

BIRDS OF TURKEY

TÜRKİYE KUŞLARI



12

Kocaçay Deltası

**Birds of Turkey** is a series which provides conservationists, birdwatchers and ornithologists with documents on bird areas in Turkey. This is usually accomplished by combining the records of many birdwatchers. Each issue covers one area. If enough new records are available, improved lists will be prepared even on areas of already published lists. The editorial board (address below) would be grateful to receive any bird records from Turkey.

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## The birds of Kocaçay delta

by Kemal-Topaç Ertan

**Türkiye kuşları** doğa korumacılarına, kuş gözlemcilerine ve ornitologlara (kuşbilimcilere) Türkiye'deki önemli yöreler üzerine bilgi veren bir yayın dizisidir. Bu dizi, birçok gözlemcinin kayıtlarının birleştirilmesiyle oluşmaktadır. Daha önce yayımlanmış olsa bile, bazı yöreler yeni bilgilerin ışığında elden geçirilerek yeniden basılacaktır. Yayın kurulu (adresi aşağıda) kuşlarla ilgili Türkiye'de kaydedilmiş her türlü bilgiyi sevinerek kabul edecektir.

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### Area and geographic position

The Kocaçay river delta is the largest in the Marmara region. It is located on the southern coast of the Sea of Marmara 65 km west of Bursa and 100 km south-west of Istanbul. It derives most of its water from the Kocaçay, the main stream with a catchment-area of approximately 10,000 km<sup>2</sup>. Its tributaries are the Nilüfer, rising from the Uludağ mountain massiv, and the Simav Çayı, both joining the Kocaçay near Karacabey.

The co-ordinates of the mouth of Kocaçay are 28°30'N and 41°30'E. Short reviews of the delta and its wildlife are available by KASPAREK & KASPAREK (1990), ERTAN, KILIÇ & KASPAREK (1989) (cf. also GRIMMETT & JONES 1989), T.Ç.V. (1993), and GREEN & MOORHOUSE (1995).

### General description of the area

The delta covers approximately 5,000 hectares and is surrounded by the Karadağ mountains rising 400 to 500 m above sea level. The delta is rich in various habitats like coastline, sand dunes, dry scrub zones, salt marshes, reed beds, alluvial forest and with increasing altitude even dry sandy hills and maquis. Many lakes and freshwater channels are found throughout the area. The main stream and the incoming small brooks from the hills remain nearly natural as a result of changing water level. Nearly all habitats are temporarily flooded by freshwater mainly in winter and spring and in the coastal parts by saltwater normally in mid-winter.

The eastern part of the delta is dominated by the Arapçiftliği Lake with an area of approx. 450 ha and a depth of about 1.0 m. The western part is covered by an 730 ha large alluvial forest and reed beds surrounding the 180 ha Dalyan lake. The hillsides are cloaked in dense euxinic deciduous forest (MAYER & AKSOY 1986), which gives way to maquis to the south-east and east as a result of deforestation in the recent past.

Karacabey, the biggest town with a population of about 25,000 is located 20 km to the south. Within the delta there are five villages: Yeniköy, Bayramdere, Boğazköy, Ekimcik, Ballıkaya, and three smaller settlements.

The altitude of the delta never exceeds 15 m a.s.l. The surrounding hills reach altitudes between 400 and 500 m.

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## Climate

From a geographic and climatic perspective the Marmara region is a transition zone between the Aegean (dry summers with cool wet winters), the Inner Anatolian highlands (hot summers and cold winters), the humid and warm western Black Sea coastal area and the Balkans. MAYER & AKSOY (1986) characterised the Marmara region as Submediterranean with precipitation in winter. The climate diagram from Bandırma (40 km to the west) shows that most of the precipitation is distributed from October to March. The driest and hottest months are July and August.

## Vegetation

### Potential natural vegetation

According to MAYER & AKSOY (1986) the region between Pergamon (today's Bergama) and Bursa, which was called Mysia (mysos = beech) in ancient times, was covered by dense forest. Today only the euxinic forests along the southern coast of the Sea of Marmara and the Uludağ mountain range remain.

Deforestation throughout the western part of Turkey, especially in the Ottoman period, has left little more than relict forests. As far as the delta area is concerned, little can be said about the degree of deforestation in pre-Ottoman time. But taking into account that the oldest settlements within the delta were founded 150 years ago and that there is only little erosion visible (mostly on the southern hillsides which are covered with maquis), wholesale deforestation might have begun only recently.

The hills west of the Kocaçay are still covered with *Fagus orientalis* and *Castanea sativa*, which are elements of the original euxinic forest that has already been cut in the east and to the south. According to local people, fires on the eastern hills destroyed much of the forest where today a 2 to 4m high maquis with *Quercus coccifera* and *Arbutus unedo* is found.

### Present vegetation

The wide variety of habitats is one of the striking features of the delta. This results in a high diversity of species. Most plants were identified by the aid of the "Flora of Turkey and the Aegean Islands" by DAVIS (1965–1988).

#### 1. Alluvial forest

At 730 ha the alluvial forest is the largest continuous habitat. It is located in the western part of the delta and its horseshoe-shape separates a large reed zone from the settlements and agricultural areas. It receives water via small brooks from the

surrounding mountains and is often flooded during the rainy season (November to April) with most water in early spring.

The alluvial forest is of extraordinary importance, not only as habitat for many bird species, but also because of its essential function for the water balance of the whole western delta and as a shield for 70% of the reed zones against the settlements. Due to the dramatic expansion of Yeniköy, large areas of this habitat are endangered by deforestation

#### 2. Euxinic deciduous forest

A dense deciduous forest with a high percentage of *Tilia platyphyllus* and *Castanea sativa* in the mountainous and coastal, and *Fagus orientalis* and *Quercus cerris* in the montane inland, extends far to the west and south-west.

#### 3. Sand dunes (140 ha)

Found in a 150 to 200 m wide coastal strip. Only a few plant species can overcome the profound structural changes (strong winds, and as a result drifting water and sand) and a high salt content. Therefore most parts of the primary dunes (10–50 m) are only sparsely covered by vegetation. Nevertheless, some parts of the secondary dunes are nearly completely covered by *Lavandula stoechans*.

#### 4. *Tamarix* zone (270 ha)

*Tamarix* dominates the wet parts, but the coverage by *Salicornia* increases in the drier areas. *Salicornia* fields continuously change into open salt fields. The transition zones where the *Tamarix* areas meet the reed beds between Dalyan Lake and the alluvial forest are very difficult to reach. These are the areas most preferred by waterfowl.

#### 5. Open salt fields (340 ha +250 ha)

Because of the high level of salt and the damage caused by cattle, only few plants manage to grow here. Most areas are covered with *Salicornia* spec. with a varying percentage of *Juncus acutus* and *Tamarix* spec. Clay areas, flooded in the early spring dry out in the summer leaving a hard and cracked crust.

#### 6. Areas with open surface water (625 ha)

Depending on rainfall and incoming water from the Kocaçay the water level of the delta varies significantly. The area of open water varies between 625 ha and 1500 ha. Most interesting to the naturalist are the transition zones (open water - reed zone - alluvial forest) west of the Dalyan lake (180 ha), where wide reed beds (500–600 ha) are dominated by *Phragmites* spec., *Typha latifolia*, *Sparganium erectum*, *Nymphaea alba*, *Alisma lanceolatum* and *Tamarix* spec.

## 7. Maquis

The hillsides to the east and south of the delta are covered by maquis. Whereas east of the Kocaçay there is "typical" Mediterranean maquis with a high percentage of *Quercus coccifera* and *Arbutus unedo*, the hills west of the river hold degraded deciduous forest which continues south of Yeniköy. In moist valleys and in some areas between the delta and Karacabey the original deciduous forest remains.

### Ornithological importance of the area

A total of 243 species of birds have been recorded in the area. Breeding has been confirmed for 79 species within the delta or the immediate proximity. For another 69 species breeding is possible. Some of the breeding or possible breeding species are endangered. The breeding birds include Ruddy Shelduck (*Tadorna ferruginea*), Ferruginous Duck (*Aythya nyroca*), White-tailed Eagle (*Haliaeetus albicilla*), Marsh Harrier (*Circus aeruginosus*), Collared Pratincole (*Glareola pratincola*), and Eagle Owl (*Bubo bubo*). Possible breeding species include Bittern (*Botaurus stellaris*), Shag (*Phalacrocorax aristotelis*), Pygmy Cormorant (*Phalacrocorax pygmeus*), Glossy Ibis (*Plegadis falcinellus*), Spoonbill (*Platalea leucorodia*), Imperial Eagle (*Aquila heliaca*), and Golden Eagle (*Aquila chrysaetos*).

In particular breeding or possible breeding of Bittern (less than 10 breeding sites in Turkey), a good-sized population of Ferruginous Duck (globally vulnerable species), breeding and possible breeding of White-tailed and Imperial Eagle (both globally threatened) emphasize the importance of the area for nature conservation. Other noteworthy features are the presence of almost all egrets and herons recorded in Turkey as breeders, breeding of the Eagle Owl in the Marmara region, and breeding of most woodpecker species.

Many of the species breeding in the surrounding hills regularly visit the delta to feed. For example 10 raptor species breeding in the hills regularly visit the delta area for this purpose.

The delta is also an important wintering area for Teal (*Anas crecca*), Lapwing (*Vanellus vanellus*), Redshank (*Tringa totanus*), Woodcock (*Scolopax rusticola*), Black-headed Gull (*Larus ridibundus*), Sandwich Tern (*Sterna sandvicensis*), and an important resting area on migration for White Pelican (*Pelecanus onocrotalus*), Pintail (*Anas acuta*), Montagu's Harrier (*Circus pygargus*), Hen Harrier (*Circus cyaneus*), Little Ringed Plover (*Charadrius dubius*), Sanderling (*Calidris alba*), Curlew Sandpiper (*Calidris ferruginea*), Wood Sandpiper (*Tringa glareola*), Green Sandpiper (*Tringa ochropus*), Common Sandpiper (*Actitis hypoleucos*), White-winged Black Tern (*Chlidonias leucopterus*) and Whiskered Tern (*Chlidonias hybridus*).

### Fauna (excluding birds)

During the ornithological and botanical surveys in 1993, some species of amphibia, reptilia and mammalia were also recorded: Among amphibia, there are Fire Salamander (*Salamandra salamandra*), an unidentified newt (*Triturus spec.*), Eastern Spadefoot (*Pelobates syriacus*), Common Toad (*Bufo bufo*), Green Toad (*Bufo viridis*), European Green Frog (*Hyla arborea*), Agile Frog (*Rana dalmatina*), and Lake Frog (*Rana ridibunda*). Among reptiles, there are Mediterranean Spur-thighed Tortoise (*Testudo graeca*), European Pond Terrapin (*Emys orbicularis*), Caspian Terrapin (*Mauremys caspica*), Persian Large Whip Snake (*Coluber jugularis*), Ring-headed Dwarf Snake (*Eirenis modestus*), Four-lined Snake (*Elaphe quatuorlineata*), Leopard Snake (*Elaphe situla*), Grass Snake (*Natrix natrix*), Dice Snake (*Natrix tessellata*), Slow Worm (*Anguis fragilis*), European Glass Lizard *Ophisaurus apodus* (see also BARAN et al. 1988b), Three-lined Emerald Lizard (*Lacerta trilineata*), Green Lizard (*Lacerta viridis*), Snake-eyed Lizard (*Ophisops elegans*), and Wall Lizard (*Podarcis muralis*). The Chameleon (*Chamaeleo chamaeleon*) reaches its more northerly limit in the delta (BARAN et al. 1988b). The most common amphibians and reptiles were Lake Frog, Mediterranean Spur-thighed Tortoise, European Pond Terrapin, Caspian Terrapin, Grass Snake, Dice Snake, Four-lined Snake, Three-lined Emerald Lizard, and Snake-eyed Lizard. The high number of species and their abundances not only emphasises the ecological importance of the area, but also indicates an excellent food resource for many bird species.

