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Morphology and morphometry characteristics of Pati duck

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Abstract

Pati ducks are recently registered indigenous non-descript duck variety of Assam mainly used for meat, egg and ritual sacrifices. In the present study, some important phenotypic and morphometric traits were studied under field conditions. Morphometric measurement for both Drake and Ducks were recorded and plumage colour patterns of all body parts were noted by visual observation. The mean length (cm) for Body, Shank, Bill, Neck, Head, Breast, Wing span and body circumference of Dracks were recorded as 61.40 ± 1.17 , 5.54 ± 0.11 , 3.26 ± 0.25 , 15.56 ± 0.37 , 7.79 ± 0.14 , 14.90 ± 0.45 , 84.33 ± 0.90 , 40.57 ± 1.06 and Ducks were 60.73 ± 0.69 , 4.78 ± 0.07 , 5.12 ± 0.09 , 16.01 ± 0.16 , 7.38 ± 0.10 , 13.28 ± 0.15 , 78.55 ± 0.53 , 37.41 ± 0.44 respectively. The major colour pattern of bill, shank and feet was found to be yellow, whereas skin was mostly white in colour and plumage colour pattern found to be white, black and brown in different parts of the body. The blue type plumage colour was also found somewhere in head region.

Keywords: Morphometry, Pati duck, phenotypic traits

Introduction

The favourable climatic condition and fertile land resources of Assam plays a significant role for agricultural and livestock production in the region. Duck farming is a major component in integrated farming system and plays a significant role in women empowerment and upliftment of socio-economic status of the farming community of Assam. Due to hot-humid climatic condition of Assam along with extensive availability of resources like ponds, river, marshy wet lands etc. provides a suitable natural habitats for duck rearing in rural areas of the states. Duck eggs and meats are widely accepted by different sections of the society and plays a vital role to fulfil nutritional security. The people of Assam are mostly shown their keen interest in duck husbandry to meet their demands for meat and egg as a source for animal protein. The state has a 7.33 lakhs Duck population and stands second position in India. Out of the total duck population reared in Assam, available duck breeds are Pati, Nageswari, Chara - Chambeli, Khaki Campbell and White Pekin. Pati duck is the most commonly reared by rural people of Assam and it was recognized by the National Bureau of Animal Genetic Resources in the year 2017. Their age at sexual maturity is in between 220-235 days and age at first egg laying is on an average of 240 days. They have an average egg weight of 60.5 g and egg production ranging from 75-90 eggs per annum. (Kalita *et.al.* 2009; Mahanta J.D., 2009). Though, many phenotypic studies have been done on Pati duck, but scanty informations are found in morphology and morphometrical characteristics. Hence, the present study is undertaken to identify the morphology and morphometrical characteristics of Pati duck.

Materials and Methods

The present study was based on field survey conducted in Nalbari and Mangaldoi district of Assam. The farmers reared duck mainly in a backyard system using locally available materials for housing, and maintained average flock size of 8-10 birds. Ducks were mainly fed with left over kitchen waste, Rice bran, broken Maize etc. A questionnaire was prepared covering all the information related to phenotypic characteristics, morphology and morphometry of duck and others duck husbandry practices covering 46 adult birds (20 weeks).

Some important phenotypic characteristics *viz.* Bill length and width, Head length and width, Neck length, Breast length, Body length, Wing Span, Body Circumference, Shank length were

measured by a standard measuring tape calibrated in centimeters. A separate sheet was prepared mentioning different colours related to shank, skin and feet. The birds were closely observed for distribution of colour pattern in Bill, Eye and Eyelid. Plumage colour pattern in all part of the body (Head, Neck, Wing, Back, Tail, Thigh and Breast) were identified and documented by visual observation for the present study. All the data are subjected to statistical analysis by standard method and presented in Mean \pm S.E.

Result and Discussion

The result of morphological characteristics on Bill Colour was found to be mostly yellow (50%) followed by Red (25%) and Yellow Brown (12.5%). The most common Eye colour was

Black (50%) followed by Gray (25%) and brown (12.5%). The Eyelid colours were mostly (57.14%) and Gray (28.57%). The Shank colour observed mostly yellow (44.44%) followed by white (22.22%), black (22.22%) and blue (11.11%). The Skin was white (50%), yellow (25%) and blue (25%) in colour. The Feet colour mainly observed was yellow (40%) followed by black (20%), blue (20%) and white (10%). All the morphological observations were for both Duck and Drake. Morphological variety has been shown in Fig.1. The morphometric characteristics of Pati duck of Assam were presented in Table.1. In the present study, distribution pattern of plumage colour in both duck and drake were depicted in Fig 2 and Fig 3.

