

Autumn-2007 Migration of Soaring Birds Across the Bosphorus, Turkey

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Abstract

The Bosphorus Strait located in Istanbul, Turkey, is one the primary migration bottlenecks in Europe for soaring birds. This study aims to determine the abundance and the species composition of soaring birds that migrate over the Bosphorus, in order to address the knowledge gap on bird migration in Turkey. In this study, 27 bird species from 4 families and 3 orders were identified, and a total of 34.346 soaring birds were observed.

Keywords: Autumn, bird migration, Bosphorus, soaring birds.

Süzülen Kuşların Türkiye-İstanbul Boğazı Üzerinden 2007 Sonbahar Göçü

Kısa Özet

İstanbul Boğazı, süzülen kuşlar için Avrupa'nın en önemli göç yollarındandır. Bu çalışmada amaç İstanbul Boğazı üzerinden süzülerek göç eden kuşların tür dağılımları ve yoğunluklarının çıkarılmasıdır. Ayrıca Türkiye'deki kuş göçleri hakkındaki bilgi eksikliđinin giderilmesidir. Bu araştırmada 3 takıma bađlı 4 familyadan 27 kuş türü tespit edilmiş ve toplamda 34.346 süzülen kuş gözlemlenmiştir.

Anahtar Kelimeler: Sonbahar, kuş göçü, Boğaziçi, süzülen kuşlar.

1. Introduction

The first recorded observations of migratory birds across the Bosphorus were made by Forskal in 1761/63 (Kummerloeve 1958). Later observations were realized by Alleon and Vian (1869/70) on migration and Braun (1901-06) on Istanbul's birds and their migrations. Some systematic counting studies on the Bosphorus occurred between 1931 and 1994 however during the 1980s and 1990s studies only were conducted in occasional days, not periodically. Among these censuses, the highest recorded raptor count was 75.176 birds in 1971 (Shirihai et al. 2000; Can 2002) whilst, 339.000 max. *Ciconia ciconia* (White stork) were counted in

1972 (Kumerloeve 1975; Cramps and Simmons 1980). These studies took place on the Bosphorus, they were not necessarily done from Büyük Çamlıca Hill, and include both spring and autumn counts. In our comparisons below we have only focused on studies done from Büyük Çamlıca Hill in the autumn.

Raptor population densities and movements remain poorly documented in Turkey; however baseline data is available to focus research efforts and help identify which species occur in this range (Beaman 1977). The purpose of this study is to address this knowledge gap, by determining the abundance of, and the species of the birds gliding and/or soaring across the Bosphorus passageway.

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Broad winged large birds prefer soaring and gliding to flapping flight during migrations. The fact that while birds during active flying exhausts 23 times higher energy than still flying or gliding (Anderson and Eberhardt 2001), clearly explains why these birds choose to glide. When there are suitable thermal air currents, soaring birds can travel up to 400 km per day while soaring high in the sky (Meyburg et al. 2004). Routes of gliding migratory birds crisscross the continents but over the oceans, their ways always correspond with the narrowest routes between any two land masses. Turkey is one of the shortest terrestrial links between Eastern Europe and Africa.

The raptor migration in Turkey is of significant importance for *Aquila pomarina* (Lesser spotted eagle), as all the known world population of them travels over Turkey (Can, 2004). Also most of the Central and Eastern European population of white stork migrates over Anatolia. Most of the migrating bird species that breed in Europe, winter in Africa. Eastern European migrants, in particular, predominantly prefer Turkey while going to or coming from Africa. These birds come to Turkey via both the Balkans and the Caucasus. In this study only those birds travelling through the Balkans are under consideration. These gliding birds deliberately select the shortest sea crossings, which are at the Bosphorus and the Dardanelles Straits in Northwestern Turkey (Ritzel, 1980). The Bosphorus is the most widely used passageway for the birds of the western Palearctic (Bjilmsa, 1987).

2. Study Area and Methods

Prior studies about the autumn migrations of soaring birds over Istanbul (Steinfatt, 1931; Porter and Willis 1967; Kitson and Porter, 1970; Beaman and Jacobsen 1974) were consulted, and the sites of their observation spots noted. Based on this information and the experiences and recommendations of long time bird observers such as Richard Porter, the author of the book “Birds of Middle East and Africa” and Tansu Gürpınar, the founder of the Doğal Hayatı Koruma Derneđi (DHKD), i.e. the Turkish Society for the Protection of Nature, the observation spot chosen by us was in Büyük Çamlıca Hill in the district of Uskudar, Istanbul, on the Asian bank of the Bosphorus (41° 01' 67" N and 029° 04' 08" E; Figure 1).

