

MORPHOMETRY AND GONAD WET MASS OF *HIPPOPUS HIPPOPUS* FROM KARIMUN JAWA ISLANDS, JAVA, INDONESIA

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ABSTRACT

Shell lengths of 26 specimens of *Hippopus hippopus* ranged from 16.4 to 41.3 cm; the shell weight from 483.32 to 6677.14 g; the soft body wet weight (w.w.) from 70.78 to 948.14 g; and the gonad w.w. from 1.87 to 55.37 g. The correlations between organs, shell mass and shell length were determined by regression analysis. All correlation coefficients were close to 1.00. Hence, the degree of the variability of the dependent variable can be determined from the independent variable.

INTRODUCTION

Knowledge of the dimensions of gonad, soft tissue and shell dimensions of the giant clam *Hippopus hippopus* is needed to support management schemes of the giant clam stocks. The gonad wet weight reflects the reproductive potential. The soft tissue and shell length reflects the growth of shells (Shelley & Southgate 1987).

In this study we determined correlations between gonad w.w., soft tissue w.w., shell mass, and shell length of *Hippopus hippopus*. Since length measurements of *H. hippopus* are easily obtained without harming the clam, the other measurements can be estimated in live giant clam from their correlations with shell length. Thus, this basic information may be useful in ecological studies.

MATERIALS AND METHODS

A total of 26 specimens of the *H. hippopus* were sampled at random in the north, south, and east of the Menyamakan Karimun Jawa Islands in May 1995. Gonad wet weight (w.w.), soft tissue w.w., shell mass, and shell length were analysed by simple linear regression and multiple linear regression. The

Liliefors test was applied to check the normal distribution of data before linear regression was carried out. Gonad w.w. was defined as the dependent variable (A). The soft tissue w.w. (B1), shell mass (B2) and shell length (B3) were independent variables. Regression analysis was used to estimate the intercept a , the slope b , and the correlation coefficient between variables when: Y = size of organ I; X = size of organ II.

RESULTS

Morphometry

The shell lengths of *H. hippopus* ranged from 16.4 to 41.3 cm, the shell weight from 483.32 to 6,677.14 g, the soft body w.w. from 70.78 to 948.14 g, and the gonad w.w. from 1.87 to 55.37 g (Table 1).

Regression analysis.

There is a strong positive correlation and interdependence between the variables in the linear regression analysis of *H. hippopus*. All the correlation coefficients r are close to 1.00 (Table 2). Hence, the degree of the variability of the dependent variable can be determined from the independent variable (Rice 1988).

Table 1. A = The gonad w.w. (g), B1 = Soft tissue w.w. (g), B2 = Shell mass (g), B3 = Shell length (cm); n = 26.

A	B1	B2	B3
2.31	70.78	744.73	16.50
9.82	174.50	1718.64	22.30
1.87	72.78	818.39	16.50
43.32	809.39	5700.00	35.40
1.96	73.32	483.32	16.40
10.73	183.04	1228.64	19.50
11.81	333.48	2750.00	25.30
12.42	237.66	1979.10	25.60
8.16	150.63	1640.52	21.80
2.15	80.64	860.10	17.40
5.50	161.32	1562.40	20.10
17.09	647.46	3080.12	28.10
5.57	170.83	1681.87	22.20
6.78	256.67	2970.32	27.30
3.37	180.21	1757.70	22.50
4.83	182.81	1683.25	21.00
4.05	82.94	910.69	18.70
55.37	948.14	6677.14	41.30
5.62	178.62	1796.76	23.00
8.71	170.12	1886.53	23.80
29.62	821.24	5783.45	35.20
3.90	76.52	848.42	17.70
2.03	82.34	889.66	17.00
4.87	90.12	989.53	18.40
2.37	86.32	947.80	18.80
47.35	830.73	6089.69	35.40

Table 2. Linear regression between variables ($Y = a + bX$). A = The gonad w.w. (g), B1 = Soft tissue w.w. (g), B2 = Shell mass (g), B3 = Shell length (cm), r = Correlation coefficient.

$\text{Log } A = -1.704^* + 1.1214 \text{ log } B_1$	$r = 0.9427$
$\text{Log } A = -3.3944 + 1.3116 \text{ log } B_2$	$r = 0.9259$
$\text{Log } A = -3.9082 + 3.5358 \text{ log } B_3$	$r = 0.9336$
$\text{Log } B_1 = -1.4686 + 1.1576 \text{ log } B_2$	$r = 0.9721$
$\text{Log } B_1 = -1.9044 + 3.1010 \text{ log } B_3$	$r = 0.9761$
$\text{Log } B_2 = -0.3097 + 2.6291 \text{ log } B_3$	$r = 0.9855$

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