

**Report,  
containing an analysis of  
available data (including  
spatial) for bats in the  
project territory**

In the frame of project:  
**"Sustainable bats conservation in the  
cross border area"**

1846 BatsConserve

**Representing BatMap**

*/Elena Georgieva/*

**Consortium BatMap**

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## INTRODUCTION

In pursuance of Activity 1: "Analysis and systematization of available bat data in the project territory" of the Contract, the Contractor selected the territorial scope of work. As a next step, the Contractor identified the sources of information relevant to the site and scope of the study and provides all available information and data on the bats in the project territory. This Report has been prepared as a result. The report contains an analysis of available data (including spatial) for bats in the project territory. As Annexes to the Report (Annex 1), all sources of information are presented/quoted. Where applicable (in case the sources of information are online maps, publications, etc., which can not be applied) are presented as an up-to-date, publicly accessible link.

In identifying the sources of information relevant to the object and scope of the study were taken into account:

- Data and information from mapping and determination of the conservation status of natural habitats and species in both countries;
- Studies related to investment proposals plans/programs and projects in the project territory;
- Data from CORINE ground cover;
- Data and information (including management plans, where applicable) for protected Natura 2000 sites and protected areas within the design territory;
- Data and information on the hydrographic network in the project territory;
- Geological features;
- Scientific publications;
- Unofficial, unpublished, non-evidential information; data in popular releases, articles and more;
- Others.

Once the Contractor has identified the sources of information relevant to the site and the scope of the survey and obtained all available information and data on the bats in the design territory, a Methodology was used to assess the reliability of the available information in order to verify the authenticity and applicability of the data sources and information.

A first step in verifying authenticity was to divide the available information into two large groups:

- **Published, verified (with proof by verification) reliable information - official information, accepted by competent authorities, in accordance with legal procedures.**
- **Published, unverified information.**

An expert assessment on criteria Reliability and Applicability, expressed as a percentage, was additionally applied on this split information. This significantly reduced the risk of using unreliable information.

The choice of sources and the application of the methods for assessing their reliability and relevance are met while respecting the following credibility and relevance criteria:

- Data and information from mapping and determination of the conservation status of natural habitats and species in both countries  
Reliability - 90 %; Applicability - 99 %
- Studies related to investment proposals/plans/programs and projects in the project territory  
Reliability - 90 %; Applicability - 95 %
- Data from CORINE ground cover  
Reliability - 98 %; Applicability - 99 %
- Data and information (including management plans, where applicable) for protected Natura 2000 sites and protected areas within the design territory  
Reliability - 100 %; Applicability - 100 %

- Data and information on the hydrographic network in the project territory  
Reliability - 100 %; Applicability – 100 %
- Geological features  
Reliability - 98 %; Applicability – 90 %
- Scientific publications  
Reliability - 98 %; Applicability – 98 %
- Unofficial, unpublished, non-evidential information; data in popular releases, articles and more.  
Reliability - tentative; Applicability – 5 %

The low-confidence information was used only as a basis for additional information.

The use of unreliable data according to the above described methodology is not allowed and such data is not taken into account.

In order to obtain the available reliable and applicable data and information, the Contractor has used publicly available reliable and applicable data and information as requested by the competent authorities and institutions in the Republic of Bulgaria and Republic of Greece (eg Ministry of Environment and water and others).

The Contractor has systematized and processed the data on species diversity, land cover, bat species, land use, protected Natura 2000 sites and protected areas, orthophoto or satellite imagery, data on water, soil, geological base, etc. relevant to the subject matter and the objectives of the project.

In preparing the Report, the Contractor has strictly adhered to the Application Form for Sustainable Bats Conservation in the Transboundary Territory (BatsConserve), the results and implementation indicators in it.

Spatial data and maps to the Report are presented as follows (**Annex № 2 - Database**):

The initial spatial data for the project area relevant to the implementation of the project and attached to the report is harmonized and systematized, which will support

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the implementation of the follow-up activities. The process of harmonization and systematization includes:

- transformation of all data into a single coordinate system that, according to the requirements of the Technical Specifications of the Assignor, will be WGS84 or an equivalent;
- All data has been transformed into file formats, allowing and facilitating spatial reference, analysis and modeling in the GIS environment;
- refinement of attribute information (where applicable) in order to be as appropriate as possible to the objectives of the project.

Spatial data and maps (to the Report) are in the WGS84 coordinate system. All spatial data is provided in a widely used and publicly available file format (for example shp, mxd, gdb or equivalent). All arrays of spatial information are accompanied by appropriate attribute information for the purposes of the project. The proposed form of representation of spatial information and maps meets the requirements of accepted work practices and is in line with applicable standards for mapping species and habitats. It is also compatible with the information system of national authorities responsible for biodiversity conservation in both countries.

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# 1. ANALYSIS AND SYSTEMATISATION OF AVAILABLE DATA (INCLUDING SPATIAL) ON THE BAT FAUNA IN THE PROJECT TERRITORY

## 1.1 INFORMATION AVAILABLE IN SCIENTIFIC PAPERS AND BOOKS

The bat fauna of Bulgaria and Greece includes both species with wide distribution and number of individuals, as well as rare species with limited range.

Increasing the knowledge of their population characteristics, localities and approximately number of individuals over different periods of their life cycle will contribute to contemporary assessment of the status of their habitats and the resulting changes under the influence of natural and anthropogenic factors.

Until the 1990s, the known bat species from Eastern Rhodopes were limited mainly to reports of 8 species (Gueorguiev & Beron, 1962; Beron & Gueorguiev, 1967; Beron, 1994; Hanak & Josifov, 1959; Beshkov, 1998). Dietz et al. (2002) reported for the first time in Bulgaria *Pipistrellus pygmaeus* from Madzharovo region, where 13 species of bats were found. A zoogeographic and faunistic characteristic of the studied bat species was made.

Order Chiroptera in Eastern Rhodopes has not been studied in detail until 1995. For the Bulgarian part of the mountain there are 8 species of 6 localities: *Rhinolophus hipposideros* (Beron & Gueorguiev, 1967; Beron, 1994), *Rhinolophus ferrumequinum* (Beron, 1994), *Rhinolophus blasii* (Gueorguiev & Beron, 1962), *Pipistrellus pipistrellus* s.l. (Hanák & Josifov, 1959), *Pipistrellus pygmaeus* (Dietz et al., 2002), *Miniopterus schreibersii* (Nowosad et al., 1987; Beshkov, 1998) and *Myotis myotis/blythii* (Beshkov, 1998). Vasileva & Todorova (1994) mentioned the presence of *Nyctalus noctula* and *Plecotus auritus*, but without specifying specific localities. Unpublished data for more than 5 locations of 5 species is provided by Horáček - *Rh. euryale*, *Myotis mystacinus*, *M. daubentonii*, *P. austriacus* and *P. pipistrellus*. The list of "the 13 Most Significant Bat Localities in Bulgaria" (Beshkov, 1998) includes Yarasa-

ini cave from the region of Kardzhali. The list contains species diversity, number of specimens and seasonal dynamics of bat colonies.