The study was conducted between the date of 1-30 September, 2007. Records of soaring birds were obtained using point counts (Bibby et al., 1995). Birds were counted and recorded on an hour scale from 08:00 am to 18:00 pm (GMT+3). Birds which could not be identified were logged as “unidentified raptor”. Since the weather conditions influence the soaring bird migration (Åkesson and Hederström, 2007) surveys were carried out continually and in all weather conditions. The wind direction and average temperature on the observation spot were recorded with a digital barometer. Birds were observed by three observers with 8x42 and 10x50 binoculars and a 20x60 telescope.

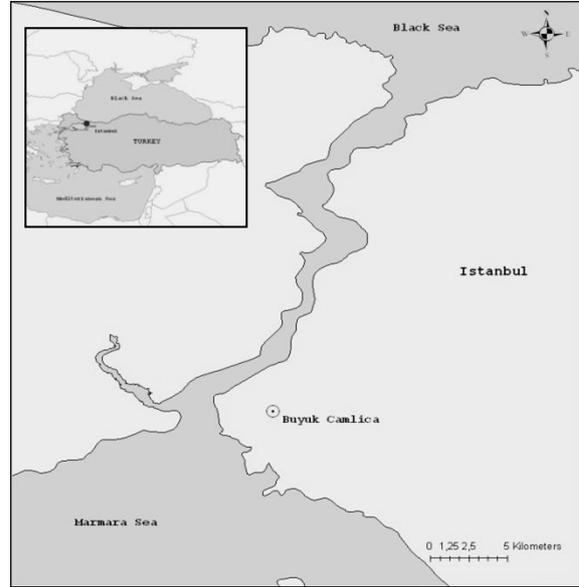


Figure 1. The vantage point of Büyük Çamlıca Hill in Uskudar District of Istanbul.

Şekil 1. İstanbul-Üsküdar-Büyük Çamlıca Tepe-sindeki Gözlem Noktası.

3. Results

In this study 34.346 birds were recorded in 30 days (Table 1). Birds were soaring within a range of 100 to 400 m high from the selected vantage point. The highest radio mast on Çamlıca Hill is approximately 160 meters. By means of this mast we estimate that normally birds pass overhead at a height of at least 100 meters. It has not been possible to estimate maximum height of soaring range. Migration phenologies of the soaring birds were

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Table 1. Observation results between 1st – 30th September, 2007.

Tablo 1. 01-30 Eylül 2007 tarihleri arasındaki gözlem sonuçları.

