

NOTE

Length-weight relationship and relative condition in *Gerres abbreviatus* (Bleeker) from the Jaffna lagoon, Sri Lanka

K. Sivashanthini *

Department of Zoology, University of Jaffna, Jaffna, Sri Lanka

Abstract

The deep-body silverbiddy, *Gerres abbreviatus*, supports an important fishery in the Jaffna lagoon in Sri Lanka. The length-weight relationship and changes in coefficient of condition of this species have been investigated in the present study. The values obtained for the mean weight by sex showed that females are relatively ($P > 0.05$) larger than males. The length-weight relationships was found to be $W = 0.02987 \times L^{3.04}$ and $W = 0.02933 \times L^{3.05}$ for males and females respectively and indicated almost isometric growth. Mean K_n values for male and female were almost similar (mean $1.52 \pm 0.08SE$ and mean $1.51 \pm 0.13SE$, respectively). The lowest K_n values from October to February showed the spawning period of the species.

The Jaffna lagoon (Lat. $9^\circ 26' - 9^\circ 46' N$ and Long. $79^\circ 52' - 80^\circ 38' E$) is a shallow water body (412 km^2) located in the northern province of Sri Lanka. The deep-body silver biddy, *Gerres abbreviatus* constitutes an important component among the fishes exploited from this lagoon. A perusal of literature shows that no information is available on the biology of this species from Sri Lankan waters. In the present account, the results of a study carried out on the length-weight relationship and condition factor of *G. abbreviatus* are discussed.

Grateful thanks are due to Dr. K. Chitravadivelu, Co-ordinator, Centre for Development of Fisheries, University of Jaffna. Particular thanks are due to the

Head, Department of Zoology for the financial assistance and facilities provided.

Material and methods

Samples for the study were collected from landing centres such as Kakkaithevu, Navanthurai, Kurunagar and Pashaiyoor in the Jaffna lagoon during June 2000 to May 2001. A total of 324 specimens of *G. abbreviatus* (205 females and 119 males) were examined for the study. Total length (TL) in mm and weight in gram were taken in the laboratory. The size ranged from 95- 194mm in males and 67-212 mm in females. The length (L) – weight (W) relationship of the form $W = aL^b$ was calculated for both sexes separately by using the logarithmic transformation,

*Present address: CAS in marine biology, Annamalai University, Parangipettai – 608 502, Tamil Nadu, India. , Fax: 00 91 4144 243555, e-mail: shanthi86@rediffmail.com

$$\text{Log}W = \log a + b. \log L$$

The regression line was calculated by the method of least square regression analysis. The monthly mean relative condition factor (K_n) was calculated using the equation $K_n = W / L^3 \times 100$, where K_n = Fulton's condition factor, W = weight in gram and L = Length in centimeters (Le Cren, 1951). The mean relative coefficient of condition was also obtained for each length group.

Results and discussion

Length - weight relationship

The length-weight relationship in *G. abbreviatus* and the logarithmic transformations are as follows:

Male (119 Nos.) $W = 0.02987 \times L^{3.04}$
 (LogW= -1.52471+3.039 x LogL)

Female (205Nos.) $W = 0.02933 \times L^{3.05}$
 (LogW= -1.53262+3.050 x LogL)

Pooled (324 Nos.) $W = 0.02940 \times L^{3.04}$
 (LogW= -1.53152+3.047 x LogL)

The "t" test showed that the regression exponent values in both sexes were very close to 3 and not significant ($P > 0.05$), indicating an isometric growth.

Condition factor

The monthly mean relative coefficient condition values for both sexes worked out from June 2000 to May 2001 are presented in Figure 1. Mean K_n values for male and female were almost similar (mean $1.52 \pm 0.08SE$ and mean $1.51 \pm 0.13SE$, respectively). Relative K_n value for females decreased gradually from June

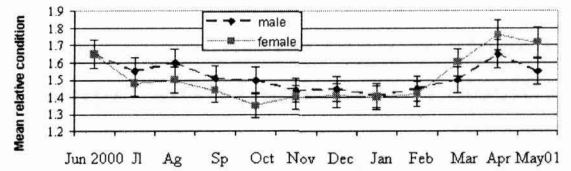


Fig.1. The monthly K_n values of *G.abbreviatus*

and attained a low value (1.35-1.42) during October to February. Again it increased to 1.765 in April 2001 and attained a low value (1.71) in September. The lowest K_n values during October to February indicated that the species spawns during this period. Relatively high K_n values obtained during the summer season have been attributed to active feeding, growth and gonadal development.

The mean relative coefficient of condition was plotted against 20mm class intervals of total length without regard to sex (Fig.2). The average K_n increased with increasing length up to 140-180mm, which indicated high feeding activity, growth

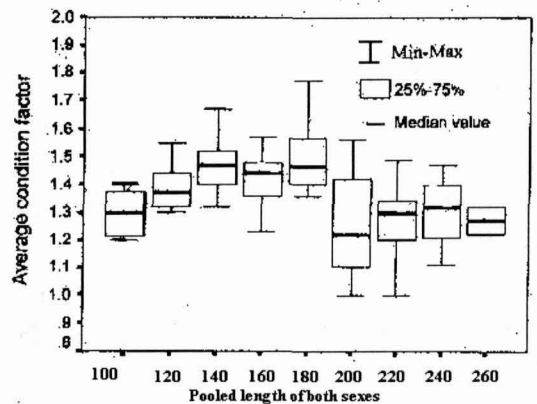


Fig.2. Average condition factor at different lengths of *G. abbreviatus*

and maturation. A gradual decrease from 180mm and a considerable steep drop at 200mm showed spawning activity. The information provided would be very much useful for fish farmers and fishery managers especially in determining the selectiv-

ity of gill nets and in imposing fishery regulations for sustainable fishery management.

References

Le Cren, E.D. 1951. *J. Anim. Eco.*, **20**: 201-219.