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# THE WATERFOWL OF SULTAN SAZLIĞI-KAYSERİ


by

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# THE WATERFOWL OF SULTAN SAZLIĞI-KAYSERİ*

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**ABSTRACT**

Sultan Sazlığı, which is situated at the south-west of Erciyes Mountain and about 45 kms from Kayseri, is shown several times in the distribution maps of birds. However, the number of species and the time of the year at which they come to Sultan Sazlığı have not been studied properly. The scope of this study is to provide adequate information on the birds of Sultan Sazlığı.

The study was carried out between June 1980 and September 1982. The data were collected by the regular observations and field records from predetermined stations. The system used is that of Tyne (1976). A total of 59631 birds belonging to 18 families and 53 species have been observed and recorded. Of these 53 secies 28 % were resident, 4 % vagrant, 17 % winter visitors and 51% summer visitors. The results are presented in the tables.

## INTRODUCTION

The birds of Turkey have been studied by Ergene (1945), Kumerloeve (1952, 1958, 1961, 1966, 1969a, 1969b, 1970, 1975), Kosswig (1950, 1951), Kasparyan (1956, 1960), Bayramoğlu (1958), Alapınar (1963), Bezzel (1964), Warncke (1965), Vader (1965), Erard (1968), Gürpınar (1968), Vielliard (1968), Pala (1971), Ertug (1975), Spitzenberger (1976), Heinzel (1979), Bruun (1980), Cramp (1980) and Kiziroğlu (1981, 1982).

Although some of these works cover the whole of Turkey, Sultan Sazlığı was shown only in the species maps of Heinzel (1979), Bruun (1980, and Cramp (1980).

Sultan Sazlığı is a large wetland protected by the Ministry of Forestry and Agriculture and is far from highways therefore maintaining

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a rich bird fauna. However, it has not attracted scientists so the birds of this area have not yet been studied properly so far.

The birds of this area were included in the bird distribution maps by Heinzel (1979), Bruun (1980) and Cramp (1980), but those species which are vagrant, migrant or resident were not indicated. This study was carried out to obtain satisfactory information on the birds of Sultan Sazlığı.

## MATERIAL AND METHOD

Sultan Sazlığı is 45 kms from Kayseri and located between the south and south-West of Erciyes mountain. It is about 1100 meters above sea level and is surrounded by Develi, Yahyalı, Incesu, and Yeşilhisar districts. It is a wetland of about 937 square kms. (Fig. 1,2).

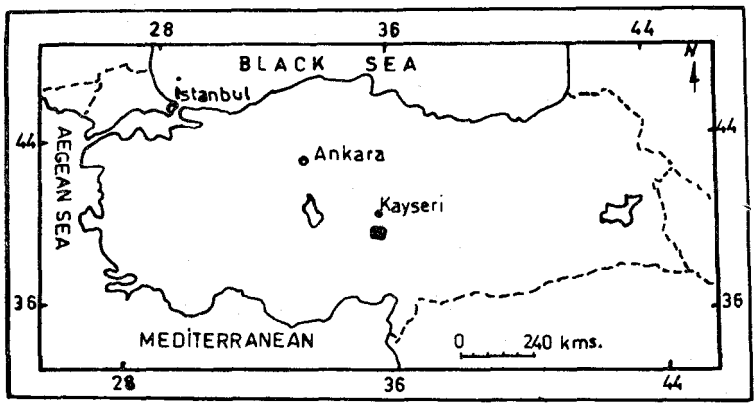


Figure 1. The map of Turkey that shows the studying area

The water, soil geographical and geological features of Sultan Sazlığı were examined by the State Hydraulic Works (1970a) and the maps of this area were drawn by Tanoğlu, Erdinç and Tümertekim (1961), Unat (1963) and the State Hydraulic Works (1970b). The natural history of Sultan Sazlığı with all its features was given by Polat (1982).

Sultan Sazlığı consists of three lakes; the first, in the north, called Lake Çöl is about 1.5 meters deep and 33.5 kms$^2$. Lake Söbe is situated at the south of Lake Çöl. Lake Yay is the biggest one in the south,

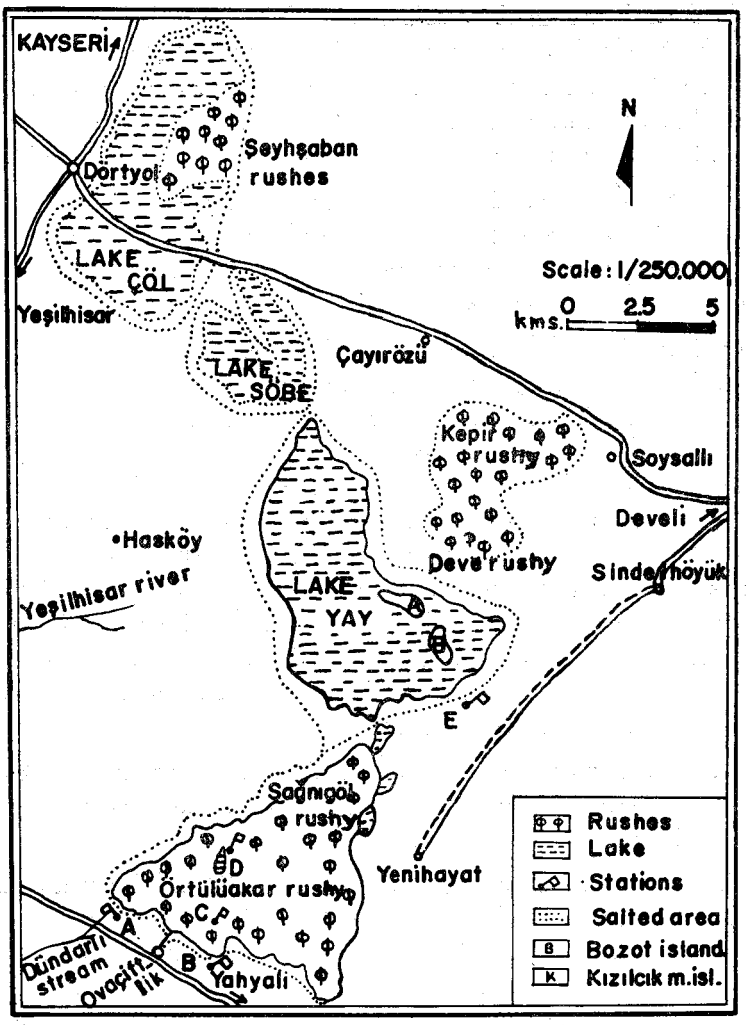


Figure 2. The map that shows the observation stations and islands in Sultan Sazlığı.

is about 2 meers deep, and highly salted. Lake Yay has two islands, Bozot and Kızılcık Madenotu.