In the period 1995 – 2002 Ivanova & Gueorguieva (2001) conducted a study on the bats of the Eastern Rhodopes both on the territory of Bulgaria and Greece. Literary reference was made and new data are presented on the distribution of 25 species of bats from 86 localities: *Rhinolophus ferrumequinum*, *Rh. hipposideros*, *Rh. euryale*, *Rh. mehelyi*, *Rh. blasii*, *Myotis myotis*, *M. blythii*, *M. bechsteinii*, *M. emarginatus*, *M. capaccinii*, *M. daubentonii*, *M. aurascens*, *Nyctalus noctula*, *N. leisleri*, *N. lasiopterus*, *Pipistrellus pipistrellus*, *P. pygmaeus*, *P. nathusii*, *P. kuhlii*, *Hypsugo savii*, *Eptesicus serotinus*, *Plecotus austriacus*, *B. barbastellus*, *Miniopterus schreibersii*, *Tadarida teniotis*. Four species (*M. bechsteinii*, *N. lasiopterus*, *B. barbastellus*, *P. pipistrellus* s.str.) are reported for the first time in Eastern Rhodopes. A zoogeographic and faunistic characteristic of the studied bat species was made.

Benda et al. (2003) summarized all known data concerning bat species in Bulgaria.

Relatively new data on bats in Bulgaria are summed up by Dutch Mammal Society (Buys & Ivanova, 2003; Van Der Wal et al., 2003).

For the **Greek territory of Eastern Rhodopes** were reported 20 bat species from 16 localities as follow: *Rh. ferrumequinum* (Hurka, 1972; Niethammer, 1974; Kock, 1974; Iliopoulou-Georgudaki, 1977, 1983; Iliopoulou-Georgudaki & Ondrias, 1986; Kryštufek, 1993; Adamacopoulos Et Al., 1995; Ivanova, 2000; Hanák Et Al., 2001); *Rh. hipposideros* (Kanelli & Hatzisarantou, 1963; Adamacopoulos Et Al., 1995; Ivanova, 2000; Hanák Et Al., 2001); *Rh. euryale* (Kock, 1974; Iliopoulou-Georgudaki, 1977, 1983; Crucitti, 1988; Ivanova, 2000); *Rh. mehelyi* (Hurka, 1972; Niethammer, 1974; Vohralík & Sofianidou, 1992; Ivanova, 2000; Hanák Et Al., 2001); *Rh. blasii* (Adamacopoulos et al., 1995; Hanák et al., 2001); *M. myotis* (Adamacopoulos Et Al., 1995; Ivanova, 2000; Hanák Et Al., 2001), *M. Blythii* (Hurka, 1972; Niethammer, 1974; Vohralík & Sofianidou, 1992; Spitzenberger, 1996; Ivanova, 2000; Hanák Et Al., 2001;); *M. emarginatus* (Iliopoulou -Georgudaki, 1977, 1983; Crucitti, 1988; Ivanova, 2000); *M. capaccinii*



(Hurka, 1972; Niethammer, 1974; Kock, 1974; Ivanova, 2000; Hanák et al., 2001); *M. mystacinus* s.l. (Hurka, 1972; Crucitti, 1988); *Nyctalus noctula* (Adamacopoulos Et Al., 1995; Ivanova, 2000; Hanák et al., 2001); *Nyctalus leisleri* (Ivanova, 2000); *Pipistrellus pipistrellus* s.l. (Kanelli & Hatzisarantou, 1963; Adamacopoulos et al., 1995; Ivanova, 2000); *Pipistrellus nathusii* (Adamacopoulos Et Al., 1995; Ivanova, 2000); *Pipistrellus kuhlii* (Adamacopoulos et al., 1995); *Hypsugo savii* (Ivanova, 2000), *Eptesicus serotinus* (Hanák et al., 2001); *Plecotus austriacus* s.l. (Iliopoulou-Georgudaki, 1983; Ivanova, 2000). (Spitzenberger et al., 2001); *Miniopterus schreibersii* (Hurka, 1972; Niethammer, 1974; Kock, 1974; Ivanova, 2000; Hanák et al., 2001) and *Tadarida teniotis* (Hanák et al., 2001).

About the so-called *bat caves* - information on the Cyclops Cave (Maronia) is provided by (Iliopoulou-Georgudaki, 1983) and about Koufovouno by (Niethammer, 1974).

A study of the chiropteroфаuna within Bulgarian territory started as part of Eastern Rhodopes Biodiversity Conservation Program in 1995, whereas for northern Greece, more extensive research was carried out in the period 1997-2000 (Ivanova, 2000). Hanák et al. (2001) presents many new species and a complete list of bats in Greece, but the bats in the province of Evros are not specifically researched, apart from the field studies of Ruedi & Uhrin (2003) in the summer of 2000.

**Western Rhodopes** (11220 km<sup>2</sup>) offer an exceptionally high variety of natural habitats and natural conditions. 30 of the 35 species of bats known in continental Europe inhabit this mountain. They are in 4 families (Petrov, Von Helversen, 2011) - **Rhinolophidae, 5 species; Vespertilionidae, 23 species; Miniopteridae, 1 species; Molossidae, 1 species.**

In **Bulgarian part** of the mountain (8732 km<sup>2</sup>) 27 species were found in the study area (with the exception of *Pipistrellus nathusii*, *Myotis alcathoe* and *Rhinolophus mehelyi*), and in **Greece** (2488 km<sup>2</sup>) – 28 bat species (with the exception of *Plecotus auritus* and *Myotis brandtii*). *Myotis mystacinus* and *Nyctalus leisleri* are reported for the first time for the Bulgarian part of Western Rhodopes. ***Rhinolophus***

*hipposideros*, *Rh. euryale*, *Rh. blasii*, *Plecotus austriacus*, *Nyctalus noctula*, *Pipistrellus pygmaeus* and *Barbastella barbastellus* are new to the Greek part of the mountain. The presence of *Myotis aurascens* needs confirmation by genetic data. Bats were found in 164 localities – 128 in Bulgaria (83 caves and mine galleries) and 36 in Greece (6 caves and mine galleries). 65% of the bat localities within Bulgaria come from underground roosts. While in Greece only 16% come from caves and galleries. As a whole, for the mountain, the most common species belong to cave-dwelling bats - *Rhinolophus hipposideros* (in 46% of the localities), *Rh. ferrumequinum* (33%), *Myotis myotis* (19%), *M. blythii* (18%) and *Miniopterus schreibersii* (16%).

Despite large areas covered with deciduous and mixed forests, forest-dwelling species such as *Myotis bechsteinii* (3.7% of the localities), *M. nattereri* (6.1%), *Barbastella barbastellus* (4.3%) and *Nyctalus spp.* (2.5-7.4%) are significantly less common in net catches. Altogether a higher species diversity and number of individuals were found in seven areas - Trigrad-Yagodina (19 species), Gorna Arda (13 species), Peshtera (12 species) and Dobrostan (10 species). In Greece – Komsatos valley between Medousa and Kotani, Arkoudorrema River near Dipotama and Taxotes-Galani with 12 species each. Five caves in Bulgaria – Dyavolskoto Garlo (Trigrad village), Gargina dupka (Mostovo village), Manuilovata peshtera (Ribnovo village) and Uhlovitsa (Mogilitsa village) are classified as Important Bat Underground Habitats according to the criteria of EUROBATS. The most important hibernaculum for wintering *Miniopterus schreibersii* is Dyavolskoto garlo cave, sheltering up to 40800 bats. There are grounds for believing that in this cave overwinter bats from summer colonies living in radius of 100-120 km. That include Bulgaria, North Greece and probably the eastern parts of Former Yugoslav Republic of Macedonia. Biometric measurements of 55 individuals belonging to 15 rare species, ringing and migration (recapture) data, and a map of all studied 89 caves and galleries are presented in **Annex № 1**.

