

**Egyptian vulture (Neophron percnopterus) research &
monitoring -
2011 Breeding Season Report- Beypazarı, Turkey**



Doğa

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Cover photograph: Egyptian vulture landing in Beypazarı dump site, photographed by Kadir Dabak.

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Introduction

The Egyptian vulture (*Neophron percnopterus*) is a medium sized scavenger species that feeds primarily on carrion and occasionally on various organic rubbish. It nests solitarily in deep cavities on steep cliffs. The global breeding population is distributed through Europe, the Middle East, Western Asia, India and Africa, and the European, Asian and Middle Eastern populations are migratory (1). In Europe, Spain has the largest breeding population with 1400 breeding pairs out of an estimated 3000-5600 pairs for Europe (2). Even though Birds in Europe gives an estimate of between 1500-3000 pairs for Turkey, this number has not been accurately established (2) as there were never any large scale projects covering the species in Turkey. Nevertheless the Turkish population of the species seems to be large relative to the whole European population. Since the species has been classified as "endangered" by the IUCN, it is even more important and urgent to conduct scientific research on the Turkish breeding population and carry out direct conservation actions on the species as the country may assume a key role in the global conservation of Egyptian vultures.

Beyşehir is situated 100 km west of Ankara, the capital city of Turkey, in the western edge of the central Anatolian plateau, just south of the western Black Sea mountains and forests. It has been widely acknowledged by amateur birdwatchers and visitors that the Beyşehir area might hold a relatively big population of Egyptian vultures, as the species is a common sight in the region, notably at the dump site very close to Beyşehir city centre.

Doğa Derneği (Birdlife in Turkey) started a project on Egyptian vultures in 2010, with the financial support of LUSH and the RSPB (Birdlife in the UK), and the technical support of BSPB (BirdLife in Bulgaria). This project aimed to establish the first ever inventory of the Egyptian vulture breeding population in the Beyşehir region. During 2010 we found 37 pairs of Egyptian vulture in the study area and managed to assess the breeding success of 17 of them (which was %100). We have also regularly observed the dump site to determine its importance to the Egyptian vulture population occupying the area. Detailed results of this first year inventory can be found in Sen and Tavares, 2010 (3).

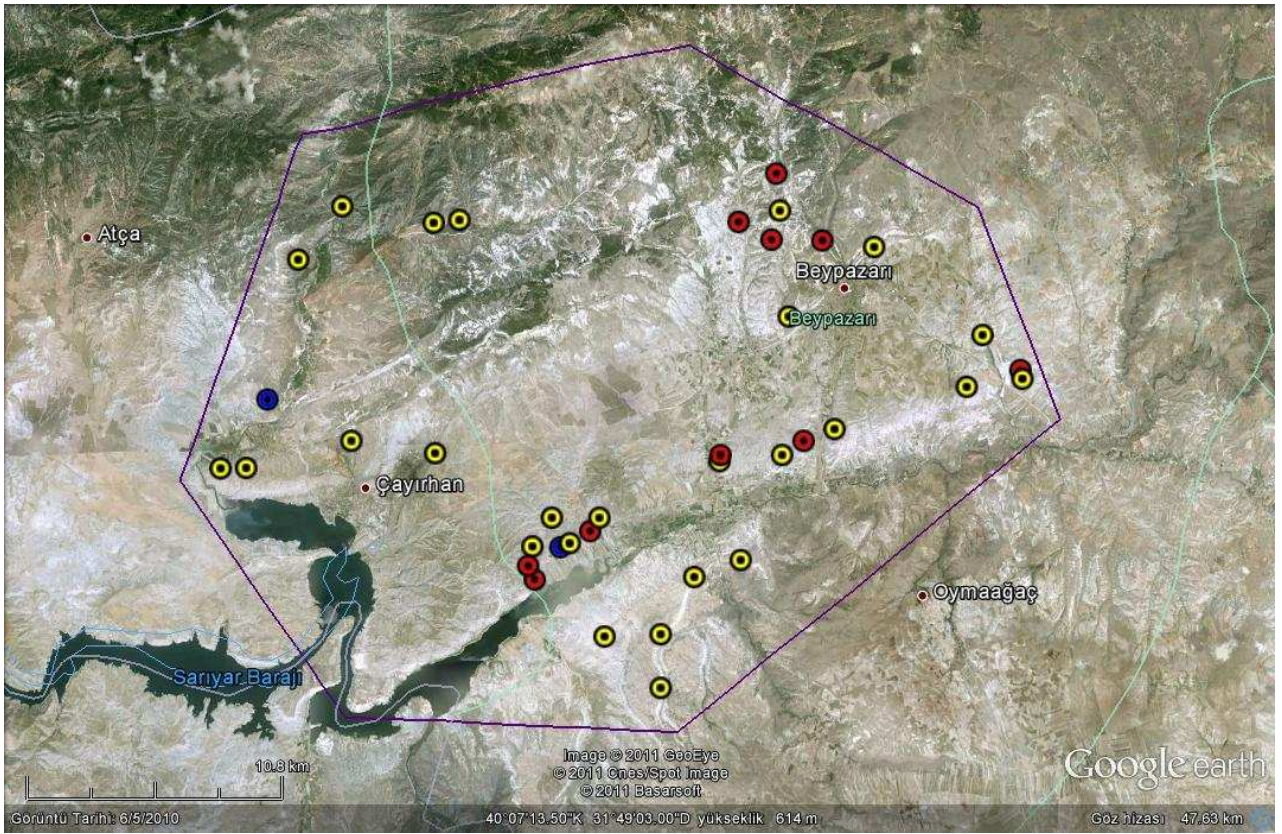
During 2011 we continued with the monitoring, now covering a larger area, and with intensified effort. This report presents the results of the second field season.