Şeyhşaban rushes with a maximum depth of 1.5 meters are in the east of Lake Çöl; Kepir rushy and Deve rushy, with a maximum depth

of 1.5 meters, lie to the north-east of Lake Yay. Sağnıgöl rushy and Örtülüakar rushy, with a maximum depth of 3.5 meters, in the south of Lake Yay are hinghly salty and cover an area of about 20 kms$^2$.

There are a number of floating islands which consist of rushes in the Örtülüakar rushy and Sağnıgöl rushy. Because of the high rate of evaporation, the salty areas occur in the summer.

Since the study site is very wide and there are some serious difficulties in going whatever the season, the study was made from specially stations chosen which have the entire characterisctics of the wetland. Access to the stations was easy.

As figure 2 shows, Sataion A and B are shore stations in the south of Sultan Sazlığı. Station A is about 3 kms to the west of the road which runs from Ovaçiftlik village to the rushy area. Station B is in the east and lies 3 kms from the same road. Station C is in the Örtülüakar rushy and about 3.5–4 kms from station B. This station includes Lake Eğri which is about 3000 m$^2$ in area and surrounds an observation tower built on sailling barrels. The tower has an observation room 10 meters high from the water surface. Since the rushes around it are 2.5–3 meters high, the tower is an useful place for observing the birds. Station D covers Lake Sarp and its surroundings. Lake Sarp is 10.000 m$^2$ and lies about 5 kms from C station in the noth-west. This is the deepest and largest Lake in Örtülüakar rushy.

Station E is to the south-east of Lake Yay on the road to Sindelhöyük and Yenihayat. It is a station without rushes and trees and is about 15 kms far from Sindelhöyük.

This study was carried out between june 1980 and September 1982. We visited the area once a month and stayed for 3 or 4 days each time. The observations and counting of birds were made between 11.00 a.m. and 15 00 p.m. at the stations in Örtölüakar rushy and station E, and in the mornings near 11 00 a.m. and after 15 00 p.m. at the shore stations.

During the study, the birds which had been watched either with the naked eye, or 12 $\times$ 40 binoculars were recorded in line using the Dobinson's methods (1976). Identifications were made according to Ergene (1945), Peterson (1954), Heinzel (1979), Bruun (1980) and Cramp (1980).

Those which were not possible to identify with the naked eye or binoculars, were hunt and prepared according to Mursaloğlu (1965) and identified. In some identification, the bird specimens in the Kayseri Office of the Mimistry of Forestry and Agriculture were also used.

In the observations, the number of birds, the habibat of each species, the number and shape of the eggs, and the form of the nests were recorded, and tried to obtain as much biological information on these birds as possible.

We have united the stations A and B as station I, stations C and D as station II and station E as station III since there were no significant difference in their species and counts.

Since station I is on the shore, we were able to carry out studies in every season, but we were not able to go station II during the winter months because of surrounding were frozen. We could also not reach the Station III from Ovaçiftlik during the winter months.

The results of the observations have been arranged in monthly tables in line according to Tyne (1976). The tables show, which species are resident, or vagrant, and which species from the north, namely winter visitor, or from the south, namely summer visitor.

The results show differences, if any, among the bird species observed at each station.

Breeding characteristics of some species are presented in the results, the order of the location of nests shown from the shore to the inside of the rushy.

## RESULTS

During this study 53 bird species belonging to 18 families from seven orders were identified as a result of 27 months of observations. A total of 59631 birds have been counted and recorded. This birds are; *Podicipediformes* 895, *Pelecaniformes* 4216, *Ciconiiformes* 22432, *Anseriformes* 23123, *Gruiformes* 4886, *Charadriiformes* 4013 and *Coraciiformes* 68.

The *Phoenicopterus ruber* is the species having the highest number (17750) among the total census, *Netta rufina*, *Fulica atra* and *Casarca ferruginea* being the second, third and fourth species 5982, 4059 and 3876

respectively. The high number of the *P. ruber* may be due to their group feeding. Basides this, members of the *Anatidae* family feed among the reeds and prefer inaccessible areas to hunters. It is obvious that this family constitutes the highest number in Sultan Sazlığı.

Of the species identified, *Egretta alba*, *Burhinus oedicnemus* and *Scolopax rusticola* were observed only in station I, *Gallinula chloropus in* station II and *Anser anser* and *Tadorna tadorna* in station III. *Anser anser*, *Tadorna tadorna* and *Gallinula chloropus* were not observed in station I. The former two of these species live in the open area so that they were not seen at station I which is rather close. *Gallinula chloropus*, on the other hand, feeds and almost hides in the rushes. *Ardea cinerea*, *Gallinago gallinago*, *Larus genei*, *Larus ridibundus*, *Vanellus vanellus*, *Tringa totanus*, *T. ochropus*, *Himantopus himantopus*, *Recurvirostra avosetta*, *Numenius arquata*, *Scolopax rusticola*, *Pelecanus onocrotalus*, *Burhinus oedicnemus*, *Ciconia ciconia*, *Egretta alba*, *Phoenicopterus ruber*, *Anser anser*, *Tadorna tadorna*, *Casarca ferruginea and Glareola pratincola* have not been encountered in the station II. Most of the species which were not seen in this station belong to the order *Charadriiformes*. Members of this order were observed at the Coast station. *Anas penelope*, *Anas clypeata*, *Aythya fuligula*, *Phatalea leucorodia*, *Plegadis falcinellus*, *Ardea purpurea*, *Egretta alba*, *Ardeola ralloides*, *Nycticorax nycticorax*, *Ixobrychus minutus*, *Oxyura leucocephala*, *Burhinus oedicnemus*, *Scolopax rusticola*, *Gallinula chloropus*, *Fulia atra*, *Alcedo atthis*, *Anas platyrhynchos* and *Charadrius dubius* are the species that were not observed in station III.