Papadatou (2008) recorded and described 23 bat species from their echolocation calls in Greece, National Park of Dadia-Lefkimi-Soufli (*Rhinolophus ferrumequinum*, *R. Hipposideros*, *R. Euryale*, *R. mehelyi*, *R. blasii*, *Myotis capaccinii*, *M. daubentonii*, *M.*

*mystacinus bulgaricus\**, *M. emarginatus*, *M. bechsteinii*, *M. myotis*, *M. blythii*, *Nyctalus noctula*, *N. leisleri*, *Eptesicus serotinus*, *Pipistrellus pipistrellus*, *P. Pygmaeus*, *P. kuhlii*, *P. Nathusii*, *Hypsugo savii*, *Plecotus austriacus*, *Miniopterus schreibersii* and *Tadarida teniotis*) for the purposes of monitoring studies.

## 1.2 INFORMATION AVAILABLE IN MANAGEMENT PLANS OF PROTECTED AREAS PURSUANT TO PROTECTED AREAS ACT.

Popov et al. (2014) provide information about *Important areas for bat conservation in "Ali Botush" Reserve*. The predominant vegetation covering the reserve territory is relatively homogeneous. The vast of the territory is covered with old deciduous forests offering favorable conditions for most of the established bat species. They provide many refuges for facultative and obligatory forest-dwelling bats such as *B. barbastellus*, *M. bechsteinii*, *P. nathusii*, *N.leislerii*, *M. nattereri*, *M. mystacinus*, *M. brandtii*, *P. austriacus*, *P. auritus*, *N.noctula*, *P. pipistrellus*, *E. serotinus* and *V. murinus*. Important for bats are also the marble rocks, which are potential habitats for *H. savii*, *E. serotinus*, *P. pipistrellus* and others. The rock crevices could be breeding places for *R. hipposideros*. Often non-breeding male bats of the species *R. ferrumequinum*, *R. hipposideros*, *M.blythii*, *M. emarginatus*, *P. austriacus*, *P. auritus* use rocky crevices as roosts (Popov and Sedefchev 2003, Peshev et al. 2004). The rock crevices that offer potential refuges areas here are most often found on cliffs (over 40 degrees). It can be assumed that these areas, in combination with the predominant old deciduous forests, offer a variety of types of shelter for most bat species, maintain the greatest density of the populations within the reserve territory and are of particular natural interest.

Popov et al. (2014) provide data on *Important areas for bat conservation in "Orelyak" Reserve*. They provide many refuges for facultative and obligatory forest-dwelling bats such as *B. barbastellus*, *M. bechsteinii*, *P. nathusii*, *N.leislerii*, *M. nattereri*, *M. mystacinus*, *M. brandtii*, *P. austriacus*, *P. auritus*, *N.noctula*, *P. pipistrellus*, *E. serotinus* and *V. murinus*. Important for bats are also the marble rocks, which are potential habitats for *H. savii*, *E. serotinus*, *P. pipistrellus* and others. The

rock crevices could be breeding places for *R. hipposideros*. Often non-breeding male bats of the species *R. ferrumequinum*, *R. hipposideros*, *M. blythii*, *M. emarginatus*, *P. austriacus*, *P. auritus* use rocky crevices as roosts (Popov and Sedefchev 2003, Peshev et al. 2004). The rock crevices that offer potential refuges areas here are most often found on cliffs (over 40 degrees). It can be assumed that these areas, in combination with the predominant old deciduous forests, offer a variety of types of shelter for most bat species, maintain the greatest density of the populations within the reserve territory and are of particular natural interest.

### **1.3 INFORMATION AVAILABLE IN NATURA 2000 STANDARD DATA FORM FROM BULGARIA AND GREECE AND IN REPORTS ON THE PROJECT "MAPPING AND DETERMINING CONSERVATION STATUS OF NATURAL HABITATS AND SPECIES – PHASE I" – MOEW.**

For clarity and comparison of the data in Standard data forms and on mapping of the habitats and species, *project "Mapping and Determining Conservation Status of Natural Habitats and Species – Phase I" - MOEW* tables are prepared (**table 1 to 6**) for each of the Natura 2000 sites (BG0000167 Belasitsa, BG0000220 Dolna Mesta, BG0001023 Rupite-Strumeshnitsa, BG0001028 Sreden Pirin-Alibotush, BG0001030 Rodopi-Zapadni and BG0001032 Rodopi-Iztochni). The tables present information about the status of the bat species from the standard data forms and from the above-mentioned project. There are data about localities, potential and hunting habitats, as well as their percentage of the site territory. The project itself provides the most actual data on bat species in Bulgaria, the conservation status of the bats is determined and the potential and hunting habitats are mapped. It contains new data on the distribution of bat species (target species and others) from the territory of Natura 2000 sites and surrounding ones with similar landscape conditions (altitude, vegetation, predominant rock bases).

**Table 1** Bat species found in Natura 2000 site BG0000167 Belasitsa

№	Species	Standard Data Form		Project „Mapping and Determining the Nature Conservation Status of Natural Habitats and Species - Phase I“ (Lot 5 Bats)				
		Wintering individuals (min - max)	Number of individuals (min - max)	Total number of localities	Winter localities (Number of individuals)	Summer localities (number of individuals)	Potential habitats (ha) and % of Natura 2000 site	Potential hunting habitats (ha) and % of Natura 2000 site
1.	Greater Horseshoe Bat ( <i>Rhinolophus ferrumequinum</i> )	-	51-100	2	-	5	974.0 8.4	2276 19.6
2.	Long-fingered Bat ( <i>Myotis capaccinii</i> )	-	-	-	-	-	0.0 0.0	1384.99 16.1
3.	Bechstein's Bat ( <i>Myotis bechsteinii</i> )	-	51-100	-	-	-	1071 9.2	-
4.	Lesser Horseshoe Bat ( <i>Rhinolophus hipposideros</i> )	-	51-100	4	-	31	183.6 1.6	2302.6 19.9
5.	Blasius's Horseshoe Bat ( <i>Rhinolophus blasii</i> )	-	-	-	-	-	0.0 0.0	2916 25.2
6.	Geoffroy's Bat ( <i>Myotis emarginatus</i> )	-	51-100	2	-	2	1435.2 12.4	8406 72.5
7.	Western Barbastelle ( <i>Barbastella barbastellus</i> )	-	158-271	4	-	-	7878 67.98	-

#### Other significant species

- Serotine (*Eptesicus serotinus*)
- Savi's Pipistrelle (*Hypsugo savii*)
- Noctule (*Nyctalus noctula*)
- Common Pipistrelle (*Pipistrellus pipistrellus*)

