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# Comparative Assessment of Age, Growth and Food Habit of the Black-Chinned Tilapia, *Sarotherodon melanotheron* (Rüppell, 1852), from Closed and Open Lagoons, Ghana

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**Abstract**

The black-chinned tilapia *Sarotherodon melanotheron* is the most abundant fish species in the Nakwa (an open lagoon) and Brenu (a closed lagoon) in the Central Region of Ghana. Aspects of the life history characteristics and the ecology of the fish populations in both lagoons were studied to assess the bio-ecological status of this important resource. The size and weight of fish samples ranged between 3.9–11.5 cm total length and 0.960–27.299 g for Nakwa Lagoon and 5.6–12.8 cm total length and 3.160–29.810 g for the Brenu Lagoon. The estimated von Bertalanffy growth parameters were $L\infty = 12.04$ cm; $K$ =2.76 year$^{-1}$ for the Nakwa Lagoon samples and $L\infty = 13.44$ cm; $K = 3.27$ years$^{-1}$ for Brenu Lagoon samples. Daily otolith incremental rate ranged from 0.01–0.03 mm per day and 0.01–0.02 mm per day for Nakwa and Brenu lagoons respectively. Stomach content analysis of the fish samples revealed that the species are planktivorous and the range of food varied between the lagoons. Green algae were the most prevalent food item in the stomachs of the fish samples from Nakwa with the frequency of 69 %, while diatoms (80.5 %) were most prevalent phytoplanktonic food item in for the fish in Brenu lagoon. The estimates of asymptotic length for the species in both lagoons are alarmingly close to known values of the species length at first sexual maturity and points to intensive fishing pressure. As a consequence, a more comprehensive sample-based survey is required in both lagoons to derive robust estimates of management reference points. The results of the stomach content analysis are beneficial to the construction of diet matrix for ecosystem models of the two systems.

**Keywords:** Age, food, Ghana, growth, Lagoon, otoliths, tilapia

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