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LENGTH - WEIGHT RELATIONSHIPS OF RED FIREFISH *PTEROIS VOLITANS*, FROM CUDDALORE COAST, SOUTH EAST COAST OF INDIA

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ABSTRACT

One name not a birth of beauty and more than one name is birth of beauty; it's bringing different style also. The *P. volitans* having a lots of pet name such as lion fish followed by zebrafish, firefish, turkeyfish, red lionfish, butterfly cod, ornate butterfly-cod, peacock lionfish, red firefish, scorpion volitans, possibly due to the fact that the species is widespread, simply observed and its dangerous to humans. The subfamily Pteroinae, which contains 5 genera, the genus pterois, species of *P. volitans*, it was collected from Cuddalore coast, since the measuring length and weight parameters. Totally, 181 males and 168 females of *P.volitans* used for the present study. The parameters and related statics of the length and weight relationships of the males form Loge W = -3.6479 + 2.3758 Loge X, while that of female was Loge W = -3.4826 + 2.3024 Loge X. Males and females combined Loge W = -3.5589 + 2.336 Loge X and the 'b' values of both males and females were less than 3.

INTRODUCTION

The condition index of fish is to measure the generally health of a fish by comparing its weight and of the same length. The length weight relationship for fish is a technical measurement that can be used to provide important biological intimation that can then be used to make good management of fisheries [1, 2] . The condition factor also indicates that the physical, chemical and environmental conditions of fish. It may use for the conditions, fatness and well being of fish and determination of other lifelong history. The measures of fish in length and weight data are very much useful for the sampling programmes, growth and aquaculture development studies [3]. It is curves are developed by weighing and measuring the individual fish from the population and also due to data useful for the age of the fish its very much gainful for the stock composition, life studies, weight, length, feeding habitats and maturity, reproduction, culture, growth, mortality, production and future aspects in other process. A number of investigations have been carried out on the length-weight relationships marine and freshwater fishes in many marine ecosystems. [1] has been reported that the length-weight relationship and seasonal cycle in gonadal weight and condition in the perch, *Perca fluviatilus*. [2] has been recorded that the length weight relationships in the oil sardine *Sardinella longiceps*, [3] has been reported that the studies on some aspects of biology of *Anabas testudineus.* [4] has been observed the bionomics of the Hill stream Cyprinids, food parasites and length-weight relationship *Labeo dyochilus*, [5] have been observed the length-weight relationship and relative condition factor in *Daysciaena albida* (Cuv.) and *Gerres filamentosus* (Cuv.), [6] has been recorded the length-weight Relationship of Indian major Carps, [7] has been recorded the length-weight and length-maximum girth relationship of *Catla catla* (Ham.) in commercial landings of Gandhi Sagar Reservoir. [8] has been recorded length-weight relationships of demersal fishes from the upper continental slope off Colombia, [9] has been recorded the marine fishes from the central Brazilian coast. [10] has been reported length-weight relationship and condition factor of *Oreochromis mossambicus*, from a domestic pond, [11] has been recorded commercially important marine fishes and shellfishes from Karnataka coast, [12] has been observed length weight relationship of milk fish, *Chanos chanos* (Forskal) reared in inland saline ground water, [13] has been recorded length-weight relationships of five fish species from Epe lagoon, [14] has been recorded that the length-weight relationship and relative condition factor of *Pampus argenteus* (Euphrasen) from Kakdwip esturine, [15] has been recorded that the lenght-weight relationship and relative condition factor of Gangetic bola, *Jhonius gengeticus* from esturine region of Kakdwip, [16] has been observed length-weight relationship and condition factor of soldier fish *Myripristis murdjan* from Cuddalore Coast, [17] has been recorded four

commercially important marine fishes of Northern Bay of Bengal. Therefore, the length-weight relationship of *P.volitans* previously not recorded. Hence the present study, on the length-weight relationship of *P.volitans* was carried out with the objective of providing a set of estimated equations, and to determine whether any difference exists in these relationships in males and females.

MATERIALS AND METHODS

Around 181 males ranging in size from 100 to 234 mm and 168 females ranging in size from 102 to 230 mm of the test animal *P.volitans,* used for the present study were collected. The length was measured from the tip of the rostrum to the end of tail using a vernier caliper and the weight was measured to the nearest 0.01g using an electronic balance. The length-weight relationship was calculated separately for both sexes as well as pooled (Fig-1). The logarithmic equation for this relationship is log e W = log e a + b log e L i.e., Y = a + bX, according to [18] where 'W' represents weight in gram and 'a' and 'b' the constants, which were estimated by the method of least squares.

The linear equation was fitted separately as well as pooled for males and females of *P.volitans* Analysis of Covariance (ANCOVA) was employed to test the significance of difference between regression coefficients (b) at 5 % level of both sexes [19].

Fig1: Showing the different size groups of male and female *P. volitans*

RESULTS AND DISCUSSION

The log values corresponding to the length and weight of males and females are plotted in the fig- 2 & 3. The regression line obtained showed a linear relationship between the two variables. The regression equations derived for each sex are given below.

