

DISTRIBUTION OF THE MARBLED TEAL *MARMARONETTA ANGUSTIROSTRIS* OVER DIFFERENT HABITATS IN AL-DELMEJ WETLANDS, IRAQ.



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ABSTRACT

This study were conducted in order to get an idea about the distribution and habitat preferred by the vulnerable species of Marbled Teal, it is considered the first effort of its kind in Iraq towards studying the Marbled Teal *Marmaronetta angustirostris* that was carried on in Hor Al-Dalmaj, southern Iraq. The findings of this effort illustrate its importance as it paves the way for further study and observation for the bird and this important wetland itself. This study tackles the all possible aspects of the habitat statuses of Marbled Teal (Threatened – Vulnerable bird species – IUCN Redlist) by means of field surveys and systematic monitoring that were conducted along the four seasons over the years 2015-2016 in one of the ecologically important and prominent and poorly-known wetlands in the Middle Euphrates, that is Hor Al- Dalmaj, as a highly important wetland on the national, regional and global levels that holds Key Biodiversity Areas (KBA), Important Bird Areas (IBA), and Important Plant Areas (IPA). Keywords: Marbled Teal, Marbled Duck, Iraq, Waterfowl conservation, Dalmaj, Wetlands.

Keywords:

conservation,
 Biodiversity,
 Eco-region,
 Waterfowl,
 Vulnerable.

I. INTRODUCTION

The location of Iraq as well as the morphology and diversity in habitat made it one of the countries that are rich in biodiversity (Allouse, 1953). Iraq has considerable area of nine different Eco-region of which some are threatened habitat (WWF, 2006). The different habitats have created colorful panorama of diversity for flora and fauna species that include endemic and threatened species (Salim, 2004). Iraq is well known with it wetland of different types, as there are considerable number of lakes and marshland that harbor good biological diversity being providing the shelter and food for different creatures (IMOIE & Nature Iraq, 2014).

Marbled Teal was discovered by (Menetris, 1832) and was referd to the genus *Anas*, but recent this genus divide to *angustirostris* put with genus *Marmaronetta*. The Marbled Teal *Marmaronitta angustirostris* is a globally threatened species (Vulnerable) that undergoing a rapid population decline (Green 1993, 1996; Collar *et. al.*,1994). In Iraq, the species is a resident breeder and wintering in different wetlands in Iraq over the two lower thirds of the country (Salim, 2012). Hor Al-Dalmaj contains suitable habitat for this bird species on the national and regional (Middle East) levels. The results of the current study approved that this wetland provides Marbled Teal good feeding ground and breeding shelter as well; nevertheless, the bird faces different threats. The area demonstrates good factors for the species in case it get managed in the proper way.

Al-Dalmaj wetlands are vast wetlands at the Middle Euphrates area. The northern part of Dalmaj is located around 120 km southeast to Baghdad City, 40 km northwest of kut city, and 40 north east to Diwaniya city (Direct distances). It consists of relatively deep-water lake with vast marshland habitat of dense and scattered reed beds (Salim, 2010). The wetlands of Dalmaj include considerable diversity in the fauna species including the richness in the Waterfowl species during winter as well as the existence of many threatened and endemic bird species that made it eligible to be considered as a Key Biodiversity area (KBA) and Important Bird Area (IBA) (IMoE & Nature Iraq, 2014).

II. METHODOLOGY:

Five field observation sites have been chosen (Table.1, Map.1) based on specific criteria of which mostly that they represent different wetlands habitat landscapes in order to have as through idea as possible about the status of the bird in Hor Al-Dalmaj and the identification of the environmental parameters favored by the bird, like water quality and vegetation cover, etc. field observation were including “area-count methodology” in each of these selected sites, and it includes using canon 500D(100-44mm) and 12X45mm binoculars and, wherever required, 40X field-telescope. 4x4 field truck was used in order to secure better observation over the five sites. A Garmin GPS was used in locating the sites, and also a 1:100,000 scale maps were used.

Table.1: Coordinates of the study area

No.	Site Code	Coordinates	
		N	E
1	DL1	32° 20' 44"	45° 12' 58"
2	DL2	32° 13' 42"	45° 22' 30"
3	DL3	32° 11' 30"	45° 38' 11"
4	DL4	32° 06' 11"	45° 31' 14"
5	DL5	32° 09' 11"	45° 29' 20"

Map.1: Location of the Study Area.

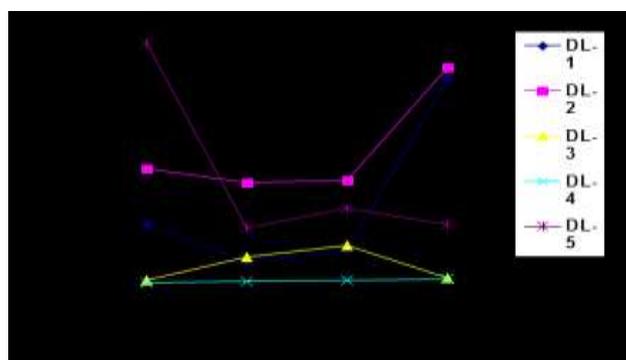


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III. RESULTS AND DISCUSSION

Dalmaj is rich in biodiversity, being a wintering ground for numerous waterfowl and a main breeding area for Marbled Teal, Ferruginous Duck, and Red-crested Pochard , which are three of the four known breeding ducks in Iraq.