Since the birds of station I are able to utilize both land and water habitats, most of the species are represented at this station. Although it-is very rich for feeding, most bird species were not found in station II which is made of rushes.

As Tables 1–5 show, *Aythya ferina*, *A.nyroca*, *Netta rufina*, *Anas strepera*, *Gelochelidon nilotica*, *Sterna hirundo*, *Sterna albifrons*, *Chlidonias hybridus*, *Phalacrocorax pygmaeus*, *Podiceps cristatus*, *P. nigricollis*, *Tachybaptus ruficollis*, *Egretta garzetta*, *Anas crecca*, *A. querquedula* and *A. acuta* are the species which were found in all stations. These species can adapt to different habitats.

As Tables 1–6 show, 15 species out of 53 are resident, 2 vagrant, 9 winter visitors coming from the north and 27 summer visitors coming from the south.

The resident species which constitute 28 % of the total are; *Aythya ferina*, *A. nyroca*, *Netta rufina*, *Anas platyrhynchos*, *Anas strepera*, *A. crecca*, *Casarca ferruginea*, *Egretta garzetta*, *Oxyura leucocephala*, *Phoenicopterus ruber*, *Phalacrocorax pygmaeus*, *Podiceps cristatus*, *P. nigricollis*, *Tachybaptus ruficollis and Fulica atra*. There were some seasonal insignificant changes in their numbers.

*Eğretta alba* and *Ardea cinerea* consisting of 4 % the total are vagrant.

The Tables 1,3,4 and 5 show, the winter visitors which make up 17 % of the total. These are; *Phalacrocorax carbo*, *Tringa ochropus*, *Anas penelope*, *Numenius arquata*, *Scolopax rusticola*, *Gallinago gallinago*, *Anas acuta*, *Anas clypeata* and *Aythya fuligula*. The winter visitors are the species coming to this area in winter and after the winter, they go to the north for breeding. The winter visitors start to come in September and leave the area in March.

The summer visitors which consist of 51 % of the total species are; *Alcedo atthis*, *Ciconia ciconia*, *Platalea leucorodia*, *Plegadis falcinellus*, *Ardea purpurea*, *Ardeola ralloides*, *Nycticorax nycticorax*, *Ixobrychus minutus*, *Pelecanus onocrotalus*, *Burhinus oedicnemus*, *Glareola pratincola*, *Charadrius dubius*, *Vanellus vanellus*, *Tringa totanus*, *Himantopus himantopus*, *Recurvirostra avosetta*, *Gelochelidon nilotica*, *Sterna hirundo*, *S. albifrons*, *Chlidonias hybridus*, *Larus genei*, *L. ridibundus*, *Grus grus*, *Gallinula chloropus*, *Anser anser*, *Tadorna tadorna and Anas querquedula*. The summer visitors come from the south and spend their breeding season in this area and migrate to the south in autumn. The beginning and the end of the migration of summer visitors change form species to species, but, in general, the summer visitors start to come in March and leave by October.

There are some monthly differences in the habitats of the species. In the first week of May, which is the beginning of the breeding season, members of the Ardeidae *are found mostly around Lake Sarp where* they build their nests. At the end of July when the youngs start to fly, they

are mostly seen at the shore, Members of the *Anatidae*, on the other hand are not seen around station I and II during July and August. Also there were a decrease in the numbers of *Anas platyrhynchos*, *Aythya ferina*, *Aythya nyroca* and *Netta rufina* at this time. This may be due to the hatching of the eggs and also to the habitual wandering around of mature animals with the youngs in the reeds. In addition to these, *Phoenicopterus ruber*, *Anser anser*, *Casarca ferruginea and Pelecanus onocrotalus* were mostly seen in groups around station III but rarely around station I. However, *Cacarca ferruginea* was recorded indivually around station I. Since the winter observations were made in station I, the number of the birds in winter belongs to this station. According to these observations, the most common bird in the winter is *Anas acuta*, it comes from the north during February and becomes the dominant species.

The breeding activities observed belong only to *Fulica atra*, *Netta rufina*, *Anas platyrhynchos*, *Aythya ferina*, *A. nyroca*, *Charadrius dubius*, *Plegadis falcinellus*, *Phalacrocorax pygmaeus*, *Egretta garzetta*, *Ardeola ralloides* and *Nycticorax nycticorax*. The nests of *Fulica atra* were found on the shallow sides of Örtülüakar rushy and the nests of *Anas platyrhynchos*, *Aythya ferina A. nyroca*, *Netta rufina Charadrius dubius* were found within the area between Lake Eğri and Lake Sarp. The nests of members of the *Ardeidae family*, *Plegadis falcinellus* and *Phalacrocorax pygmaeus* were found along the north east coast of Lake Sarp. Members of the *Ardeidae* family, which breed in colonies, do not use the old nests but change their breeding sites every year. Although we have not seen their nests, it is assumed that *Platalea leucorodia* breeds here since it vas observed around Lake Sarp together with members of the *Ardeidae*.

## DISCUSSION

There are some differences between the results obtained from this study and the results given by Heinzel (1979), Bruun (1980), and Cramp (1980).

Heinzel (1979) recorded *Alcedo atthis*. *Vanellus vanellus*, *Tringa ochropus*, *Recurvirostra avosetta*, *Sterna albifrons*, *Grus grus*, *Fulica atra*, *Gallinula chloropus*, *Anser anser*, *Tadorna tadorna*, *Ardea cinerea*, *Eg-*

*retta alba* and *Phalacrocorax carbo* as residents, *Aythya ferina* and *Larus ridiloundus* as *winter visitors. In the present study, Alcedo atthis, Vanellus vanellus, Recurrvirostra avosetta, Sterna albifrons, Gallinula chloropus, Larus ridibundus, Anser anser, Tadorna tadorna* and *Grus grus* are summer visitors, and *Phalacrocorax carbo* and *Tringa ochropus are* winter visitors, *Aythya ferina* is resident and *Egretta alba* and *Ardea cinerea* are vagrant.