In the alluvial forest there are Wild Boar (*Sus scrofa*), Jackal (*Canis aureus*), Red Fox (*Vulpes vulpes*), Tree Marten (*Martes martes*) (one on 18.6.93), Beech Marten (*Martes foina*), Eastern Hedgehog (*Erinaceus concolor*), and Anatolian Squirrel (*Sciurus anomalus*). There is apparently also a population of Rabbit (*Oryctolagus cuniculus*) as burrows have been found in the sand dunes. Local people reported the occurrence of Otters (*Lutra lutra*) at Dalyan lake (see also KASPAREK & KASPAREK 1990). Excrements and footprints were found in autumn 1992, but no indications of a population were found since then.

### Human activities in the area

#### Hunting

Hunting is one of the most severe problems of the delta. Weapons are very popular among the rural population and found in nearly every household. The majority of hunters do not possess a license.

Hunting outside the season is scarcely prosecuted; in any case the fines are very low. Thus hunting has escalated uncontrolled. During the survey in 1993 (March to

August) there were several hunting parties led by the local ranger. But according to inhabitants of the settlements the peak hunting season is November to January, when sometimes up to several dozens of hunters scour the delta at the same time. Wild boar, Hare, Fox, Jackal, Pheasant, Chukar, Mute Swan, Mallard, Teal, Garganey, Pintail, and Pochard are the most common bag. On 18.9.1988, M. SCHROTH found one Little Bittern, two Glossy Ibises, one Teal, one Garganey and one Hoopoe, all shot illegally.

Furthermore, fishermen shoot pelicans and cormorants, because they are seen as competition. When hunting ducks, decoys are often used to trap wild birds, although this practice is prohibited by Turkish law.

In particular the hunting parties are a heavy disturbance for wild life in the small alluvial forest. The numbers of migrant and overwintering birds shot is probably significant.

### **Fishery**

For many inhabitants of Bayramdere, Boğazköy and Yeniköy fishing is an important seasonal income. In the closed season most of them repair their boats in a little harbour or work as woodcutters in the dense forests SW of the delta. There are approx. 80 small boats with 3 to 5 people in each fishing along the coast between Bandırma in the west and Mudanya in the east. Apart from widely-used trawling and net-fishery, fish traps are commonly used along the Kocaçay and in the shallow lakes. Although trawling is prohibited in the closed season, it was occasionally practised.

If not controlled properly, the small fish-traps are dangerous for Water Rail, Moorhen and Coot. During the bird survey in 1993, several birds perished in the traps (mostly Moorhens).

### **Pasturing**

Approximately 250 head of cattle and 30–40 horses continuously live in the delta and move freely in nearly all habitats. The consequences are selection of thorny, toxic or otherwise resistant plants, over-fertilisation (and as a result the danger of eutrophication of the water channels and lakes) and a general change in the fauna (for example the increase of Geotrupidae, leeches and other parasites).

### **Bee-keeping**

Beehives are found mostly in the northern parts of the alluvial forest and at the borders of the euxinic forest to the south-west. Transportation and control by the beekeepers are a rather minor disturbance factor.

### **Harvesting wild plants**

Plants of interest within the immediate delta were vineleaves, wild asparagus, reed (for the cowhides and stables) and suitable plants for fences (for example *Paliurus spina-cristi* and *Ruscus aculeatus*).

In the euxinic forest south-west of the delta bayleaf, chestnut and, to a larger extent, linden-blossoms were harvested. In the maquis, south and south-east of the delta the main objects were several herbs (*Origanum vulgare*, *Thymus spec.*, *Mentha spec.* etc.) and orchid bulbs for Salep production. Within the delta the disturbance by collectors was of minor importance.

### **Deforestation**

If the balance between selected felling of individual trees and reforestation was maintained as observed during the survey in 1993, the alluvial forest should not be endangered.

### **Tourism**

Despite the attractiveness of the sea shore for recreation (broad, sandy beaches and near deciduous forests) and its closeness to metropolis such as Bursa and Istanbul, the Kocaçay delta has been developed only recently. This was presumably due to the inaccessibility and as a result anonymity of the area. The infrastructure was only developed after the asphalt road from Karacabey to Yeniköy on the coast was finished.

In 1993 Yeniköy offered accommodation and facilities for approx. 2000 tourists. Most of them are Turkish citizens. If the recent process continues, a rapid increase has to be expected. Most tourists are confined to the beaches near Yeniköy. During the survey some nature tourists (mostly bird-watchers) were seen within the alluvial forest and along the Kocaçay.

### **Buildings**

Most villages were founded at the end of the last century and have changed little during the recent past.

Yeniköy, in contrast, was founded only several decades ago and has undergone an uncontrollable building boom since it was connected to Karacabey. To answer requirements for further expansion, the district government in Karacabey plans to put large areas of the alluvial forest at its disposal (though, the present extent of deforestation does not confirm these plans). It is evident, that the deforestation and necessary drainage of these areas would have far-reaching effects on the ecosystem of the whole western delta.

## Traffic

In addition to the asphalt road between Karacabey and Yeniköy, there is another metalroad path east of the Kocaçay, connecting Karacabey with Ballıkaya. The main traffic which has increased since the beginning of the building boom in Yeniköy several years ago is confined to these two arterial roads.

Despite two further paths, one along the western and one on the eastern bank of the Kocaçay, the other paths within the delta can only be driven in 4-wheel drive vehicles. The central-western delta area, which is flooded most of the year, is not connected with the transport-network and therefore inaccessible. Parts of the alluvial forest were sometimes passed with tractors or landrovers to transport lumberjacks or rural workers occupied with the cattle. There was a rather low level of traffic throughout the year.

## Sewage and refusal disposal

East of Yeniköy, at the edge of the alluvial forest, a waste disposal site was created several years ago, which has grown continuously and now covers nearly a quarter of a hectare. There is no restriction of access and is therefore freely used by the population of Yeniköy. Therefore it grows uncontrolled into the alluvial forest. The waste consists mostly of rubble.

Other pollutants are floating dirt and oil, which are washed up on the sea shore; its probable origin being Istanbul 100 km to the north-east.

During the bird survey in 1993, sewage-tankers were repeatedly seen downloading their waste in the alluvial forest east of Yeniköy. Because nearly all natural water canals in the western delta region are connected with each other, a distribution of this sewage is to be expected.

## Agriculture

In common with most parts of the southern Marmara region agriculture is mainly based on the cultivation of vegetables (cucumber, aubergines, beans, onions and tomatoes), grain and to a lesser extent fruits (mostly peaches and melons). To prevent floods south of the Arapçiftliği lake, the water course was regulated by a channel a few years ago. The water level of the lake has consequently decreased and the lake's connection with the sea has dried up (cutting off the passage for anadrome migrating fish species), changing the entire ecosystem of the lake.

## Conservation status

Arapçiftliği Lake has been declared a *Hunting and Reproduction Reserve* („Av ve Yaban Hayatı Koruma ve Üretme İstasyonu“) by the Central Hunting Commission.

## Bird-watching activity

This paper includes the results of a breeding bird survey by the author between April and August 1993. In keeping with the European guidelines for mapping methods in bird census work (BERTHOLD 1976, OELKE 1977), studies of breeding densities were conducted in selected areas: alluvial forest (31.0 ha), sand dunes (28.7 ha), fallow, agricultural and *Juncus acutus* areas (68.2 ha), and by the Kocaçay river side.

Further bird records were obtained from the following observers:

13-14.5, 10-11.7.66	Bird Report (1966-67)
4-13.4, 21-22.5, June 1967	Bird Report (1966-67)
January 1969	International Waterfowl Research Bureau/IWRB (unpubl.)
10-11.11.69	M. J. Helps, A. R. Kitson & R. F. Porter
8.-9.5.73	J. A. Loterjimate (unpubl.)
24.4, 26.4, 22-23.5., 6-7.6.74	N. Koch (unpubl.)
30.9.86	M. Kasperek & A. Kiliç (unpubl.)
6.10.86	M. Kasperek (unpubl.)
10.-11.4.87	R. Cabo et al. (unpubl.)
23.-24.9.87	R. Jürgens et al. (unpubl.)
30.-31.3.88	K. Jaschke et al. (unpubl.)
18.9.-19.9.88	M. Schroth (unpubl.)
30.5.-1.6.89	I. Green (unpubl.)
3.1.90	L. J. Dijkzen & A.-M. Blomert (unpubl.)
12.-13.4.90	Ch. König et al. (unpubl.)
14.-15.4.90	P. Wiprächtiger et al. (unpubl.)
23.-24.9.90	Ch. Bräuning, D. Robel et al. (unpubl.)
30.5.91	Kirwan & Martins (1994)
23.9.91	D. Robel et al. (unpubl.)
14.4.92	W. Gatter et al. (unpubl.)
20.9.92	Ch. Stange et al. (unpubl.)
23.9.92	G. M. Kirwan et al. (unpubl.)
18-19.9.93	J. Fünfstück et al. (unpubl.)
17-18, 20.9.94	J. Fünfstück et al. (unpubl.)
15-17.9.95	J. Fünfstück et al. (unpubl.)

## Hints for bird-watchers

The delta can be reached by the E90 highway from Bursa to Bandırma. At Karacabey a small road leads north along the Kocaçay and after 25 km reaches the delta. To visit the eastern part, visitors may use a small ferry, or drive by car along the metalroad east of the Kocaçay (see also under Traffic). During the summer, accommodation is easily found in Yeniköy, where a small path leads east into the deciduous forest. One of the most interesting sites for waterbirds is the fishercamp where the Kocaçay flows into the Sea of Marmara. Most waterfowl can be found on Dalyan lake, especially in the transition zone between the lake itself and the reed

zones. Another interesting site is the outflow of the Arapçiftliği lake and in springtime the flooded areas of fallow east and south-east of the mouth of Kocaçay. The highlight of the delta is the flooded deciduous forest, where most herons and storks can be observed.

### Acknowledgements

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### Abbreviations

Br	=	Ch. Bräuning et al.
Cab	=	R. Cabo et al.
DB	=	L. J. Dijkzen & A.-M. Blomert
Ert	=	K. T. Ertan
Ff	=	J. Fünfstück
Gat	=	W. Gatter et al.
HKP	=	M. J. Helps, A. R. Kitson & R. F. Porter
IWRB	=	International Waterfowl Research Bureau
Jas	=	K. Jaschke et al.
Jü	=	R. Jürgens et al.
Ka	=	M. Kasperek
Kg	=	Ch. König et al.
Kir	=	G. Kirwan
KK	=	M. Kasperek & A. Kiliç
Ko	=	N. Koch
Kreu	=	J. Kreuziger
Lo	=	J. A. Loterijmante
Rb	=	D. Robel et al.
Schr	=	M. Schroth
Sta	=	Ch. Stange et al.
Wer	=	M. Werner
Wip	=	P. Wiprächtiger

Records without observer initials were made by the author in 1993.

## Species list

### *Gavia arctica* (Black-throated Diver, Karagerdanlı Dalgıç)

Winter visitor: 2 east of Yeniköy on 15.4.90 (Wip), one on 14.4.92 (Gat) and one 2 km west of the delta on 16.4.93 (Kreu).

### *Tachybaptus ruficollis* (Little Grebe, Küçük Batağan)

Very common breeding resident of the alluvial forest and reed zones. The population is estimated at 100–150 pairs.

### *Podiceps cristatus* (Great Crested Grebe, Bahri)

Breeding resident. The population was estimated at 10–15 pairs. Outside the breeding season occasionally recorded on the sea. One on 3.1.90 (DB) is the only winter record.

### *Podiceps grisegena* (Red-necked Grebe, Kızılboyunlu Batağan)

One east of Yeniköy on 15.4.90 (Wil) is the only record.

### *Podiceps auritus* (Slavonian Grebe, Kulaklı Batağan)

One at the mouth of the Kocaçay on 9.5.73 (Lo) is the only record.

### *Podiceps nigricollis* (Black-necked Grebe, Karaboyunlu Batağan)

Summer visitor. A pair was seen at the mouth of the Kocaçay and at the Arapçiftliği Lake three times in 1993. Breeding not confirmed. Maximum 60 on 14.4.92 (Gat). One winter record: one on 3.1.90 (DB).

### *Puffinus yelkouan* (Yelkouan Shearwater, Yelkovan)

6 found dead on 18.9. and three dead on 18.9.88 on the shores of the Sea of Marmara (Schr). 17 over the sea on 19.9.93 (Ff).

