

American Journal of Environment Studies (AJES)



**Studies on Environmental Ecology and Taxonomic
Survey of *Anas Platyrhynchos* Family: Anatidae in
and Around the Manchar Lake Jamshoro, Sindh,
Pakistan**

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Studies on Environmental Ecology and Taxonomic Survey of *Anas platyrhynchos* Family: Anatidae in and Around the Manchar Lake Jamshoro, Sindh, Pakistan



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Crossref

Article History

Submitted 19.04.2023 Revised Version Received 20.12.2023 Accepted 23.12.2023

Abstract

Purpose: Present study has been conducted on the Taxonomic survey and Environmental ecology of mallard '*Anas platyrhynchos*' and its sub-species at manchar Lake Jamshoro, Sindh, Pakistan.

Materials and Methods: A total number of 150 specimens were collected from different zones of manchar lake jamshoro Sindh. Out of which 93 specimens were identified as male (62%) and 57 were identified as female (38%). Maximum no: of ducks were collected from crops, ponds and homes of local Mohanas. Species richness was highest in the month of January followed by February and March and least in June July. Specimens were collected from different dimensions of Manchar Lake. At first, samples were collected alive from different areas from January 2022 to march 2023. Specimens were identified using authentic taxonomic keys and available literature.

Findings: It was observed that most of the female ducks of other species were living and breeding with the males of *Anas platyrhynchos* 'The mallard', and many hybrid offspring are produced with

remarkable change in morphometric characters' body, I think with passing time, so many new variations and differences are developed in mallard duck species, and so many new breeds are produced, that the offspring, f2 generation of the mallard male ducks can now be considered as a separate sub-species.

Implications to Theory, Practice and Policy: In our ecosystem ducks play important role, they are also known as waterfowls. *Anas platyrhynchos* is given the status of least concern species by IUCN2016.

Keywords: *Specimens, Zones, Species Richness, Identification Key*

1.0 INTRODUCTION

Wetlands play a substantial role in providing habitats to variety of resident and migratory birds; therefore, their ecological processes have always been a matter of great concern. Increasing human exploitation of eco-biological resources is causing degradation of wetlands resulting in fast decline and disappearance of avifaunal species ^[1]. Almost 70 percent of migratory birds Enter Pakistan; find their way to the wetlands of Sindh ^[2] *Anas platyrhynchos* is a valuable waterfowl; it's globally the third most studied research animal after common starling (*Sturnus vulgaris*) and the barn owl (*Tyto alba*). I guess; if immunological research on these ducks would be included mallard will be the 1st most studied research animal in the world. ^[3] *Anas platyrhynchos* is the most standard waterfowl in the world with distinctive duck shaped body, it's commonly known as mallard duck. Male mallard has shiny green, feathered head color, white neck collar and brown colored body: Whereas; female mallard is dotted brown with white neck collar. *Anas platyrhynchos* is being considered as an economically important bird for its usage in many purposes i.e; food, agriculture, domestication for beauty purpose, hunting etc. These ducks are reared in a large number all over the world for eggs and meat every year, eggs are considered as the best source of protein. *Anas platyrhynchos* is cosmopolitan and can be found all over the world. This species lives both in fresh and saltish water and found in homes also as pet. ^[4]

2.0 MATERIALS AND METHODS

Present study was conducted from January 2022 to March 2023, in and around Manchar Lake, its surrounding ponds, ditches, lakes and croplands. Data was collected at different intervals of the above mentioned months in early morning (8.00 am to 11:00 am) and at the sunset (5.00pm to 6.30pm). Ducks were counted by direct field observation and captured with the help of fishing net, bird sound trapping, with the help of local children and other techniques. Ducks were kept under study for many weeks and brought to the vertebrate biology laboratory for measurement of body parameters, identification of distinctive characters and other related morpho-metrices for a detailed study. Keys for identification of species were also prepared with the help of international literature.