Bruun (1980) reported that *Alcedo atthis, Vanellus vanellus, Tringa ochropus Recurvirostra avosetta, Larus ridibundus, Sterna albifrons, Gallinula chloropus, Anser anser, Tadorna tadorna, Anas clypeata* and *Phalacrocorax carbo* were resident and *Anas crecca* were resident and winter visitor. In this study, however, it was found that *Alcedo atthis, Vanellus, Recurvirostra avosetta, Larus ridibundus, Sterna albifrons, Gallinula chloropus, Anser anser and Tadorna tadorna* are summer visitors, *Tringa ochropus, Phalacrocorax carbo* and *Anas clypeata* are winter visitors and *Anas crecca* is resident.

Cramp (1980) reported, *Phalacrocorax carbo, Egretta alba, Phoenicopterus ruber* and *Tadorna tadorna to be* winter visitors to the coast of Turkey, but summer visitors for the central part of Turkey, *Ardea cinerea* as summer visitors, *Anas crecca* as winter visitors and *Egretta garzetta as summer visitors and vagrant, whereas in this study it is shown that Egretta alba* and *Ardea cinerea* are vagrant, *Tadorna tadorna is a* summer visitors, *Phalacrocorax carbo* is a winter visitors and *Anas crecca, Phoenicopterus ruber, Egretta gazetta are* resident.

Cramp (1980) reported that *Tadorna tadorna* lives in fresh water. *Podiceps nigricollis* breeds in groups and mostly lives together with the species of *Larus* and *Chlidonias* and *Phalacrocorax pygmaeus* uses old *nests*. In this study, *Tadorna tadorna* was seen *around* Lake yay, the nests of *Podiceps nigricollins* had not been found. However, it was found that they live together with *Podiceps cristatus* and *Tachybaptus ruficollis* and do not use their former nests.

There are some differences between our results and those given by Heinzel (1979), Bruun (1980) and Cramp (1980). These differences may be due to; a) our working area was very small in comparison to theirs, b) their results were dependent on regional specimens and c) the birds in the palaearctic may show differing adaptive cracteristics to differing environmental contitions.

Timmerman (1976) included Sultan Sazlığı in his distribution map of *Anser albifrons*. We could not work around Lake Yay during the winter months. However, Timmerman (1976) may be right, since a dead *Anser albifrons* was presented in the Kayseri Office of Mimistry of Forestry and Agriculture.

*Phoenicopterus ruber and Tadorna tadorna* which were recorded in Lake Yay during the whole observation months, were accepted as resident species, this was supported by villagers and watchmen who testified that these species have also been seen during the winter.

No differences appeared between the breeding activities observed by us and those given by Harrison (1975) and Cramp (1980). The breeding properties given by Harrison (1975) and Cramp (1980) were similar to the results obtained from our work, therefore we have not repated them here for Sultan Sazlığı.

The rich bird fauna of Sultan Sazlığı is protected by Mimistry of Forestry and Agriculture. The protection has brought an end to the decreace of the birds of the area.

In April and May of 1982 about 100–200 dead and 800–1000 unhealty *Fulica atra* in station I were found where Dündarlı stream joins Örtülüakar rushy. The veterinary controls revealed that these animals had been poisened by the use of agricultural control chemicals either used for fruit in the garden or in the grain field surroundings the rushy. This situation shows that the wild life in Sultan Sazlığı may be seriously endangered in time if the necessary precautions are not taken.

Karasaz area which is located in the west of Erciyes Mountain and about 15–20 kms to the north of Sultan Sazlığı had been drained and dried. It was highly productive for a few years after drying, but today it is quite unproductive and useless either for agriculture or for wild life. The present state of Karasaz should be taken into acount in any future decision to be made on Sultan Sazlığı.

## ACKNOWLEDGEMENT

I would like to thank my advsier Prof. Dr. Bahriye Mursaloğlu for her invaluable encouragement and guidance throughout this study.