Males : Loge W = -3.6479 + 2.3758 Loge X

Females : Loge W = -3.4826 + 2.3024 Loge X

The combined logarithmic relationship between the length and weight in male and female of this species is plotted on fig- 4. The results of analysis of covariance on the length-weight equation revealed not any significant differences between the regressions of males and females at 5 % level ($F = 2.6626$) ($P < 0.05$), so the regression equation for males and females combined together was also calculated as follows.

Pooled : Loge W = -3.5589 + 2.336 Loge X

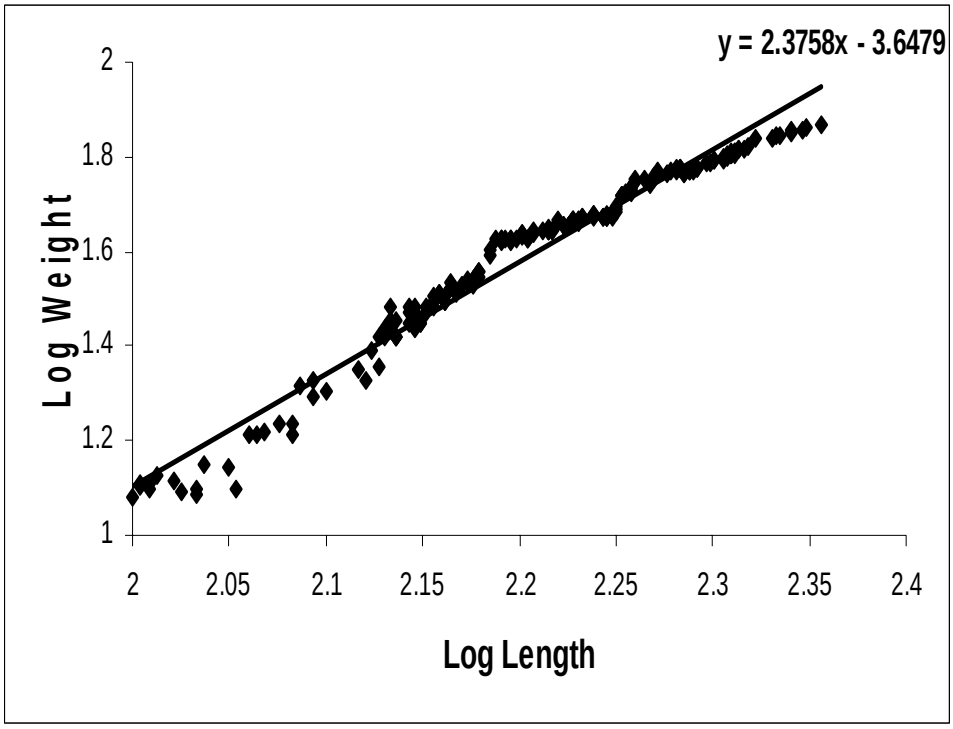

Fig 2. Logarithmic relationship between the length and weight in male *P. volitans*

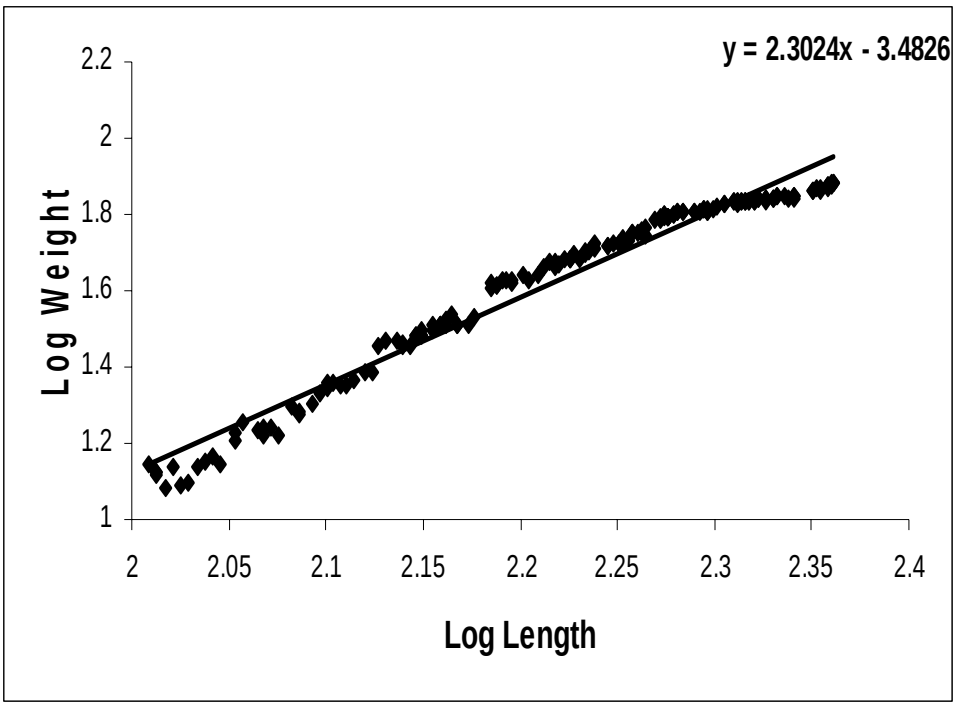

Fig 3. Logarithmic relationship between the length and weight in female *P. volitans*