3.0 FINDINGS Identification of Species

The results of one species and two sub-species of ducks including, body parameters of collected specimens, their taxonomic position, comparison tables, graphs and other relevant findings of the present work are discussed in detail below:

Study Area

Manchar is the largest freshwater lake in Pakistan and located in jamshoro district. It is the largest single wetland unit in the RBOD area and now a threatened wetland, dying from pollution, toxic run-offs and mal-administration. This neglected lake sprawls over 200 sq.km area. It provides shelter to the vast biodiversity that has daily and seasonal dependencies for all the lifesupport systems. Manchar provides food to birds in the form of plants, vertebrates, and invertebrates, also provides them massive shelter and possibilities of making nests within the aquatic vegetation. Birds also use lake for drinking water, breeding, rearing young ones and social interactions.

Meanwhile, birds play important role in balancing the ecosystem and food web of the ecosystem in that lake ^[5].

Morphometric characters of *Anas platyrhynchos*, male

Mallard male have shiny green feathered head color, white ring neck collar is seen during recording parameters and bill is even at both sides, yellowish- green in color, shiny purple colored speculum in the wings is present with white borders. Lower parts of the body are grayish and wings are brownish gray, tail is white with two black feathers in the center which are curved little upward.

Female

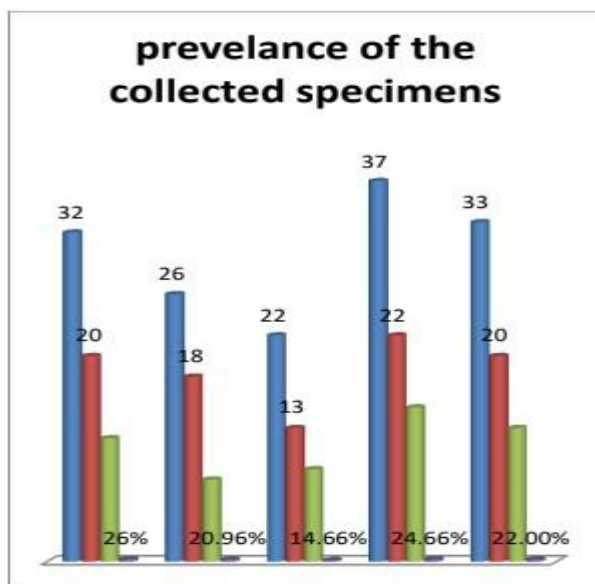
Mallard female is brown with evenly black dotted body; beak is orange with black margins. Under tail coverts and outer tail feathers are white, breast is also white in color, high up dark eye line can also be seen and feet are observed orange in color.

Statistical Analysis Including Median/Mean/ S.D (Male)

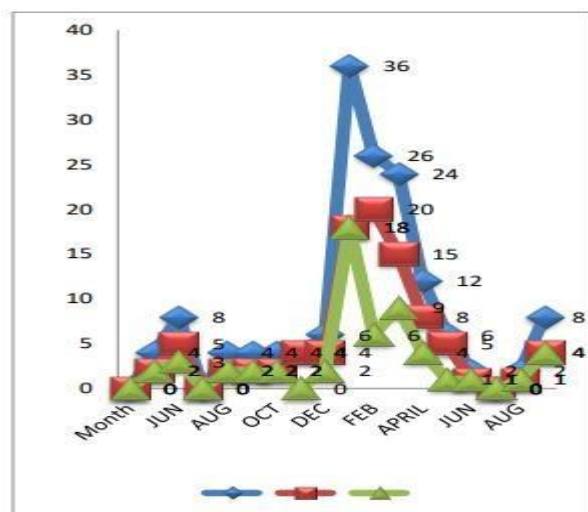
A total of 40 mallard males were observed, their body parameters were taken with the help of vernier caliper, meter scale and divider. Measurement of Length of bill (r: 5) mean and S.D (68.18 ± 1.64). Wing length range was recorded as (r: 8) mean and S.D (102.34 ± 1.34). Average range recorded for length of neck was (r: 12) mean and S.D (147.3 ± 3.85). Average range of body length was (r: 13) mean and S.D (371.5 ± 4.06).

