

Seasonal Dynamic of the Small Diver *Tachybaptus ruficollis* in Lake Dam 16th Tishreen

Razan hasan balloul ^{#1}, Mohammad Ghalyah ^{#2}, Dr. Adib Zieni ^{#3}

^{#1,2}, zoology Department, Faculty of Science, Tishreen University, Lattakia, Syria.

^{#3}Professor, zoology Department, Faculty of Science, Tishreen University, Lattakia, Syria.

Abstract - This study was conducted from July 2018 to July 2019 at a rate of two visits per month at Lake Dam 16th Tishreen. The results showed the presence of a small diver, *Tachybaptus ruficollis*, in the study areas (floating cages, reservoir). As a result of monitoring and point counts at the two sites selected from the Lake. We recorded 500 individuals of *Tachybaptus ruficollis* from them 355 and 145 from the first and second sites, respectively, and the recorded *Tachybaptus ruficollis* the highest frequency rate around the floating cages. The numbers of recorded bird species varied according to the months of the year, from 12 individuals from November to 155 in May while absent in February 2019. Some ecological coefficients (Species richness factor, variation factor) was studied where it was found that its numbers were more variable and therefore less stable in the basin area with a different coefficient (6.20), and it appeared that May 2019 is the highest number of this bird with a Richness factor of 227.12.

Keywords — Dam 16th Tishreen, Floating cages, *Tachybaptus ruficollis*, Variation factor.

I. INTRODUCTION

Syria is home to many endemic birds in addition to migratory, passing, or visiting birds, but these birds do not exceed 3.5% of the total species around the world. The number of bird recorded species from Syria reached 360, where the Syrian bird wealth reaches 360 species distributed in eighteen levels comprising fifty-seven bird species ([1]). ([2]) reported 115 species of birds from Deir Ez-Zor. Seven species of birds were recorded from the city of Damascus, namely, grey crow, black beggar, periodic sparrow, common swallow, the hook of houses, and cream ([3]). ([4]) studied birds at the site of the Salfoun and recorded 23 species of birds. Al ([5]) studied 15 species of waterbirds in the freshwater of the Syrian coast. The number of birds threatened by extinction locally and internationally, which is home to 17 species, including the *Egretta alba*, is home to 17 species, according to ([6]). Studies on water birds of the Syrian coast are few and even rare. The importance of research comes as it studies for the first time a small diver in terms of environment, distribution, and classification.

The current study aims to investigate the monthly numerical changes of the small diver at selected sites of Lake Dam 16th Tishreen.

II. MATERIALS AND METHODS

The research was carried out in Lake Dam 16th Tishreen, about 16 km from Latakia. The Lake is 11.2 km long and 11 km wide, used to irrigate about 20,000 hectares of farmland surrounded by forestry trees such as wild pines and oaks. Monitoring of the small diver in Lake 16th Tishreen was done from July 2018 to July 2019 at the rate of two field visits per month in the method of monitoring the beach and point counts ([7]). Using a two-eyed binocular (Olympus 10*50 DPSI) for distant birds, with the naked eye of nearby birds for a period of 1-3 hours of observation for each of the selected locations (floating cage site, basin area)

The number of small divers was recorded, and some photos were provided. Some measurements have been taken (total length of the bird, wing length, length of tail, length of the leg, length of beak...) ([8]; [9]).

Author name, affiliation, and complete address are to be placed underneath the title. In the case of multiple authorship of a submitted paper, the affiliation and complete address of each author must be specified. All characters of species bird recorded (shape, size, and color) and identified based on available keys ([10], [11]), [12]). Studied material was preserved in dry methods, according to [13]. Those materials were deposited in the collection of the Department of Zoology, Faculty of Sciences, University of Tishreen, Latakia, Syria.

The statistical study was using SPSS software, and some ecological factors were calculated:

Species Richness: $D=(S-1)/\ln$

S= The number of species per year

N= The number of species per round ([14], [15])

Coefficient Variation: ([15])

C.V=S/X*100

S= Standard deviation

X= Average arithmetic

III. RESULTS AND DISCUSSION

This study was conducted from July 2018 to July 2019. The small diver was observed at the two study sites (floating cage area and reservoir area)

This bird belongs to:



Taxonomy:

Order: Podicipiti formes

Family: Podicipitidae

Genus: *Tachybaptus*

Species: *T. ruficollis*

Podicipiti formes

This order includes divers and birds that leave water briefly and spend most of their life in it between swimming and diving. They feed on fish, insects, and worms. It resembles ducks in their general form, but their beak is shortly tapered, the hind limbs are closer to the back of the body than in the ducks, so they can't walk on the ground, their feet are not as slick as the feet of ducks and swans, but each of their fingers is surrounded by a side membrane, its tail is very short, and its feathers are not distinguished from the feathers next door. The feathers are thick and soft, and the texture in the lower parts of the body is silky. The wings are short and narrow. The bird has difficulty taking off from the water, but if he is at risk resorting to diving without flying (colonies in artificial lakes)

the bird builds his nests from aquatic plants, builds them floating in shallow places of swamps, where weeds abound that hide the nest from view. The number of eggs in the nest is 6-4, which is white in the un-dotted color, hatches after three weeks incubation flappers prisolial. ([8],[9],[16])