Date	Mean temperature (°C)	Wind direction	<i>Ciconia nigra</i> (L., 1758)	<i>Ciconia ciconia</i> (L., 1758)	<i>Pernis apivorus</i> (L.,1758)	<i>Milvus migrans</i> (Bod., 1783)	<i>Neophron percnopterus</i> (L., 1758)	<i>Gyps fulvus</i> (Hab., 1783)	<i>Circus gallicus</i> (Gme., 1788)	<i>Circus aeruginosus</i> (L., 1758)	<i>Circus cyaneus</i> (L., 1766)	<i>Circus pygargus</i> (L., 1758)	<i>Accipiter gentilis</i> (L., 1758)	<i>Accipiter nisus</i> (L., 1758)	<i>Accipiter brevipes</i> (Sev., 1850)	<i>Buteo buteo</i> (L., 1758)	<i>Buteo rufinus</i> (Cre., 1827)	<i>Aquila pomarina</i> Bre., 1831	<i>Aquila clanga</i> Pal., 1811	<i>Aquila nipalensis</i> Hod., 1833	<i>Aquila heliaca</i> Sav., 1809	<i>Hieraaetus pennatus</i> (Gme., 1788)	<i>Pandion haliaetus</i> (L., 1758)	<i>Falco tinnunculus</i> L., 1758	<i>Falco vesperinus</i> L., 1766	<i>Falco subbuteo</i> L., 1758	<i>Falco biarmicus</i> Tem.,1825	<i>Falco cherrug</i> Gray,1834	<i>Falco peregrinus</i> Tun., 1771	Unidentified Raptors	TOTAL
1.9	28	NW			354	2										48										7				4	415
2.9	24,8	NE		10	2								1																		13
3.9	25,8	NW		234	102								1																	337	
4.9	25,8	N	15	53	127				1				1		9						1				3	1				211	
5.9	26,5	S	23	10	66									2	6								1		1				11	120	
6.9	23,7	S	11		20					1		3				3									2				5	45	
7.9	22	N		800					3						8	1									1				4	817	
8.9	19,1	SW	130	656	92				1					4			8												56	947	
9.9	18,6	NW	28	84	19				2	3			5	46			5												3	195	
10.9	20,1	NW	202	5881	79	3			17		2		12	505	17	1	7				1		1	2					43	6773	
11.9	22,2	NE	214	164	3				7				6	186	3	1	4					1		2					11	602	
12.9	19,4	N	15		3				15				2	52		1	107					7							3	205	
13.9	19,8	NW	86			1			22					304	4		507					8							21	953	
14.9	19,9	NE	13	2	12				9					327	3		86					9							2	463	
15.9	20,2	N	55	1		1			35				2	737	14		316					4		1					5	1171	
16.9	20,8	N	66	1				1	16				29	1401	20		703	1	3	1	7		1					4	2254		
17.9	21,4	N	187	10		1	1		63	1			3	863	91		1636		2	2	8							1	5	2874	
18.9	20,9	N		1		1	2		42				13	273	35	6	217					5		1					14	610	
19.9	21,2	N	74	10		1			11			1	7	530	14	2	3	2				1		1					4	661	
20.9	22,1	NE	14	8	1				10				6	62	4	2	644					2							3	756	
21.9	18,9	NE																												0	
22.9	17,7	N																												0	
23.9	18,4	N	35			1			15				6	18	1234		5533	2				5				2		1	153	7005	
24.9	16,2	SW	48	75	1	3		1	48			1	89		1695		539	1				5							320	2826	
25.9	18,5	NW	352	43	1	5		1	161	1			40	658	651	1	530				1	9			3			46	2503		
26.9	20,4	ESE	89	1		1			24				7	20	17		4					3			2				2	170	
27.9	22,6	N	3						3	1			1	6	3	1								8	3				2	31	
28.9	21,5	SW	19	1	3	2			7	1		1	14	7	25	2						1			5	1		1	5	95	
29.9	21,1	W			4	2			92	1			16	6	121	3	70					1	1	1	7	1		1	10	337	
30.9	20,2	NW							133	2			1	36	1	171	1	513	1			1		1	1				95	957	
TOTAL			1679	8045	889	24	3	3	737	11	2	6	2	296	6016	4189	21	11432	7	5	5	78	2	10	22	26	1	1	3	831	34346