### *Phalacrocorax carbo* (Cormorant, Karabatak) ●

Regular visitor which breeds on the rocky coast west of Malkara approx. 12 km east of the mouth of Kocaçay. A colony of 40–50 pairs was found there in the cliffs approximately 10–15 m above ground (24.4.93, Ert). It is thought that another colony exists further west. *Ph. carbo* is a regular, very common feeding visitor to the delta with groups of up to 50 arriving in the morning and departing in the evening. At

the connection between the lake and the Sea of Marmara and at the mouth of the Kocaçay, groups of up to 250 adults and immatures were often seen in 1993. In autumn, e.g. 400 on 19.9.83 (Ff). Winter numbers are low: 23 on 3.1.90 (DB).

***Phalacrocorax aristotelis* (Shag, Tepeli Karabatak)**

Uncommon, irregular visitor to the coast of the delta, mostly in groups of 3–5. Numbers increase in the more rocky, western parts of the coast, where it may breed.

***Phalacrocorax pygmeus* (Pygmy Cormorant, Küçük Karabatak)**

Regular visitor to the Dalyan lake in groups of 2–5. 3–5 pairs probably breed in the alluvial forest in E3. Maximum 60 on 14.4.92 (Gat). At Manyas Lake 40 km to the south-west there is a colony of approx. 150 pairs (KASPAREK 1992b). Although not probable, it cannot be eliminated that the recorded individuals of the delta may be visitors from Lake Manyas.

In autumn, maximum of 150 on 18.9.94 (Ff). Three on 3.1.90 (DB) is the only winter record.

***Pelecanus onocrotalus* (White Pelican, Ak Pelikan)**

Regular passage migrant and winter visitor in large numbers. Approx. 300 on 14 and 15.4.90 (Wip). During 11.4 and 26.4.93 groups of up to 800 individuals were recorded for several days at Lake Dalyan and the mouth of the Kocaçay (Ert). The last birds departed on 5.5.

***Pelecanus crispus* (Dalmatian Pelican, Tepeli Pelikan)**

One on 6.6.74, two on 7.6.74 (Ko) and two on 10.4.87 (Cab) are the only records. They may have been visitors from Lake Manyas, where a colony of up to 30 pairs exists (KASPAREK 1992b).

***Botaurus stellaris* (Bittern, Balaban)**

1–2 pairs probably bred in the *Tamarix*-reed zones south-west of the mouth of Kocaçay in 1993. Two males were heard there on 26.5., one the following day and one still on 6.6. Another pair may have bred west of Dalyan Lake, where one was booming on 1.6 (Ert).

***Ixobrychus minutus* (Little Bittern, Küçük Balaban)**

Common breeding bird in the reed beds and the alluvial forest. 10–15 pairs were located on the riverbanks alone. Earliest on 29.4.1993 (Ert), latest one on 19.9.88 (Schr).

***Nycticorax nycticorax* (Night Heron, Gece Balıkçılı)**

Migrant breeder with most records in the alluvial forest and the *Tamarix* area near the mouth of Kocaçay. Groups of up to 40 were seen within the forest, mostly at dawn, in 1993 (Ert). The population was estimated 20–30 pairs. Earliest record in spring three on 31.3.88 (Jas), latest in autumn two on 23.9.91 (Rb) and one on 24.9.87 (Jü).

***Ardeola ralloides* (Squacco Heron, Alaca Balıkçılı)**

Widespread migrant breeder in all reed zones. The total population may be 10–15 pairs in 1993 (Ert). Earliest record in spring 10 on 14.4.92 (Gat), in autumn latest four on 23.9.90 (Br) and about 20 on 23.9.91 (Rb).

***Egretta garzetta* (Little Egret, Küçük Ak Balıkçılı)**

Breeds in the alluvial forest east of Bayramdere and probably on the islands of Arapçiftliği lake. The population was estimated 40–60 pairs in 1993 (Ert). *E. garzetta* is during the summer months regularly present at all humid habitats, especially at flooded openings of the alluvial forest accompanied by storks and the Glossy Ibis. Still common in September, e.g. 33 on 23.9.91 (Rb).

***Egretta alba* (Great White Egret, Büyük Ak Balıkçılı)**

1–2 pairs probably breed in the reed beds of Arapçiftliği Lake. Great White Egrets were sometimes seen together with Little Egrets, White and Black Storks and Glossy Ibises in the alluvial forest in 1993 (Ert). Maximum 12 on 16.9.95 (Ff). 7 on 3.1.90 (DB) is the only winter record.

***Ardea cinerea* (Grey Heron, Gri Balıkçılı) ●**

Breeding bird in the alluvial forest west of Bayramdere, where a colony of 10–15 pairs was found. Also probably breeding near Boğazköy and in the reed beds west of the mouth of Kocaçay. Singles or groups of up to 3 were regularly seen in all wet areas. Maxima 40 on 14.4.92 (Gat) and 120 on 23.9.91 (Rb). In addition, 247 were migrating west over the delta in groups of up to 110 on 17.9.95 (Ff).

***Ardea purpurea* (Purple Heron, Erguvani Balıkçılı)**

3–5 pairs probably breed along the channel west of the mouth of Kocaçay and in the reed beds at the western end of Dalyan lake. Singles were usually seen. Highest counts 25–30 on 16.9.95 (Ff) and 8 first-year birds on 18.9.94 (Ff). Earliest 15.4.93 (Ert), latest two 23.9.91 (Rb) and one on 24.9.87 (Jü).

***Ciconia nigra* (Black Stork, Kara Leylek)**

Apparently breeds in the alluvial forests north-west of Boğazköy and south of Arapçiftliği Lake. The population was estimated at 8–10 pairs in 1993 (Ert). Feeding Black Storks are mostly solitary using flooded areas of the alluvial forest. Autumn migrant in September with 7 on 24.9.87 (Jü).

***Ciconia ciconia* (White Stork, Leylek) ●**

Migrant breeder with at least 17 pairs in human settlements. Tree nesting was not found. The following nests were counted in 1993: Bayramdere (3–4 pairs), Boğazköy (5 pairs), next to E5 road (1 pair), between Bayramdere and Boğazköy (1 pair), north-east of Bayramdere (1 pair), Ekimcik (4–5 pairs), Ballıkaya (1 pair), and Çiftlik (1 pair). Passage migrant in large numbers with a maximum in the second week of May.

***Plegadis falcinellus* (Glossy Ibis, Çeltikçi)**

Up to 10–15 pairs may breed. Has been seen feeding, usually accompanied by Little Egrets, on flooded clearings in the alluvial forest west of Bayramdere in 1993. Earliest spring record on 31.3.88 (Jas). 25 on 11.4.87 (Cab) and 40 on 14.4.92 (Gat). In the second half of April groups of up to 80 are regular (Ert).

***Platalea leucorodia* (Spoonbill, Kaşıkçı)**

Status unclear. Regularly seen during the 1993 breeding season, mostly at Arapçiftliği Lake. The birds usually approached in the morning from the west. Nesting by 3–5 pairs cannot be ruled out around Dalyan Lake (Ert). In spring, earliest three on 14.4.92 (Gat). Maximum count 32 on 18.9.94 (Ff).

***Cygnus olor* (Mute Swan, Kuğu)**

1–2 pairs breed at both Dalyan Lake and Arapçiftliği Lake. According to hunters the Mute Swan is more common in winter. Maximum 24 on 31.3.88 (Jas).

***Cygnus cygnus* (Whooper Swan, Ötücü Kuğu)**

One on 8.4.67 (Bird Report 1966–67) is the only record.

***Anser anser* (Greylag Goose, Boz Kaz)**

Several records during May 1967 (Bird Report 1966–67) and a carcass found on 18.9.88 (Schr).

***Tadorna ferruginea* (Ruddy Shelduck, Angıt)**

Common and widespread breeding resident of the surrounding hills. 25–30 pairs are estimated to breed in the surroundings (Ert). Maximum >50 on 30.3.88 (Jas), 45 in January 1969 (IWRB), and 15 on 12.4.90 (Kg).

***Tadorna tadorna* (Shelduck, Suna)**

1 to 2 birds from mid-April to early June 1967 (Bird Report 1966–67), four on 11.4.87 (Cab) and 2 on 12.4.90 (Kg) are the only records.

***Anas penelope* (Wigeon, Fiyu)**

Two records: 30 in January 1969 (IWRB) and 20 on 26.4.74 (Ko)

***Anas strepera* (Gadwall, Boz Ördek)**

5 in January 1969 (IWRB) and 18 on 3.1.90 (DB) are the only records.

***Anas crecca* (Teal, Çamurcun)**

Winter visitor in groups up to 100–200, e.g. 150 in January 1969 (IWRB). Still 60 on 14.4.92 (Gat).

***Anas platyrhynchos* (Mallard, Yeşilbaş) ●**

Common breeding bird in all reed beds. 20–30 pairs are estimated. Breeding has been confirmed at Dalyan Lake and the area west of it (female with young on 18.4.93, Ert). Regular winter visitor in large numbers (>1000) according to local hunters, but otherwise maximum only 103 on 3.1.90 (DB).

***Anas acuta* (Pintail, Kilkuyruk)**

Regular passage migrant with up to 100 according to local hunters. Maximum count is 520 on 18.9.94 (Ff). Otherwise in spring two each on 12.4.90 (Kg) and on 14.4.92 (Gat), 50 on 26.4.74 (Ko) and one on 22.5.74 (Ko). In addition, 40 in January 1969 (IWRB).

***Anas querquedula* (Garganey, Çıkrıkçın)**

Apparently breeds in the reed beds on the north and south side of Arapçiftliği Lake. 30–50 pairs were estimated in 1993. Earliest in spring >50 on 30.3.88 (Jas). Maximum counts in September with 200 on 18.9.94 (Ff) and 160 on 19.9.93 (Ff).

***Anas clypeata* (Shoveler, Kaşıkçaga)**

Winter visitor in small numbers, usually not exceeding 5–10. Maximum 420 on

16.9.95 (Ff) and 70 in January 1969 (IWRB). Earliest in autumn six on 23.9.91 (Rb) and four on 24.9.87 (Jü). Autumn maximum 30 on 14.4.92 (Gat).

***Netta rufina* (Red-crested Pochard, Macar Ördeği) ●**

Relatively common breeding bird in reeds between the alluvial forest and Dalyan Lake, where a nest was found on 1.5.93 (Ert). The population is estimated at 10–20 pairs. Also a winter visitor in moderate numbers, usually not exceeding 50–100 but 180 in January 1969 (IWRB).

***Aythya ferina* (Pochard, Elmabaş Patka)**

Breeds in the reeds with most at the west end of Dalyan Lake. The population was estimated at 30–50 pairs in 1993 (Ert). According to local hunters a winter visitor in large numbers (>2000). Otherwise, maximum count 500 in January 1969 (IWRB) and 61 on the sea on 3.1.90 (DB).

***Aythya nyroca* (Ferruginous Duck, Pasbaş Patka)**

Very common breeding bird of the reed beds and to some extent also in the flooded parts of the alluvial forest. The Ferruginous Duck is the most common duck with an estimated population of 70–100 pairs.

***Aythya fuligula* (Tufted Duck, Tepeli Patka)**

Regular visitor with maximum counts of 70 on 26.4.74 (Ko), 60 on 31.3.88 (Jas), 50 each in January 1969 (IWRB) and 3.1.90 (DB) and 30 on 12.4.90 (Kg). 9 on 18.9.88 (Schr) is the only autumn record.

***Aythya marila* (Scaup, Karabaş Patka)**

4 in January 1969 (IWRB) is the only record.

***Melanitta nigra* (Common Scoter, Kara Ördek)**

One near the Arapçiftliği Lake on 9.4.67 (Bird Report 1966–67).

***Bucephala clangula* (Goldeneye, Altıngöz)**

36 in January 1969 (IWRB) is the only record.

***Mergus albellus* (Smew, Sütlabi)**

25 in January 1969 (IWRB) is the only record.

***Pernis apivorus* (Honey Buzzard, Arı Şahini)**

Regular visitor. At least one pair appears to breed in the nearby deciduous forest south of Boğazköy and Bayramdere. In autumn latest records three on 23.9.91 (Rb) and on 23.9.92 (Kir).

