

Ovarian response in female red headed bunting, *Emberiza bruniceps* under natural day length (NDL)

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Red-headed bunting, *Emberiza bruniceps* is a seasonal and under natural day length, captive bird which shows periodic cycles in gonadal growth and development (Jain and Kumar, 1995; Singh and Chandola, 1981).

The investigations pertaining to the photoperiodic phenomenon in avian reproduction and associated events are more extensively carried out in males compared to the females. This is a photoperiodic bird that follows the annual solar cycle for gonadal growth (Tewary and Tripathi, 1983).

Present Investigation was carried out with female red-headed bunting, *Emberiza bruniceps*, family Emberizidae; order Passeriformes. Female red-headed bunting is dull looking ashy brown head (above), buffish washed with yellow (below) and under tail coverts yellow. At Bhopal (India), birds are seen throughout the winter till spring (September/October to March and early April). Day time, birds are found in the crop fields and during night, they shelter in bushes, sugarcane field and on 'Babool trees', *Acacia arabica* (Personal observation).

Adult birds captured from the field and maintained under natural day length (NDL) in captivity at Regional Institute of Education, Bhopal (INDIA), fed with paddy grains and Kakoon and water *at libitum*.

During the study, birds were exposed to natural day length (NDL). In case of the

experiments carried out under NDL, the birds were maintained in a room facing windows, through which normal day length is available from dawn to dusk. The periods of light and dark, were controlled by automatic time switches. The difference between room temperature and that of light boxes was noticed 2 to 2.5°C.

The ovarian weights were assessed *in situ* by unilateral exploratory laprotomy. Ovarian weight was estimated by comparing the sizes of ovary with another standard set of fixed ovary of known weights.

Birds were maintained under natural day length (NDL) at Bhopal, India (Lat. 23° 32' N Long 77° 5'E) from April to March in each month between 15th and 20th day. The observations were made using five birds (N = 5).

In female bird, single ovary weight was recorded (Table 1). The ovarian weight was highest in the month of May, June and July. The ovarian response is a little delayed and growth started in the month of May. The value of the ovarian weight in the month of May and June was significantly higher than the often months of the year except July. The ovaries remained through the year except May, June and July (Fig. 1).

The significant changes which have been observed in the present study reveals a delayed regression patterns compared to the previous work (Tewary *et al.*, 1982; 1984, Tewary and Tripathi, 1983; Tripathi, 1987, 1989).

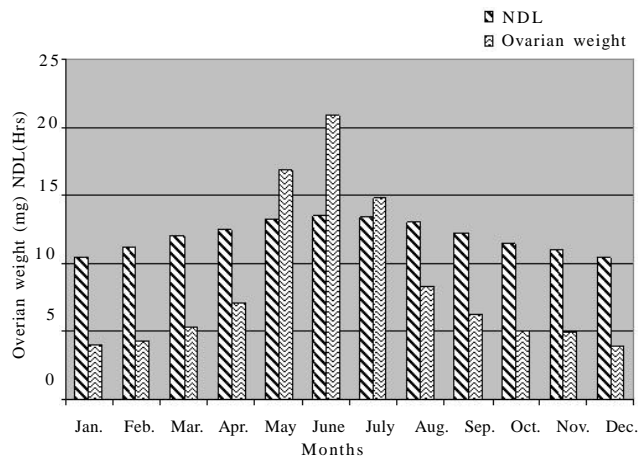
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Table 1: Study of ovarian response in red headed bunting under natural day length (NDL) in different months

Months	Natural day length (NDL) (hrs)	Ovarian weight (mg.)
January	10.50	04.02
February	11.24	04.28
March	12.04	05.34
April	12.50	07.14
May	13.28	16.86
June	13.48	20.84
July	13.40	14.80
August	13.06	08.24
September	12.26	06.26
October	11.42	05.08
November	11.02	04.94
December	10.40	03.94

**Fig. 1: Ovarian weight (mg) in different months**

Ovarian weight remained minimal throughout January to April and August to December. This type of restricted breeding phase is the characteristics of avian-fauna except few species inhabiting equatorial rain forest and tropical island.

In this investigation, the initiation of ovarian growth strictly followed an increasing day length of summer, however, the role of the factors especially, temperature, day length and innate sexual rhythm can not completely be excluded at the moment. A female gonad does not acquire full breeding condition in captivity provided that the other situations are the same (Burger, 1942; Farner *et al.*, 1977; King *et al.*, 1966; Farner and Lewis, 1973; Lewis 1975).

Ovarian growth in red-headed bunting during May and June approaches approximately 1/10 of the size in wild birds at their breeding ground (Ali, 1996). The conclusion is that day length may be an effective environmental factor which regulates the annual periodic function like ovarian growth.

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