The smallest bird recorded in the region can be identified by its small size and the end of the non-sharp body. Adult birds are distinguished by the absence of white from the top of the wing with a dark brown color, the larynx and cheeks in bright chestnut color, and a yellow patch at the base of the beak in winter. Adult and young birds are covered with light brown feathers from the top and orange-yellow from the bottom and are mixed with pale chestnuts on the front of the neck for adults. Young birds have white stripes on the head and behind the neck. Dive by jumping and spraying water when it feels dangerous instead of flying. Fly for a short distance only with very fast wing whisks close to the surface of the water.(Fig 1A,1B)

Environment: Lakes and ponds dense with plants, and even estuaries in winter. Nest on a pile of herbs in the water.

Situation: Some are immigrants in most of its breeding areas, as well as in the Black Sea, the Mediterranean coasts, and the Arabian Peninsula. ([9])

It was noted that the diver is fast-moving and disappears in the water, and when the bird's crop is opened, which is caught on the date 27/7/2019, it was found the remains of the bones of the fish (Fig 1C).

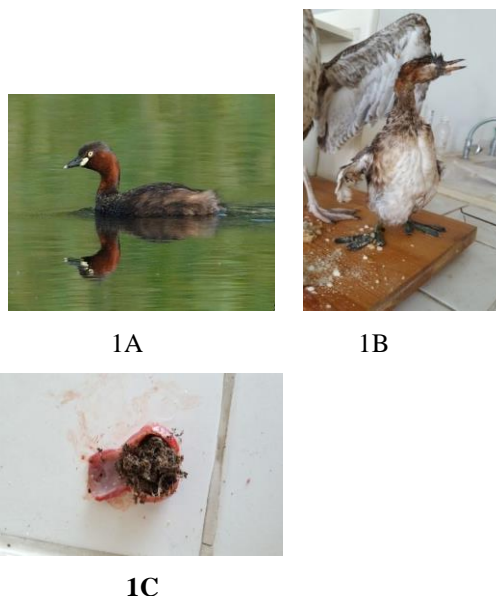


Fig 1: A picture of *Tachybaptus ruficollis*
 A: *Tachybaptus ruficollis* by ([17])
 B: preserved material in dry methods, Zoology Dept., Faculty of Science, University of Tishreen
 C: The crop with its contents

Monthly and seasonality dynamic of the small diver in Lake Dam 16 Tishreen:

Most water birds migrate in different ways, and their numbers vary during the seasons ([9]). The numbers of the small diver recorded during the search period have shown that Table (I) the total number of small diver birds was 155 individual in May 2019, while in July 2019 declined to 9 of the same year. This can be due to climate change between the seasons and the abundance of the food base. Figures (3 & 4) data indicate that the small diver appeared during the months of the year in varying numbers between the two study areas and was the highest number of 100 individuals in the floating cage area while reaching 55 in the reservoir area.

A study of the contents of the vesicles revealed the presence of a large ammunty of bony fish pieces (Fig 1C), and this is evidence of the feeding of the small diver on the fish in the Lake Dam of 16 Tishreen mainly.

It was noted from the study of the difference factor (Fig 5) for the numbers of the small diver in the study areas during the study period that its numbers were more variable in the reservoir area with 6.20, and it was shown by studying the changes of the qualitative richness factor of the small diver in the study areas for the months in which the research was conducted that May 2019 is the richest in the numbers of this bird with a factor of richness 227.12.

TABLE I

The numbers variation of the small diver in the studies areas (floating cages, reservoir) from 2018 until 2019

Location and Number of bird Months/ Year	<i>Tachybaptus ruficollis</i>	
	Floating cage site N	Reservoir area N
2018July	40	5
August 2018	21	1
September2018	13	30
October2018	30	20
Novambar2018	8	4
December2018	20	5
January2019	48	0
February 2019	0	0
March2019	15	5
April2019	45	6
May2019	100	55
June2019	15	5
July2019	0	9
Grand total	355	145
X	27.30+	11.15+
SD	1.22-	0.818-

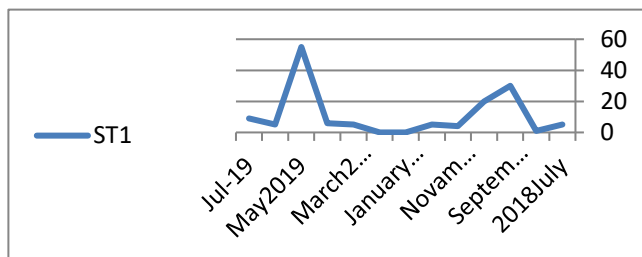


Fig 3: Changes in the numbers of the *Tachybaptus ruficollis* in the study area (floating cages ST1) in Lake Dam 16th Tishreen