***Milvus migrans* (Black Kite, Kara Çaylak)**

Rare visitor with three April records: one each on 24.4. and 26.4.74 (Ko) and two on 14.4.92 (Gat).

***Haliaeetus albicilla* (White-tailed Eagle, Akkuyruklu Kartal) ●**

1–2 pairs of this globally threatened species breed in the delta. Breeding season maximum 6 on 24.4.74 and 4 on 23.5.74 (Ko). In 1993 an abandoned eyrie was found west of Dalyan Lake. During the 1993 survey only singles (probably the same individual) were seen. They left the delta mostly to the south-west (Ert).

***Neophron percnopterus* (Egyptian Vulture, Küçük Akbaba)**

One on 26.4.74 (Ko) is the only record.

***Circaetus gallicus* (Short-toed Eagle, Yılan Kartalı)**

Regular visitor. At least two pairs bred in the surrounding hills in 1993 (Ert). Adults carrying food were observed flying towards the maquis south-east of Ballıkaya. In spring earliest one on 30.3.88 (Jas). Latest in autumn singles on 19.9.93 (Ff), 20.9.94 (Ff) and 23.9.92 (Kir).

***Circus aeruginosus* (Marsh Harrier, Saz Delicesi) ●**

Breeds in the reed beds. Nests were found north-west of Boğazköy on 2.5.93 and at the north end of Arapçiftliği Lake on 13.6.93 (Ert). The total population is 2–3 pairs. In winter, three on 3.1.90 (DB).

***Circus cyaneus* (Hen Harrier, Gökçe Delice)**

Uncommon passage migrant with records in March and April: two females on 30.3.88 (Jas), one female each on 31.3.88 (Jas) and 12.4.90 (Kg), one on 14.4.90 (Wil), one female on 23.4.93 (Ert), and one on 28.4.93 (Ert).

***Circus macrourus* (Pallid Harrier, Akça Delice)**

5 males near Arapçiftliği Lake on 4-13.4.67 (Bird Report 1966–67) is the only record.

***Circus pygargus* (Montagu's Harrier, Çayır Delicesi)**

Uncommon passage migrant. Earliest are a male on 12.4.90 (Kg), one near Ekmekçi on 14.4.90 (Wil), two males (19.4.93, Ert), one male and one female on 21.4.93 (Ert) and 2 males on 26.4.93 (Ert).

***Accipiter gentilis* (Goshawk, Çakırkuşu) ●**

Breeding resident in the deciduous forest adjacent to the delta and irregular visitor to the delta itself. A nest was found near Ekimcik on 3.5.93 (Ert).

***Accipiter nisus* (Sparrowhawk, Atmaca)**

In 1993 1–2 pairs probably bred in the alluvial forest (Ert).

***Accipiter brevipes* (Levant Sparrowhawk, Yoz Atmaca)**

Status unclear. Three April records in 1993: one male each on 11.4, 28.4 and 29.4.93 (Ert).

***Buteo buteo* (Buzzard, Şahin)**

Regular records of up to 4 together indicate 2–3 breeding pairs along the hillside south of the delta. Winter visitor with up to 7 on 3.1.90 (DB).

***Buteo rufinus* (Long-legged Buzzard, Kızıl Şahin)**

Regularly seen hunting over the delta during the breeding season. At least 2–3 pairs appear to breed in the deciduous forests mainly to the south-west.

***Aquila pomarina* (Lesser Spotted Eagle, Küçük Orman Kartalı)**

Status unclear. One pair may breed in the alluvial forest: during the 1993 survey singles were recorded several times (Ert). More regular on migration during spring and autumn. Maximum counts: 7 on 30.3.88 (Jas), 3–6 on 30.5.89 (Green) and 5 each on 14.4.92 (Gat) and 19.9.88 (Schr). One Lesser Spotted Eagle successfully hunted a Night Heron on 19.9.88 (Schr).

***Aquila heliaca* (Imperial Eagle, Şah Kartalı)**

One pair is thought to breed in the surroundings of the delta. In 1993, a regular visitor to the delta from the hills south-east of Ekimcik, where an adult food-carrying was observed on 29.5.1993 (Ert).

***Aquila chrysaetos* (Golden Eagle, Kaya Kartalı)**

One pair apparently breeds in the hills south of the delta. Regular visitor to the

delta. A displaying pair was seen over the alluvial forest west of Boğazköy on 1.5.93 (Ert). A second male approached, disturbing the pair.

***Hieraaetus pennatus* (Booted Eagle, Küçük Kartal)**

One pair probably breeds in the deciduous forest west of Yeniköy. Very rare visitor to the delta in 1993 with records on 17.4 and 13.5. In spring earliest a light phase individual on 12.4.90 (Kg).

***Pandion haliaetus* (Osprey, Balık Kartalı)**

Scarce migrant. One on 26.4.74 (Ko) and three on 23.9.90 (Br) are the only records.

***Falco naumanni* (Lesser Kestrel, Küçük Kerkenez)**

Possible breeder. A few records along the dunes and near the human settlements between the alluvial forest and the sand dunes east of Yeniköy in 1993 (Ert).

***Falco tinnunculus* (Kestrel, Kerkenez)**

Regular but rare visitor which may breed. Records are concentrated along the Kocaçay.

***Falco vespertinus* (Red-footed Falcon, Ala Doğan)**

Passage migrant in moderate numbers. Peak migration in early May with groups up to 30 on 3.5.93 (Ert). In autumn e.g. one female on 20.9.94 (Ff).

***Falco subbuteo* (Hobby, Delice Doğan)**

At least one pair appear to breed in the alluvial forest to the east of Bayramdere and probably another in the deciduous forest south of Bayramdere. First spring record two on 18.4.93 (Ert), latest in autumn one on 23.9.91 (Rb) and two on 24.9.87 (Jü).

***Falco eleonora* (Eleonora's Falcon, Ada Doğanı)**

Occasional visitor. One individual, probably a dark phase, on 9.5.73 (Lo). One on 22.5.74 (Ko) and one dark phase between Apolyont Gölü and Kocaçay delta on 4.6.74 (PANS 1974). Eleonora's Falcon breeds on an island in the Sea of Marmara (KASPAREK & RISTOW 1986).

***Falco biarmicus* (Lanner, Bıyıklı Doğan)**

Very rare visitor along the Kocaçay where singles were recorded on 14.5.93 and 30.5.93 (Ert). Other records came from the hills west of Ekmekcik.

***Falco peregrinus* (Peregrine, Gök Doğan)**

Irregular visitor to the delta.

***Alectoris chukar* (Chukar, Keklik)**

Uncommon breeding bird in the maquis south and south-east of the delta despite being under severe hunting pressure.

***Coturnix coturnix* (Quail, Bildircin)**

Rare breeding bird in areas of *Juncus acutus* and in the sand dunes. Earliest records in spring are two on 12.4.90 (Kg) and one on 14.4.92 (Gat).

***Phasianus colchicus* (Pheasant, Sülün)**

Uncommon breeding resident throughout the delta area and in the surrounding hills, preferring the more arid zones. Pheasants are hunted. There is a breeding station between Bayramdere and Boğazköy which was founded in 1969 and has operated since 1971. Several hundred pairs are bred and released each year (KASPAREK 1988).

***Rallus aquaticus* (Water Rail, Su Kılavuzu)**

Common breeding bird of the flooded areas covered by reed and *Tamarix*. The population was estimated over 100 pairs in 1993 (Ert). The species was not found in the alluvial forest and along the Kocaçay.

***Porzana porzana* (Spotted Crake, Benekli Sutavuğu)**

The only record is one in the reeds at the west end of Dalyan Lake on 2.5.93 (Ert).

***Porzana parva* (Little Crake, Bataklik Sutavuğu)**

Wip observed a female in a ditch near Yeniköy on 14.4.90. This is the only record.

***Gallinula chloropus* (Moorhen, Saztavuğu)**

Very common and widespread breeding resident in nearly all reed beds and along the Kocaçay. In 1993 the population was estimated at 400–450 pairs (Ert).

***Fulica atra* (Coot, Sakarmeke)**

Common breeder on all open waters with a similar distribution pattern to *G. chloropus*, although it prefers more open areas. The population was estimated at 100–120 pairs in 1993 (Ert). Regular winter visitor with maximum of 4000 in January 1969 (IWRB).

***Grus grus* (Crane, Turna)**

Scarce migrant in spring and autumn: 7 on 31.3.88 (Jas), 35 on 24.9.87 (Jü) and two flocks of 9 and 24 circling over Bayramdere on 30.9.86 (KK)

***Haematopus ostralegus* (Oystercatcher, Poyrazkuşu)**

In 1993 2–4 pairs probably bred on the beach east of Yeniköy (Ert). In 1966 and 1967 two pairs in the same area (Bird Report 1966–67).

***Himantopus himantopus* (Black-winged Stilt, Uzunbacak)**

In 1993, two pairs apparently bred on mudflats south of Arapçiftliği Lake (Ert).

***Recurvirostra avosetta* (Avocet, Kılıçgaga)**

Irregular visitor with records in April, June and September. Two on 26.4.74 (Ko), three on 11.4.87 (Cab), 8 on 7.6.74 (Ko) and two on 23.9.90 (Br) are the only records.

***Burhinus oedicnemus* (Stone Curlew, Kocagöz)**

A few pairs probably breed in the sand dunes and the waste lands. Bird Report (1966–67) estimated 7 pairs in 1966 and 3–4 pairs in 1967. Earliest in spring on 10.4.87 (Cab), latest in autumn on 20.9.92 (Sta).

***Glareola pratincola* (Collared Praticole, Batak Kirlangıcı) ●**

Migrant breeder. Three colonies with a total of 80–100 pairs were found in the sand dunes about half-way between Yeniköy and the mouth of Kocaçay in 1993. Breeding had been established in 1966 with 20 pairs each at Dalyan Lake and Arapçiftliği Lake (Bird Report 1966–67). Earliest record in spring one on 14.4.92 (Gat), latest in autumn one on 23.9.90 (Br). Maximum in autumn about 80 on 18.9.88 (Schr).

***Charadrius dubius* (Little Ringed Plover, Halkalı Küçük Cılıbit)**

Common breeding bird along the entire coast line. Bird Report (1966–67) estimated 4–8 pairs in 1966/67. Latest 22 on 18.9.94 (Ff).

***Charadrius hiaticula* (Ringed Plover, Halkalı Cılıbit)**

Uncommon passage migrant, which has been recorded until the second week of May and in September. Peak numbers in April and early May (e.g. 30 on 14.4.92, Gat).

***Charadrius alexandrinus* (Kentish Plover, Akça Cılıbıtı)**

Common breeding bird of along the whole coast. The population was estimated at 60–75 pairs in 1993 (Ert) and is thus much higher than in 1967 (at least 5 pairs, Bird Report 1966–67).

***Eudromias morinellus* (Dotterel, Dağ Cılıbıtı)**

One at Arapçiftliği Lake on 9/10.4.67 (Bird Report 1966–67).

***Pluvialis apricaria* (Golden Plover, Altın Yağmurcun)**

Migrant. Two on 26.4.74 (Ko), two on 18.9.94 (Ff) and 11 on 19.9.93 (Ff) are the only records.

***Pluvialis squatarola* (Grey Plover, Gümüş Yağmurcun)**

Scarce passage migrant in both seasons. In spring, 15 at Lake Arapçiftliği on 13-14.5.66 (Bird Report 1966–67); in autumn, one each on 18.9 and 19.9.88 (Schr), 15 on 19.9.93 (Ff), three on 23.9.90 (Br), 7 on 23.9.91 (Rb), and 7 on 24.9.87 (Jü). One winter record: 9 on 3.1.90 (DB).

***Chettusia gregaria* (Sociable Plover, Sürmeli Kızkuşu)**

One on 26.4.74 (Ko) is the only record (cf. KASPAREK 1992a).

***Vanellus vanellus* (Lapwing, Kızkuşu)**

Probably uncommon winter visitor and passage migrant. 10 on 3.1.90 (DB). Latest record in spring is one on 11.4.93 (Ert).

***Calidris alba* (Sanderling, Ak Kumkuşu)**

Rare passage migrant. In spring, 1 on 10.4.67, 2 on 15.5.66 (Bird Report 1966–67) and two late spring migrants still present on 24.5.93 (Ert). In autumn one on 16.9.95 (Ff), 4 on 18.9.94 (Ff), 5 on 19.9.93 (Ff), 3 on 23.9.90 (Br) and 2 on 23.9.87 (Jü).

