



BLACK VULTURE PATTERN OF PRESENCE IN THE EASTERN RHODOPES, BULGARIA



©Svetoslav Spasov/BSPB

TECHNICAL REPORT UNDER ACTION A3,

OF LIFE RE-VULTURES PROJECT LIFE14NAT/NL/901

BULGARIAN SOCIETY FOR THE PROTECTION OF BIRDS

2018



Authors:

Volen Arkumarev, Dobromir Dobrev, Stoycho Stoychev, Anton Stamenov

Recommended citation:

Arkumarev, V., Dobrev, D., Stoychev, S., Stamenov, A. 2018. Black Vulture pattern of presence in the Eastern Rhodopes, Bulgaria. Technical report under Action A3, LIFE14 NAT/NL/901. Bulgarian society for the protection of birds, 17 pp.

About the project:

This survey and report are developed under action A4 of the LIFE project Conservation of Black and Griffon vultures in the cross-border Rhodopes mountains (LIFE Re-Vultures LIFE14NAT/NL/000901) funded by the European Commission. The project aims to reduce acute threats to black and griffon vultures and thus allow them to recover in the Bulgarian/Greek cross-border area of the Eastern Rhodope Mountains









Contents

I.	INTRODUCTION
II.	MATERIALS AND METHODS4
1.	Observations of Black Vultures from stationary viewpoints4
2.	Monitoring of vultures at feeding stations5
III	RESULTS
1.	Visual observations from stationary viewpoints8
2.	Observations at vulture feeding stations 12
IV.	DISCUSSION 14
v.	CONCLUSIONS AND RECOMMENDATIONS 16
VI.	REFERENCES17
VII	I. ANNEXES 18



I. Introduction

The Eurasian Black Vulture (Aegypius monachus) is the largest of the four vulture species inhabiting Europe. Common and widespread in the past, nowadays the Black vulture is considered as irregular breeder in Bulgaria (Iankov et al. 2007). The last confirmed breeding occurred in 1993 on the territory of Studen Kladenets SPA and Eastern Rhodopes are considered the last known breeding area of the species in Bulgaria (Marin et al. 1998). The only colony of the Black vulture on the Balkans is located in the National Park of Dadia-Soufli-Lefkimi forest (Dadia NP onwards) in Greece, about 25 km from the border with Bulgaria (Skartsi et al. 2008). At the end of the 60-s the population in the Dadia NP was as low as 4-5 pairs and ca. 26 individuals (Hallman, 1979). During 1987-1993 the population increased from 6 pairs to 20 pairs breeding in the Dadia NP. In the period 1994-2005 the population remained stable with 19 ± 2 pairs while since 2006 it increase to 28 ± 4 (Skartsi et al., 2008, Zakkak et al. 2015, DNP Management Body unpublished data).

Through the use of radio transmitters on the Black vulture population of Dadia NP it has been proven already that Black vulture's range and movements extend to Bulgaria (Vasilakis et al., 2008). Moreover records of Black vultures (wing-tagged in Dadia NP) at the Bulgarian feeding stations have proven their frequent visits. Some birds seem to stay for longer periods in Bulgaria and might form permanent groups but this hasn't been well studied yet. Currently the Bulgarian part of the Eastern Rhodopes seems to be and important part of the home range of the Black vultures breeding in Dadia, but also a possible site where immature birds may settle and eventually breed.

Obtaining comprehensive information on the numbers, pattern of presence and the main flight corridors of the Black vultures foraging in Bulgaria is absolutely necessary in order to plan and effectively implement conservation measures securing the survival of the species. This study will contribute for the overall knowledge on the distribution and movements of the last breeding colony of the Black vulture on the Balkan Peninsula and will inform the conservation priorities. For instance, if a breeding pair is found, it is of vital importance to identify the nest site in order to prevent disturbance or destruction by tourism, hunting or forestry operations.









II. Materials and methods

The pattern of presence of the Black Vulture in Bulgaria was studied by visual observations from stationary viewpoints and regular observations at the supplementary feeding stations in Eastern Rhodopes.