Material and Methods

Study area

We conducted our nest observations in a 750 km² area which includes three municipalities, namely Beyşehir, Çayırhan and Kırbaşı (Map 1). There are two Key Biodiversity Areas in the region (Sarıyar dam and Kirmir valley), a recognition of its conservation value and priority (4). The area is characterized by numerous valleys with steep cliffs, and steppe habitat, ideal for Egyptian vultures to nest and breed.

The communal rubbish dump site (photos 1, 2 and 3) in Beyşehir is a very attractive foraging site for Egyptian vultures as a nearby slaughter house regularly dumps cattle and sheep remains (not carcasses just internal organs and bones), and until this year a chicken farm was also using the site to dump chicken eggs. Even though the chicken farm ended its operations earlier this year (and this had an obvious impact in terms of numbers of Egyptian vultures feeding on the dump site, see pages 5 and 6), the rubbish dump still holds its significance for the long-term conservation of the species in the region.



Map 1. Study area (Purple line) and nest locations of 39 regularly observed pairs in 2011 (yellow dots are successful pairs, red dots are failed pairs and blue dots are the pairs that we couldn't assess breeding success).

Rubbish Dump site observations

We conducted 6 counts by scan sampling (5) the dump site, from April to August (twice in April and once in the other months). In 2011 we decided to change the point where we counted Egyptian vultures for improved efficiency, but the dump site is so open that no bias was detected. Counts took place between 7am and 11am in 30 min intervals, resulting in 9 counts for a count day. We used the count with the maximum number of Egyptian vultures to represent each count day.

Nest site observations

We were able to locate territories of 37 pairs and found the nests of 19 of those in 2010. Our aim this year was to find more nests and if possible locate even more pairs inhabiting our study area. To achieve that goal we spent 40 field days from April to August. We searched for new nests and pairs mainly in April and May when breeding pairs are being established and building nests in cavities. Starting from June we did not look specifically for new nest sites and concentrated on the observation of known sites and pairs to assess breeding success. Usually each nest was visited once every month unless we were not able to determine its breeding status (nest building, incubation, chicks visible etc.). If there was a suspicion of a nest failure, we conducted repeated checks on that nest for several days until breeding status was determined. In the case of poor visibility of nests, which is usually the case when the nest is in a very deep cavity (photos 3 and 4), we observed for several signs indicating the status of the nest (adults carrying food to the nest, instantaneous observation of the beak or the wing of an incubating adult etc.). Observation of grown fledglings in the end of July or mid August was indicative of a successful breeding.

Results

Monthly trends at the rubbish dump site

There was an apparent decrease in the numbers of Egyptian vultures at the dump site in 2011 when compared to 2010 (Figure 1). Mean maximum number of Egyptian vultures observed per count day was 30 (n=22) in 2010 while this number declined to 21 (n=6) in 2011. This difference between years is however not significant (Mann-Whitney U-test, Median₂₀₁₀=27,5, Median₂₀₁₁=18, p=0.0826, p<0.05).