***Calidris minuta* (Little Stint, Küçük Kumkuşu)**

Migrant with records in April/May and September: 50 on 13-14.5.66 (Bird Report 1966–67), present on 26.4.74 (Ko), 10 on 23.5.74 (Ko), 9 on 16.9.95 (Ff), one on 19.9.93 (Ff), 109 on 23.9.90 (Br) and three on 30.9.86 (KK).

***Calidris temminckii* (Temminck's Stint, Sarıbacaklı Kumkuşu)**

Two records: recorded on 26.4.74 and two on 23.5.74 (Ko).

***Calidris ferruginea* (Curlew Sandpiper, Kızıl Kumkuşu)**

Not uncommon spring passage migrant with a peak in mid-May. Regular migrant in autumn, with one on 16.9.95 (Ff), 5 on 18.9.88 (Schr), 10 on 18.9.94 (Ff), 51 on 19.9.93 (Ff), and present on 23.9.90 (Br).

***Calidris alpina* (Dunlin, Karakarınlı Kumkuşu)**

Not uncommon passage migrant in September. 15 on 16.9.95 (Ff), one on 18.9.88 and a carcass the following day (Schr), 5 on 19.9.93 (Ff), 80 on 23.9.90 (Br), and three on 24.9.87 (Jü).

***Limicola falcinellus* (Broad-billed Sandpiper, Sürmeli Kumkuşu)**

Two records: one at Dalyan Lake on 15.5.66 and one at Arapçiftliği Lake on 21.5.67 (Bird Report 1966–67).

***Philomachus pugnax* (Ruff, Döğüşkenkuş)**

Occasional visitor in moderate numbers with records in March, April, May, July and September without a clear pattern. Monthly maximum counts are 27 on 30.3.88 (Jas), 60 on 12.4.90 (Kg), 40 on 14 and 15.5.66, and 22 on 23.9.90 (Br). A carcass was found on 19.9.88 (Schr).

***Gallinago gallinago* (Snipe, Suçulluğu)**

Occasional visitor with records in March, April, July, September and October. Earliest in spring one on 30.3.88 (Jas). Maximum counts are 10 on 19.9.88 (Schr) and 13 on 23.9.90 (Br).

***Scolopax rusticola* (Woodcock, Çulluk)**

Winter visitor in large numbers according to local hunters. Otherwise only recorded on 10-11.11.69 (HKP).

***Limosa limosa* (Black-tailed Godwit, Çamurçulluğu)**

Uncommon migrant in both seasons. In spring one on 31.3.88 (Jas), 6 on 11.4.87 (Cab), one on 26.4.74 (Ko), one on 14.5.66 and two on 15.5.67 (Bird Report 1966–67). One on 16.9.95 (Ff), 20 on 18.9.94 (Ff) and 40 on 23.9.91 (Rb) are the only autumn records.

***Numenius arquata* (Curlew, Kervançulluğu)**

At least 10 on 31.3.88 (Jas) is the only spring record. In autumn, two on 17.8.93

(Ert), one on 19.9.88 (Schr) and three on 23.9.90 (Br). Four on 3.1.90 (DB) is the only winter record.

***Tringa erythropus* (Spotted Redshank, Kara Kızılbacak)**

Small numbers at Arapçiftliği Lake in the spring 1966 and 1967 between 4.4 and 27.5 (Bird Report 1966–67). Otherwise the only records are 10 on 19.9.93 (Ff) and 14 on 23.9.90 (Br).

***Tringa totanus* (Redshank, Kızılbacak)**

Not uncommon passage migrant and probable winter visitor. Maximum counts are 120 on 24.9.87 (Jü), 90 on 23.9.90 (Br) and 50 on 31.3.88 (Jas).

***Tringa stagnatilis* (Marsh Sandpiper, Bataklık Dödükçünü)**

Scarce migrant. One each on 14.4.92 (Gat) and on 11.4.87 (Cab), and 8 on 11.7.66 (Bird Report 1966–67) are the only records.

***Tringa nebularia* (Greenshank, Yeşilbacak)**

Rare passage migrant and summer visitor. Maximum counts 15 on 12.4.90 (Kg) and 10 on 30.3.88 (Jas).

***Tringa ochropus* (Green Sandpiper, Yeşil Dödükçün)**

Not uncommon passage migrant with spring maximum in mid-April.

***Tringa glareola* (Wood Sandpiper, Orman Dödükçünü)**

Common passage migrant with maximum in the first week of May. Earliest 10 on 12.4.90 (Kg). Autumn maximum 16 on 23.9.90 (Br).

***Actitis hypoleucos* (Common Sandpiper, Dere Dödükçünü)**

Not uncommon passage migrant. As also recorded during summer.

***Arenaria interpres* (Turnstone, Taşçeviren)**

Regular migrant in late April and September in small numbers. Maximum 10 on 26.4.74 (Ko). These records accord with the migration pattern known in Turkey (KASPAREK 1992c).

***Stercorarius parasiticus* (Arctic Skua, Korsanmartı)**

One on 23.9.90 (Br) and two light phase adults over the sea on 19.9.93 (Ff) are the only records.

***Larus melanocephalus* (Mediterranean Gull, Akdeniz Martısı)**

Rare passage migrant and winter visitor. Two birds near the mouth of Kocaçay on 15.4.93 and 4 + 3 imat. there on 28.4.93, together with Common, Sandwich and Little Terns (Ert).

***Larus minutus* (Little Gull, Küçük Martı)**

Passage migrant in May/June and September plus one winter record (January): 40–50 immatures on 19–22.5.67 (Bird Report 1966–67), present on 23.5.74 and on 7.6.74 (Ko), 217 on 19.9.93 (Ff), one on 18.9.94 (Ff) and 10 on 3.1.90 (DB).

***Larus ridibundus* (Black-headed Gull, Karabaş Martı)**

Not uncommon passage migrant and winter visitor, e.g. 400 on 14.4.92 (Gat) and 700 on 19.9.93 (Ff). Also present during summer in small numbers.

***Larus genei* (Slender-billed Gull, Incegagalı Martı)**

Four adults and one immature on 19.9.93 (Ff) is the only record.

***Larus fuscus* (Lesser Black-backed Gull, Karasırtlı Martı)**

Irregular visitor. 400 immatures at the mouth of Kocaçay on 13.5.66 (Bird Report 1966–67). In addition, several records of groups up to six: one on 10.7.66, three on 10.4.67 (Bird Report 1966–67), one each on 16.7.94 and on 19.9.93 (Ff), two on 23.9.91 (Rb), three on 23.9.87 (Jü), six on 23.9.92 (Kir) and two on 6.10.86 (Ka).

***Larus cachinnans* (Yellow-legged Gull, Gümüş Martı)**

Regular visitor during the breeding season, in particular along the coast and around the mouth of Kocaçay. May breed. 1 or 2 pairs may have nested at Arapçiftliği Lake at the end of May 1967 according to Bird Report (1966–67). Otherwise e.g. >500 on 18.9.93, approx. 6000 the following day (Ff), and 400 on 14.4.92 (Gat).

***Gelochelidon nilotica* (Gull-billed Tern, Gülen Sumru)**

Passage migrant in small numbers. 14 on 9.4.67 (Bird Report 1966–67), 5 on 11.4.87 (Cab) and one on 23.9.90 (Br).

***Sterna caspia* (Caspian Tern, Büyük Sumru)**

Regular migrant in September: three on 16.9.95 (Ff), two on 18.9.88, four on 19.9.88 (Schr), two on 23.9.90 (Br) and six on 23.9.91 (Rb).

***Sterna sandvicensis* (Sandwich Tern, Karagagalı Sumru)**

Common passage migrant in spring and autumn and winter visitor. Maximum counts are 40 on 14.4.92 (Gat), 59 on 16.9.95 (Ff), 115 on 18.9.94 (Ff), and 250 on 19.9.93 (Ff).

***Sterna hirundo* (Common Tern, Sumru) ●**

Migrant breeder. A colony with approx. 70 pairs was found on an island in Arapçiftliği Lake on 14.5.93. A pair with two young there on 11.7.66 (Bird Report 1966–67). Maximum in spring 100 on 14.4.92 (Gat), maximum in autumn 25 on 18.9.88 (Schr).

***Sterna albifrons* (Little Tern, Küçük Sumru) ●**

Breeds along the coast with apparently several small colonies. The total population was estimated at 20–30 pairs in 1993 (Ert). A pair was still feeding three young on 16.9.95 (Ff).

***Chlidonias hybridus* (Whiskered Tern, Bıyıklı Sumru)**

Status unclear. Present during 1966 and 1967 breeding seasons indicating nesting (Bird Report 1966–67). In 1993 common passage migrant in groups of usually up to 50 (Ert). Maximum counts 150 on 16.9.95 (Ff) and 100 on 18.9.88 (Schr). In spring earliest two on 14.4.92 (Gat).

***Chlidonias niger* (Black Tern, Kara Sumru)**

Summer visitor which may breed. Autumn maximum 58 on 23.9.90 (Br). In autumn, 9 on 18.9.94 (Ff) and 17 on 19.9.93 (Ff).

***Chlidonias leucopterus* (White-winged Black Tern, Akkanatlı Sumru)**

Common passage migrant in spring in groups of up to 100 on 3.5.93 (Ert). One on 16.9.95 is the only autumn record (Ff).

***Columba livia* (Rock Dove, Kaya Güvercini)**

In 1993 5–10 pairs apparently bred on the rocky coast east of Malkara (Ert).

***Columba oenas* (Stock Dove, Gökçe Güvercin)**

6 at the mouth of Kocaçay on 26.5.66 (Bird Report 1966–67) is the only record.

***Columba palumbus* (Woodpigeon, Tahtalı)**

Summer visitor and potential breeding bird in the deciduous alluvial forest.

***Streptopelia decaocto* (Collared Dove, Kumru)**

Common resident breeder in human settlements.

***Streptopelia turtur* (Turtle Dove, Üveyik)**

Very common migrant breeder in all tree-covered areas of the delta with an estimated population of 150–200 pairs in 1993 (Ert). For feeding, *S. turtur* has often been seen in the dunes where it picks up sand. Earliest one on 30.3.88 (Jas), latest one on 18.9.94 (Ff).

***Clamator glandarius* (Greater Spotted Cuckoo, Tepeli Guguk)**

One on 11.4.87 (Cab) is the only record.

***Cuculus canorus* (Cuckoo, Guguk)**

Regular summer visitor throughout the delta. 10–15 calling males were estimated in the breeding season 1993 (Ert). Earliest on 15.4.90 (Wil), latest one on 19.9.93 (Ff).

***Otus scops* (Scops Owl, İshakkuşu)**

Breeding bird in the dunes and north of Boğazköy, where at least two males were calling in 1993 (Ert). Latest one calling on 15.9.95 (Ff).

***Bubo bubo* (Eagle Owl, Puhu) ●**

Breeding bird. Two juveniles were seen on a steep slope between Yeniköy and Malkara on 24.5.93 (Ert).

***Athene noctua* (Little Owl, Kukumav)**

Rare breeding bird in the agricultural area between the Arapçiftliği Lake and Ekimcik and near Bayramdere. Probably three pairs in 1993 (Ert).

***Strix aluco* (Tawny Owl, Alaca Baykuş)**

Resident breeder in the alluvial forest. Estimated population in 1993 15–20 pairs (Ert).

***Asio otus* (Long-eared Owl, Kulaklı Orman Baykuşu)**

Rare visitor to the deciduous forest where it may also breed.

***Caprimulgus europaeus* (Nightjar, Çobanaldatan)**

Not uncommon breeding bird in the dunes east of Yeniköy, where 5–10 pairs probably bred in 1993 (Ert). Latest one on 15.9.95 (Ff).

***Apus melba* (Alpine Swift, Akkarınlı Sağan)**

Regular visitor to the delta. May breed in the steep rocky slopes between Malkara and Kurşunlu. Latest in autumn one on 23.9.91 (Rb).

