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Morphometric Study of Three Species of Myna At Junagadh, Gujarat, India.

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ABSTRACT

Morphometric study of three myna species Common Myna (Acridotheres tristis), Bank Myna (Acridotheres ginginianus) and Brahminy Myna (Sturnus pagodarum) was done in Junagadh, Gujarat. Morphometric six characters of Body length, Bill, Wing, Tarsus, Middle toe and Tail length of male and females for three species are shown males were significantly larger than those of females for all the characters.

KEYWORDS Morphometric study of Myna.

INTRODUCTION:-

Mynas are one of the common birds throughout India (Ali ***et al***. 1983). Mynas are classified in order Passeriformes and Family ***Sturnidae***. Their preferred habitat is fairly open country, and they eat insects and fruit. Several species live around human habitation.

Common Myna (***A. tristis***):- It is characterized by large, stocky body with black hood and patch of bright yellow bare skin behind eye. Overall body plumage is chocolate-brown but under tail, tip of upper tail, wing patches are white. Bill and legs are yellow.

Bank Myna (***A. ginginianus***):- is it stocky, bluish-grey in color with a deep orange bill and eye patches. It is smaller and greyer than the Common Myna. The major characters for differentiations are that the coloration Bank Myna's is pale bluish grey instead of brown, also the black crown has a sharp boundary as opposed to a gradation, the clear visible naked skin round eyes brick-red instead of yellow, and the wing-patch and tips of tail-feathers pinkish buff instead of white.

Brahminy Myna (***S. pagodarum)***:- is it grey upperparts and reddish-orange under parts and black wing quills. The tail has white sides and tip to dark tail. Yellowish bill with blue base, and blue or yellow skin behind eye and have large black cap.

Information about the morphometric variation in three myna species is rare. Ranges of taxonomic characters of different species are available in literature but these are largely based on the measurements of a few museum skins. Data on body size of birds are useful for determining the sex of live specimens, studying taxonomic relationship between bird populations and the process of evolution, assessing ecological overlap and resource partitioning between similar coexisting species and estimation of energy reserves of the body (Baker ***et al***. 1980; Dhindsa ***et al***. 1985).

In the present study, comparisons of body size of sexes have been planned for all the three species. This may be useful to know sexual dimorphism if any and geographic variation in body size. Result reported in this study may also be useful for future studies on morphometric comparison of the ancestral and descendent population.

STUDY AREA:-

The study was confined to Junagadh (21° 31'N and 70° 49' E) city a District head-quarter and a picturesque town, which was the former capital of the Princely State of Junagadh. The city is a gate way to famous Gir Forest which is the natural habitat for the last existing population of Asiatic Lion in the wild. Jungadh has a tropical monsoon climate with three distinct seasons i.e., monsoon, winter and summer.

The nesting sites of Mynas were identified viz. Sakkarbaug Zoological Garden (SBZ), Lalbaug (LB), Junagadh Agricultural University Campus (JAU), Raypur Farm Areas (RYP), Police Training Centre (PTC**)** in Junagadh city area. In this SBZ includes Zoological Garden, LB includes undisturbed and protected area of mixed vegetation of cultivated and natural plants, JAU includes undisturbed farm and garden area, RYP includes Crops viz., Cotton, Ground nut, Mango, Wheat, Maize, Pearl millet, Sugar cane, Gram etc. were cultivated throughout the year and PTC in the foot hills of Girnar with rocky terrain. This area is open ground with grassland patches and randomly disturbed native trees. Surrounding lime stone mines provide water source round the year.

MATERIALS AND METHODS:-

Data collection for morphometry:- Morphometric studies were done method suggested by Ali and Ripley (2001-Vol.1). For morphometric studies twenty two adult Common Myna (Male = 12, Female = 10), eighteen adult Bank Myna (Male = 10, Female = 8) and seventeen Brahminy Myna (Male = 8, Female = 9) were captured form the breeding area.

Capturing mynas during breeding season (June and July 2010-2011) was not difficult and relatively easier than other techniques like mist netting.

When a bird enters into a nest for incubation or for feeding young, the nest entrance was closed by flat obstacle attached to pole or rod. Then the bird was captured by hand, climbing to the nest with the help of ladder. Birds were handled very carefully, by taking almost care avoiding any damage or internal injury. All the birds were touched by wearing rubber gloves; bare hand handling was avoided to exclude chance of contamination on either side.

Six morphometric characteristic Body length, Bill (From skull), Wing (Chord measurement), Tarsus, Middle toe and Tail length of each species were measured (Plate 1). Male and female sexes were identified during field observation using 8 X 40 binoculars at nest and feeding sites, noting size differences between sexes.

RESULTS AND DISCUSSIONS:-

Mean and standard deviation of six morphometric characters of male, females for three species are shown in Tables 1. Comparison of each character of males with females revealed that the character value of males were significantly larger than those of females for all the characters.

Body length of male Common Myna is 239.1 ± 08.8mm, whereas body length of female is 227.7 ± 05.3 mm, which is slightly smaller than male. Tail length of male is 90.7 ± 00.7 mm, whereas in female is 80.6 ± 01.5 mm. These indicate that these two characters are found slightly larger than female. (Table 1). The pattern of character variability observed in present study was also observed by Baker and Moeed (1980). This was also found that wing length and tail length were smaller whereas bill length was larger in Common Myna as compared to Common Myna in all localities mentioned. Baker and Moeed (1980) found that the pattern of geographic variations are not in order, contiguous localities often do not have most similar morphometrics. Naik and Naik (1969) denied that there is sexual dimorphism in wing and tail measurements. However, Dhindsa and Sandhu (1984) who studied House Crow (***Corvus splendens***) characters suggested that the extent of variability of various characters may vary in different species. Range and mean of some characters of this species given by Brooke (1976) and Baker and Moeed (1980) indicate that the males are larger than females. Counsilman ***et al.*** (1994) indicate that in Common Myna, males were on average, larger than females for the discriminating characters. The present study also showed a similar pattern.

