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An account of ornamental bird status and species assemblage in the bird shops of Rajshahi City Corporation, Bangladesh

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***Abstract*—*The rearing and business of ornamental birds have become an important source of income in Bangladesh. The present study was conducted to determine the management and profitability of the ornamental birds, and species assemblage of the cage bird business in Rajshahi City, Bangladesh. A total of 30 ornamental bird shops were found and were working with new promise in the study area. This study identified 24 varieties of ornamental birds, including exotic and indigenous, that were traded in Rajshahi City. The most dominant order was Psittaciformes (6 species) followed by Passariformes (3 species), and Columbiformes (7 species) under the families Columbidae (seven), Psittaculidae (five), and Estrilididae (two) species, and only one species is found in the Fringillidae and Cacatuidae families. Shannon's index (H) for species diversity is 2.37, the evenness index (E) is 0.86, and Margalef's index (d) for species richness is 2.22. Most of the ornamental birds were imported by traders who fulfilled requirements to import them. The bird cages along with other accessories such as feed, medicine, and artificial pots were also traded in shops in this area.*

Keywords*— *Ornamental birds, rearing, business, diversity and species

I. INTRODUCTION

Bangladesh is situated in a subtropical monsoon climate. It is the home of 690 different kinds of birds, of which 380 are permanent inhabitants, 209 are winter visitors, 11 are summer visitors, and 90 are vagrants. (Khan, 2008). Birds are crucial for the structure and function of ecosystems because they provide a multitude of ecological services, including seed dispersal and assisting in the restoration of forests (Lozada *et al*., 2007). Around 4,000 years ago, in prehistoric Egypt, cage birds were first recognized. They are fed two different kinds of food: oil and grain seeds. Such cage birds are fed various foods from Morocco, Canada, and Australia. The remaining ingredients are found in oil seeds, almonds, sunflower seeds, and mustard seeds, as well as in cereals (Alderton 2000, 2003, 2005). First, the idea of cage bird study came from aviculturists, who saw that the altricial or helpless chicks of birds from their hatch needed to care for humans. There are six color patterns in Cockatiel, and California is the major Cockatiel producer and supplier in the world (Grau and Roudybush, 1983). A study that was conducted in Dhaka Katabon, Bangladesh, in 2009 suggested that there were 33 species of birds out of 43 wildlife species (Sarker and Abdullah, 2009). The six basic fundamental needs for cage birds should be food, environment, disease-free life, company, and avoiding mental suffering. The cages of birds need to change their position twice a year, and when any new birds are introduced, they are observed for thirty days in quarantine (Animal Welfare Council, UK). International and local laws are designed for trade, and live animals are sold in regional open markets (Sullivan, 2003). Ecologists often use the richness, abundance, and community composition of birds to understand the diversity of species in natural occurrence (Joshi, 2001). Several studies on birds have been done sporadically in various parts of the country (Kabir, 2014), however, there is no record of Rajshahi pet birds. So, in this

investigation, we have enlisted the available ornamental cage birds, and the possible diversity assemblage was determined that has been found in the pet shop of the Rajshahi City Corporation area of Bangladesh.

II. MATERIALS AND METHODS

The study was conducted in Rajshahi City to obtain detailed information about ornamental bird status, species availability, diversity, abundance, and prospects of bird shops in the Rajshahi City Corporation area. The total area is 8.20 sq. km, located between 24°21' and 24°23' north latitudes and between 88°32' and 88°36' east longitudes. The study period was conducted over six months (November to April) in 2022. The data was collected two times a month. The information was collected through survey methods, using questionnaires and cross-check interviews. In favor of this study, one of the PRA (Participatory Rural Appraisal) tools and FGD (Focus Group Discussion) were conducted to obtain more accurate data (Chambers, 1992; Nabasa *et al*., 1995). The session was held in front of bird shops. At the beginning of the interview, a brief introduction about the objectives of the survey was given to each of the shopkeepers, who were assured that all information would be kept confidential. Each question was explained clearly and asked systematically for their sound understanding. Statistical analysis like relative abundance was done through a formula in Microsoft Excel and biodiversity indices were calculated following (Shannon and Wiener, 1949):

$$H'(S) = -\sum_{i=1}^{s} pi \ln pi$$

Where pi = fraction of entire population made up of species; S = total number of species; i = proportion of species.