Female

A total of 24 female were observed and their body parameters were taken, range recorded with the help of vernier caliper, meter scale and divider. Measurement of Length of bill (r: 3) mean and S.D (65.57 ± 1.024). Wing length range was recorded as (r: 5mm) mean and S.D (367.6 ± 1.709). Average range recorded for length of neck was (r: 1) mean and S.D (144.4 ± 0.342). Average range of body length was (r: 2) mean and S.D (365.8 ± 0.676).



Graph 1: Showing Prevalence of Collected Species



Graph 2: Showing Bird Population in Different

Table 1: Showing Weather of Study Area in Different Months

Months	Weather	Min temp	Max temp	Humidity
May	Hot and dry	27	44	04
Jun	Hot and dry	28	42	06
Jul	Hot and humid	28	40	46
Aug	Hot and sunny	28	38	38
Sept	Humid	25	37	15
Oct	Sunny & dry	21	36	00
Nov	Pleasant	15	31	02
Dec	Cold & dry	10	24	04
Jan	Cold & dry	08	22	05
Feb	Cold	10	26	07
March	Cold & humid	16	33	06
April	Pleasant & dry	22	39	02
May	Hot & dry	27	44	04
Jun	Hot & humid	28	50	06
Jul	Hot & humid	28	48	46

Aug	Hot & humid	27	42	38
Sept	Hot & humid	21	37	15

4.0 DISCUSSION

In our ecosystem ducks play important role, they are also known as waterfowls. *Anas platyrhynchos* is given the status of least concern species by IUCN-2016 ^[6] It is one of the several species of birds that were described by Carlous Linnaeus work in 18th-century *Systema Naturae* that until holds it's real binomial name. ^[7] Ducks of *Anas platyrhynchos* species are playing fundamental role in several aquatic ecosystems as herbivores, predators and also the vectors of seeds, invertebrates and other nutrients. This species also preserves the diversity of different organisms, control pests and operate as senitinals of possible disease outbreaks. *Anas platyrhynchos* is being hunted all over the world ^[2] their eggs are harvested in Iceland ^[3] and also all over the world. It is being consumed as food; mallards were being consumed in Neolithic Greece. ^[4] Generally, the thigh and breast meat is eaten. ^[5]

They have been ever-present among their habitats in the rivers, streams and ponds of manmade parks, farms and other artificial waterways and to the spots of visiting water features courtyards of humans as a significant decorative; kept for beautiful scenic reason. ^[6] Mallard ducks have shared a long relationship with humans. ^[8] Although these roles have been unnoticed since long time. *Anas platyrhynchos* is threaten by loss from pollution e.g. petroleum and wetland habitat degradation. ^[9] From pesticide pollution. ^[10] The species also faces loss of life as a result of lead shot ingestion Whereas; 46 ducks were identified =26 male and 20 females from surrounding ponds. Body measurement of the samples were taken with the help of divider, digital vernier caliper, Meter scale, thread, digital weighing machine (SF400), Photographs were taken with help of Digital camera of Sony Ericson Company.

5.0 CONCLUSION AND RECOMMENDATIONS

It was observed that most of the female ducks of other species were living and breeding with the males of *Anas platyrhynchos* 'The mallard', and many hybrid offspring are produced with remarkable change in morphometric characters' body, I think with passing time, so many new variations and differences are developed in mallard duck species, and so many new breeds are produced, that the offspring, f2 generation of the mallard male ducks can now be considered as a separate sub-species. Another environmental change was observed during study, these Fresh water ducks have started diving and feeding on dirty drainage water due to shortage of fresh water ponds and lakes and due to heavy body weight stopped flying, which is the matter of serious concern for a migratory species.

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