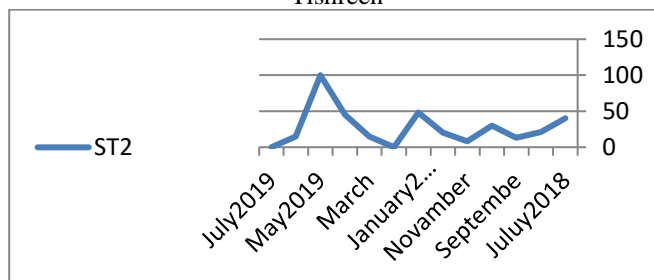


Fig 4: Changes in the numbers of the small diver in the study area (Reservoir ST2) in Lake Dam 16th tishreen

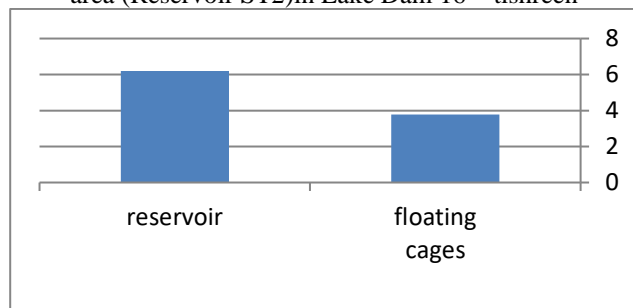


Fig 5: Difference factor for the numbers of the small diver study areas.

VI. CONCLUSIONS

The *Tachybaptus ruficollis* is a water bird scattered in The Lake of The Dam of 16 Tishreen and has been identified and described in the research for the first time. The *Tachybaptus ruficollis* forms bird colonies in the summer, especially in May, with hundreds of numbers in the floating cage area.

ACKNOWLEDGMENT

The authors would like to thank the Faculty of Sciences, Tishreen University, Lattakia, Syria, for providing the financial and logistic support to this work.

REFERENCES

- [1] National Study of Biodiversity in the Syrian Arab Republic, Syria (1998).
- [2] A.Edek. "Classification study of biotypes found in Deir Ez-Zor. Euphrates University". 291 pp,2010.
- [3] A.Motawaj. "The biology and behavior of some bird species in the city of Damsha and its environs". Damascus University Journal of Basic Sciences, Agricultural Science series, Volume (17) Issue (1). 131-115,2000.
- [4] B.Alcheikh. "Studying the effect of land use on birds' diversity at the Al- Safkuon area in Latakia.Tishreen University" Journal-Biological Sciences, 33(7):25-38,2011.
- [5] B.Alcheikh. "A Contribution to the study of waterbirds on the Syrian coast". Tishreen University Journal-Biological Sciences, 35(7):22-34,2013.
- [6] BirdLife International. State of the Environment Report,(2012).
- [7] D.Hill, S.Taylor, R.Thaxton, A.Amphlett. "Horen,us-Breeding birds communities of native pine forest Scotland".Bird Study ,337 ,133-141,1990.
- [8] E.B.Alouse. "Birds Of Iraq".Vol.1.General Ornithology, Podicipitiformes – Falconiformes.Baghdad, 276 P,1961.
- [9] R.F.Porter, S.Christensen, P.Hansen.P.S. "Birds of the Middle East, London".WID,460P,2004.
- [10] S.D.Schemnetz. "Capturing and handling wild animals", in C.E Braun, ed. Tech-niques for wildlife society, Bethesda, USA, 425P,2005.
- [11] V.E.Sokolove. *Birds Of Iraq*, Vol.2.Galliformes- Piciformes.Baghdad ,279.P,1961.
- [12] L.A.Gladkove.G.P,Dementeve,E.S.Ptyshenka, A.M.Sydilovskoia. "Classic fiction of Birds in the USSR", Moscow, High School,536 p,1964. (in Russian).
- [13] S.Bergdar. "Practical applications invertebrates and the human body". Damascus University, Riyadh Press: 231pp,1984.
- [14] J.Levine. "Species diversity and biological invasions:." relating local process to community pattern.Science 288:852-854,2000.
- [15] J.K.Charles. Ecology. "The Experimental Analysis of Distribution and Abundance". HARPER & ROW, publishers,NewYork,665 p,1978.
- [16] J.E.Webb, J.A.Wall work, J.H.El good. "Guide to Living Birds".Macmillan Press LTD,London,291P,1976.
- [17] H.Azzvv, P. Dorouaou, C.Azzvv, J. Monval, O. Gerar . "Field Guide to Identifying Migratory Waterbirds in Northern Africa". Bird Lovers Association, Tunisia, French National Bureau of Hunting and Wildlife, France. Tunisia, 498,2012. Translated by Mohammed Saeed.