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LENGTH–WEIGHT RELATIONSHIP OF SELECTED SIX FINFISH SPECIES FROM KANKE RESERVOIR OF RANCHI, JHARKHAND, INDIA

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ABSTRACT : Length–weight relationship (LWR) was estimated for six finfish species; two Rohu species and one Bronze Featherback, one Pethia, one Mrigal and one Tilapia species from Kanke Reservoir of Ranchi (Jharkhand, India). Total ten sampling sites were selected; 1) CMPDI Site (Maximum effluent releasing urban side), 2) Pen Culture Site (Fish culture site), 3) Boating Site (Rock garden side), 4) Idol Immersion Site, 5) Reservoir Gate, 6) Panchsheel Colony, 7) Pandra, 8) Durga Mandir, 9) Misirgonda Alias Pahar and 10) Middle Site (away from culture site) for study. Samples were collected bimonthly basis from 10 September 2020 to 10 July 2021. Random collection of fish sample was done by using diverse gear such as cast net, gill net, hook and line, scoop net and mosquito net. The fish sample was also collected from local fish market of Kanke (Ranchi). Operation period of different gear was vary; for cast net/ mosquito net 2-3 hours, for hook and line 4-6 hours, scoop net 1-2 hours and soaking time of gill net varied from 2-4 hours and sometimes overnight. Length-weight relationship showed good fit with r^2 values varying from 0.90 to 0.99.

Key words : Gill net, length-weight relations (LWR), fish biology, Potpoto river.

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INTRODUCTION

The study of length-weight relationship is considered to be an important tool to provide many informations of fish biology especially growth rate, age structure, age at first maturity and segregation of stocks (Richter *et al*, 2000; Morey *et al*, 2003; Hossain *et al*, 2006; Vaslet *et al*, 2008). Sarkar *et al* (2013) reported that information about climate and environmental changes and change in human practices can also be gathered by using the data on length and weight relationship. Commonly the "wellbeing or fitness of fish" is represented by K (Fulton's condition factor), the fish which is heavier at specific length is considered to be in better condition (Bagenal, 1978). The value of K of a fish varies and it depends on several factors like food availability, state of sexual maturity, age and sex of some species (Anibeze, 2000).

The Kanke is small, fresh water reservoirs in Jharkhand. It is situated at the base of the Gonda Hills (23°23'50"N, 85°18'15"E) in Ranchi district, primary source of water inflow in this reservoir is Potpoto River and has water spread area of 100 ha. Mainly constructed with the purpose of rain water harvesting and supplying drinking water to Ranchi town area. At same time, it is the home for several fishes and micro-organisms. Most common fishes are Carps, Barbs, Murrels, Featherback, Loaches and Spiny eels etc.

The mathematical relationship between length and weight of fishes is to be considered as practical index and very helpful for understanding their growth, age at first maturity, reproduction, survivability and general wellbeing (Le Cren, 1951). The data on length-weight relationship is very limited for most of tropical fish (Dubey *et al*, 2012 and Mir *et al*, 2012). Length–weight relationship is principally helpful in converting the length into weight data in field studies related to fishery science where it is difficult to determine weight. Many reports are available on the length–weight relationships of marine and inland fishes, but it is scanty especially for the fishes

Naeem (2010), Parameswaran and Sinha (1966), Hossain *et al* (2012), Chakrabarty and Singh (1963), Jhingran (1959) and Kamal (1971).

But the "b" value of *O. mossambicus* in this study shows negatively allometric growth pattern, which is similar to results observed by De Silva (1985) in man-made reservoir of Sri Lanka. In case of Australian water body, "b" value for same species (*O. mossambicus*) reported more than 3 by Blühdorn and Arthington (1990).

The species were caught from the major commercial gears of Indian inland fisheries that is subjected to high fishing pressure, it was crucial to understand their life history traits and other biological parameters to conserve the resources on the Indian inland waters. Studies on length-weight relationship of fin fishes are limited in Indian waters especially in Kanke Reservoir of Ranchi, (Jharkhand, India) and in this backdrop, findings of the present study will help the fishery managers and policy makers to formulate proper harvest management plan for these six species.

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