Body length of male Bank Myna is 224.8 ± 03.7 mm, whereas body length of female is 218.8 ± 05.6 mm, which is slightly smaller than male. Tail length of male is 77.8 ± 02.1 mm, whereas in female is 71.8 ± 01.8 mm. These indicate that these two characters are found slightly larger than female. (Table 1).

In Brahminy Myna, each morphometric character is found smaller than both two species of myna (Common Myna and Bank Myna). Body length of male Brahminy Myna is 185.0 ± 01.0 mm, whereas body length of female is 173.7 ± 03.4 mm, which is slightly smaller than male. Tail length of male is 68.5 ± 00.5 mm, whereas in female is 61.9 ± 03.6 mm. This data also revealed that male is slightly larger than female. (Table 1). Bahrmann (1976) determined differences in size of sexes in 400 species and sub-species of Passeriformes occurring in Eurasia and has found that the wing of male is longer without exception. Brooke (1976) has also found that Natal females are smaller, particularly in wing length. In present study also females were found smaller in wing length. Males are known to be larger in overall body size in many avian species but in some (e.g. ***Falconidae, Accipitridae and Strigidae***) reverse is the case (Amadon 1959, Lack 1968). Some of the size differences between sexes have evolved in relation to sexual behaviour and other in relation to ecology (Lack 1968).

The data also indicate that, in this three species of myna measurement of bill, wing, tarsus, middle toe also slightly larger than female and Bank Myna is slightly smaller than Common Myna.

During field observation, body length and tail length is prominent different in male and female. During breeding season together with male and female pair, this difference is identify easily, whereas difficult during non breeding season and in group.

CONCLUSION:-

Morphometric characters of male and females for three species of myna (Common Myna, Bank Myna, Brahminy Myna) are shown males were significantly larger than female (Plate 2). During breeding season together with male and female pair, body length and tail length difference is identifying easily.

Plate: 1 Morphometry mesurment of adult Myna

Table 1. Comparison of body size of adult male and female of the myna.

No.	Character (mm)	Common Myna		Bank Myna		Brahminy Myna	
		Males n=12	Females n=10	Males n=10	Females n=8	Males n=8	Females n=9
1	Body Length	239.1 ± 08.8	227.7 **± 05.3**	224.8 **± 03.7**	218.8 **± 05.6**	185.0 **± 01.0**	173.7 **± 03.4**
2	Bill	29.4 **± 00.5**	25.9 **± 01.2**	30 **± 00.7**	23.6 **± 01.4**	21.6 **± 00.1**	19.6 **± 00.5**
3	Wing	149.8 ± 01.8	141.2 **± 02.5**	123.8 **± 02.3**	116.2 **± 03.3**	103.6 **± 00.3**	95.9 **± 01.5**
4	Tarsus	40.7 **± 01.0**	36.2 **± 02.0**	41.0 **± 01.2**	37.0 **± 02.1**	27.5 **± 01.0**	27.8 **± 01.1**
5	Middle Toe	31.0 **± 01.0**	27.1 **± 02.9**	29.3 **± 01.9**	28.2 **± 01.5**	28.5 **± 00.4**	27.7 **± 00.4**
6	Tail	90.7 ± 00.7	80.6 **± 01.5**	77.8 **± 02.1**	71.8 **± 01.8**	68.5 **± 00.5**	61.9 **± 03.6**

REFERENCES:-

1. Ali. S., and Ripley, S. D. (2001). Handbook of Birds of India and Pakistan, Vol.1 & 5. Oxford University Press, Bombay.
2. Amadon, D. (1959). The significance of sexual differences in size among birds. ***Proc. Am. Phil. Soc***. 103: 531-536.
3. Bahrmann, U. (1976). Die relative sexual deferens in derordnung der Passeriformes (Aves). ***Zool. Abh. (Dres.)*** 34: 1-37.
4. Baker, A. J. and Moeed, A. (1980). Morphometric variation in Indian samples of the Common Myna, ***acridotheres tristis***, (Aves: Sturnidae). ***Bijdragen Tot De Dierkunde*** 50(2): 351-363.
5. Brook, R. K. (1976). Morphological notes on ***Acridotheres tristis*** in Natal. ***Bull. Br. Orn. Club*** 96(1): 8-13.
6. Counsilman, J. J., Nee, k, Jalil, A. K., and Wung, L. K. (1994). Discriminant analysis of morphometric characters as a means of sexing Mynas, ***J. Field Ornithol*** 65(1): 1-7.
7. Dhindsa, M. S., and Sandhu, P. S. (1984). Morphometric variation in a population of the House crow, (***Corvus splendens). Le Gerfaut*** 74: 139-144.
8. Dhindsa, M. S., Toor, H. S., and Gupta, J. P. (1985). Body size of three species of Indian weaverbirds: Comparison of sexes and species. ***Anim. Biol*** 1(1): 36-45.
9. Lack, D. (1968). Ecological Adaptations for Breeding in Birds. Methuen and Co. Ltd., London.
10. Naik, N. L., and Naik, R. M. (1969). On the plumage and moults of some Indian starling. ***Pavo*** 7(1 & 2): 57-73.