1. Observations of Black Vultures from stationary viewpoints

The observations of Black Vultures from stationary viewpoints aim at identifying possible roosting and/or nesting sites of the species and its pattern of presence. In each of the seven SPAs in Bulgaria targeted by the project at least two stationary viewpoints are chosen (Fig. 1). Observations are held twice per month at each point in the period December – May. Viewpoints are chosen at higher open spots on hills with wide view in all directions for easy scanning of the surroundings and spotting birds. Viewpoints are easily accessible. Observations are made with spotting scopes (20x60) and binoculars (10x60). Data is collected during daytime and until darkness under suitable weather conditions for adequate visibility (no fog, heavy rain etc.) by experienced observers. The observer enters all collected data during the observation in the specially developed application SmartBirds Pro (https://smartbirds.org/) which uploads the data in the BSPB's database. Once at the viewpoint the observer registers the start time of observation, meteorological conditions and visibility. For every raptor species and especially vulture species the observer indicates the number, age (adult, subadult, immature, juvenile), height, direction and type of flight (gliding, soaring, active etc.), behavior. If the bird is marked the observer registers the type of tag (ring, wingtag, transmitter etc.), the colour and the number of the tag, whether it is on the left or on the right wing/leg. The behavior of the bird has to be described as detailed as possible. Except for the vultures, the observer fills in the application all other bird species observed during the visit.











Fig. 1. Stationary viewpoints for observation of Black Vultures

2. Monitoring of vultures at feeding stations

Observations during specially organized supplementary feedings at feeding stations are held at least twice per month for two days in two of the project SPAs – Studen kladenets and Most Arda/Madzharovo. Observations are made with spotting scopes (20x60) and binoculars (10x60). Data collection starts after carcass disposal at the feeding station and continues until darkness or until the carcass is fully consumed. Observations are made under suitable weather conditions for adequate visibility (no fog, heavy rain etc.) by experienced observers at distance greater than 500 m from the feeding station in order to avoid disturbance. The observer fills the data in the specially developed application SmartBirds Pro and uploaded it in the BSPB's database. The observer register the date, name of the feeding station, meteorological condition (e.g. clouds, rain, wind, temperature etc.) and visibility. Information on the type of carcass, origin, weight and time of disposal is also gathered and filled in. The observer indicates the start time of observation and for every hour register the number of vultures present at the feeding station by species (Griffon, Black and Egyptian vulture) until the end of the observation. For each species number of birds in different age groups (adult,









subadult, immature, juvenile) has to be determined. For every marked bird the observer registers its age, type of tag (wingtag, ring or transmitter etc.) the colour and the number of the tag, whether it is on the left or on the right wing/leg. For Black vultures the height, direction and type (gliding, soaring, active etc.) of flight has to be registered. It includes the direction from which the vulture has arrived and the subsequent direction in which the vulture has disappeared after leaving the feeding station. Except for the vultures, the observer fills in the application all other bird species observed during the visit.

III. Results

For the period of the study 151 Black Vultures were observed during specially organized feedings, from the vantage observations points or by random observations in the project area (Fig. 2). In 2016 in total 64 Black Vultures were observed and in 2017 this number reached 87. The age was determined for 77.5% of the observed individuals with immatures being the most numerous group representing 56.4% of the observed individuals, followed by the adults with 28.2% (Fig. 3). In total 20 marked Black vultures were observed and half of them were recorded in Bulgaria more than once during the study period (Annex I). They were all tagged by the Management Body of Dadia-Lefkimi-Soufli Forest National Park or WWF-Greece. Black Vulture with wingtag 91 was observed 15 times in the Eastern Rhodopes, the rest were observed between 1 and 5 times.