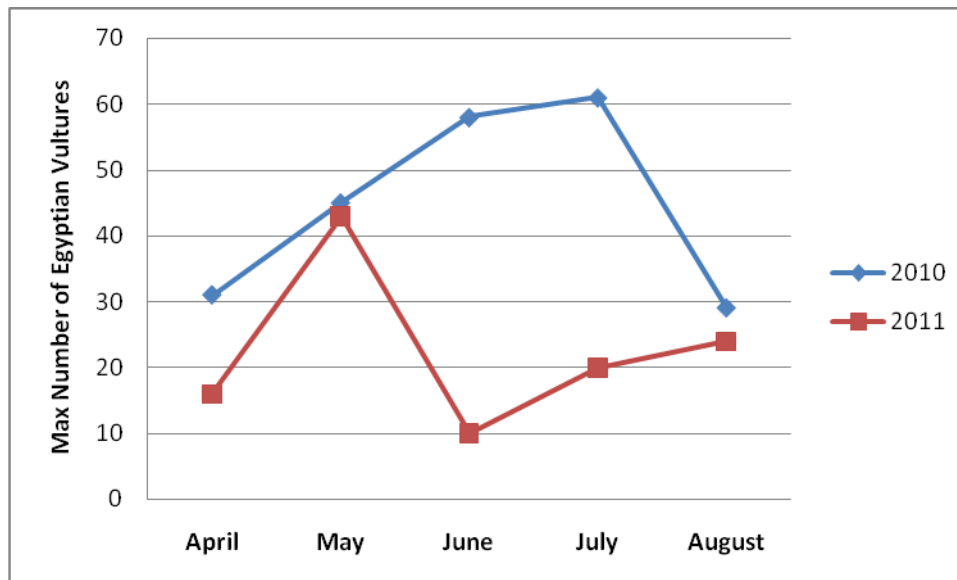


Figure 1. Monthly variation in maximum number of Egyptian vultures (immatures included) counted at the dump site for 2010 and 2011

Population size and breeding success

We increased the study area from 500 km² in 2010 to 750 km² in 2011 and found 10 new pairs, plus 5 pairs that we had already found last year outside the 2010 study area. We decided to discard one pair from our estimation of last year because it was observed that the relevant cliff was occupied by only one pair. So with the addition of 15 pairs and discarding 1 we now know that there are at least 51 territorial pairs in the study area. 39 of those were observed in a regular manner from April to August (Map 1). First observation date of a nest site was 5th of April and last observation day was 25th of August. We were able to determine the breeding status of 37 nests by the end of the breeding season. 26 nests were successful with 32 fledglings. 11 nests failed in various periods of the breeding season (Table 1). We can group those into 3 categories: 3 pairs probably never laid eggs as they were continuously observed flying together near their potential nest sites from April to June. The nests were always empty. At least one of them should have been observed incubating if they had laid eggs. 3 other pairs failed in the middle of the incubation period (May-beginning of June). They started incubating but left the nest early and did not lay eggs again. We observed those nests until August as well to be sure of their failure but were not able to detect any chicks or fledglings. The last 6 pairs failed breeding unexpectedly just before or after the hatching period. We did not observe any chicks in those nests at the end of June when the chicks were already visible and mid-sized in the successful nests. We repeatedly observed these 6 nests in August but did not see any fledglings. Adults also spent less time around their nest sites compared to a successful pair and the nests seemed deserted.

Table 1. Population size and breeding success of Egyptian vultures in Beypazarı during 2011 breeding season

Beginning of the Breeding Season	End of the Breeding Season					
Territorial Pairs	Pairs with Unknown Status	Found Nests (Known Breeding Pairs)	Found Nests with Unknown Status	Pairs that Failed breeding	Nesting Success (per breeding pair)	Productivity(per breeding pair)
51	12	39	2	11	0,7 (26/37)	0,86 (32/37)