Based on the field observation over the period of the survey that covered twelve months, generally seems that DL-1 area provide good habitat for the occurrence and distribution of the Marbled Teal in Dalmaj wetlands. The bird was found over all the survey time, it was not absent in any of these twelve months. It also observed that there is noticeable variation in the population of Marbled Teal over the twelve months.



The figure above and the table below summarize the results of the surveys, and shows that there are considerable differences among the different sampling sites over Dalmaj wetlands. It gives thorough idea about the distribution of the Marbled Teal over the different habitats and within the various-heights of reedbeds and the open-water theatres that are used frequently by the Marbled Teal over the different seasons. Marbled Teal in Dalmaj is doing very well in terms of their life circle in breeding, movements, and wintering unless it being disturbed and this disturbance affects their natural life cycle in the area. Definitely, the percentage shown in the figure above does not represent the actual population in this area because the sampling sites were only five with a total surveying /observations are that does not exceeds five percentage of the entire area of Dalmaj waterbody; so, there definitely very much numbers higher than the counts.

Generally, migrant birds arrive in early October and leave in mid-March. Therefore, there is an increase in the population with the arrival of the wintering duck community and declines in the breeding season. Apart of our direct observations, frequent reporting from different hunters and locals (Who are able to identify the birds) reported that "Very large number of Marbled Teal and were seen in different places in Dalmaj of which the highest number might be as high as twenty thousand individuals" (Per. Comm-Local & hunter, 2013). The number claimed might be true because of the congregator behavior of Marbled Teal when mixing with other duck species. It seems that the congregation phenomena of various duck species, including Marbled Teal, is common in the Iraqi Wetlands, as Salim (2010) has found these birds congregating in such large number in different wetland over Iraq.

The most significant variation can be found in site DL-5 that lies at the middle of the Southern part of Dalmaj, where the majority of the Marbled Teal populations were found in winter (85 individuals). This site consists of relatively open water area especially to the south of the new canal, with some reedbeds and some areas of sedge plants, and this agreed with Green in 1998b when he is recorded some kinds of ducks in the open water with reedbeds.

The second site that held considerable numbers of the Marbled Teal was the DL-1 that lies at the northern part of Dalmaj. It consists of relatively similar habitats to the previous site (DL-5), but lacks to the large open area of the water, and the open water areas are not larger than few hectares in comparison with DL-1. The reedbeds in this area is comparatively higher than that in DL-1. It seems that large numbers of the Marbled Teal use this area during winter where the researched has recorded more than 70 individuals in this site. The lowest number of Marbled Teal in this area was recorded during spring. Green (1997), recorded the lowest population of Marbled Teal during spring. DL-2 seems to be the best wintering area for Marbled Teal in Dalmaj during the surveys time. More than 75 individuals were found during winter in DL-2 and this number represents the second highest number that we've recorded ever in Dalmaj. It seems that the habitat of this site, that consists of dense reedbeds close to some open water areas with submerged plants, is preferable habitat for the Marbled Teal in winter, but might not be very good area for breeding as we've observed only 36 individuals in summer during our surveys.

It seems that the sites DL-3 and DL-4 do not provide very good habitats for the Marbled Teal either for the wintering birds or during the breeding season. Few birds (a bit over ten) were the highest number of the populations that were found in these two sites during the study time. This might be due to being these sites frequented by the fishermen or for their being close to the road and the embankment of the Lake (Table.2). This is agreed with Green (1996) when he reviewed the disturbance of the human activities will act on the presence of Marbled Teal.

Table. 2: Seasonal variation in the counts of Marbled Teal

Location	Mean ± SE				LSD Value
	Winter	Spring	Summer	Autumn	
DL-1	20.67 ± 6.22	7.67 ± 1.20	11.67 ± 6.17	72.33 ± 35.51	59.67 *
DL-2	40.67 ± 2.40	35.67 ± 14.67	36.33 ± 10.98	76.67 ± 8.83	32.275 *
DL-3	1.00 ± 0.50	9.33 ± 6.35	13.33 ± 8.81	1.67 ± 0.82	8.912 *
DL-4	0.333 ± 0.15	0.667 ± 0.332	1.00 ± 0.50	1.33 ± 0.67	2.977 NS
DL-5	85.33 ± 17.48	19.33 ± 4.05	26.67 ± 16.04	20.67 ± 9.33	42.105 *
LSD Value	26.418 *	22.097 *	31.356 *	53.275 *	----
* (P<0.05) , NS: Non-significant.					

IV. CONSERVATION OF MARBLED TEAL IN AL-DALMAJ WETLAND

In spite of the ecological importance of Hor Al-Dalmaj, it is under different kinds of pressures and threats like the unstable of the hydrological scheme, agricultural expansion and intensification, pollution, disturbance, and over-hunting (clap-nets, shotguns). These threats are interchanging in their impacts as they affect Marbled Teal and its life in Hor Al-Dalmaj, so the wetland and species both suffer the impacts of these pressures. The area is characterized by many features that make it unique from the ecological and recreational perspectives. Hence, it is recommended to establish a management plan that covers the hydrological, ecological and developmental preservation for Hor Al-Dalmaj and the diversity of flora and fauna it nourishes. This can go side by side with certain activities on the part of the authorities like the enforcement of the Iraq environmental legislations and the application of the international and regional convention, especially those related to the establishment and sustaining of protected areas.

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