**Table 2** Bat species found in Natura 2000 site BG0000220 Dolna Mesta

№	Species	Standard Data Form		Project „Mapping and Determining the Nature Conservation Status of Natural Habitats and Species - Phase I“ (Lot 5 Bats)				
		Wintering individuals (min - max)	Number of individuals (min - max)	Wintering individuals (min - max)	Number of individuals (min - max)	Wintering individuals (min - max)	Number of individuals (min - max)	Wintering individuals (min - max)
1.	Greater Mouse-eared Bat ( <i>Myotis myotis</i> )	-	11-50	-	-	-	54.8 0.6	7445 76.8
2.	Greater Horseshoe Bat ( <i>Rhinolophus ferrumequinum</i> )	-	51-100	1	-	1	196.9 2.0	1552 16
3.	Bechstein's Myotis ( <i>Myotis bechsteinii</i> )	-	11-50	2	-	-	831 8.6	-
4.	Lesser Horseshoe Bat ( <i>Rhinolophus hipposideros</i> )	-	51-100	2	-	3	120.7 1.3	1971.6 20.4
5.	Blasius's Horseshoe Bat ( <i>Rhinolophus blasii</i> )	-	11-50	1	-	1	51.4 0.5	4768 49.2
6.	Geoffroy's Bat ( <i>Myotis emarginatus</i> )	-	51-100	1	-	1	68.2 0.7	3756 38.8
7.	Western Barbastelle ( <i>Barbastella barbastellus</i> )	-	39-75	-	-	-	1809 18.68	-
8.	Mediterranean Horseshoe Bat ( <i>Rhinolophus euryale</i> )	-	51-100	1	-	50	79 0.8	1181 12.2

#### Other significant species

- Serotine (*Eptesicus serotinus*)
- Noctule (*Nyctalus noctula*)
- Common Pipistrelle (*Pipistrellus pipistrellus*)

Within this Natura 2000 site in **Stapalkite cave** has been found **Mediterranean Horseshoe Bat (*Rhinolophus euryale*)** – 50 individuals (according to literature). Popov et al. (2014) describe **Brown Big-eared Bat (*Plecotus auritus*)**, **Gray Big-eared Bat (*Plecotus austriacus*)**, **Greater Horseshoe Bat (*Rhinolophus ferrumequinum*)** and **Lesser Horseshoe Bat (*Rhinolophus hipposideros*)** in the region of villages Petrelik, Teplen and Beslen.

**Table 3** Bat species found in Natura 2000 site BG0001023 Rupite - Strumeshnitsa

№	Species	Standard Data Form		Project „Mapping and Determining the Nature Conservation Status of Natural Habitats and Species - Phase I“ (Lot 5 Bats)				
		Wintering individuals (min - max)	Number of individuals (min - max)	Wintering individuals (min - max)	Number of individuals (min - max)	Wintering individuals (min - max)	Number of individuals (min - max)	Wintering individuals (min - max)
1.	Greater Mouse-eared Bat ( <i>Myotis myotis</i> )	-	11-50	-	-	-	327.6 3.1	8235 78.7
2.	Greater Horseshoe Bat ( <i>Rhinolophus ferrumequinum</i> )	-	50-100	5	-	13	82.5 0.8	1199 11.5
3.	Schreiber's Bent-winged Bat ( <i>Miniopterus schreibersii</i> )	-	-	-	-	-	1.5 0.0	4705 45
4.	Long-fingered Bat ( <i>Myotis capaccinii</i> )	-	-	-	-	-	9 0.1	4705 45.0
5.	Bechstein's Myotis ( <i>Myotis bechsteinii</i> )	-	11-50	-	-	-	357 3.4	-
6.	Lesser Horseshoe Bat ( <i>Rhinolophus hipposideros</i> )	-	50-100	4	-	26	27.9 0.3	1811.4 17.3
7.	Lesser Mouse-eared Myotis ( <i>Myotis blythii</i> )	-	11-50	2	-	2	386.6 3.7	8235 78.7

8.	Blasius's Horseshoe Bat ( <i>Rhinolophus blasii</i> )	-	-	-	-	-	0.0 0.0	2949 28.2
9.	Geoffroy's Bat ( <i>Myotis emarginatus</i> )	-	-	-	-	-	210.5 2.0	1463 14.0
10.	Western Barbastelle ( <i>Barbastella barbastellus</i> )	-	11-50	1	-	-	583 5.57	-
11.	Mediterranean Horseshoe Bat ( <i>Rhinolophus euryale</i> )	-	-	-	-	-	4.3 0.0	599 5.7

### Other significant species

- Serotine (*Eptesicus serotinus*)
- Savi's Pipistrelle (*Hypsugo savii*)
- Daubenton's Myotis (*Myotis daubentonii*)
- Lesser Noctule (*Nyctalus leisleri*)
- Noctule (*Nyctalus noctula*)
- Nathusius' Pipistrelle (*Pipistrellus nathusii*)
- Common Pipistrelle (*Pipistrellus pipistrellus*)
- European Free-tailed Bat (*Tadarida teniotis*)



**Table 4. Bat species found in Natura 2000 site BG0001028 Sreden Pirin - Alubotush**

№	Species	Standard Data Form		Project „Mapping and Determining the Nature Conservation Status of Natural Habitats and Species - Phase I“ (Lot 5 Bats)				
		Wintering individuals (min - max)	Number of individuals (min - max)	Wintering individuals (min - max)	Number of individuals (min - max)	Wintering individuals (min - max)	Number of individuals (min - max)	Wintering individuals (min - max)
1.	Greater Mouse-eared Bat ( <i>Myotis myotis</i> )	-	11-50	4	-	4	1272.6 1.9	47980 69.6
2.	Greater Horseshoe Bat ( <i>Rhinolophus ferrumequinum</i> )	-	51-100	14	4	16	2709.5 3.9	10177 14.8
3.	Schreiber's Bent-winged Bat ( <i>Miniopterus schreibersii</i> )	-	101-250	1	-	1	649.6 0.9	15125 21.9
4.	Long-fingered Bat ( <i>Myotis capaccinii</i> )	-	-	-	-	-	157.4 0.2	10194 14.8
5.	Bechstein's Myotis ( <i>Myotis bechsteinii</i> )	-	250-500	-	-	-	9746 14.1	-
6.	Lesser Horseshoe Bat ( <i>Rhinolophus hipposideros</i> )	-	251-500	23	1	407	2663.7 3.9	11439 16.6
7.	Lesser Mouse-eared Myotis ( <i>Myotis blythii</i> )	-	11-50	1	-	1	704.7 1.0	47980 69.6
8.	Mehely's Horseshoe Bat ( <i>Rhinolophus mehelyi</i> )	-	-	-	-	-	228.3 0.3	4985 7.2
9.	Blasius's Horseshoe Bat ( <i>Rhinolophus blasii</i> )	-	-	-	-	-	352.0 0.5	21047 30.5
10.	Geoffroy's Bat ( <i>Myotis emarginatus</i> )	-	11-50	3	-	3	1043.3 1.5	31926 46.3
11.	Western Barbastelle ( <i>Barbastella barbastellus</i> )	-	426-795	6	-	-	18958 27.50	-
12.	Mediterranean Horseshoe Bat ( <i>Rhinolophus euryale</i> )	-	11-50	1	-	4	1082.7 1.6	7808 11.3

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### **Other significant species**

- Serotine (*Eptesicus serotinus*)
- Savi's Pipistrelle (*Hypsugo savii*)
- Whiskered Myotis (*Myotis mystacinus*)
- Natterer's Bat (*Myotis nattereri*)
- Lesser Noctule (*Nyctalus leisleri*)
- Noctule (*Nyctalus noctula*)
- Nathusius' Pipistrelle (*Pipistrellus nathusii*)
- Common Pipistrelle (*Pipistrellus pipistrellus*)

Popov et al. (2014) researched the region of the villages **Kornitsa (gap Osman blato), Breznitsa, Musomishta (Karierata № 2173 cave), Ilinden, resort Popovi livadi** and established **Noctule (*Nyctalus noctula*), Lesser Horseshoe Bat (*Rhinolophus hipposideros*) and Gray Big-eared Bat (*Plecotus austriacus*)**.