| SPECIES | YEARS / Months / Observatory-station | 1980 | | | | | | | 1981 | | | | | | | | | | | | 1982 | | | | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | June | July | August | September | October | November | December | January | February | March | April | May | June | July | August | September | October | November | December | January | February | March | April | May | June | July | August | September | |
| Podiceps cristatus | 1st station | 2 | 4 | | 3 | 4 | 11 | 9 | 15 | 15 | 3 | 3 | | 3 | 4 | 8 | | 2 | 11 | 3 | 5 | 6 | 3 | 3 | 4 | 8 | 14 | | | 143 |
| | 2nd station | 3 | 12 | | 7 | 13 | 10 | | | | 3 | 12 | 11 | 14 | 8 | 4 | 23 | 9 | 2 | | | | | 6 | 4 | 20 | 18 | 8 | 15 | 202 |
| | 3rd station | 1 | 6 | | | | | | | | | | | | 4 | 1 | | | 14 | | | | | | 8 | 9 | 3 | | 16 | 61 |
| Podiceps nigricollis | 1st station | 7 | 2 | | 1 | 17 | 7 | 6 | 14 | 2 | 3 | 4 | | 12 | 3 | 6 | | 9 | | 10 | 3 | 17 | | | | 3 | | | | 126 |
| | 2nd station | 8 | 5 | | 1 | 8 | 23 | | | | 19 | 2 | 5 | 17 | 16 | 9 | 1 | 6 | | | | | | | | 4 | 19 | 6 | 11 | 160 |
| | 3rd station | | | | | | | | | | | | | | | | | | | | | | | | | 4 | 2 | | | 6 |
| Tachybaptus ruficollis | 1st station | 3 | | | 2 | | 20 | 4 | 18 | 2 | | 4 | 7 | | | | | | | 3 | | 7 | | 2 | 6 | | | | | 78 |
| | 2nd station | 5 | 3 | | 7 | 12 | 11 | | | | 7 | 1 | 12 | 7 | | | 5 | | | | | | 6 | | 3 | | | 4 | 9 | 92 |
| | 3rd station | | 8 | | | | 6 | | | | 4 | | | | | | | 3 | | | | | | | 6 | | | | | 27 |
| Phalacrocorax carbo | 1st station | | | | | 9 | 1 | 11 | 6 | 11 | | | | | | | | 11 | 5 | 20 | 6 | 15 | 4 | 4 | | | | | | 103 |
| | 2nd station | | | | | | 11 | | | | | | | | | | | | 6 | | | | 4 | 1 | | | | | | 22 |
| | 3rd station | | | | | | | | | | | | | | | | | | 8 | | | | 8 | 15 | | | | | | 21 |
| Phalacrocorax pygmaeus | 1st station | | 22 | | 111 | 30 | 42 | 2 | 8 | 33 | 25 | 4 | | 22 | 114 | 32 | 20 | 55 | 26 | 41 | 35 | 33 | 50 | 15 | | 19 | 141 | 32 | 11 | 923 |
| | 2nd station | 7 | 54 | | 24 | 20 | 43 | | | | 11 | | 64 | 59 | 85 | 92 | 70 | 45 | | | | | 48 | 34 | 69 | 47 | 126 | 165 | 39 | 1102 |
| | 3rd station | | 18 | | | 9 | 20 | | | | 13 | 1 | 4 | 19 | 18 | 22 | 265 | 1 | 19 | | | | | 15 | 2 | 38 | | 4 | 39 | 507 |
| Pelecanus onocrotalus | 1st station | | | | | | | | | | | | | | | | | | | | | | | | 362 | 194 | | | | 556 |
| | 3rd station | | | | | | | | | | | | | | | | | | | | | | | | 360 | 80 | 230 | | 300 | 970 |
| Ardea cinerea | 1st station | 1 | 1 | | | 2 | | | | | 3 | 4 | | | 14 | 2 | | | | | | | | 4 | 1 | | | 12 | | 44 |
| | 3rd station | | | | | | | | | | 3 | 1 | | | | | | | | | | | | | | | | | | 4 |
| Ardea purpurea | 1st station | 3 | 3 | | | | | | | | | | 3 | 2 | 4 | | 1 | | | | | | | | 1 | 2 | | 2 | | 21 |
| | 3rd station | | 4 | | | | | | | | | 3 | 2 | | 3 | 5 | | | | | | | | | | | | 1 | | 18 |

Table 1. Monthly counting of the species indicated below during the study.

| SPECIES | YEARS / Months / Observatory station | 1980 June | July | August | September | October | November | December | 1981 January | February | March | April | May | June | July | August | September | October | November | December | 1982 January | February | March | April | May | June | July | August | September | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Egretta alba | 1st station | | | | | | | | | | 3 | 3 | | | 4 | | | 6 | 2 | | | | | | | | | | | 18 |
| Egretta garzetta | 1st station | | 1 | | 28 | 26 | 3 | | | 5 | 7 | 7 | 8 | 20 | 3 | 58 | 19 | | 13 | 19 | 8 | 16 | | 4 | 1 | 23 | 35 | 75 | 35 | 414 |
| | 2nd station | 18 | 35 | | 34 | 10 | 5 | | | | 4 | 35 | 16 | 45 | 42 | 60 | 48 | 32 | 4 | | | | | 15 | 60 | 79 | 88 | 15 | 10 | 655 |
| | 3rd station | | | | 9 | 2 | | | | | 11 | 3 | 1 | 18 | 14 | 16 | 34 | 13 | | | | | | 4 | 1 | 9 | | 35 | 18 | 188 |
| Ardeola ralloides | 1st station | | | | | | | | | | | | | 4 | 10 | 77 | 14 | | | | | | | 1 | 6 | 21 | 79 | 53 | | 265 |
| | 2nd station | 15 | 32 | | | | | | | | | | 20 | 30 | 37 | 41 | 66 | | | | | | | 14 | 40 | 66 | 5 | 18 | | 384 |
| Nycticorax nycticorax | 1st station | 8 | 27 | | 35 | | | | | | | | | 6 | 2 | 34 | 15 | 6 | | | | | | | | 7 | 1 | 39 | | 180 |
| | 2nd station | 35 | 48 | | 27 | | | | | | | | | 15 | 45 | 23 | 66 | 31 | | | | | | | 35 | 26 | 84 | 48 | | 483 |
| Ixobrychus minutus | 1st station | 39 | | | | | | | | | | 28 | 9 | 2 | 3 | 6 | | | | | | | | 4 | 17 | 5 | 5 | | 10 | 128 |
| | 2nd station | 5 | 3 | | | | | | | | | | | 10 | 9 | 11 | | | | | | | | | 2 | 5 | 9 | 10 | 8 | 72 |
| Ciconia ciconia | 1st station | | | | | | | | | | | | 2 | 5 | 3 | 13 | | | | | | | | | | 2 | 9 | 10 | | 44 |
| | 3rd station | | | | | | | | | | | | 6 | | | | | | | | | | | | | | | | | 6 |
| Plegadis falcinellus | 1st station | | 14 | | | | | | | | | | 8 | 6 | 34 | 57 | 221 | | | | | | | 27 | 4 | 45 | 88 | 90 | 15 | 609 |
| | 2nd station | 25 | 46 | | | | | | | | | | 131 | 85 | 60 | 63 | 50 | | | | | | | 42 | 51 | 83 | 105 | 40 | 20 | 901 |
| Platalea leucorodia | 1st station | | | | | | | | | | | | | | 2 | 4 | 4 | | | | | | | | 2 | 12 | 9 | 11 | | 44 |
| | 2nd station | 4 | 3 | | | | | | | | | | | 25 | 6 | 2 | 16 | | | | | | | | 8 | 22 | 6 | 12 | | 104 |
| Phoenicopterus ruber | 1st station | 180 | | | | | | | | | | 1800 | 300 | | 75 | 150 | | 40 | | | | | | | | | 250 | | | 2795 |
| | 3rd station | 650 | | | | | | | | | 120 | 250 | 800 | 200 | 350 | 480 | 180 | 300 | 110 | | | | | 125 | 500 | 115 | 500 | 275 | 9000 | 14955 |
| Anser anser | 3rd station | | | | | | | | | | | | 20 | | | | | | | | | | | | 250 | 6 | 8 | | 200 | 484 |
| Tadorna tadorna | 3rd station | | | | | | | | | | | | 25 | 20 | | | 65 | 4 | | | | | | 15 | 15 | 22 | | 15 | 80 | 261 |

Table 2. Monthly counting of the species indicated below during the study.