***Alcedo atthis* (Kingfisher, Yalıçapkını) ●**

Breeding resident. 3–5 pairs breed in the delta with most records along the Kocaçay. In 1993 breeding holes were found at the channels around the mouth of Kocaçay (Ert). No records in the alluvial forest presumably due to the absence of suitable nesting sites. In autumn, e.g. 15 on 16.9.95 and 30 on 18.9.94 (Ff).

***Merops apiaster* (Bee-eater, Arıkuşu) ●**

Common breeding bird with nest holes found in the sand dunes and in steep sand slopes along the brook between Bayramdere and Boğazköy in 1993. Records also indicate breeding in the maquis-covered hills east of the Kocaçay. In 1967, a colony of about 50 pairs was found at Kocaçay (Bird Report 1966–67). The total population was estimated at 40–60 pairs in 1993 (Ert). Earliest record in spring on 25.4.93 (Ert), latest in autumn 30 on 19.9.83 (Ff) and 5 on 23.9.91 (Rb).

***Coriacias garrulus* (Roller, Gökkuşgun)**

Rare migrant breeder with an estimated population of 3–5 pairs in 1993 (Ert). Earliest one on 11.4.90 (Kg), latest two on 19.9.88 (Schr).

***Upupa epops* (Hoopoe, İbibik)**

Very common breeding bird in the alluvial forest, preferring the drier western parts. A breeding density of 0.19 pairs/ha was found on a 31 ha study plot there, resulting in a total population estimate of 130 to 150 pairs in 1993 (Ert). On 19.5.67, 6.4 calling birds per km and 9.4 sightings per km (Bird Report 1966–67). In spring, earliest two on 30.3.88 (Jas) with approx. 15 on 14.4.92 (Gat). Latest in autumn one on 23.9.90 (Br) and three on 23.9.91 (Rb).

***Jynx torquilla* (Wryneck, Boyunçeviren)**

Single migrants on 30.3.88 (Jas), 10.4.66 (Bird Report 1966–67), 14.4.90 (Wil), and 19.5.66 (Bird Report 1966–67). Sight records of one each on 27.5.93 and on 7.6.93 (Ert) may refer to late migrants, although breeding cannot be eliminated (see KASPAREK 1989).

***Picus viridis* (Green Woodpecker, Yeşil Ağaçkakan) ●**

Common breeding bird. The breeding density in a 31 ha study area within the alluvial forest was 0.29 pairs/ha in 1993 (Ert). The total population is estimated at

150–170 pairs. Breeding was confirmed in 1967, when a nest was found on 19.5 (Bird Report 1966–67). The maximum breeding density was reached in the dry parts of the alluvial forest.

***Dryocopus martius* (Black Woodpecker, Kara Ağaçkakan)**

One record in the deciduous forest in the hills southwest of Yeniköy on 25.5.93 (Ert).

***Dendrocopus major* (Great Spotted Woodpecker, Orman Alaca Ağaçkakanı)**

Status unclear. There is only one certain record, on 18.4.93 in the alluvial forest (Ert).

***Dendrocopus syriacus* (Syrian Woodpecker, Alaca Ağaçkakan)**

Relatively common breeding bird. A breeding density of 0.13 pairs/ha were found on a 31 ha study plot in the alluvial forest, resulting in a total population estimate of 80–100 pairs in 1993 (Ert). The highest breeding density is reached in the richly structured parts of the alluvial forest. Several records in the tree-rich cultivated areas and along the Kocaçay.

***Dendrocopus medius* (Middle Spotted Woodpecker, Ortanca Ağaçkakan)**

Up to 10 pairs may breed in the alluvial forest.

***Dendrocopus leucotos* (White-backed Woodpecker, Aksırtılı Ağaçkakan)**

Status unclear. A few pairs may breed in the alluvial forest. Bird Report (1966–67) reported two pairs on 19.5.67. There are several additional records in the alluvial forest, but it cannot be ruled out that these are from the near deciduous forest of the hills southwest of Yeniköy, where it is a not uncommon breeding bird.

***Dendrocopus minor* (Lesser Spotted Woodpecker, Küçük Ağaçkakan) ●**

Common breeding bird. The highest density is reached in the richly-structured parts of the alluvial forest. A breeding density of 0.29 pairs/ha was found on a 31 ha study plot, resulting in a total population estimate of 220–240 pairs in 1993 (Ert). Unlike the Syrian Woodpecker, *D. minor* prefers moister areas, i.e. usually the edge between forests and water canals or flooded areas. A female entered a nest hole at Dalyan Lake on 16.5.66 (Bird Report 1966–67). 6 nesting holes, all in *Fraxinus excelsior*, were found in 1993 and newly fledged young were observed in the second week of June 1993 (Ert).

***Melanocorypha calandra* (Calandra Lark, Boğmaklı Toygar)**

Probably breeds in the arid *Juncus acutus* plains with adjacent agricultural areas and in the sand dunes with 10 to 20 pairs estimated in 1993 (Ert).

***Melanocorypha bimaculata* (Bimaculated Lark, Küçük Boğmaklı Toygar)**

Two records: present on 6.6 and 7.6.74 (Ko).

***Calandrella brachydactyla* (Short-toed Lark, Bozkır Toygarı)**

Status uncertain. May breed in the arid open salt plains. 20 on 30.3 and 10 on 31.3.88 (Jas), tens north of Ekmekçi on 14.4.90 (Wil) and a total of 13 on 14.4.92 (Gat) indicate regular presence in spring. In 1967, flocks of 400 and 200 in mid-April were late migrants. 5 singing and 16 others present on 19-20.5.67 (Bird Report 1966-67) and present on 25.5.93 (Ert) are, however, the only breeding season records. In autumn, one on 19.9.88 (Schr), five on 23.9.87 (Jü), five on 23.9.92 (Kir), and 9 on 23.9.90 (Br).

***Galerida cristata* (Crested Lark, Tepeli Toygar)**

Common breeding bird with 400 to 450 pairs in all arid areas with sparse vegetation. Breeding densities varied between 0.31 and 0.38 pairs/ha in 1993 (Ert).

***Lullula arborea* (Woodlark, Orman Toygarı) ●**

Rare breeding bird in the dunes. A pair with a nest in the sand dunes east of Yeniköy on 14.4.90 (Wil).

***Alauda arvensis* (Sky Lark, Tarlakuşu)**

Status uncertain. Scarce visitor, but may breed. One on 30.3.88 (Jas), and present on 24.4.74 and 23.05.74 (Ko) are the only records.

***Riparia riparia* (Sand Martin, Kum Kırlangıcı)**

30-40 regularly feeding at the mouth of Kocaçay and over the alluvial forest during the 1993 breeding season may indicate breeding within the delta (Ert). Earliest record in spring approx. 100 on 14.4.92 (Gat).

***Hirundo rustica* (Swallow, Kır Kırlangıcı)**

Common breeding bird in human settlements. At least 200 pairs are estimated to breed. Earliest record on 10.4.93 (Ert).

***Hirundo daurica* (Red-rumped Swallow, Kızıl Kırlangıç)**

Scarce migrant in spring. One on 31.3.88 (Jas) and 40 on 14.4.92 (Gat) are the only records.

***Delichon urbica* (House Martin, Ev Kırlangıcı)**

Common breeding bird in human settlements. 120-150 pairs are estimated to breed. Earliest records in spring on 14.4.92 (Gat), 15.4.90 (Wil) and 15.4.93 (Ert).

***Anthus campestris* (Tawny Pipit, Kır İncirkuşu)**

Relatively common breeding bird in dry areas with sparse vegetation. Population estimate: 80 to 100 pairs. Earliest in spring one on 11.4.87 (Cab), latest one each on 23.9.90 (Br) and 23.9.91 (Rb).

***Anthus trivialis* (Tree Pipit, Ağaç İncirkuşu)**

Probably a rare breeding bird between the maquis and the deciduous forest along the road south of the delta area to Karacabey. No records in the delta itself. Earliest in spring one on 30.3.88 (Jas), latest in autumn seven on 23.9.91 (Rb) and common on 23.9.92 (Kir).

***Anthus pratensis* (Meadow Pipit, Çayır İncirkuşu)**

Rare passage migrant and probably winter visitor. KASPAREK (1992) lists *A. pratensis* a common passage migrant and winter visitor in the whole western part of Turkey. The latest record in spring on 21.4.93 (Ert), the earliest in autumn five on 23.9.91 (Rb).

***Anthus cervinus* (Red-throated Pipit, Kızılgerdanlı İncirkuşu)**

Not uncommon passage migrant, mainly in the open salt plains. The spring migration peak in 1993 was in the third week of April (Ert). 2 at Dalyan Lake on 19.5.67 (Bird Report 1966-67) is the latest spring record. In autumn, two on 18.9.94 (Ff).

***Anthus spinoletta* (Water Pipit, Dağ İncirkuşu)**

12 on 3-8.4.67 (Bird Report 1966-67) and 10 on 12.4.90 (Kg) are the only records.

***Motacilla flava* (Yellow Wagtail, Sarı Kuyruksallıyan)**

Common passage migrant and not uncommon breeding bird in *Tamarix* and *Juncus acutus* with 50 to 70 pairs estimated in 1993 (Ert). *M. flava* was often seen feeding in small groups in the open salt plains. Earliest spring record on 31.3.88 (Jas), the

last migrating flock in spring on 5.5.93. In autumn, latest two on 19.9.93 (Ff) and common on 23.9.92 (Kir).

***Motacilla cinerea* (Grey Wagtail, Dağ Kuyruksallayanı)**

Scarce visitor. One on 30.3.88 (Jas) and one on 23.9.90 (Br) were clearly migrants, but two between Boğazköy and Bayramdere on 31.5.93 (Ert) were recorded in the breeding season but without evidence of breeding.

***Motacilla alba* (White Wagtail, Ak Kuyruksallayan)**

Breeding in human settlements and agricultural areas with 20 to 40 pairs in 1993 (Ert). Migration in April with approx. 300 on 14.4.92 (Gat).

***Troglodytes troglodytes* (Wren, Çıtkuşu)**

Breeding resident in dense parts of the alluvial forest. In 1993 the population was estimated at 40–70 pairs (Ert). In winter, some on 3.1.90 (DB).

***Cercotrichas galactotes* (Rufous Bush Robin, Çalı Bülbülü)**

Rare breeding bird in the alluvial forest and the tree and brush-rich agricultural areas with 15 to 25 pairs estimated in 1993 (Ert). Earliest record in spring on 12.5.93 (Ert), latest in autumn on 23.9.91 (Rb).

***Erithacus rubecula* (Robin, Kızılgerdan)**

Breeding bird in the alluvial forest with 25 to 40 pairs estimated in 1993 (Ert). Much more common in the deciduous forest. In winter some on 3.1.90 (DB).

***Luscinia megarhynchos* (Nightingale, Bülbül)**

Very common migrant breeder. The breeding density was 3.16 pairs/ha in a 31 ha study plot in the alluvial forest in 1993. In another 7.5 ha plot, even 4.13 singing males/ha were counted. Along Kocaçay, the number of singing males was on average 0.21 males/km. The population size of the whole delta was estimated at 3000 pairs in 1993 (Ert). Latest records in autumn are one each on 19.9.88 (Schr) and 23.9.91 (Rb).

***Phoenicurus ochruros* (Black Redstart, Kara Kızılkuyruk)**

Six on 30.3.88, two on 31.3.88 (Jas) and one female at Yeniköy on 14.4.90 (Wil) are the only records.

***Phoenicurus phoenicurus* (Redstart, Kızılkuyruk)**

Probably not uncommon breeding bird in the agricultural areas and along the Kocaçay with 20 to 30 pairs estimated in 1993 (Ert). Earliest two on 10.4.87 (Cab) and one female on 11.4.93 (Ert), latest one on 23.9.87 (Jü).

***Saxicola rubetra* (Winchat, Çayır Taşkuşu)**

Passage migrant in large numbers with a peak in the second week of May and less frequent in September. Most records were in agricultural areas. Earliest spring record one on 10.4.87 (Cab), the last group on 14.5.93 (Ert). In autumn e.g. 5 on 18.9.88, 8 on 19.9.88 (Schr), 10 on 23.9.90 (Br), approx. 10 on 23.9.91 (Rb) and two on 24.9.87 (Jü).

***Saxicola torquata* (Stonechat, Taşkuşu)**

Scarce winter visitor. Four on 30.3.88 (Jas) and two on 3.1.90 (DB) are the only records.

