INTRODUCTION

Singhari, *Sperata sarwari* (family: Bagridae) is an Indus catfish found in Pakistan and Indus drainage system in India (Mirza et al., 1992). It is carnivorous fish, feeds mainly on animal food (Nawaz et al., 1994, Sandhu and Lone, 2003). The relationship between weight and length for fish in a given population can be analyzed by measuring weight and length of the same fish throughout their life or of a sample of fish taken at a particular time. Weight-length relationship has been commonly used for two different purposes. Firstly, to describe the mathematical model between weight and length so as to derive one from the other (Wootton, 1998). It is highly valuable in cases where weight can be determined from known length and vice versa. Since length can be easily and accurately measured, the data on length are available in various studies (Zafar et al., 2003). Secondly, weight length relationship is used to compute the departure from the expected weight for length of the individual fish or a group of fishes as indications of fatness or degree of well being (Condition factor) of fish. This parameter helps to assess the experimental improvements in an environment for an existing fish and for the purpose of new stocking. The study of weight-length has its applied value in fish biology. The significance of the study in fishes is to assess the growth of fish in different environments.

In the application of the weight-length relationship to define a population, fish length is measured and predicted average weight is assigned to all fish in a given length group. This is often faster and more convenient than weighing fish individually, especially when large number of live fish is sampled. Weight-length relationship is used on commercial scales in population assessments (Steeby et al., 1991; Ali et al., 2000).

The status of Singhari (*Sperata sarwari*) in Pakistan is more or less endangered due to the poor knowledge of its biology, but also due to the declining stocks of this fish in natural waters. The present study is a sequence of this chain and is dealing with weight-length relationship and condition factor of *Sperata sarwari*. It is for the first time that this species is being studied from this point of view in Pakistan.

MATERIALS AND METHODS

Fifty Singhari fish (*Sperata sarwari*), of different body sizes with range 24.9 - 93.7 cm in total length and 66 - 4824 g in body weight were sampled from Mangla Lake, Pakistan during February to March 1998-1999. They were sampled from different body sizes with range 24.9 - 93.7 cm in total length and 66 - 4824 g in body weight. The growth is considered in terms of increase in weight. The volume is represented by weight, which is related to the cube of linear dimension (Length). It is therefore, true that a relationship exists between length (linear dimension) and weight in animals. The relationship between weight (W) and length (L) typically takes the allometric form: W = aL^b. This expression can be transformed logarithmically as suggested by Le Cren (1951), Log W = Log a + b Log L. Where W stands for weight, L for total length, ‘a’ is constant and ‘b’ is the exponent or growth coefficient. These relationships are mostly used by fishery biologist. If fish retains the same shape it grows isometrically and growth coefficient “b” has the value b = 3.0 (Ali, 1999). A value significantly larger or smaller than b = 3.0 shows allometric growth (Bagenal and Tesch, 1978). The weight-length relationship provides an opportunity to calculate an index known as condition factor (K) or “well being” of a fish. Fish with a high value of K are heavy for its length, while fish with a low “K” value are lighter (Bagenal and Tesch, 1978; Wootton, 1998; Zafar et al., 2000).
November 2005 with the help of commercial fishermen. The fishing effort was done by using gill nets with the same length (10 m) and height (1.6 m), but with meshes varying from 15 to 110 mm, knot to knot. Fish random sampling were brought in the laboratory. Length and weight were recorded using fine scale (1mm) and electronic balance (MP-3000 Chyo, Japan) sensitive up to 0.01g. All measurements were made from the tip of the maxilla to the longest caudal fin ray. Parameters “a” and “b” were determined by method of least square regression.

Log a = \frac{\Sigma \log W \cdot (\log L)^2 - \Sigma \log L \cdot \Sigma (\log L \cdot \log W)}{N \cdot (\log L)^2 - (\Sigma \log L)^2}

With the value of ‘log a’ in hand, find ‘b’

b = \frac{\Sigma \log W - (N \cdot \log a)}{\Sigma \log L}

Condition factor “K” was calculated by the formula K = 100W/L^3 (Weatherly and Gill, 1987; Wootton, 1998).

RESULTS AND DISCUSSION

The value of constant a = 0.000448 and growth coefficient b = 3.57 were determined. Condition factor “K” when analyzed against total length and body weight, it was found to increase with increasing length or weight (0.34 –0.67).

Table 1. Length weight relationship for different fish species from different localities.

<table>
<thead>
<tr>
<th>Fish Species</th>
<th>Exponent Growth coefficient (b)</th>
<th>Reference</th>
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<tbody>
<tr>
<td>Cirrhina mrigala</td>
<td>4.56</td>
<td>Javaid and Akram, 1972</td>
</tr>
<tr>
<td>Clarias batrachus</td>
<td>3.3</td>
<td>Sinha, 1975</td>
</tr>
<tr>
<td>Labeo rohita (Immature)</td>
<td>3.17</td>
<td>Chatterji et al, 1977</td>
</tr>
<tr>
<td>Labeo rohita</td>
<td>3.06</td>
<td>Salam and Janua, 1991</td>
</tr>
<tr>
<td>Oreochromis nilotica</td>
<td>2.99</td>
<td>Naeem et al, 1992</td>
</tr>
<tr>
<td>Oncorhynchus mykiss</td>
<td>2.98</td>
<td>Salam et al, 1994</td>
</tr>
<tr>
<td>Channa punctata</td>
<td>2.9</td>
<td>Ali et al, 2000</td>
</tr>
<tr>
<td>Oncorhynchus mykiss</td>
<td>3.12</td>
<td>Naeem et al, 2000</td>
</tr>
<tr>
<td>Tor putitora</td>
<td>3.05</td>
<td>Zafar et al, 2001</td>
</tr>
<tr>
<td>Catla catla</td>
<td>3.02</td>
<td>Zafar et al, 2003</td>
</tr>
<tr>
<td>Sperata sarwari</td>
<td>3.57</td>
<td>Present Study</td>
</tr>
</tbody>
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REFERENCES


