher relative fecundity (6.31±0.36 g^{-1}) than the fish from Bandaththara (5.43±0.51 g^{-1}). Egg diameters of fish ranged from 1.38-1.82 mm and 1.43-2.15 mm in Udawalawa and Bandaththara respectively. Study revealed that female Nile Tilapia in controlled conditions had higher total and relative fecundities when compared to the fish in the wild. But the eggs collected from Nile Tilapia from Udawalawa had significantly lower diameters than that of wild. The findings of the present study will provide an insight for sustainable management of Nile Tilapia fishery in Sri Lanka.

Keywords

Fecundity, Nile Tilapia, captivity, wild fish