BIOMETRY OF *Lissemys punctata* AND *Melanochelys trijuga*

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INTRODUCTION

In any species biometric investigations help to understand the interrelation between the various parameters. Besides, biometric study is a reliable technique for recognising the degree of reproductive maturation without sacrificing the animals (Paulraj, 1980). In addition it may also assist in quantifying the degree of sexual dimorphic differences. Hence an attempt was made to study various biometric measurements in two species of turtles, namely *Lissemys punctata punctata* and *Melanochelys trijuga trijuga*.

MATERIALS AND METHODS

Biometric measurements consisted of measuring carapace length (CL), carapace width (CW) at the widest region, plastron length (PL), anterior width (AW) and posterior (PW) width of the plastron, shell height (SH), bridge (B) and weight (WT) for both the *Lissemys* and *Melanochelys*. Measurements were made using a vernier calipers and consisted of straight line measurements as recommended by Pritchard *et al.* (1983) for all the above parameters and were expressed in millimeters (mm.). Weight of the animal was measured using an animal balance and expressed in grams (g.).

RESULTS

During the present study biometry measurements of 148 *L. p. punctata* (83 males and 65 females) and 134 *M. t. trijuga* (65 males and 68 females) were taken.

Average carapace length of *L punctata* was female 173.46 mm. and male 169.37 cm. and *M. trijuga* 176.45 cm. (female) and 185.07 cm. (male, Table 1). Apart from bridge length in *M. trijuga*, in all other biometry measurements females were higher.

Biometry study on three species of *Kachuga* (Emydidae) *K. tentoria circumdata, K. dhongoka* and *K. kachuga* of National Chambal Sanctuary along river Chambal of the Gangetic system was done by Rao and Singh (1987). Their report indicated that the mean carapace lengths were 24.65 cm. *(K.t. circumdata)* 44.6 cm. *(K. dhongoka)* and 47.6 cm. *(K. kachuga)*. Lavania *et al.* (1989), while doing biometrical studies on *L. p. punctata*, caught in and around Agra, found that the average size of males was 763.75 g. and that of females 822.03 g. The values of the present investigation on the same species but of Madras are females 899.54 g. and males 795.61 g.

Another point of observation worthy of discussion is that females *(Lissemys)* are larger than the males in all measurements: Lavania *et al.* (1989) also reports that the females are slightly heavier than the males (other measurements are not provided) as also Daniel (1983) who reports that female *Lissemys* is larger (275 mm.) than the males and males are approximately 100 mm. smaller than females with regard to carapace length. The present investigation on both the species also indicated that females are bigger than males. However, Das (1985) opines that in many reptiles the maximum length is obtained by the male while it is the reverse in case of turtles. Known example of larger male size include snapping turtles in which individuals occasionally engage in aggressive encounters (Froese and Burghardt, 1974; Hammer, 1971); but there is no evidence indicating that larger male size leads to any mating advantages (Bury, 1979). However, male and female freshwater turtles usually differ in coloration, size shell proportions and other features (Carr, 1952; Ernst and Barbour, 1972; McCoy 1968; Viosca, 1933). Presumably dimorphism in some species reflects factors important in social interactions, survival or reproduction. For example in a species with larger females, the diets of the sexes may differ reducing intraspecific competition for food. Greater reproductive fitness is obtained because the large female body size permits more eggs to develop in each gravid female. Nevertheless, the reasons and energetics for the size differences of sexes are poorly understood (Bury, 1979).

Computed statistical analysis of coefficient of correlation (Table 2) in adult *Lissemys* shows a value of 0.65 for CL to CW in females and 0.95 in males; however, for *Melanochelys* (Table 2) the values for the same are 0.96 (female) and 0.93 (male). The correlation between CL to PL in *Lissemys* are 0.64 (female) and 0.98 (male) while the same for *Melanochelys* are 0.95 (female) and 0.92 (male). However, the correlation between CL to WT in *Lissemys* are 0.64 (female) and 0.94 (male) and in *Melanochelys* 0.93 (female) and 0.80 (male) respectively. These positive correlations indicate interrelationship of various biometry factors.

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Table 1. Average Biometry of Adult **Lissemys** *and* **Melanochelys**

Animal	CL	CW	PL (mm)	AW	PW	SH	B	WT (g)
Lissemys								
F	173.46	143.06	163.58	113.84	95.90	64.46	59.84	899.54
M	169.37	141.77	158.11	110.88	87.68	64.27	58.75	795.61
Melanochelys								
F	196.45	143.49	170.20	81.17	89.21	73.18	70.92	1358.01
M	185.09	132.82	161.20	80.73	87.05	77.23	72.10	978.75

F= Female; M= Male

Table 2. Coefficient of Correlation of Adult Turtle Biometry

***Lissemys punctata punctata* - female**

	CL	CW	PL	WT
CL		0.65	0.64	0.64
CW			0.96	0.91
PL				0.95

***Lissemys punctata punctata* - male**

	CL	CW	PL	WT
CL		0.95	0.98	0.94
CW			0.94	0.95
PL				0.93

***Melanochelys trijuga trijuga* - female**

	CL	CW	PL	WT
CL		0.96	0.95	0.93
CW			0.95	0.95
PL				0.90

***Melanochelys trijuga trijuga* - male**

	CL	CW	PL	WT
CL		0.93	0.92	0.80
CW			0.85	0.82
PL				0.72

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