***Oenanthe isabellina* (Isabelline Wheatear, Boz Kuyrukkakan)**

Scarce visitor in autumn. Three on 23.9.87 (Jü) and one on 23.9.91 (Rb) are the only records.

***Oenanthe oenanthe* (Wheatear, Kuyrukkakan)**

Passage migrant in small numbers and rare breeding bird in the rockier parts of the maquis south-east of the delta. On migration mostly seen in the dunes. In spring, earliest four on 31.3.88 (Jas), latest on 28.4.93 (Ert).

***Turdus merula* (Blackbird, Karatavuk)**

Common breeding resident in the alluvial forest and the cultural land with 250 to 350 pairs estimated in 1993 (Ert).

***Turdus pilaris* (Fieldfare, Tarla Ardıcı)**

>60 in the western part of the delta on 3.1.90 (DB) is the only record.

***Turdus philomelos* (Song Thrush, Öter Ardıç) ●**

Common breeding bird mainly in the alluvial forest and the deciduous forest, where highest densities are found. 0.48 pairs/ha were counted in 1993 on a 31 ha study plot in the alluvial forest. Rarer in cultivated areas with trees. A total of 300 to 350 pairs was estimated in 1993 (Ert). Breeding has been confirmed on 12.5.67, when

one was seen carrying food (Bird Report 1966–67), and on 27.5.93 when newly fledged young were seen.

***Turdus viscivorus* (Mistle Thrush, Ökse Ardıcı)**

At least one was observed in the western part of the delta on 3.1.90 (DB).

***Cettia cetti* (Cetti's Warbler, Kamışbülbulü)**

Very common breeding bird in the alluvial forest and nearly all wet scrub habitats, especially along water edges. A breeding density of 1.26 pairs/ha was found in a 31 ha study area within the alluvial forest in 1993. Along the Kocaçay, one singing male was counted per 0.15 km. The total population can thus be estimated at 1000 to 1200 pairs in 1993 (Ert). *C. cetti* was not found in pure reed zones. In winter at least one on 3.1.90 (DB).

***Locustella fluviatilis* (River Warbler, Ağaç Kamışçını)**

Up to three singing on 9-19.5.66/67 (Bird Report 1966–67) and one in the delta on 7.6.74 (Ko).

***Locustella luscinioides* (Savi's Warbler, Bataklik Kamışçını)**

Probably a rare breeding bird between the alluvial forest and the reed bed west of the Kocaçay with 10 to 20 pairs in 1993 (Ert). East of the river there is only one record at the north end of Arapiftliği Lake. Earliest one singing on 14.4.90 (Wil).

***Acrocephalus melanopogon* (Moustached Warbler, Bıyıklı Kamışçın)**

Perhaps rare breeder in the water canals within the alluvial forest. A few records in the 1993 breeding season (Ert).

***Acrocephalus schoenobaenus* (Sedge Warbler, Kindıra Kamışçını)**

Common breeding bird along the Kocaçay and the canals within the alluvial forest. 0.42 pairs/ha were found in a 31 ha study area in the alluvial forest and the average distance between singing males at the Kocaçay was 0.29 km in 1993 (Ert). A total of 300 to 350 pairs was estimated in the entire delta area in 1993 (Ert). Richly structured and well-covered edges (rather *Rubus* spec. etc. than pure reed) to water-expanses are preferred. Earliest on 18.4.93 (Ert), latest on 19.9.88 (Schr).

***Acrocephalus palustris* (Marsh Warbler, Çalı Kamışçını)**

Probably breeding bird. Status needs to be confirmed. Earliest in spring on 14.4.93 (Ert).

***Acrocephalus scirpaceus* (Reed Warbler, Sazbülbulü)**

Very common breeding bird in nearly all reed beds. Highest breeding density is reached in the central-western delta area. 1.03 pairs/ha were found in a 31 ha study area in the alluvial forest and the average distance between singing males at the Kocaçay was 0.064 km in 1993 (Ert). Earliest record on 19.4.93 (Ert).

***Acrocephalus arundinaceus* (Great Reed Warbler, Büyük Kamışçın)**

Very common breeding bird in all reed beds containing some open surface water. 0.32 pairs/ha were found in a 31 ha study area in the alluvial forest in 1993 and the average distance between singing males along the Kocaçay was 0.067 km. *A. arundinaceus* reached its highest breeding density along the eastern shore of the Kocaçay (21 singing males on 750 m). The total population of the delta was estimated at 750 to 850 pairs. Earliest in spring on 14.4.93 (Ert).

***Hippolais pallida* (Olivaceous Warbler, Ak Mukallit)**

Breeding bird along the Kocaçay and in agricultural scrub. 45 singing males counted in the alluvial forest on 19.5.67 (Bird Report 1966–67). Earliest in spring on 19.4.93 (Ert).

***Hippolais olivetorum* (Olive-tree Warbler, Büyük Mukallit)**

Breeding bird with 17 singing in the alluvial forest in May/June 1966 (Bird Report 1966–67). Earliest in spring on 3.5.93 (Ert).

***Hippolais icterina* (Icterine Warbler, Sarı Mukallit)**

One on 23.9.91 (Rb) is the only record.

***Sylvia melanocephala* (Sardinian Warbler, Maskeli Ötleğen)**

Status unclear. No records from the delta area itself, but may rarely breed in the transitional zone between high maquis and deciduous forest south of the delta area along the road to Karacabey.

***Sylvia hortensis* (Orphean Warbler, Akgözlü Ötleğen)**

Status unclear. May rarely breed in the cover-rich maquis. Earliest record on 20.4.93 (Ert).

***Sylvia nisoria* (Barred Warbler, Çizgili Ötleğen)**

Status unclear. May breed in the alluvial forest and the bushy agricultural area. Earliest record was on 14.5.93 (Ert).

***Sylvia curruca* (Lesser Whitethroat, Küçük Akgerdanlı Ötleğeni)**

Breeds in forest clearings, at the edges of the alluvial forest and in the agricultural areas with 30–40 pairs estimated in 1993 (Ert). Earliest spring record one on 30.3.88 (Jas), latest autumn records three on 23.9.90 (Br) and one on 23.9.91 (Rb).

***Sylvia communis* (Whitethroat, Akgerdanlı Ötleğeni)**

Very common and wide distributed breeding bird with 500 to 550 estimated pairs in 1993 (Ert). Preferred open but structured areas with a minimum of dense brushes but was also found in open, drier parts of the alluvial forest. Breeding densities in different areas varied greatly. Highest densities in *Paliurus spina-christi* bushland between the dunes and the dry forest clearings (2.5 pairs/ha). In spring, earliest 10 on 14.4.92 (Gat). Latest in autumn on 23.9.87 (Jü) and on 23.9.91 (Rb).

***Sylvia borin* (Garden Warbler, Boz Ötleğeni)**

Two on 20.9.94 (Ff) is the only record.

***Sylvia atricapilla* (Blackcap, Karabaşlı Ötleğeni)**

Common breeding bird in the alluvial forest, in particular at its edges, and in smaller numbers in the agricultural areas. 0.65 singing males/ha were found in a 31 ha study plot within the alluvial forest in 1993 (Ert). The total population of the delta area was estimated at 300 to 400 pairs in 1993 (Ert). The area is situated at the edge of the breeding range of the species (KASPAREK 1990). During spring passage, e.g. 30 on 14.4.92 (Gat).

***Phylloscopus bonelli* (Bonelli's Warbler, Boz Söğütbülülü)**

One on 19.9.88 (Schr) is the only record.

***Phylloscopus sibilatrix* (Wood Warbler, Orman Söğütbülülü)**

One on 10.4.87 (Cab), three on 17.9.94 (Ff), and one on 17.9.95 (Ff) are the only records.

***Phylloscopus collybita* (Chiffchaff, Çıvgın) ●**

Common migrant breeder in the alluvial forest. 0.52 singing males/ha were found there on a 31 ha study plot in 1993 (Ert). The population size of the entire delta was estimated 350 to 380 pairs. Two nests were found in April 1967 (Bird Report 1966–67). Earliest record in spring 30.3.88 (Jas).

***Phylloscopus trochilus* (Willow Warbler, Söğüt Bülbülü)**

Rare passage migrant in spring (the only records are of some on 14.4.90, Wil, and five on 14.4.92, Gat). Regularly recorded in September with several on 18 and 19.9.88 (Schr), 6 on 19.9.93 (Ff), some on 23.9.90 (Br), approx. 25 on 23.9.91 (Rb), and common on 23.9.92 (Kir).

***Muscicapa striata* (Spotted Flycatcher, Benekli Sinekkapan)**

Common breeding bird in all tree-rich but open and highly structured areas of the delta. 0.29 pairs/ha were counted in a 31 ha study plot within the alluvial forest in 1993 (Ert). The total population size in the delta was estimated at 200 to 230 pairs in 1993 (Ert). First record on 17.4.93 (Ert), latest one on 23.9.90 (Br), 10 on 23.9.91 (Rb), and many on 23.9.92 (Kir).

***Ficedula parva* (Red-breasted Flycatcher, Küçük Sinekkapan)**

Probably rare breeding bird in dry parts of the alluvial forest with up to 5 pairs in 1993 (Ert). Earliest record on 26.4.93 (Ert), latest one on 23.9.91 (Rb).

***Ficedula semitorquata* (Semi-collared Flycatcher, Alaca Sinekkapan)**

One on 10.4.87 (Cab) is the only record.

***Ficedula hypoleuca* (Pied Flycatcher, Kara Sinekkapan)**

Common passage migrant in clearings, edges of the alluvial forest and along the Kocaçay. Peak migration was in mid-April. Latest record in autumn one on 23.9.87 (Jü).

***Ficedula albicollis* (Collared Flycatcher, Halkalı Sinekkapan)**

Relative common passage migrant with several records between 13.4.93 and 3.5.93 (Ert).

***Aegithalos caudatus* (Long-tailed Tit, Uzunkuyruklu Baştankara)**

Probably not uncommon breeding resident often seen in small groups of 3 to 7 individuals. Breeding population was estimated at 30–40 pairs in 1993 (Ert).

***Parus caeruleus* (Blue Tit, Mavi Baştankara)**

Very common breeding resident in all tree-rich areas with the highest densities in humid parts of the dense alluvial forest. Breeding density in a 31 ha study plot in the alluvial forest was 0.81 pairs/ha in 1993 (Ert).

***Parus major* (Great Tit, Büyük Bastankara)**

Very common breeding bird in nearly all habitats from the alluvial and deciduous forest to human settlements, the extensively used agricultural areas and the maquis. A breeding density of 1.16 pairs/ha was found in a 31 ha study plot in 1993 (Ert).

***Sitta europaea* (Nuthatch, Sivacıküşu)**

Common breeding bird in the alluvial forest. 0.39 pairs/ha were counted on a 31 ha study plot within the alluvial forest in 1993 (Ert). Total population was estimated at 250 to 350 pairs in 1993 (Ert).

***Certhia brachydactyla* (Short-toed Treecreeper, Bahçe Tırmaşıküşu)**

Common breeding bird in the alluvial forest. 0.45 pairs/ha were counted on a 31 ha study plot within the alluvial forest in 1993 (Ert). The total population size of the delta area was estimated at 300 to 330 pairs in 1993 (Ert).

***Remiz pendulinus* (Penduline Tit, Çulhakuşu) ●**

Not uncommon breeding bird along the Kocaçay and in the *Tamarix* zones. Several nests were found along the water-canal west of the mouth of Kocaçay on 23.4.94 (Ert).

***Oriolus oriolus* (Golden Oriole, Sarıasma) ●**

Common breeding bird. 0.35 calling males/ha were noted in 1993 on a 31 ha large study plot within the alluvial forest. 14 singing males counted on 19.5.67 (Bird Report 1966–67). The Golden Oriole prefers old, but not completely closed parts of the alluvial forest. The total population was estimated at 250 to 270 pairs. Earliest record in spring one on 14.4.92 (Gat), latest in autumn one on 23.9.90 (Br).