The obtained results, together with the telemetry data revealed most of the roosting sites of the species in Bulgaria. The majority of them were situated in SPA Studen kladenets, close to the feeding place, the rest of the roosts were scattered in other project sites like SPA Byala reka and SPA Krumovitsa along the main flyway corridor of the species towards Bulgaria (Fig. 4)













Fig. 2. Observations of Black Vultures in the study area



Fig. 3. Age classes of the Black vultures observed in Eastern Rhodopes







Fig. 4. Roosting sites of Black Vultures in the study area

1. Visual observations from stationary viewpoints

Nineteen stationary viewpoints were selected in all 7 project SPAs in Eastern Rhodopes. In 2016 visual observations were conducted between March and May during 25 days. In 2017 visual observations from the viewpoints were conducted starting from December 2016 until May 2017 during 43 days. Observations lasted in total 1114 hours and 47 Black Vultures were observed. Overall, Black Vultures were recorded in Eastern Rhodopes in 37% of the days with observations from the viewpoints. Permanent communication between the observers allowed detection of the same birds from different viewpoints and to follow their movements and the direction of flight. No nests or pairs with territorial behavior were observed during the study.

The age was determined for 72.3% of the observed individuals. The most numerous were the immatures, followed by the adults. Only 2 juveniles and 3 subadults were observed during the study (Fig. 5). Seven different birds tagged with wingtags were observed. Two of the tagged birds were registered twice during the study period. One









of them is an adult with wingtag 47 which is a regular breeder in Dadia NP. The second one is a juvenile with wingtag A0 tagged in 2016 in its nest in Dadia.



Fig. 5. Age classes of the Black vultures observed from the stationary viewpoints

Highest numbers of Black Vultures were recorded in March and April in both years of the study. The number of Black Vultures recorded in these two months is significantly higher when comparing with the rest of the study period. In May only two Black vultures were registered each year and this number remained similar or even lower in December and February. In January no Black Vultures were observed from the stationary viewpoints (Fig. 6).













Fig.6. Number of Black Vultures registered in Eastern Rhodopes per month

On average 159 hours of observations were conducted for the two years period in each SPA. Most Black Vultures were observed in SPA Byala reka (16 ind.). In SPA Krumovitsa and SPA Studen kladenets 14 Black vultures were detected. In SPA Dobrostan Black Vultures were not recorded during the study (Fig.7 and Fig. 8). In SPA Most Arda one Black Vulture was observed to enter a valley at dawn probably for roosting. However, the exact location of the roost site was not visible from the view point. The vulture was feeding at a nearby carcass together with Griffon Vultures before roosting. In two more occasions two Black Vultures were observed to roost on the cliffs near the feeding station in SPA Studen Kladenets.



Fig. 7. Number of Black Vultures observed in the project SPAs.





Fig. 8. Number of observed Black Vultures per viewpoint

Griffon vultures were also recorded during the visual observations. In 2016 the number of observations reached 911 while in 2017 1045 Griffon Vultures were observed (Fig. 9). Most of the Griffon Vulture observations were in SPA Studen Kladenets where one of the feeding stations is operating and the main breeding colony is situated.



Fig. 9. Number of Griffon Vultures observed in the project SPAs.





2. Observations at vulture feeding stations

Observations for recording Black Vulture presence were conducted also during specially organized feedings. In total 211 specially organized feedings for vultures were carried out in two priority areas – Madzharovo SPA and Studen kladenets SPA. About 46 200 kg of carcass were provided, mainly cattle, small livestock and offal material from the slaughterhouses in the region. In SPA Madzharovo 15 550 kg of carcasses were provided during the study period and 30 620 kg of carcasses were disposed at the feeding station in SPA Studen kladenets. The most abundant carcass by number was the cattle with 110 carcasses supplied for the vultures, with a total contribution of 25 660 kg of meat (Fig. 10).



Fig. 10. Carcasses provided at the vulture feeding stations in Eastern Rhodopes

On 59 occasions 97 Black vultures were observed to take advantage of these feedings. In order to register the marked birds and confirm their age four camera traps were installed for regular monitoring of the feeding places. Most of the Black Vultures were observed feeding in SPA Studen kladenets (96%), while only 4% visited the feeding stations in SPA Madzharovo. In total 18 marked Black Vultures were detected during the feedings. Vulture with wingtag 91 was observed 14 times at the feeding station in SPA Studen kladenets. This bird was frequently roosting near the feeding station as well. The other tagged birds were observed between 1 and 4 times. In six occasions the







same individuals were observed in two consecutive days at the feeding station and on the second day in the early morning hours. This proves that these birds were roosting in the vicinity of the feeding station.