Table 3. Monthly counting of the species indicated below during the study.

| SPECIES | YEARS / Months / Observatory station | 1980 | | | | | | | 1981 | | | | | | | | | | | | 1982 | | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | June | July | August | September | October | November | December | January | February | March | April | May | June | July | August | September | October | November | December | January | February | March | April | May | June | July | August | September | |
| Casarca ferruginea | 1st station | | | | | | | | | | | | 2 | | | | | 4 | | | | | | | | | | | | 6 |
| | 3rd station | 120 | 60 | | 200 | 90 | 140 | | | | | 4 | 82 | 650 | 200 | 72 | 120 | 210 | 98 | | | | | 60 | 44 | 650 | 450 | 500 | 120 | 3870 |
| Anas platyrhynchos | 1st station | 7 | 1 | | 14 | 3 | 40 | 57 | 48 | 35 | 23 | 6 | 4 | 20 | 26 | 12 | 10 | 17 | 27 | 26 | 59 | 8 | 8 | 145 | 21 | 16 | 38 | 2 | 3 | 686 |
| | 2nd station | 19 | 25 | | 18 | 48 | 23 | | | | 7 | 33 | 26 | 31 | 40 | 35 | 29 | 7 | 27 | | | | 9 | 57 | 19 | 15 | 32 | 10 | 12 | 532 |
| Anas crecca | 1st station | 11 | | | | 13 | 22 | 21 | 16 | 44 | 19 | | 15 | 4 | 3 | | | 29 | 43 | 14 | 62 | 17 | 11 | 28 | 3 | 37 | 12 | 20 | 8 | 452 |
| | 2nd station | | 10 | | 31 | 31 | 38 | | | | 37 | | | 12 | 28 | 26 | 21 | 38 | 73 | | | | 75 | 32 | 3 | 39 | | | 6 | 500 |
| | 3rd station | | 16 | | | | | | | | 18 | | | | | | 41 | 16 | 3 | | | | | 31 | | 3 | 4 | | 80 | 212 |
| Anas querquedula | 1st station | 7 | | | | | | | | | | 118 | 22 | 32 | 48 | 5 | | | | | | | 8 | 5 | 12 | 1 | 16 | 3 | | 277 |
| | 2nd station | | 16 | | | | | | | | | 100 | 68 | 36 | 22 | 48 | | | | | | | 16 | 40 | 18 | 31 | 2 | 14 | 3 | 414 |
| | 3rd station | | | | | | | | | | | | | | | | | | | | | | | | 13 | 8 | 8 | | 150 | 179 |
| Anas strepera | 1st station | | 4 | | | 15 | 11 | 14 | 36 | 43 | 4 | 12 | 12 | 16 | 24 | 26 | | | 15 | 19 | 9 | 23 | 10 | 18 | 11 | 39 | | 4 | | 365 |
| | 2nd station | 12 | 23 | | 14 | 22 | 32 | | | | | 12 | 29 | 30 | 32 | 32 | | 2 | 25 | | | | 10 | 20 | 31 | 89 | | 3 | 35 | 453 |
| | 3rd station | | | | | | | | | | 2 | 1 | | 4 | | 3 | | | | | | | 6 | 5 | | 9 | | | 69 | 99 |
| Anas penelope | 1st station | | | | | | 9 | 19 | 74 | 40 | 16 | | | | | | | 5 | 18 | 7 | 59 | 30 | | | | | | | | 277 |
| | 2nd station | | | | | 21 | 40 | | | | 32 | 16 | | | | | | | 61 | | | | 9 | | | | | | | 179 |
| Anas acuta | 1st station | | | | | | 5 | 6 | 33 | 205 | 65 | 2 | | | | | | | 43 | 15 | 164 | 560 | 124 | 40 | | | | | | 1262 |
| | 2nd station | | | | | | 14 | | | | 34 | 11 | | | | | | | 74 | | | | 34 | 8 | | | | | | 171 |
| | 3rd station | | | | | | | | | | 16 | | | | | | | | | | | | 18 | 25 | | | | | | 59 |
| Anas clypeata | 1st station | | | | | 8 | 9 | 7 | 28 | 7 | 19 | | | | | | | | 3 | 10 | 12 | 17 | 7 | 16 | | | | | | 143 |
| | 2nd station | | | | | 14 | 6 | | | | 15 | 2 | | | | | | | 30 | | | | 8 | 7 | 2 | | | | | 84 |

Table 4. Monthly counting of the species indicated below during the study.