**Table 5.** Bat species found in Natura 2000 site BG0001030 Rodopi-Zapadni

№	Species	Standard Data Form		Project „Mapping and Determining the Nature Conservation Status of Natural Habitats and Species - Phase I“ (Lot 5 Bats)				
		Wintering individuals (min - max)	Number of individuals (min - max)	Wintering individuals (min - max)	Number of individuals (min - max)	Wintering individuals (min - max)	Number of individuals (min - max)	Wintering individuals (min - max)
1.	Greater Mouse-eared Bat ( <i>Myotis myotis</i> )	-	101-250	19	50	33	4231.8 1.6	56161 20.6
2.	Greater Horseshoe Bat ( <i>Rhinolophus ferrumequinum</i> )	-	501-1000	24	559	49	5023.4 1.8	9433 3.5
3.	Schreiber's Bent-winged Bat ( <i>Miniopterus schreibersii</i> )	25000 - 35000	2500-3500	7	3287 8	2662	4015 1.5	41171 15.1
4.	Long-fingered Bat ( <i>Myotis capaccinii</i> )	-	501-1000	4	20	50	803 0.3	7973 2.9
5.	Bechstein's Myotis ( <i>Myotis bechsteinii</i> )	-	590-1182	9	-	-	27684 10.1	-
6.	Lesser Horseshoe Bat ( <i>Rhinolophus hipposideros</i> )	-	251-500	36	217	69	5717.8 2.1	12295.9 4.5
7.	Lesser Mouse-eared Myotis ( <i>Myotis blythii</i> )	-	101-250	24	50	30	1201.5 0.6	181362 83.4
8.	Mehely's Horseshoe Bat ( <i>Rhinolophus mehelyi</i> )	-	-	-	-	-	66.4 0.0	535 0.2
9.	Blasius's Horseshoe Bat ( <i>Rhinolophus blasii</i> )	-	101-250	-	-	-	929.7 0.3	9314 3.4
10.	Geoffroy's Bat ( <i>Myotis emarginatus</i> )	-	101-250	13	12	117	5133.5 1.9	28405 10.4

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11.	Western Barbastelle ( <i>Barbastella barbastellus</i> )	-	1140-2183	9	-	-	52219 19.14	-
12.	Mediterranean Horseshoe Bat ( <i>Rhinolophus euryale</i> )	-	101-250	3	5	16	1001.2 0.4	7816 2.9

Within this Natura 2000 site in **Kambankite cave** (№0585) has been found **Bechstein's Myotis (*Myotis bechsteinii*)**, while **Western Barbastelle (*Barbastella barbastellus*)** has been found in several caves – „Peshtera BFS №3669“, „Peshterata s dvata prozoretsa №277“, „Peshterata na strelite №3655“, „Byalo Kamene nova“ and others.

#### Other significant species

No data from the standard form is available.

**Table 6** Bat species found in Natura 2000 site 33 BG0001032 Rodopi-Iztochni

№	Species	Standard Data Form		Project „Mapping and Determining the Nature Conservation Status of Natural Habitats and Species - Phase I“ (Lot 5 Bats)				
		Wintering individuals (min - max)	Number of individuals (min - max)	Wintering individuals (min - max)	Number of individuals (min - max)	Wintering individuals (min - max)	Number of individuals (min - max)	Wintering individuals (min - max)
1.	Greater Mouse-eared Bat ( <i>Myotis myotis</i> )	51-100	3500-5000	10	68	400 0	911.9 0.4	181362 83.4
2.	Greater Horseshoe Bat ( <i>Rhinolophus ferrumequinum</i> )		2000-3000	35	161	248 1	5123.5 2.4	40156 18.5
3.	Schreiber's Bent-winged Bat ( <i>Miniopterus schreibersii</i> )	250-500	2000-3500	10	380	290 7	965.9 0.4	65831 30.3

4.	Long-fingered Bat ( <i>Myotis capaccinii</i> )	11-50	2000-3500	7	10	3000	2325.8 1.1	65606 30.2
5.	Bechstein's Myotis ( <i>Myotis bechsteinii</i> )	-	973-1947	4	-	-	45586 21.0	-
6.	Lesser Horseshoe Bat ( <i>Rhinolophus hipposideros</i> )	-	250-500	15	27	115	2013.2 0.9	46062 21.2
7.	Lesser Mouse-eared Myotis ( <i>Myotis blythii</i> )	-	3000-4500	11	64	4000	1201.5 0.6	181362 83.4
8.	Mehely's Horseshoe Bat ( <i>Rhinolophus mehelyi</i> )	-	250-500	1	-	4	6150.2 2.8	39742 18.3
9.	Blasius's Horseshoe Bat ( <i>Rhinolophus blasii</i> )	1000-1500	800-1200	9	1200	850	6019.3 2.8	128421 59.1
10.	Geoffroy's Bat ( <i>Myotis emarginatus</i> )	-	6000-10000	3	1	6746	2400.8 1.1	122389 56.3
11.	Western Barbastelle ( <i>Barbastella barbastellus</i> )	-	725-1146	1	-	-	36270 16.7	-
12.	Mediterranean Horseshoe Bat ( <i>Rhinolophus euryale</i> )	101-250	500-1000	6	190	721	1825.2 0.8	35099 16.1

In this Natura 2000 site **Bechstein's Myotis (*Myotis bechsteinii*)** is reported in frontier post near Mandritsa village, niche close to Mechina dupka and Western Barbastelle (*Barbastella barbastellus*) (according to literature).

#### Other significant species

No data from the standard form is available.

Comparison of target and other bat species is made in **Table 7** for each of the Natura 2000 sites on the territory of Bulgaria in the study area. Most of the species have habitats in **BG0001021 "Reka Mesta" and BG0001028 „Sreden Pirin Alibotush"** (19 species) and least species in **BG0000167 „Belasitsa"** (9 species).