Discussion

When we compare the monthly maximum counts of Egyptian vultures at the Rubbish dump for 2010 and 2011 we do see a difference in both trend and numbers observed (figure 1). Except for May (43 Egyptian vultures), all other counts in 2011 are lower than in 2010. If we do not include the May 2011 count in the Mann-Whitney U-Test, then the difference between the two years becomes significant ($p=0,0246$, $p<0.05$). Please note that the number of count days in 2011 is a lot less than 2010 (6 versus 22), and this may have introduced a bias (by chance the count days we chose in 2011 were the days when there were not many Egyptian vultures), but it is a fact that the management of the rubbish dump site changed substantially from 2010 to 2011. In 2010, Egyptian vultures always preferred to feed on eggs that were being dumped from a nearby chicken farm. They formed large congregations of up to 30 individuals over that single food source. In 2011 that chicken farm was closed. So the only food source for the vultures at the dump site was the discards of the nearby slaughter house. This could have been enough to continue to attract vultures to the dump site as they also feed on the remains of livestock animals but we never observed large congregations of feeding vultures in 2011. They usually perched around the dump site throughout our observation period even though there were obvious animal remains scattered around. The absence of eggs might be the reason why we observed low numbers of Egyptian vultures at the dump site through the breeding season of 2011. If this is the case, the disappearance of a preferred food item might affect their survival/fitness, as we do not know if the ecosystem of the region is capable to sustain such a dense vulture population without artificial feeding. If the breeding pairs also use the dump site then lack of food might induce breeding failures.

We suggest that continuous observation at the Beypazarı communal dump site in the breeding season should be continued. Additional observation of other dump sites from nearby municipalities like Çayırhan and Kırbaşı is also important as they might serve as alternative feeding sites.

European Union sanitary legislation have had long lasting effects on European vulture populations (6). The management of dump sites in Turkey is also starting to change. Extensive and open-air dump sites like the ones in Beypazarı are not highly regarded both in the community and governmental bodies. It is expected that the number of these communal dump sites and the frequency of dumping of carcasses and other organic material to open grounds will decrease gradually. It is therefore imperative to investigate their effects on vulture populations and provide alternative action plans.

The breeding success of Egyptian vultures in Beypazarı during 2011 decreased significantly when compared with 2010. With 11 breeding failures, nesting success (number of pairs with at least

one fledgling per total breeding pairs) declined to 0,7 (there was no failure in 2010). The decline in productivity (fledglings per total breeding pairs) was even more steep, from 1,65 to 0,86. In 2010 there were 28 fledglings from 17 successful pairs (11 pairs with 2 fledglings) but only 32 fledglings from 26 successful pairs (only 6 pairs with 2 fledglings) in 2011. We did not observe any obvious reason for breeding failures and there was not any human disturbance in the nest sites except for one case. The decline in the number of pairs with 2 fledglings might indicate a relatively low food abundance, perhaps caused by the disappearance of eggs from the dump site, though more data covering several years is needed to reach a reliable conclusion. It is also important to note that the decline in breeding success may not indicate any obvious threat over the population and simply can be a random fluctuation.

One can also argue that the 17 pairs monitored in 2010 were biased and were not a representative of the whole population. But looking at the 2011 data we can easily see that 6 pairs that were successful in 2010 have failed in 2011. If we only consider the same 17 pairs in 2011 as well, the nesting success would have been 0,65 even lower than for the whole sample size in 2011. A simple chi-square statistic to compare two figures from 2011 (one with 17 pairs the other with 37 pairs) gives a non significant difference ($X^2 = 0.1672$, $df = 1$, $p\text{-value} = 0.6826$, $p > 0.05$). So we suggest that the breeding success was indeed higher in 2010.

Beypazarı and its surrounding region could hold one of the densest populations of Egyptian vultures in Europe. The study we conducted for 2 years started to collect basic data on the status and dynamics of the population. We believe that the area is vital for Egyptian vultures and should be a focus of conservation studies and action in the future..

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Photos



Photo 1. Overall view of the Beypazarı Dump Site



Photo 2. Egyptian vultures perching near the dumps site



Photo 3. An Egyptian vulture feeding on the dumps site



Photo 4. The deep cavity inside the red circle is an Egyptian vulture nest. It is not possible to observe inside the nest, so the only way to see the Egyptian vulture pair is when they are perching near the entrance.



Photo 5. The Egyptian vulture nest inside the nest is easily visible contrary to the one in photo 4.