Evenness Index (Hill, 1973):

$$E = H/ \ln S$$

Where, S = total number of species; H = Index of species;

Margalef's Index (Margalef, 1970):

$$d= (S-1)/ \ln N$$

Where, S = Total number of species; N = Total number of individuals in the sample.

III. RESULTS

During the study period, we collected data from 24 varieties of ornamental birds. From them, 16 species of three orders and five families were recorded from the pet bird shops in the Rajshahi City Corporation area. Among them, different species of love birds, finch birds, and different varieties of pigeons are mostly common. They are very gorgeous colors, nice-looking, and very attractive. From the collection list of ornamental birds in Rajshahi City's bird shop, we found that there are 3 orders of birds in Rajshahi City's bird shop. They are Psittaciformes, Passariformes, and Columbiformes. It is found that the Psittaciformes order has seven species, the Passeriformes order has three species, and the Columbiformes order has six species.

The Shannon-Wiener Diversity Index (H'), Evenness (E), and Margalef's Richness Index (d) were computed concerning the species. Studies on diversity indices in this area yielded the following findings: Shannon's index (H) for species diversity is 2.37, the evenness index (E) is 0.86, and Margalef's index (d) for species richness is 2.22.

Table 1: List of the ornamental birds in the bird shop of the Rajshahi City Corporation area

Common Name	Scientific Name	Number of Individuals	Relative abundance
Order: Psittaciformes **Family:** Psittaculidae			
Budgerigar	*Melopsittacus undulates*	100	11.76
Yellow-collared love bird	*Agapornis personatus*	80	9.41
Fisher's Love Bird	*A. fischer*	60	7.06
Lillian's love bird	*A. lilianae*	30	3.53
Black-winged love bird	*A. taranta*	20	2.35
Family: Cacatuidae			
Cockatiel	*Nymphicus hollandicus*	60	7.06
Order: Passeriformes			

Family: Esrtildidae			
Gouldian finch	*Chloebia gouldiae*	40	4.71
Zebra Finch	*Taeniopygia castanotis*	40	4.71
Family: Fringillidae			
American Goldfinch	*Spinus tristis*	30	2.35
Order: Columbiformes **Family:** Columbidae			
Eurasian collared dove	*Streptopelia decaocto*	20	2.35
Stock Dove	*Columba oenas*	20	2.35
Diamond dove	*Geopeliacun cuneate*	20	4.71
Spotted dove	*Spilopelia chinensis*	40	3.53
King Pigeon	*C. livia*	30	2.35
Silver siraji		20	2.35
Noton pigeon		20	4.71
Lahore pigeon		40	3.53
White Lahore		30	2.35
Chua chandan		20	3.53
Giribadge		30	4.71
Homar		40	3.53
Lakhma		30	1.18
Yellow eyed pigeon	*C. eversmanni*	10	2.35
Zebra Dove	*Geopelia striata*	20	3.53
Total		850	100

Table 1 shows 5 families of ornamental birds in the Rajshahi City area's bird's shop. The families are Psittaculidae, Esrtildidae, Fringillidae, Cacatuidae, and Columbidae. These families and family-wise bar diagrams are displayed below-