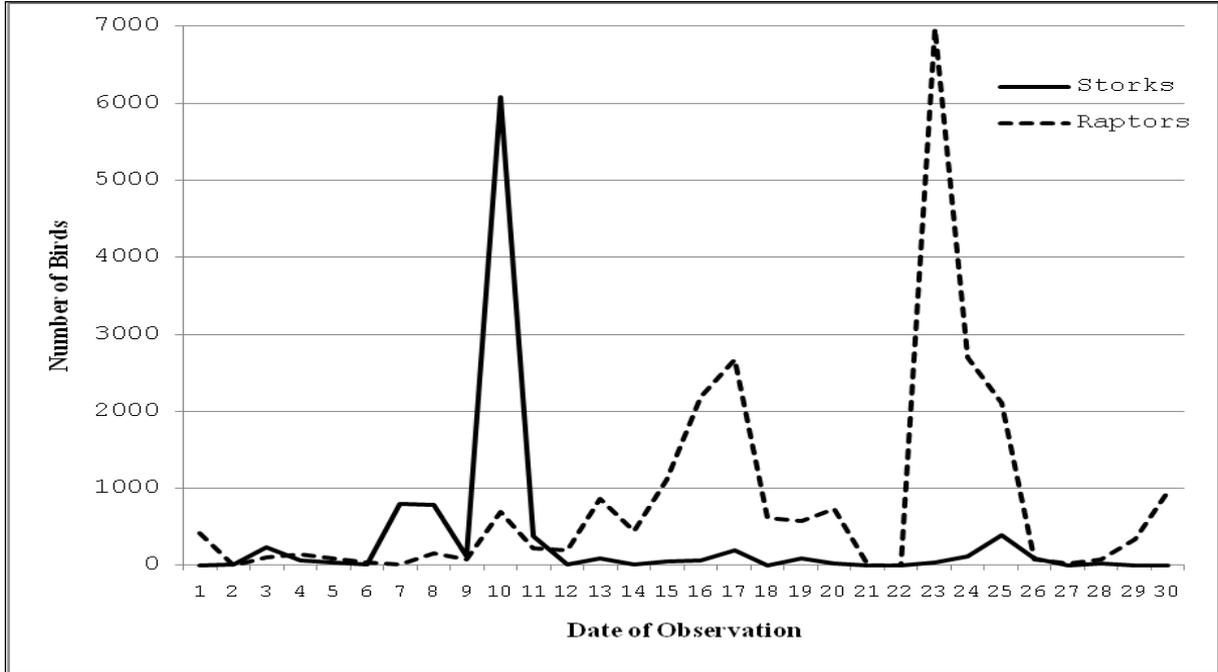


Figure 2. Daily overall bird count for the soaring birds.
Şekil 2. Süzölen kuşların günlük toplam kuş sayıları.

determined by keeping a daily flight log. This shows that the highest frequency of soaring bird observations were on 10 September and 23 September, 2007 with 6.773 and 7.005 birds, respectively. On 21-22 September, 2007 the weather conditions were adverse and it rained heavily during these days and consequently no birds were observed.

The maximum number of *Ciconia ciconia* was recorded on 10th September, 2007 with a total of 5.881 individuals (Figure 2). When the daily records were compared, it was noted that storks were more common in the first half of the month while raptors were more common in the second half of the month. *Aquila pomarina* were first recorded on the 8th of September and recorded regularly until the end of the study. The peak count was on 23 September, 2007 with 5.533 individuals, this large congregation occurred after two days of rainy weather. *Buteo buteo* (Common buzzard) also peaked on the 23 September. *Accipiter brevipes* (Levant sparrowhawks) were recorded between the 5th and-30th of September, 2007 and made a peak on the 16th with 1.401 individuals. The first *Circaetus gallicus* (Short toed eagle) individual arrived on 04 September, 2007 and the highest number of short toed eagles was recorded on 25 September, 2007 with 161 individuals. Along with the common birds,

rare passage migrants such as *Gyps fulvus* (Griffon vultures), *Aquila nipalensis* (Steppe eagles) and *Aquila heliaca* (Imperial eagles) were also recorded during the survey.

Regarding the hours of passage that were noted, 77% of the whole bird tally passed over the observable area of the vantage point between 11:00 am and 15:00 pm with 8.033, 7.839 and 6.770 birds, respectively. During the earlier morning hours, (09:00-10:00 am) there were fewer migrants (782 birds) (Figure 3). Raptors (6.673 birds) were most frequently observed between 13:00 and 14:00 pm whilst Storks (3.429 birds), on the other hand, were most active between 14:00 and 15:00 pm. It should be noted that the times are according to Turkish Summer Time and hence 3 hours ahead of GMT.

4. Discussion

The soaring bird assemblage during the study consisted of 33% (11.432 birds) *Aquila pomarina*; 23% (8.045 birds) *Ciconia ciconia*; 18% (6.016 birds) *Accipiter brevipes* and 12% (4.189) *Buteo buteo*. Based on prior studies during the autumn migration, the most frequently observed bird species among all the soaring birds is *C. ciconia* (Porter and