Table 1: Morphometric characteristics of Pati ducks of Assam

Traits	Duck (n=32) Mean \pm S.E	Drake (n=14) Mean \pm S.E
Bill length	5.12 \pm 0.09	5.71 \pm 0.30
Bill width	3.74 \pm 0.11	3.26 \pm 0.25
Head length	7.38 \pm 0.10	7.79 \pm 0.14
Head width	3.21 \pm 0.10	3.10 \pm 0.13
Neck length	16.01 \pm 0.16	15.56 \pm 0.37
Breast length	13.28 \pm 0.15	14.90 \pm 0.45
Body length	60.73 \pm 0.69	61.40 \pm 1.17
Wing span	78.55 \pm 0.53	84.33 \pm 0.90
Body circumference	37.41 \pm 0.44	40.57 \pm 1.06
Shank length	4.78 \pm 0.07	5.54 \pm 0.11



Fig 1: Different morphological variety in Pati Duck, Assam

The average Bill length was found to be 5.12 \pm 0.09cm in Pati duck and 5.71 \pm 0.30in drake. Similar finding was recorded by Arundhati *et al.*, 2018 who reported the bill length of Pati duck was 5.44 cm. Ajith *et al.* (2009) found significantly higher bill length (6.70 and 6.80 cm)in males in comparison with respective females (6.10, 6.30 cm)with regard to Chara and Chemballi ducks of Kerala. Yakubu (2009) [6] reported shorter bill length of 4.98cm and 3.75 cm for African Muscovy male and female ducks. Another finding was recorded by Murugan *et al.*, 2009 [3] in Sanyasiand Keeri variety ducks of India; they recorded the bill length of 6.81 \pm 0.82 and 6.1 \pm 0.90 cm respectively for both the variety. Another observation on the Bill length of desi ducks in west Bengal was 5.25 \pm 0.04cm, reported by Vij *et al.*, 2010 [5]. Morduzzaman *et al.* (2015) [2] also reported bill length of Nageswari ducks of Bangladesh were 5.87 \pm 0.09 and 5.54 \pm 0.07 in male and female respectively. The variation of bill

length might be due to the difference in breed. In the present study, bill and head width were larger in Duck than Drake. These follows opposite to the result of desi duck of Odhisa(kamal *et al.*, 2014),Desi duck of West Bengal (Vij *et al.* 2010) [5] and Nageswari ducks (Morduzzaman *et al.* 2015) [2], where the recorded a larger bill and head width of Drake than that of Duck.

In the present study average Neck length(cm) recorded was more in duck (16.01 \pm 0.16) than that of drake (15.56 \pm 0.37). Yakubu (2009) [6] also recorded the mean neck length for male and female African Muscovy ducks as 18.10cm and 14.33 cm respectively, while Murugan *et al.* (2009) [3] recorded a higher value for the neck length of 21.10 \pm 0.12 cm and 18.70 \pm 0.24 cm for Sanyasi Drake and Ducks respectively. The difference in neck length might be due to the breed difference.

