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Variation in Condition Factor of Some Freshwater Fishes from Epie Creek, Bayelsa State, Nigeria

Enetimi Idah Seiyaboh

Department of Biological Science, Faculty of Science, Niger Delta University, Wilberforce Island, Bayelsa State, Nigeria

***Corresponding Author:** Enetimi Idah Seiyaboh, Department of Biological Science, Faculty of Science, Niger Delta University, Wilberforce Island, Bayelsa State, Nigeria*

ABSTRACT

This study assessed seasonal influence in condition factor of some freshwater fishes from Epie creek, Bayelsa state, Nigeria. The fishes were caught with the help of local fishermen in the area, and condition factor was determined following standard biometric protocol. Findings showed condition factor of 0.69 (Chrysichthys furcatus) to 2.99 (Synodontis clarias) for dry season and 0.65 (Gnathonemus deboensis) to 1.35 (Citharinus citharus) for wet season. The condition factor was less than 1 for Schilbe mystus in both seasons of study, and Gnathonemus deboensis and Citharinus citharus during the dry season.Variation in the well-being of the fish differs among the species as well as season. The well-being of the fish could be influence by level of anthropogenic activities in the creek.

Keywords: *Anthropogenic activities, Condition factor, Fish health, Freshwater, Surface water;*

INTRODUCTION

In Bayelsa state several surface water exist and majority of the water resources are tributary of river Nun which are called by several names at different locations. Several studies have been carried out in some of the aquatic ecosystem with regard to water quality (viz: physicochemical and microbial quality) (Ogamba et al., 2015a-c, 2017; Seiyaboh et al., 2017a,b; Izonfuo and Bariweni, 2001; Aghoghovwia and Ohimain, 2014; Aghoghovwia et al., 2018; Agedah et al., 2015; Daka *et al*., 2014), sediment quality (Kigigha et al., 2018; Seiyaboh et al., 2016a,b, 2017c).

Basically surface water is a major habitat to aquatic organisms including fisheries, planktons and macro benthic organisms (Izah and Srivastav, 2015). Fisheries found in the surface water resources have been widely studied with regard to weight-length relationship and condition factor. Some of these studies have been carried out in Bayelsa state including Brass river (Seiyaboh et al., 2016c),Ikoli creek (Seiyaboh et al., 2016d), Kolo creek (Seiyaboh et al., 2016e), Sagnana river (Seiyaboh et al., 2016f).

Epie creek is important surface water aligning major express way (Mbiama- Yenagoa road) in Yenagoa metropolis, the state Capital (Ben-Eledo et al., 2017a; Seiyaboh and Izah, 2017). The water is used fordomestic, agricultural and industrial activities (Ben-Eledo et al., 2017a). The water is a major sink to several wastes streams resulting from market activities in the area (Ben-Eledo et al., 2017a,b), urban runoff (Izonfuo and Bariweni, 2001) and municipal wastes including sewage (Ben-Eledo et al., 2017a). Fishing, boating/ canoeing, swimming activities is also carried out in the creek.

Probably due to urbanization and prevailing anthropogenic activities in the creek, the quality of the creek with regard to water and sediment is under serious threat especially in area close to market. In addition, when water and sediment characteristics are impacted upon, the tendency that the aquatic organisms in such area can be impacted as well is very high.

Some aspect of fish biology such as length - weight relationship and condition factor are very important in assessing the population dynamics of fisheries (Abu and Agarin, 2016). Specifically, condition factor of a fish is basically used to determine its general well-being in fisheries (Abowei, 2006; Abu and Agarin, 2016;Kumolu-Johnson and Ndimele, 2010; Seiyaboh et al., 2016d), as well as the status of the fish habitat i.e aquatic ecosystem (Atama et al., 2013). According to Abu and Agarin (2016), Seiyaboh et al. (2016d),Onimisi and Ogbe (2015), the condition factor of fish is essential in evaluating age, feeding and growth

rate. Hence, this study aimed at assessing the condition factor of some common fishes in Epie creek, Bayelsa state, Nigeria.

MATERIALS AND METHODS

Study Area

The Epie creek is an important surface water bodies aligning Yenagoa-Mbiama road in Yenagoa, Bayelsa state. The creek is connected to other major creeks in the area such as Taylor creek. The creeks receives several wastes streams resulting from human activities directly (Ben-Eledo et al., 2017a,b) and sometimes indirectly through runoff (Izonfuo and Bariweni, 2001). In addition fishing and canoeing/boating are some activities commonly carried out in the creek. During the dry season, the water level decrease, and in some area one can easily cross the creek without the use ofwooden bridge or boat that is common in the area. While in the dry season the water often exceed the water drainage and affects residents aligning the creek.