In most of the cases Black Vultures were visiting the feeding stations solitarily or in small groups of up to 3 individuals. However bigger groups were observed as well with up to 5-7 individuals. The highest number of Black vultures observed together at the feeding station in SPA Studen kladenets was 8. In one occasion two birds were observed with short courtship behavior near the feeding station.

The age structure of the Black Vultures visiting the feeding stations was defined. The age of 75 of the observed vultures was determined. The most numerous group were the immatures with 57.33%, followed by the adults with 26.67%. The subadults and the juveniles were 9.33% and 6.67% respectively (Fig. 11).



Fig. 11. Age classes of the Black vultures observed at the feeding stations







IV. Discussion

The main flight corridor of the Black Vultures between Bulgaria and Greece was identified by visual observations from stationary viewpoints situated on high hill tops across the Eastern Rhodopes. Most of the vultures fly over SPA Byala reka and SPA Most Arda following the valleys of Byala reka river and Dushundere stream. This is the shortest route between the feeding station in Dadia National Park and the one near Studen kladenets in Bulgaria. This finding was later confirmed by the data received from the GPS transmitters as well (See Annex II). The Black Vultures were observed to fly solitarily or in small groups of up to 3 individuals in rare cases in mixed groups with Griffon Vultures. The results from the visual observations from the stationary viewpoints indicate that Griffon Vultures are using the same flight corridor during foraging. Both vulture species are gaining height over the bare hills of Irantepe ridge which is the highest ridge in the area and then are gliding south or north. In bad weather conditions vultures were observed to fly lower following the valley of Dushundere stream which follows Irantepe ridge on its eastern side. About 1000 cattle are extensively grazed in Irantepe ridge providing good food base for vultures and might well explain the regular presence of both vulture species in the area. During the study in three occasions Black Vultures were observed feeding on cow carcasses in this area. In two of the cases carcasses were visited by up to 3 Black Vultures and 40 Griffon Vultures while in the third case 7 Black Vultures were observed together with 28 Griffon Vultures. This area is remote with no human settlements and significant numbers of livestock which proves its importance for the vultures. Five artificial nest platforms have already been installed in suitable habitat near Irantepe ridge aiming to attract Black Vultures. All sites selected for installment of nest platforms are along the main flight corridor of the species. Thus, increasing the chances for attracting Black Vultures to settle in Bulgaria and occupy some of the artificial nests.

The majority of the Black Vulture observations from the stationary viewpoints were made in March and April. The weather in these months is more stable and sunny with suitable air thermals which allow vultures to forage on greater distances. In January and February 2017, the weather conditions were very harsh with heavy snowfall and very low temperatures for long periods of time. This might explain the absence of Black









Vultures which probably have stayed in Dadia NP close to the feeding station that is regularly supplied with carcasses. In such harsh conditions vultures prefer to save energy by feeding near the colony and not foraging over remote areas. On the other hand, this period coincides with the beginning of the breeding season when pairs are occupying nests and laying eggs. In spring and summer, the weather conditions allow long distance movements from the colony especially in areas with high food availability. One adult Black Vulture with wingtag 47 which is breeding in Dadia NP was observed twice in Bulgaria during the chick rearing period. This shows that some adults under suitable weather conditions undertake long distance movements searching for food. However, the prevalence of immature Black Vultures observed both from the viewpoints and at the feeding stations shows potential for attracting younger individuals in the area which might on later stages to settle and breed.