***Lanius collurio* (Red-backed Shrike, Kızılsırtlı Örümcekküşu)**

Very common breeder in nearly all habitats. Prefers dry and open but brushy areas, where breeding densities of e.g. 2.0 pairs/ha are reached. 82 (mainly males) were counted between Karacabey and the mouth of Kocaçay (19.3 km; 4.24 ind./km) on 13.5.66 and 170 in a few miles in the alluvial forest on 17.5.67 (Bird Report 1966–67). Common passage migrant in particular in autumn, when e.g. Rb counted 33 on 23.9.91.

***Lanius minor* (Lesser Grey Shrike, Karaalınlı Örümcekküşu)**

40–50 pairs may breed in the western part of the delta in 1993 (Ert). Like *Lanius senator* open cultivated areas with scattered scrub are preferred. Earliest in spring on 23.4.93 (Ert).

***Lanius senator* (Woodchat Shrike, Kızılbashi Örümcekküşu)**

Probably a rare breeder in scrub and open cultivated areas with hedges. Up to 5 pairs may have bred in 1993 (Ert). Earliest one on 12.4.90 (Kg) and a male on 14.4.90 (Wil).

***Lanius nubicus* (Masked Shrike, Alaca Örümcekküşu)**

Common breeding bird in clearings in the alluvial forest, the transitional zone between the dunes and the alluvial forest west of the mouth of Kocaçay and in smaller numbers in agricultural areas with hedges. The breeding density in a 31 ha study plot was 0.26 pairs/ha, resulting in a total population size of approx. 250 to 300 pairs in 1993 (Ert). Earliest in spring on 20.5.93 (Ert), latest in autumn one first-year on 15.9.95 (Ff).

***Garrulus glandarius* (Jay, Alakarga)**

Probably a common resident breeder in the alluvial forest with 40 to 50 pairs estimated in 1993 (Ert).

***Pica pica* (Magpie, Saksagan) ●**

Breeding bird in open areas with single trees. The population was estimated at 10–15 pairs in 1993, when two nests were found in *Tamarix* and *Crataegus* bushes (Ert).

***Corvus monedula* (Jackdaw, Küçük Karga)**

Relatively common breeder in Ekimcik and Ekmekçi sometimes visiting the cultivated areas of the delta in groups of 10–20. Very common breeding bird in Karacabey.

***Corvus corone cornix* (Hooded Crow, Leş Kargası)**

Breeding bird throughout the delta with an estimated population of 10–15 pairs in 1993 (Ert).

***Corvus corax* (Raven, Kuzgun)**

Breeding bird in the alluvial forest and the steep slope between Yeniköy and

Malkara. A total of 7–10 pairs was estimated in 1993 (Ert). In 1966, three pairs at Arapçiftliği Lake (Bird Report 1966–67). In the early morning hours *Corvus corax* was regularly seen feeding along the beach or on the waste disposal site east of Yeniköy in groups of 2–4.

***Sturnus vulgaris* (Starling, Sığırcık)**

Several records of mostly singles. May breed. In winter some on 3.1.90 (DB).

***Sturnus roseus* (Rose-coloured Starling, Ala Sığırcık)**

Scarce migrant. The only record was a group of 50–55 individuals on a horse-paddock on 25.5.93 (Ert).

***Passer domesticus* (House Sparrow, Serçe)**

Apparently breeds in all human settlements.

***Passer hispaniolensis* (Spanish Sparrow, Söğüt Serçesi) ●**

Very common and widespread migrant breeder. Three colonies with 50–150 pairs each were found in 1993; one along the Kocaçay near the fish landing, one in the *Tamarix* area south of Dalyan Lake and the third west of Boğazköy (Ert). There were probably more colonies east of the Kocaçay. Spring arrival usually in mid-April with about 200 on 11.4.87 (Cab) and 50 on 12.4.90 (Kg). Earliest record on 10.4.93 (Ert), latest in autumn one on 18.9.88 (Schr).

***Passer montanus* (Tree Sparrow, Ağaç Serçesi)**

Status uncertain: only one record on 15.4.93 (Ert).

***Fringilla coelebs* (Chaffinch, İspinoz)**

Very common resident breeder which prefers the dense and rather dry parts of the alluvial forest. Breeding density in a 31 ha study plot in the alluvial forest was 1.39 pairs/ha. Records in the nearby deciduous forest indicate an even higher density there.

***Carduelis chloris* (Greenfinch, Florya)**

Common breeding bird of edges and clearings in the alluvial forest and the tree-rich cultivated areas with 150–200 pairs estimated in 1993 (Ert).

***Carduelis carduelis* (Goldfinch, Saka)**

Common breeding bird in all tree-rich parts of the delta with 200 to 250 pairs

estimated in 1993 (Ert). Often found feeding in groups of 3 to 10 along the dunes and the scrub areas between the dunes and the alluvial forest.

***Carduelis spinus* (Siskin, Karabaşlı Iskete)**

9 on 11.4.67 (Bird Report 1966–67) and two on 30.5.91 (KIRWAN & MARTINS 1994) may indicate breeding in the surroundings. Otherwise, 20 on 3.1.90 (KIRWAN & MARTINS 1994).

***Carduelis cannabina* (Linnet, Ketenkuşu)**

Status uncertain. Rare visitor to the cultivated areas and along the Kocaçay, where it may breed.

***Coccothraustes coccothraustes* (Hawfinch, Kocabaş)**

Common breeding bird in the western part of the alluvial forest, but no records east of the Kocaçay. Several groups with a total of 60–80 on 11.4.90 (Kg). In winter at least three on 3.1.90 (DB).

***Emberiza cirlus* (Cirl Bunting, Bahçe Kirazkuşu)**

Common breeding bird in open and dry parts of the alluvial forest, in the transitional zone between the dunes and the alluvial forest and in the agricultural areas. 0.39 pairs/ha were found in the alluvial forest, but local concentrations of up to 1.2 pairs/ha were found in richly structured dry clearings. 0.24 pairs/ha were counted in the transitional zone between the alluvial forest and the sand dunes east of Yeniköy. *E. cirlus* was not found in the central and eastern parts of the delta. First record in spring on 14.4.93 (Ert). Latest record in autumn two on 19.9.88 (Schr), although once also seen in winter (at least two on 3.1.90, DB).

***Emberiza cia* (Rock Bunting, Kaya Kirazkuşu)**

Status unclear, may breed. One between Kocaçay and Lake Dalyan on 14.4.90 (Wil) and a singing male on 23.4.93 (Wer) are the only records.

***Emberiza hortulana* (Ortolan Bunting, Kirazkuşu)**

Rare visitor with two spring and one autumn records: one on 24.4.92 (Gat), present on 24.4.74 (Ko) and three on 23.9.90 (Br).

***Emberiza caesia* (Cretzschmar's Bunting, Kızıl Kirazkuşu)**

Probably a common breeding bird of the maquis south and south-east of the delta. No record within the delta. Earliest record on 30.5.93 (Ert).

### ***Emberiza schoeniclus* (Reed Bunting, Bataklık Kirazkuşu)**

Probably an uncommon breeding bird in all reed beds in the western half of the delta with an estimated population of 20 to 30 pairs in 1993 (Ert). East of the Kocaçay *E. schoeniclus* has been found only at the north end of Arapçiftliği Lake. The concentration was highest (at least 15) in reeds at the west end of Dalyan Lake.

### ***Emberiza melanocephala* (Blackheaded Bunting, Karabaşlı Kirazkuşu)**

Common breeding bird in agricultural areas and fallow-areas with hedges with approx. 250 pairs estimated in 1993 (Ert). *E. melanocephala* uses similar habitats as *E. cirius* in the delta area. However, there was almost no overlap, as hedge and tree-rich areas in the central and eastern part of the delta were occupied by *E. melanocephala*, while *E. cirius* was found in similar habitats in the western and south-western delta area.

### ***Miliaria calandra* (Corn Bunting, Tarla Kirazkuşu)**

Very common breeding bird in agricultural land, the fallow areas, and, to a lesser extent, the dunes. Breeding density is very low in wet areas such as the pastures north-east of Boğazköy. Breeding density was 0.24 pairs/ha in sand dunes east of Yeniköy, 0.76 pairs/ha in salt plains with *J. acutus*, 0.43 pairs/ha in fallow areas and 0.25 pairs/ha in agricultural areas. In autumn, small flocks with e.g. 65 on 18.9.94 (Ff).

## **Özet (Turkish summary)**

Kocaçay Deltası, Marmara Denizinin güney kıyısında ve Karacabey kasabasının 20 km. kuzeyinde yer alan, güney Marmara Bölgesi'nde 10,000 km<sup>2</sup>lik bir yağış havzasına sahip Kocaçay'ın oluşturduğu 5000 ha. genişliğinde bir sulak alan kompleksidir. Denizden ortalama 15 m yüksekliğindeki deltada habitat çeşitliliği yüksektir; ayrıca, deltayı çevreleyen Karadağ tepelerindeki (400-500 m.) bitki örtüsü bu çeşitliliği artırır. Deltanın doğu kesiminde Arapçiftliği Gölü (450 ha), batı kesiminde subasar orman ve Dalyan Gölü (180 ha) başlıca coğrafi unsurlardır. Bir geçiş bölgesinde yer alan deltada ılımlı Akdeniz iklimi hakimdir.

750 ha.lık subasar orman, su rejimini düzenleyici rolü ve barındırdığı türler açısından yaşamsal öneme sahiptir. Ayrıca deltada kumullar (140 ha), ılgın çalılıkları (270 ha), tuzlu çamur düzlükleri (590 ha), açık su alanları (625 ha) ve sazlıklar (600 ha) vardır. Yakındaki tepelerdeki nemli ıhlamur ve kestane ormanları ile bozulmuş kısımlarında gelişen makilikler tür çeşitliliğine olumlu katkı yaparlar.

Çoğu son on yıl içinde yapılmış kısıtlı gözlemler sonucunda bugüne kadar Kocaçay Deltası'nda toplam 243 tür saptanmıştır. Bunlardan 79'unun bölgede ürediği kanıtlanmıştır; 69 türün daha kuluçkaya yatması olasıdır. Üremesi kesin ya da olası türler içinde Küçük Karabatak (*Phalacrocorax pygmaeus*), Balaban (*Botaurus stellaris*), Çeltikçi (*Plegadis falcinellus*), Kaşıkçı (*Platalea leucorodia*), Pasbaş Patka (*Aythya nyroca*), Akkuyruklu Kartal (*Haliaeetus albicilla*), Kaya Kartalı (*Aquila chrysaetos*), Şah Kartal (*A. heliaca*) ve Puhu (*Bubo bubo*) özellikle belirtilebilir. Balıkçıların Türkiye'de kaydedilmiş hemen hemen tüm türleri, ağaçkakan türlerinin çoğu ve yırtıcıların on türü üreme zamanı bölgede görülmektedirler. Delta ayrıca, kışları olarak Çamurcun (*Anas crecca*), Kızkuşu (*Vanellus vanellus*), Kızılbecak (*Tringa totanus*), Çulluk (*Scolopax rusticola*) ve Karagagalı Sumru (*Sterna sandvicensis*) için, göç zamanlarında da Ak Pelikan (*Pelecanus onocrotalus*), Kilkuyruk (*Anas acuta*), Çayır Delicesi (*Circus pygagrus*), Gökçe Delice (*C. cyaneus*) ile çeşitli kumkuşu (*Calidris* spp.), düdükçün (*Tringa* spp.) ve sumru türleri (*Chlidonias* spp.) için önemlidir. Kuşlar dışında, yörede memeliler ve sürüngenler de yüksek çeşitlilik gösterirler.

Kocaçay Deltası'ndaki sorunların başında, deltanın doğal değerlerini ciddi bir şekilde tehdit eden kaçak avcılık ve kentsel gelişme gelmektedir. Karayolunun iyileştirilmesinden sonra artan turizm sonucunda özellikle Yeniköy çevresindeki inşaat etkinlikleri ve evsel atık sorunu mutlaka denetim altına alınmalıdır. Bunların dışında küçük ölçekli balıkçılık, arıcılık, hayvan otlatma ve yaban bitkileri toplama gibi daha az tahripkâr ekonomik etkinlikler de görülmektedir. Şimdilik sadece kısıtlı bir alanı korunan deltanın başta subasar orman olmak üzere geniş kesimleri biran önce daha etkili bir koruma statüsüne kavuşturulmalıdır.

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Sea of Marmara