Fish Sampling

Sampling was carried out between March and August for wet season and November to December for dry season 2014. Fishes were collected with the assistance of local fishermen that use gillnets, long lines, traps and stakes to trap them. During sampling, the fish were transported to the laboratory using thermos cool boxes. Fish specimens were identified using monograph descriptions, checklists and identification keys provided by Reed *et al.* (1967), Holden and Reed(1972), Poll(1974), Whyte (1975), Jiri (1976), Reed and Sydenham (1978), Otobo (1981), Whitehead (1984), Loveque *et al.*(1991).

Metre rule was used to measure the fish from the anterior tip to the caudal fin (Seiyaboh et al., 2016d).The weight of the fish was obtained after drilling water from the buccal cavity and blot drying with a dry piece of clean hand towel (Seiyaboh et al., 2016d,e).

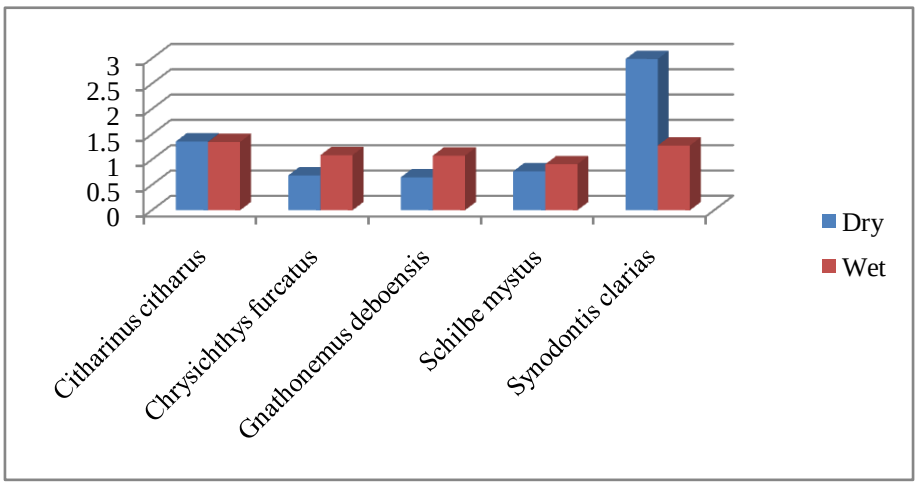

Figure1. *Condition factor of some freshwater fish species from Epie creek, Bayelsa state, Nigeria*

Condition Factor

The condition factor (K) of the experimental fishes was estimated from the relationship:

$K=100W/L^3$ (Seiyaboh et al., 2013, 2016d, e; Pauly, 1983)

Where;

K= Condition Factor

W= Weight of Fish (g)

L= Length of Fish (cm)

RESULTS AND DISCUSSION

Figure 1 presents the condition factor of some freshwater fishes obtained from Epie creek, Bayelsa state, Nigeria across the two predominant seasons (wet and dry). Mean values for dry and wet seasons were 2.99 and 1.28 respectively (*Synodontis clarias*), 1.36and1.35 respectively (*Citharinus citharus*), 0.69 and 1.09 (*Chrysichthys furcatus*), 0.65 – 1.08 respectively (*Gnathonemus deboensis*) and 0.77 – 0.91 respectively (*Schilbe mystus*).

The condition factor of *Schilbe mystus* for both seasons, and *Gnathonemus deboensis* and *Citharinus citharus* for dry season were less than 1 indicating poor condition (Seiyaboh et al., 2016d).

These further show that variation between fishes of different species with regard to condition factor. Furthermore, apart from the condition factor of *Synodontis clarias* during the dry season, the values were higher in wet season. These further suggest seasonal influence

(Seiyaboh et al., 2016d). Typically age, feeding intensity and growth rate could affect condition factor of a fish.

The condition factor trend reported in this study has some similarity with the work of Seiyaboh et al. (2016d) in Ikoli creek that reported condition factor in the range of 0.81 – 2.09 (wet season) and 0.81 – 1.87 (dry season).Okon and Sikoki(2014) reported that higher condition factor suggests well-being of a fish. Variation that exists could be due to level of degradation caused by anthropogenic in the water (Abu and Agarin, 2016) and behavioral response and adaptation strategies of the fish species (Seiyaboh et al., 2016d).

CONCLUSION

The condition factor of some fresh water fish from Epie creek, Bayelsa state was investigated. The result revealed that wet season have higher condition factor except for *Synodontis clarias.* Furthermore, the condition factor were > except for *Schilbe mystus* for both seasons, and *Gnathonemus deboensis* and *Citharinus citharus* for dry season. Variation suggests level of anthropogenic activities long the creeks as well as seasonal influence.

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