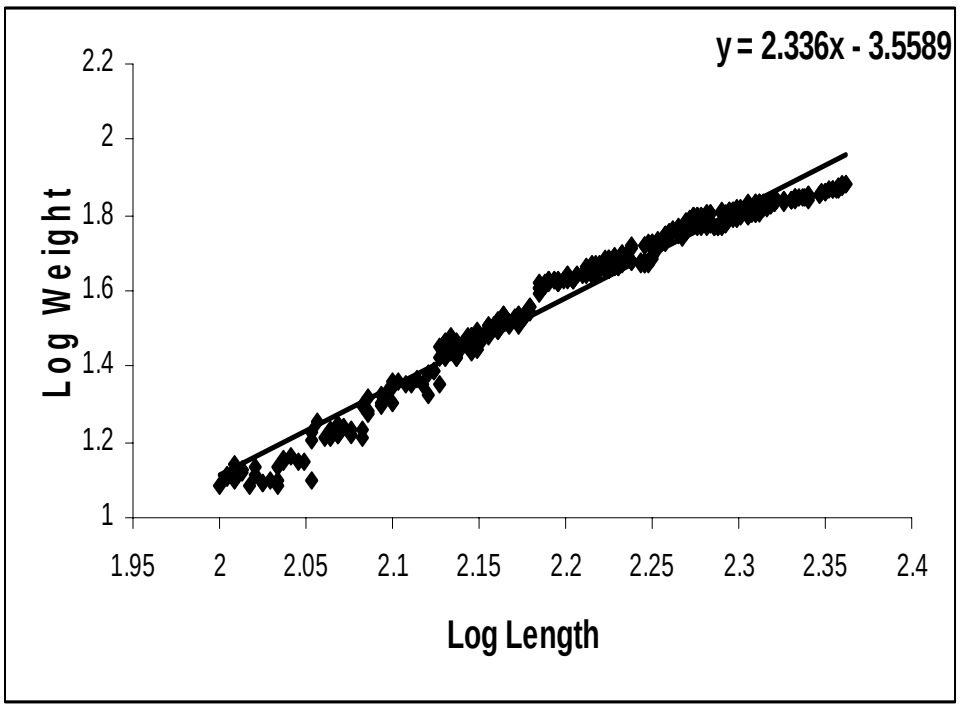

Fig 4. Logarithmic relationship between the length and weight in *P. volitans* male and female as combined

The length and weight relationship information is a fundamental science of fishes. The knowledge of the parameters relates to the length and weights in fishes are scanty. However, the studies significantly important for the fishery biology, the evaluations fish stocks and life cycle [3, 5, 7]. The plant ecosystem, like that the mangrove, sea grass and sea weed, is also known as a play an important spawning and nursering home for many fish species. The family Scorpaenidae species of red lionfish *Pterois volitans* is a venomous coral reef fish of marine ecosystem. The red lionfish or red fire fish, *Pterois volitans*, is playing an Indian marine fish that has been recently recorded to the Cuddalore coast from east coast of Tamilnadu. The lionfish inhabitants mostly harbours as well as offshore reefs in their native assortment. The *P. Volitans* or zebra fish, the functions of like in zebra, the structure of *P. Volitans*, if it is banded with distinct red and white stripes alternated with red, maroon, or brown. As well as followed by other name of turkeyfish, is a functions of the fleshy tabs around the mouth and above the eyes and also the elaborate fan-like pectoral fins and long separated dorsal spines, the *P. volitans* are contains venomous spines its can be long dorsal and pectoral. The spines are using for the prey capture and fighted with predator. It grows as large size and juveniles slightly shorter than 1.5 inch. The spawning rate of lionfish monthly and are able to immediate disperse during the larval stage for expansion of their invasive region.

However here it can be concluded that the weight of the fish it is a function of length. The information on length-weight relation is essential for studies on growth and sexual maturity of animals. Here this study was done with the aim to explain the mathematical relationship between two variables namely the length and the weight – so that if one is known, the other could be computed easily [8, 9, 12]. The results from the present study revealed the length-weight relationship of *P.volitans*. This provided a set of estimated equations, and to determine whether any difference exists in these relationships in males and females. The regression equations derived for male was found as Loge W = -3.6479 + 2.3758 Loge X, while that of female was Loge W = -3.4826 + 2.3024 Loge X. The combined logarithmic relationship between the length and weight in male and female was also calculated which was as found as Loge W = -3.5589 + 2.336 Loge X, from these equations it is clear that the ‘b’ values of both males and females were less than 3. The miracle planet and movable forest of marine water delivery in *P. volitans*, the people mostly like its only ornamental culture. Mainly its culture of small scale, consumption is high and also the significantly important for export. Hence, the length and weight information can be use for its large scale culture, increasing the rate of productions and solve the demand of seafood.

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