**Table 7** Species and their conservation status in Natura 2000 sites on the territory of Bulgaria in the study area

No	Species	BG0000167 „Belasitsa”	BG0000220 „Dolna Mesta”	BG0001021 “Reka Mesta”	BG0001023 „Rupite Strumeshnitsa”	BG0001028 „Sreden Pirin Alibotush”	BG0001030 „Rodopi - Zapdni”	BG0001032 „Rodopi - Iztochni”
1.	Greater Mouse-eared Bat ( <i>Myotis myotis</i> )		P	R	R	R	R	C
2.	Greater Horseshoe Bat ( <i>Rhinolophus ferrumequinum</i> )	R	C	C	C	R	C	C
3.	Schreiber’s Bent-winged Bat ( <i>Miniopterus schreibersii</i> )			C	V	R	C	C
4.	Long-fingered Bat ( <i>Myotis capaccinii</i> )			R	P	V	R	R
5.	Bechstein’s Myotis ( <i>Myotis bechsteini</i> )	V	R	V	V	R	R	R
6.	Lesser Horseshoe Bat ( <i>Rhinolophus hipposideros</i> )	R	C	C	C	C	C	C
7.	Lesser Mouse-eared Myotis ( <i>Myotis blythii</i> )			R	R	R	R	C
8.	Mehely’s Horseshoe Bat ( <i>Rhinolophus mehelyi</i> )						V	R
9.	Blasius’s Horseshoe Bat ( <i>Rhinolophus blasii</i> )		R	V		V	R	R
10.	Geoffroy’s Bat ( <i>Myotis emarginatus</i> )	P	R	V	V	V	R	R
11.	Western Barbastelle ( <i>Barbastella barbastellus</i> )	R	R	R	V	R	C	V
12.	Mediterranean Horseshoe Bat ( <i>Rhinolophus euryale</i> )		R		P	R	R	C
13.	Serotine ( <i>Eptesicus serotinus</i> )	C	C	C	C	C		
14.	Savi’s Pipistrelle ( <i>Hypsugo savii</i> )	C		C	C	C		
15.	Daubenton’s Myotis ( <i>Myotis daubentonii</i> )			C	C			
16.	Steppe Whiskered Bar ( <i>Myotis mystacinus</i> )					C		

17.	Natterer's Bat ( <i>Myotis nattereri</i> )			C		C		
18.	Lesser Noctule ( <i>Nyctalus leisleri</i> )			C	C	C		
19.	Noctule ( <i>Nyctalus noctula</i> )	C	C	C	C	C		
20.	Nathusius' Pipistrelle ( <i>Pipistrellus nathusii</i> )			C	C	C		
21.	Common Pipistrelle ( <i>Pipistrellus pipistrellus</i> )	C	C	C	C	C		
22.	Common Pipistrelle ( <i>Pipistrellus pygmaeus</i> )			C				
23.	European Free-tailed Bat ( <i>Tadarida teniotis</i> )				C			
Total number of species		<b>9</b>	<b>11</b>	<b>19</b>	<b>18</b>	<b>19</b>	<b>12</b>	<b>12</b>

Legend: C – common; R – rare; V – very rare; P – presented

The information available in Natura 2000 Standard data form in Greece can be summarized as follow:

One Natura 2000 site is within the territory of Eastern Thrace - Komotini area - **GR1130009 Limnes Kai Limnothalasses Tis Thrakis - Evryteri Periochi Kai Paraktia** and three sites are within the Mesta basin - **GR14004 Koryfes Orous Falakro** (This is Bozdag mountain (Falakro Oros), which is lodged as study area), **GR1140002 Rodopi (Simyda)** and **GR1140003 Periochi Elatia, Pyramis Koutra**.

Comparison of target and other bat species is made in **Table 8** for each of the Natura 2000 sites in the study area. Most of the species have potential habitats in **GR1140003 Periochi Elatia, Pyramis Koutra** (10 species) and least species in **GR140004 Koryfes Orous Falakro** (4 species).

**Table 8** Number of species and their conservation status in Natura 2000 sites in Greece in the study area

No	Species	GR1140002 Rodopi (Simyda)	GR1140003 Periochi Elatia, Pyramis Koutra	GR140004 Koryfes Orous Falakro	GR1130009 Limnes Kai Limnothalasses Tis Thrakis - Evryteri Periochi Kai Paraktia
1.	Greater Mouse-eared Bat ( <i>Myotis myotis</i> )			P	
2.	Greater Horseshoe Bat ( <i>Rhinolophus ferrumequinum</i> )				R
3.	Schreiber's Bent-winged Bat ( <i>Miniopterus schreibersii</i> )	P			R
4.	Long-fingered Bat ( <i>Myotis capaccinii</i> )				
5.	Bechstein's Myotis ( <i>Myotis bechsteinii</i> )		P		
6.	Blasius's Horseshoe Bat ( <i>Rhinolophus blasii</i> )				R
7.	Geoffroy's Bat ( <i>Myotis emarginatus</i> )	P	P		
8.	Western Barbastelle ( <i>Barbastella barbastellus</i> )	P			
9.	Mediterranean Horseshoe Bat ( <i>Rhinolophus euryale</i> )		R		
10.	Serotine ( <i>Eptesicus serotinus</i> )			P	P
11.	Savi's Pipistrelle ( <i>Hypsugo savii</i> )			P	P
12.	Steppe Whiskered Bar ( <i>Myotis aurascens</i> )	P			P
13.	Giant Noctule ( <i>Nyctalus lasiopterus</i> )		R		V, P
14.	Lesser Noctule ( <i>Nyctalus leisleri</i> )		R		P
15.	Noctule ( <i>Nyctalus noctula</i> )	P	P		P
16.	Kuhl's Pipistrelle ( <i>Pipistrellus kuhlii</i> )				P
17.	Nathusius' Pipistrelle ( <i>Pipistrellus nathusii</i> )		P		P
18.	Common Pipistrelle ( <i>Pipistrellus pipistrellus</i> )		P	P	P
19.	Common Pipistrelle ( <i>Pipistrellus pygmaeus</i> )		P		
20.	Brown Big-eared Bat ( <i>Plecotus auritus</i> )			P	
21.	European Free-tailed Bat ( <i>Tadarida teniotis</i> )	R			P
22.	Particoloured Bat ( <i>Vespertilio murinus</i> )	P	R		V, P
<b>Total number of species</b>		<b>7</b>	<b>10</b>	<b>4</b>	<b>14</b>



Legend: C – common; R – rare; V – very rare; P – presented

#### 1.4 INFORMATION AVAILABLE IN MONITORING STUDIES

According to the National System for Biodiversity Monitoring (Ministry of Environment and Water – Executive Environment Agency) in Rhodopes mountain area subject of annual monitoring are the bat colonies in Dyvolkskoto garlo cave (the largest wintering colony with *Miniopterus schreibersii*), Gargina dupka (large wintering and breeding colonies of several thousand specimens *Miniopterus schreibersii* and *Myotis capaccinii*), Ivanova voda (large wintering colonies *Myotis blythii/myotis* and *Myotis capaccinii* with number of individuals reaching up to 15,000 bats), Karangin (breeding colonies *Myotis blythii/myotis*, *Myotis capaccinii* and *Miniopterus schreibersii*), Yarsa-ini (*Myotis blythii/myotis*, *Myotis capaccinii* and *Miniopterus schreibersii* and not very large number of Horseshoe bats), Manuilovata peshtera cave (wintering and breeding colonies of Horseshoe bats and *Miniopterus schreibersii*, a few hundred to several thousand bats) and Samara and Ayna-ini (large breeding colonies Horseshoe bats).