| SPECIES | YEARS / Months / Observatory station | 1980 | | | | | | | 1981 | | | | | | | | | | | | 1982 | | | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | June | July | August | September | October | November | December | January | February | March | April | May | June | July | August | September | October | November | December | January | February | March | April | May | June | July | August | September | |
| Netta rufina | 1st station | 40 | 21 | | 91 | 36 | 44 | 29 | 90 | 17 | 36 | 80 | 300 | 190 | 103 | 18 | 235 | 35 | 95 | 65 | 65 | 13 | 14 | 31 | 10 | 72 | 42 | | | 1769 |
| | 2nd station | 130 | 12 | | 142 | 85 | 506 | | | | 63 | 450 | 350 | 150 | 78 | 33 | 490 | 263 | 68 | | | | 36 | 120 | 420 | 203 | 90 | 37 | | 3768 |
| | 3rd station | | | | 11 | | 80 | | | | | | | 130 | 18 | | 35 | 12 | 50 | | | | 4 | 20 | | 150 | 60 | 5 | | 445 |
| Aythya ferina | 1st station | 18 | 5 | | 70 | 35 | 70 | 80 | 35 | 19 | 35 | 15 | 55 | 263 | 105 | 15 | 102 | 34 | 21 | 76 | 84 | 16 | 5 | 18 | | 93 | 32 | 4 | 6 | 1311 |
| | 2nd station | 28 | 14 | | 72 | 98 | 500 | | | | 83 | 195 | 280 | 219 | 25 | 23 | 190 | 62 | 30 | | | | 40 | 74 | 230 | 203 | 54 | 33 | 29 | 2482 |
| | 3rd station | | | | | | 60 | | | | 14 | | 49 | 3 | 5 | 8 | | | | | | | | | | 60 | 24 | | | 183 |
| Aythya nyroca | 1st station | 10 | 6 | | 11 | 22 | 21 | 14 | 3 | 21 | 11 | 12 | 38 | 158 | 9 | 15 | 56 | 54 | 59 | 24 | 49 | 4 | 15 | 14 | 36 | 24 | 28 | 26 | 2 | 742 |
| | 2nd station | 22 | 2 | | 30 | 24 | 23 | | | | | 11 | 95 | 38 | 3 | 4 | 37 | 27 | 27 | | | | 15 | 41 | 56 | 33 | 26 | 18 | 22 | 554 |
| | 3rd station | | 14 | | | 11 | | | | | 4 | | 52 | 86 | 22 | 5 | 4 | 11 | 18 | | | | 18 | 11 | 14 | 15 | 35 | 8 | 60 | 388 |
| Aythya fuligula | 1st station | | | | | | | 17 | 20 | 10 | | | | | | | | | | 37 | 5 | 11 | | | | | | | | 100 |
| | 2nd station | | | | | | | | | | 15 | | | | | | | | | | | | | | | | | | | 15 |
| Oxyura leucocephala | 1st station | | | | 9 | | | 15 | 2 | 28 | 16 | 11 | 5 | | | 3 | | | 10 | 5 | 17 | 32 | | 4 | | 3 | 2 | 4 | 2 | 159 |
| | 2nd station | 3 | 22 | | | | | | | | 6 | 4 | | 5 | 12 | 41 | 10 | 18 | 11 | | | | | | 11 | | 27 | 32 | 40 | 242 |
| Grus grus | 1st station | | | | | | | | | | | | | 4 | 3 | 6 | 450 | | | | | | | | | 4 | | 4 | | 471 |
| | 2nd station | | | | | | | | | | | 4 | | | 4 | | | | | | | | | | | | | | | 8 |
| | 3rd station | | | | | | | | | | | | 21 | | 18 | 30 | 8 | 92 | | | | | | | | 18 | 29 | 40 | 80 | 336 |
| Fulica atra | 1st station | 56 | 42 | | 39 | 14 | 41 | 39 | 80 | 75 | 108 | 33 | 18 | 40 | 34 | 36 | 29 | 66 | 53 | 32 | 34 | 95 | 350 | 1110 | 230 | 825 | 208 | 13 | 10 | 3710 |
| | 2nd station | | 25 | | 48 | 19 | 15 | | | | 12 | 29 | 3 | 14 | 8 | 25 | 2 | 30 | | | | | | | | 15 | 40 | 33 | 30 | 349 |
| Gallinula chloropus | 2nd station | | | | | | | | | | | 4 | 4 | | | | | | | | | | | | | 2 | 2 | | | 12 |
| Scolopax rusticola | 1st station | | | | | | | 14 | 11 | 18 | | | | | | | | | | 12 | 5 | 16 | | | | | | | | 76 |

Table 5. Monthly counting of the species indicated below during the study.

| SPECIES | YEARS / Months / Observatory station | 1980 | | | | | | | 1981 | | | | | | | | | | | 1982 | | | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | June | July | August | September | October | November | December | January | February | March | April | May | June | July | August | September | October | November | December | January | February | March | April | May | June | July | August | September | |
| Recurvirostra avosetta | 1st station | | | | | | | | | | | | | | | | | | | | | | 11 | | | 2 | | 4 | | 17 |
| | 3rd station | | | | | | | | | | | | | | | | | | | | | | 5 | | 8 | 3 | 4 | 3 | 2 | 25 |
| Charadrius dubius | 1st station | 14 | | | | | | | | | | | | 10 | 9 | 11 | 12 | | | | | | | 3 | 5 | 5 | 13 | 12 | | 94 |
| | 2nd station | | 4 | | | | | | | | | | | | 11 | | 15 | | | | | | | | | | | | | 30 |
| Himantopus himantopus | 1st station | 17 | 9 | | | | | | | | | 46 | 35 | 37 | 24 | 31 | 6 | | | | | | | 55 | 20 | 48 | 58 | 28 | | 414 |
| | 3rd station | 18 | 2 | | | | | | | | | 11 | 32 | | | 18 | 4 | | | | | | | 14 | 10 | 22 | 14 | 15 | | 160 |
| Numenius arquata | 1st station | | | | | | | | | | | | | | | | | | | 3 | 4 | 15 | 9 | | 1 | | | | | 32 |
| | 3rd station | | | | | | | | | | | | | | | | | | | | | | 2 | | | | | | | 2 |
| Vanellus vanellus | 1st station | 11 | 24 | | | | | | | | | | 3 | 34 | 33 | 39 | 21 | 3 | | | | | | 3 | 19 | 15 | 16 | 108 | | 329 |
| | 3rd station | 4 | 19 | | | | | | | | | | 14 | 18 | 2 | 20 | 31 | | | | | | | 2 | 8 | 6 | 14 | 10 | | 148 |
| Gallinago gallinago | 1st station | | | | | | | | | | | | | | | | 1 | 3 | 4 | 4 | 6 | 11 | 2 | | | | | | | 31 |
| | 3rd station | | | | | | | | | | | | | | | | 8 | | | | | | 3 | | | | | | | 11 |
| Tringa ochropus | 1st station | | | | | | | 35 | 18 | 28 | | | | | | | 3 | 19 | 16 | 22 | 1 | 4 | 1 | 5 | | | | | | 152 |
| | 3rd station | | | | | | | | | | | | | | | | 7 | 11 | 12 | | | | | | | | | | | 30 |
| Tringa totanus | 1st station | | | | 7 | 34 | 5 | | | | 11 | 11 | 48 | 27 | 13 | 31 | 7 | 2 | | | | | 7 | 33 | 9 | 10 | 3 | 88 | 14 | 330 |
| | 3rd station | | | | | 18 | 11 | | | | 11 | 1 | 15 | | 8 | | 11 | | | | | | 3 | 12 | 2 | 8 | 12 | 6 | 11 | 129 |
| Burhinus oedicnemus | 1st station | 3 | 3 | | | | | | | | | 26 | 9 | | | | | | | | | | | | | | 2 | 4 | | 49 |
| Glareola pratincola | 1st station | 2 | 27 | | 21 | 13 | 14 | | | | | | | 28 | 49 | 58 | 9 | | | | | | | | | 8 | 48 | 55 | 40 | 372 |
| | 3rd station | 3 | 5 | | | 11 | 3 | | | | | | | | 18 | 1 | 6 | | | | | | | | | 15 | 3 | 16 | | 81 |