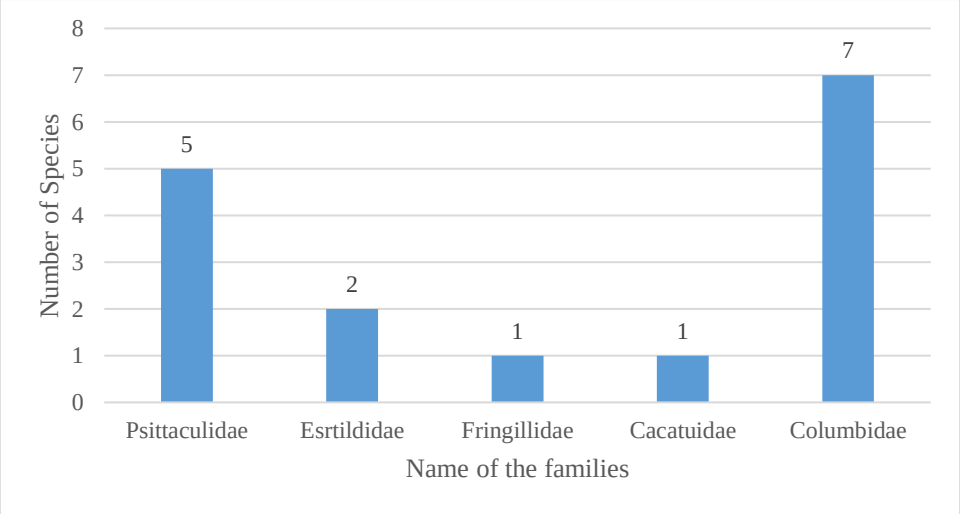

Fig. 1. Showing the families of different ornamental varieties

The bird cages with accessories such as feed, medicine, and artificial pots were also traded in shops in this area. All traders in markets made a considerable amount of profit.

IV. DISCUSSION

In this study, a total of 24 varieties and 16 species of ornamental birds were found under three orders and five families in Rajshahi City Corporation pet and ornamental bird shops during the study period. Columbidae has 7 species, Psittaculidae has 5 species, Estrilididae has 2 species, and only 1 species is found in the Fringillidae and Cacatuidae families. Kabir (2014) mentioned that there are 16 in total belonging to the families Psittacidae 6, Passeridae 5, Phasianidae 3, and Columbidae 2 in the districts of Kushtia and Dhaka Katabon, Bangladesh. According to Kabir (2014), previous and present studies in different locations have both similarities and dissimilarities, resulting in birds of the Phasianidae family not being found in the Rajshahi area, but birds of the Estrilididae and Cacatuidae were not found in the previous study. Popular cage birds found in Bangladesh are Canary, Munia, Red Munia, Java Sparrow, Gold Finch, Green Finch, Blue Finch, etc. (Url 1). But in our study area, it was found that love birds, finch birds, and different varieties of pigeons are mostly common; Munia was not found in this area at all. A report in 2015 indicated that the Australian lovebird is a prevalent species. Several works on avifauna have been done separately in various parts of the country, but there is no record of ornamental bird diversity in any bird market in Bangladesh. Birds are mainly imported from India, Pakistan, Australia, America, the UK, and China. The sellers of Katabon Market make sure that you will find safe food and medicine for your pets. They collect foods and medicines according to the guidance of different relevant books and manuals (Url 2). Among cage birds, the Budgerigar had the highest frequencies for the people. With the wild and foreign cage birds, some other indigenous birds like the rose-ringed parakeet, Chinese spotted dove and hill myna were occasionally found, which are now facing great ecological hazards (IUCN, 2000). People took wild or caged animals as not only pets but also food, medicine, decoration, and export goods (Martin and Phipps, 1996).

V. CONCLUSION

Ornamental birds are available everywhere around the globe. The ornamental bird business is a flourishing sector in the trendy business world. Considering the findings of all the present research work, it is clear that the introduction of ornamental birds in Bangladesh is a very common practice, and new species are introduced day by day. In our country, ornamental birds in the Rajshahi City Corporation area are also remarkable. However, shop owners are normally illiterate people, and they don't have formal training to maintain their living-sale items. It is also said that there is no doubt that Bangladesh is losing some of its valuable indigenous wildlife, especially birds. Therefore, people have to be conscious of wildlife, ornamental birds, nature, and the conservation of nature. It is our moral responsibility as such departments to implement laws and control the illegal trade of that animal.

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