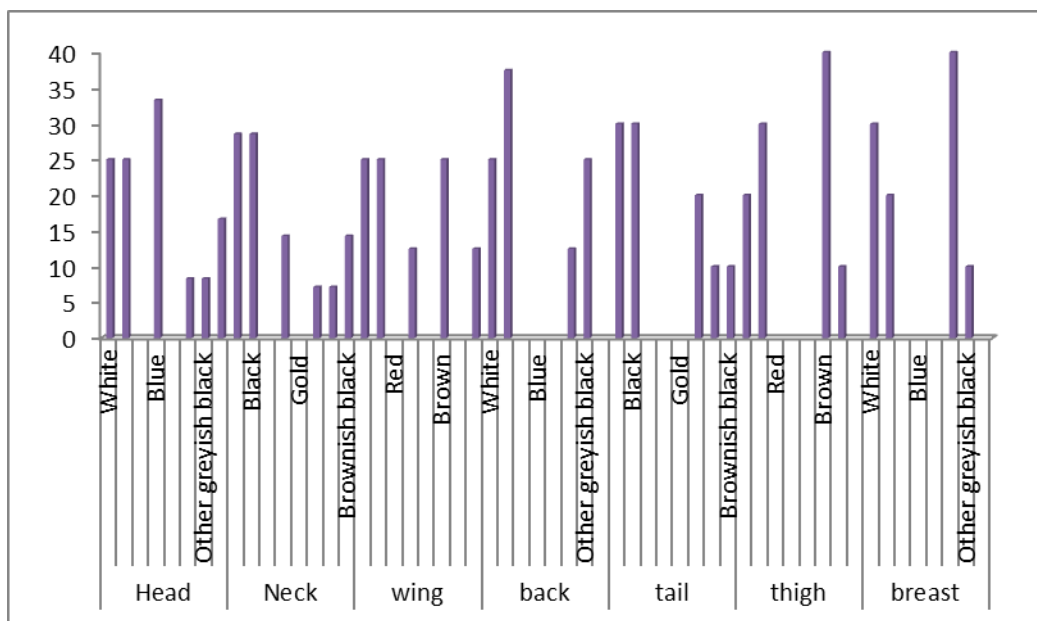


Fig 2: Plumage colour pattern of Drake

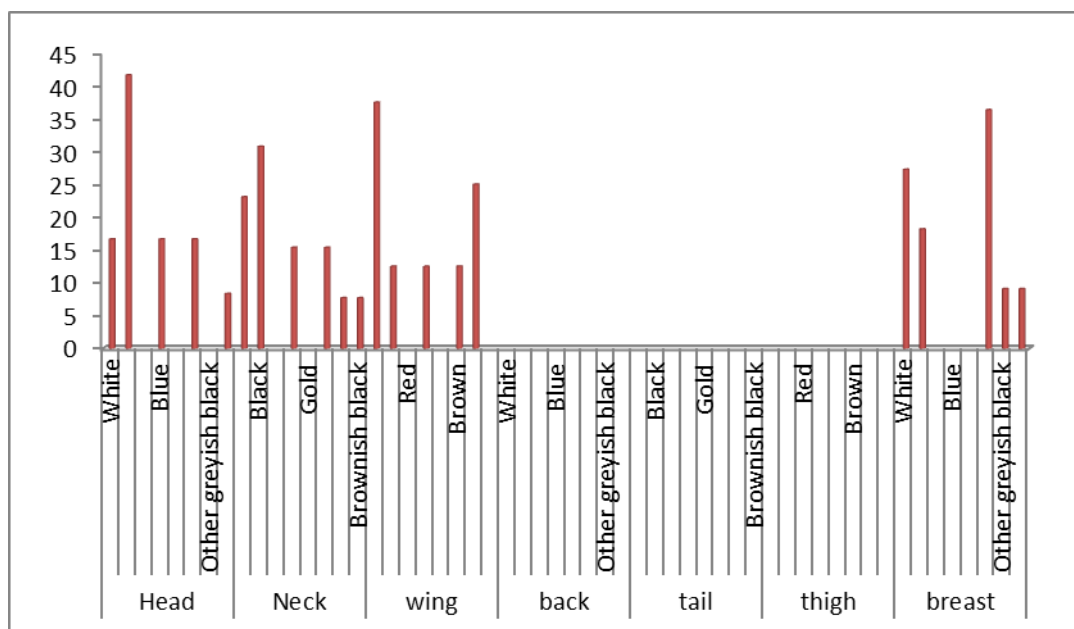


Fig 3: Plumage colour pattern of Duck

In the present observation, shank length of Pati duck was recorded as 4.78 ± 0.07 cm and drake is 5.54 ± 0.11 cm. Earlier Arundhati *et al.*, 2018 reported shank length of 5.675 cm for Pati Duck. Zaman *et al.* (2007) [7] also recorded the mean shank length of male and female as 6.67 ± 0.71 and 6.12 ± 0.68 cm respectively for Nageswari ducks of Assam. Another study by Kamal *et al.* 2019, the average shank length was reported as 6.21 cm for Drakes and 5.89 cm for Ducks of Odisha. However, Sharma *et al.* 2003 reported the shank length for Nageswari duck were 6.49 cm at 20 weeks of age. Another report on shank length for desi ducks of West Bengal was reported as 5.67 cm by Vij *et al.* 2010 [5]. Veeramani *et al.*, 2014 found significantly higher shank length for males than female ducks of both Sanyasi and Keeri varieties (5.61 ± 0.02 cm for males and 5.56 ± 0.01 cm for females); Whereas, Renchi *et al.*, (1979) recorded the mean shank length in male and female Desi ducks of Kerala at 12 weeks of age as 6.44 ± 0.04 cm and 6.15 ± 0.02 cm and reported that males had significantly higher shank length than female ducks and similar values were recorded by Ajith *et al.*

(2009) for Chara and Chembaliducks of Kerala. The difference in the shank length of different varieties of indigenous ducks might be attributed to the variation in the genotype and environment where they were reared.

In the present study average body length of male and female bird of Pati Ducks were recorded as 60.73 ± 0.69 cm and 61.40 ± 1.17 cm respectively. Murugan *et al.*, 2009 [3], reported the body length for Sanyasi and Keeri varieties was 23.85 ± 0.09 cm and 23.64 ± 0.08 cm respectively. On the other hand, Yakubu (2009) [6] recorded mean values of body length for male and female African Muscovy ducks as 47.86 cm and 38.35 cm respectively. The lower valued obtained in this study might be due to the variation in the size and conformation of the distinct variety / breed of ducks.

In the present study the Wing span found to be higher in Drake (84.33 ± 0.90 cm) than that of Duck (78.55 ± 0.53 cm). Average neck length was measured and was found to be greater in females than that of males. Opposite trend, but higher values of (23.49 ± 0.58 cm in males and 21.59 ± 0.49 cm in females) were noted in Nageswari duck by Morduzzaman

et al. 2015 ^[2] and lower value (13.47±0.25 and 12.90±0.22cm) Sanyasi and Keeri variety of ducks by Murugan *et al.* 2009 ^[3].

Conclusion

The present study will provide baseline information of morphology and morphometric characteristics of native Pati Duck breed of Assam. It will help to formulate the selection strategies and systematic breeding policy. The study also helps to exploiting potentiality of native ducks and conservation of unique germplasm for near future.

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