During a two-year monitoring survey (Pandurski 2005–2006) on the species composition and distribution of bats on the territory of Bulgaria in the Eastern Rhodopes, 16 species were identified. Besides direct observations of bats in underground habitats (caves and artificial galleries), the basic method of the field study was the registration and analysis of the bat's ultrasounds (echolocation calls).

The widest richness of species (14 species) is recorded in the area of the town of Madzharovo and its surroundings – Kovan kaya, Gaberovoto dere and others. Here was established numerous breeding colony of Greater Horseshoe Bat (*Rhinolophus ferrumequinum*) and Geoffroy's Bat (*Myotis emarginatus*), reaching thousands of specimens and occupying the mine „Kapitan Petko”. A new locality of the exceptionally rare for Bulgaria European Free-tailed Bat (*Tadarida teniotis*) was established in the region of Dolna kula village. Daubenton's Myotis (*Myotis daubentonii*) is recorded with great numbers of bats. This species shows extremely high hunting activity above the

water of the Arda and Byala River. Common species here are Savi's Pipistrelle (*Hypsugo savii*), Schreiber's Bent-winged Bat (*Miniopterus schreibersii*), Common and Soprano Pipistrelle (*Pipistrellus pipistrellus* and *Pipistrellus pygmaeus*), which inhabit mostly rocky terrains and available underground habitats. Common are also some forest-dwelling species such as Noctule and Lesser noctule (*Nyctalus noctula* and *Nyctalus leisleri*).

#### 1.5 INFORMATION AVAILABLE FROM ANOTHER SOURCES (REPORTS, PERSONAL DATA ETC.)

On 8.10.1988 г and 21.10. 1989 г. in **Manuilovata peshtera cave, Ribnovo village** Beshkov et al. (1989) describe an active colony of Schreiber's Bent-winged Bat (*Miniopterus schreibersii*) with over 1000 bats.

Within the monitoring in the area of wind farm „**Kachulka**”, covering the period of spring migrations (29-31.03.2008; 20-23.04.2008), breeding season (23-26.05.2008; 24-26.06.2008) and the period of displacement and autumn migrations (3-4.08.2008; 16-17.09.2008) Pandurski (2008) with the use of ultrasound detection, established a total of 9 bat species for the entire monitoring period in the area directly affected by the Investment Proposal or directly bordering on it, potentially affected:

- **Mouse-eared bats (*Myotis sp.*):** Due to the specificity of the used method, the exact species belonging can not be determined. The individuals are average sized Mouse-eared bats, with echolocation calls about 45 KHz.
- **Common Pipistrelle (*Pipistrellus pipistrellus*):** In Eastern Rhodopes area is active from early spring to late autumn until the beginning of December, if there are appropriate meteorological conditions. In the region of the military field was registered at the end of April extremely high social activity of a group male bats near the abandoned military buildings.
- **Nathusius' Pipistrelle/Kuhl's Pipistrelle (*Pipistrellus nathusii/khulii*):** The specificity of ultrasound method in some cases does not allow a clear distinction between the two species, which is why we assume that they are both likely to be present. **Nathusius' Pipistrelle** is a migrating species over long distances and its presence here in the spring months is probably associated with such migration.

- **Kuhl's Pipistrelle (*Pipistrellus khulii*):** The bats identified by the analysis of social calls belong to a local population, inhabiting the sunny cliffs and valleys directly bordering the territory of the Investment Proposal.
- **Savi's Pipistrelle (*Hypsugo savii*):** The species is strongly attached to rocky terrains, mostly karst. The surrounding of the territory of the Investment Proposal provide very good conditions for its existence here. Within a few kilometers there are numerous rocky slopes, rock crevices and caves.
- **Serotine (*Eptesicus serotinus*):** We believe that registered individuals belong to the local population, inhabiting the rocky slopes, crevices and caves very close to the Investment Proposal territory.
- **Lesser Noctule (*Nyctalus leisleri*):** Mainly forest-dwelling species, which occurs almost all over the country. In the Investment Proposal area occurs only during 24-hour nutritional migration.
- **Long-eared bats (*Plecotus sp.*):** As some of the *Myotis* species, the precise species determination of registered individuals is not possible. Both Long-eared bats species in the territory of Bulgaria are attached to rocky terrains or forests.
- **Schreiber's Bent-winged Bat (*Miniopterus schreibersii*):** In the area of the investment proposal, no winter and day-long shelters have been established, and its presence here is related to nutritional daily migrations.

Pandourski (2009) conducted point surveys at two points on the land of the **village of Manchevo near Momchilgrad**: point 1. at an altitude of 653 m and coordinates 41°32'18.91" and 25°26'24.06", next to the Muslim cemetery and at the lower part at an altitude of 443 m and coordinates 41°32'27.02" and 25°25'16.72" and has established three types of bats: Common Pipistrelle (*Pipistrellus pipistrellus*), Kuhl's Pipistrelle (*Pipistrellus kuhlii*) and Geoffroy's Bat (*Myotis emarginatus*).

In shallow underground galleries of the old Thracian mine shaft in the area of **Ada tepe, Krumovgrad**, Pandourski (personal data) has established a small group (8 - 10 individuals) of Greater Horseshoe Bat (*Rhinolophus ferrumequinum*) (**picture 1**).



**Picture 1** Thracian mine, inhabited by Greater Horseshoe Bat (*Rh. ferrumequinum*)

According to Pandurski, 2011 (unpublished) through detector observations, detects high activity in Common Pipistrelle (*Pipistrellus pipistrellus*) in area of **Makaza** (near to frontier post).

During the period 2003 - 2012, Pandourski (2014) registered with the help of an ultrasonic detector one of the rare for the region of Eastern Rhodopes species of bats *Tadarida teniotis*.

In cave near the sanctuary **Harman Kaya, Bivoljane village** Boyan Petrov (unpublished) reported a few Mediterranean Horseshoe Bats (*Rhinolophus euryale*).

In the autumn of 2011 and the spring of 2012, Pandurski (unpublished data) conducted a field study on the bat species community affected by the industrial landfill project on the territory of Kardzhali, as well as in surrounding areas with known bat localities. Two underground bat habitats are localized:

- "**Karangil**" cave, located in the village of Shiroko pole area (41.631728° N 25.457121° E) and 3.1 km east of the landfill. In the past the cave was an important underground habitat of bats, but but due to the frequent visits of humans, nowadays the underground bat colonies are banished. No bat was found during the field study.

- **Ancient underground mines** near the village of Stremtsi (41.711219°N и 25.403065°E) (image 2 a and b), standing 7.42 km north of the landfill. Due to the frequent visit of tourists, the number of bats in recent years decreased significantly. During the field study in May and June 2012, only 12 individuals of the species Mediterranean Horseshoe Bat (*Rhinolophus euryale*) were identified and only one Greater Mouse-eared Bat (*Myotis myotis*).



a



b

**Picture 2 a** – Underground bat habitats: ancient mines near Stremtsi village (left) and b – Karangil cave (right)

The results of the study with ultrasound detector in the affected area show that here predominant species, with highest flying activity is the Common Pipistrelle (*Pipistrellus pipistrellus*).