Table 6. Monthly counting of the species indicated below during the study.

| SPECIES | YEARS / Months / Observatory station | 1980 | | | | | | | 1981 | | | | | | | | | | | 1982 | | | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | June | July | August | September | October | November | December | January | February | March | April | May | June | July | August | September | October | November | December | January | February | March | April | May | June | July | August | September | |
| Larus genei | 1st station | 17 | 12 | | | | | | | | | | 23 | 14 | 30 | 19 | | | | | | | | 13 | 6 | 78 | 3 | 12 | 6 | 233 |
| | 3rd station | 16 | 13 | | | | | | | | | | 18 | 10 | 9 | 6 | | | | | | | 3 | 15 | 25 | 50 | 21 | 18 | 18 | 222 |
| Larus ridibundus | 1st station | | | | | | | | | | | | | 9 | 15 | 12 | | | | | | | | 8 | | 15 | | | | 59 |
| | 3rd station | | | | | | | | | | | | | 20 | 9 | 25 | 6 | | | | | | 4 | | 9 | 5 | 4 | 9 | 4 | 95 |
| Chlidonias hybridus | 1st station | 5 | 5 | | | | | | | | | | 4 | 4 | 5 | 11 | | | | | | | | 12 | 5 | 6 | 3 | 11 | | 71 |
| | 2nd station | | 8 | | | | | | | | | | 2 | 14 | 8 | 4 | | | | | | | | | | 4 | 6 | 5 | | 51 |
| | 3rd station | | 6 | | | | | | | | | | | | 4 | | | | | | | | | 4 | 5 | | 2 | 8 | | 29 |
| Gelochelidon nilotica | 1st station | 4 | 10 | | | | | | | | 35 | 29 | 15 | 5 | 18 | 23 | 5 | 13 | | | | | 13 | 25 | 8 | 9 | 30 | 18 | | 260 |
| | 2nd station | | | | | | | | | | 7 | 30 | | | | | | | | | | | | | | | 6 | 6 | | 49 |
| | 3rd station | 4 | | | | | | | | | 4 | 12 | | 20 | 1 | | 8 | 4 | | | | | 8 | 5 | 3 | 8 | 4 | 12 | | 93 |
| Sterna albifrons | 1st station | 6 | 11 | | | | | | | | | 12 | 7 | 7 | 12 | 12 | | | | | | | | | | 5 | 13 | 13 | | 98 |
| | 2nd station | | | | | | | | | | | 2 | | 3 | | | | | | | | | | | | | | | | 5 |
| | 3td station | 4 | 2 | | | | | | | | | 3 | | 2 | | 2 | | | | | | | | 2 | 2 | | 2 | 3 | | 22 |
| Sterna hirundo | 1st station | | 13 | | | | | | | | | 8 | 10 | 22 | 14 | 8 | 9 | 7 | | | | | | | | 19 | 8 | 4 | | 122 |
| | 2nd station | | 2 | | | | | | | | | | | | | | 21 | | | | | | | | | | | | | 23 |
| | 3rd station | | 9 | | | | | | | | | 10 | | | | | 13 | 4 | | | | | | | 3 | 5 | 9 | 6 | | 59 |
| Alcedo atthis | 1st station | 1 | | | | 9 | 1 | | | | | | | 2 | 3 | | | 3 | | | | | | | | | | 3 | | 22 |
| | 3rd station | 5 | 1 | | 3 | 4 | | | | | | | | 5 | 5 | 1 | 1 | 4 | | | | | | | | | 7 | 6 | 4 | 46 |

## ÖZET

Kayseri'den yaklaşık 45 km. uzaklıkta ve Erciyes dağının güneybatısında yer alan Sultan Sazlığı, çeşitli zamanlarda kuşların yayılış haritalarında gösterilmiştir. Sultan Sazlığına gelen kuşların sayıları ve gelme zamanları yeterli şekilde incelenmemiştir. Bu çalışmanın amacı Sultan Sazlığı kuşları hakkında yeterli bilgiyi sağlamaktır.

Çalışma Haziran 1980 ve Eylül 1982 yılları arasında yapıldı. Veriler önceden tayin edilen istasyonlarda düzenli aylık gözlemler ve arazi kayıtlarıyla toplandı. Kullanılan sistematik düzen Tyne (1976)'ninkidir. 18 familya ve 53 türe ait toplam 59631 kuş gözlendi ve sayıldı. Bu 53 türün % 28'i yerli,% 4'ü gezici, % 17'si kış göçmeni ve % 51'i yaz göçmenidir. Sonuçlar tablolarda gösterilmiştir.


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