Black Vultures were visiting the feeding stations mostly solitarily or in small groups up to 3 individuals. They were frequently outnumbered by Griffon Vultures which were keeping them aside of the carcass. As a result, Black Vultures were feeding mostly after the Griffon Vultures or on small pieces of meat and bones scattered around without access to the main carcass. Higher numbers of Black Vultures at the feeding stations were observed when offal was disposed. Whole carcasses are monopolized by the Griffon Vultures because their numbers in Eastern Rhodopes are higher, they are roosting near the feeding station and are the first to arrive and feed after carcass disposal. Black vultures are arriving later and in groups of only a few individuals and cannot efficiently compete for the carcass with the Griffon Vultures. When offal is disposed at the feeding station it is more scattered and in small pieces which allows more vultures to feed simultaneously and decrease the inter and intraspecific competition in the vulture guild. In 2017 more offal was disposed at the feeding station in both SPAs and this might explain the observed slight increase in the number of Black Vultures visiting the feeding sites.











V. Conclusions and recommendations

- The main flight corridor of Black Vultures between Bulgaria and Greece is defined. It follows the Byala reka river valley, Dushundere river valley and Irantepe ridge in three SPAs – SPA Byala reka, SPA Most Arda and SPA Studen kladenets.
- Concrete conservation measures have to be applied in the areas along the main flight corridor of Black and Griffon Vultures between Bulgaria and Greece in order to ensure their survival. Actions against poison use in these areas are highly recommended. Other priority actions are insulation of hazardous powerlines, advocacy against windfarm projects, antipoaching activities.
- **** The majority of Black Vultures foraging in Bulgaria are immatures.
- Black Vulture presence in Eastern Rhodopes is highest in spring and summer and lowest in the winter months.
- ▲ Black vultures are frequently outnumbered by Griffon Vultures at the feeding stations in Bulgaria. Slight modifications in the distribution of the carcasses at the feeding stations are recommended in order to favor the Black Vultures. The carcasses have to be scattered over bigger area on the feeding site allowing more vultures to feed simultaneously and thus reducing the inter- and intraspecific competition. This feeding strategy has been successfully applied at the feeding station in Dadia NP.











VI. References

- Hallmann, B. 1979. Guidelines for the conservation of birds of prey in Evros. Final report of IUCN/WWF, Project no. 1684, Morges, Switzerland, 31 p.
- Iankov, P. 2007: Atlas of Breeding Birds in Bulgaria. Bulgarian Society for the Protection of Birds. Conservation series. Book 10. BSPB, Sofia.
- Marin, S, Rogev, A.B., Christov, I., Sarov, M. 1998. New observations and nesting of the black vulture (Aegypius monachus. L., 1766) in Bulgaria. In: Tewes E, Sa´nchez JJ, Heredia B, Bijleveld van LM, editors. International Symposium on the black vulture in south eastern Europe and adjacent regions (Dadia, Greece, 15–16 September 1993). Palma de Mallorca: FZS/BVCF. p. 47–50.
- Skartsi, T., Vasilakis, D. 2008. Monitoring of the black vultures and the griffon vulture inside the National Park of the Forest of Dadia-Lefkimi-Soufliou. (Greek). Annual technical report 2007. WWF Greece. Athens.
- Vasilakis, D., Poirazidis, K., Ellorriaga, J.2008. Range use of a Eurasian Black Vulture (Aegypius monachus) population in the Dadia National Park and the adjacent areas, Thrace, NE Greece. Journal of Natural History 42: 355-373.
- Zakkak, S., Babakas, P. 2015. Annual monitoring report for the species and habitats of European concern—2014. Management body of Dadia-Lefkimi-Soufli forest national park (unpublished data).











VII. Annexes

Annex I. Number of observations of marked Black Vultures in the Eastern Rhodopes, Bulgaria for the period 2016-2017

Wingtag/ring inscription	Number of observations
32	1
42	3
47	4
50	1
56	1
73	1
87	1
88	1
91	15
92	4
93	3
94	1
96	3
98	3
Ao	5
C4	2
C6	2
C7	1
C9	1
H65	1









Annex II. Preliminary map of Black Vulture movements revealed by GPS telemetry