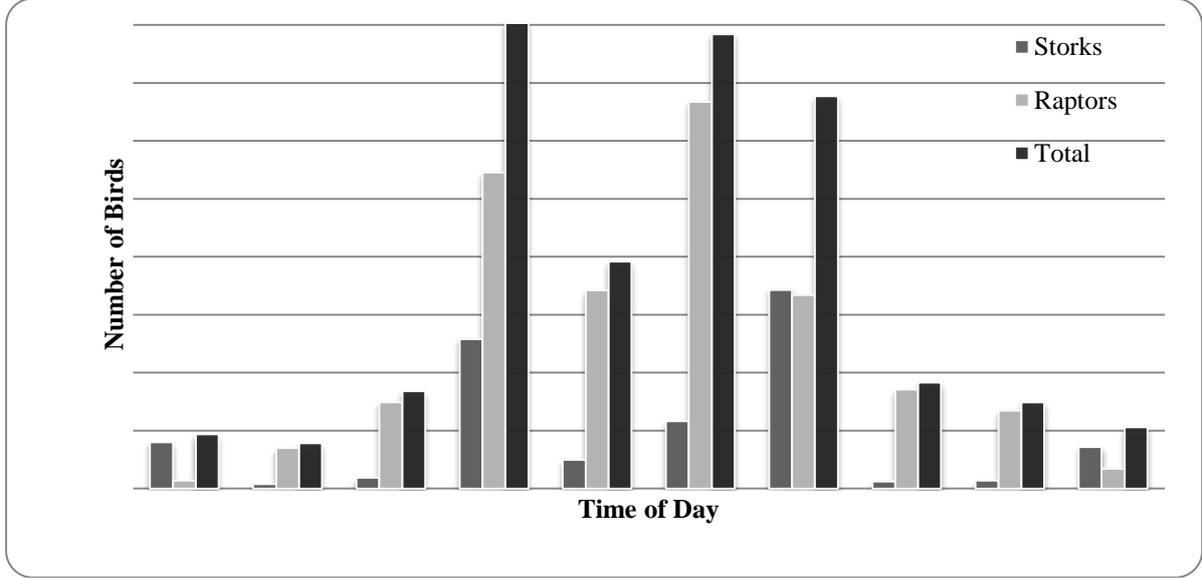


Figure 3. Bird counts based on hourly intervals.
Şekil 3. Kuşların saatlik dilimlerdeki sayıları.

Table 2. Previous Studies on Soaring Bird Migration over the Bosphorus from Büyük Çamlıca in the Autumn.
Tablo 2. Süzülen Kuşların Boğaziçi Büyük Çamlıca'daki Sonbahar Göçlerine ait Çalışmalar.

References	Date	Obs. days	Storks	Raptors
Steinfatt (1932)	13/09/-01/11/1931	20	1075	13587
Nisbet&Smouth (1957)	13-22/09 & 27/09/-01/10/1956	16	1676	846
Balance&Lee (1961)	20/08/-08/09/1960	20	16102	5375
Porter&Willis (1967)	14/07/-08/11/1966	118	213339	37105
Ornithological Society of Turkey (OST) 1969 (Ritzel, 1980)	25/08/-13/10/1969	51	135700	61640
Ornithological Society of Turkey (OST) 1971 (Cramp&Simmons 1980; Shirihai et al., 2000)	13/08/-04/10/1971	53		75176
Ornithological Society of Turkey (OST) 1972 (Cramp&Simmons 1980; Shirihai et al., 2000)	05/08/-06/10/1972	63	339000	
Ornithological Society of Turkey (OST) 1975 (Ritzel, 1980)	09/08/-02/10/1975	50	46653	26376
<i>This Study</i>	<i>01/09/-30/09/2007</i>	<i>30</i>	<i>9724</i>	<i>24622</i>

Willis, 1967; Ritzel, 1980; Can, 2002). Our results, in this respect, differ from most prior studies except Steinfatt (1932) which have shown *C. ciconia* to be the most frequently observed bird species among all the soaring birds (Table 2). The probable reason might be the migration season of *C. ciconia* is known to be late August.

The most recent previous study from Çamlıca Hill was made over 30 years ago in 1975 (Ritzel, 1980). Our study is important by providing recent systematically collected data both adding to our

knowledge bank (Table 2), and valuable information to conservationists for assessing the current status of soaring bird species. It is known from previous studies that September is the period when *A. pomarina*, *A. brevipes* and *Circaetus gallicus* pass over the Bosphorus. Therefore this study particularly provides a basic data in order to more fully understand the migration behavior of these species. It is recommended that additional raptor migration studies should be carried out extending through an interval from 15 August to 30 November. Also

Bosphorus counts should be carried out from at least two additional vantage points in order to provide an accurate picture of the migration at the northern end of the Bosphorus.

As the phenomenon of bird migration is an enigmatic dimension of bird life, it is also an important visitor attraction for bird watchers. According to this study, the time intervals; 11:00-12:00 am and 13:00-15:00 pm are the periods when the highest number of birds is to be encountered. We recommend birding tourists plan their visits to Çamlıca Hill between these hours if their time in Istanbul is limited.

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