The analysis of the results from the field survey, as well as the detailed reference to the available literature give grounds to believe that 7 bat species are presented in the territory for the landfill and the service roads and they use this area only temporarily as part of their hunting habitat. According to the results and analyzes of the project “Mapping and Determining Conservation Status of Natural Habitats and Species – Phase I” the potential or hunting habitats of bat species protected in the national Natura 2000

network are not part of the affected area from the realization of the investment proposal.

### 1.6 AVAILABLE SPATIAL DATA FOR BATS IN THE PROJECT TERRITORY

Spatial data and maps to the Report are presented in **Annex 2 - Database**.

The database is in a format ESRI File Geodatabase (\*.gdb). All spatial data contained in it are in a coordinate system WGS84 UTM 35N. The shape of the base and the coordinate system meet the requirements of the Assignor's technical assignment and the technical proposal of the Contractor.

#### The database contains:

1. Spatial data Product of the project "Mapping and Determination of the Conservation Status of Natural Habitats and Species - Phase I" for the species of bats and their habitats falling within the following protected Natura 2000 sites for protection of wild flora and fauna on the territory of Bulgaria: BG0000220 „Dolna Mesta“, BG0001021 „Reka Mesta“, BG0001028 „Sreden Pirin - Alibotush“, BG0001030 „Rodopi - Zapadni“ and BG0001032 „Rodopi - Iztochni“, falling within the territorial scope of the project;

2. Spatial data on the boundaries of protected natura 2000 sites in the territories of Bulgaria and Greece falling within the territorial scope of the project:

Natura 2000 site code	Natura 2000 site name	Country	Natura 2000 site type
BG0002013	Studen kladenets	BG	A
BG0002076	Mesta	BG	A
BG0002078	Slavyanka	BG	A
BG0001021	Reka Mesta	BG	B
BG0001030	Rodopi - Zapadni	BG	B
BG0001028	Sreden Pirin - Alibotush	BG	B
BG0001032	Rodopi - Iztochni	BG	B
BG0002012	Krumovitsa	BG	A
BG0000220	Dolna Mesta	BG	B
GR1110013	-	GR	
GR1130008	MARONEIA - SPILAION	GR	B
GR1140004	KORYFES OROUS FALAKRO	GR	B
GR1140009	OROS FALAKRO	GR	A

GR1140008	KENTRIKI RODOPI KAI KOILADA NESTOU	GR	A
GR1130009	LIMNES KAI LIMNOTHALASSES TIS THRAKIS - EVRYTERI PERIOCHI KAI PARAKTIA ZONI	GR	B
GR1130010	LIMNES VISTONIS, ISMARIS - LIMNOTHALASSES PORTO LAGOS, ALYKI PTELEA, XIROLIMNI, KARATZA	GR	A

3. Spatial data for the boundaries of departments and subdivisions for the following forest holdings on the territory of Bulgaria: Garmen, Gotse Delchev, Dikchan, Dobrinishte, Krumovgrad, Momchilgrad and Kirkovo. Data on the aforementioned holdings is publicly available on the Executive Forest Agency's website (<http://www.procurement.iag.bg:8080/cgi-bin/lup.cgi>);

4. Spatial Data from the Corine Terrestrial Coverage Project 2012 for the parts of the territories of Bulgaria and Greece in which the project activities will be realized. Project data is publicly available on the program Copernicus page (<https://land.copernicus.eu/pan-european/corine-land-cover/clc-2012>);

5. Point data - Coordinates of known bat species provided by Key Experts Bats on the project resulting from previous studies conducted on the territory of Bulgaria;

6. The defined territorial range (spatial limits) of the work, according to the criteria set by the Assignor, the requirements of the Technical Specification and the Technical Proposal of the Contractor;

7. Others.

## **2. HUMAN RESOURCES - MANAGEMENT TEAM AND STAFF FOR IMPLEMENTING ACTIVITY 1 AND OBLIGATIONS OF EXECUTERS RESPONSIBLE FOR IMPLEMENTATION**

For the implementation of Activity 1: „Analysis and systematization of available bat data in the project territory“, the following human resource was used - a management team and staff and duties of the experts responsible for its implementation:

### **1. Key Expert "Team Leader" and her duties to implement Activity 1:**

- ✓ Manages the overall performance of the activity.
- ✓ Distributes the responsibilities and tasks within the team.
- ✓ Accepts the work of the experts.
- ✓ Represents the contact person with the Assignor.
- ✓ Recognizes the performance of the activity before the Assignor.
- ✓ Accepts from the key experts proposals for territorial scope of work and coordinates it with the Assignor.
- ✓ Leads correspondence with competent authorities and institutions to provide the necessary data and information.
- ✓ Ensure the authenticity and applicability of the data and information gathered according to the proposed Methodology for Assessing the Authenticity of Available Information.
- ✓ Guarantees the quality of the results achieved.
- ✓ Follows on the implementation schedule.
- ✓ Applies Quality Assurance System.
- ✓ Others.

### **2. Key experts „Bats“ and their obligations to implement Activity 1:**

- ✓ Perform their duties in accordance with the assigned tasks and responsibilities of the Team Leader.



- ✓ Apply a Quality Assurance System.
- ✓ Participate actively in defining the territorial scope of work and agree with the Team Leader.
- ✓ Offer sources of information and data.
- ✓ Apply Methodology to assess the reliability of available information.
- ✓ Participate in the systematization and processing of collected data on species diversity, land cover, bat species, land use, protected Natura 2000 sites and protected areas, orthophoto or satellite imagery, data on water, soil, geological base, etc., according to their competence.
- ✓ Cooperate actively with each other as well as with all team members and provide the necessary assistance in case of expert opinion of key experts "Bats".
- ✓ Responsible for the preparation of a Report containing an analysis of available data (including spatial data) on bat species in the project territory, incl. applications.
- ✓ Follow the schedule for the implementation of the activity.
- ✓ If necessary, perform field verification.
- ✓ Participate in control validation of terrain data (in the case of verification).
- ✓ Others.

### **3. Key Expert "Environment" and her obligations to implement Activity**

#### **1:**

- ✓ Performs its duties in accordance with the assigned tasks and responsibilities of the Team Leader.
- ✓ If necessary, it helps to determine the territorial scope of work.
- ✓ Offers sources of information and data.
- ✓ Applies a methodology for assessing the reliability of the available information.
- ✓ Participates in the systematization and processing of collected data on species diversity, land cover, habitats of bat species, land use, protected Natura 2000 sites and protected areas, orthophoto or satellite imagery, data on water, soil, geological base, etc., according to its competence.

- ✓ Cooperates actively with all members of the team and provides the necessary assistance in case of expert opinion of key expert "Environment".
- ✓ If necessary, assist in the preparation of a Report containing an analysis of available data (including spatial data) on bat species in the project territory, incl. applications.
- ✓ Maintains the schedule for the implementation of the activity.
- ✓ If necessary, perform field verification.
- ✓ Others.

#### **4. Key Expert „Forestry“ and his duties to implement Action 1:**

- ✓ Performs its duties in accordance with the assigned tasks and responsibilities of the Team Leader.
- ✓ If necessary, it helps to determine the territorial scope of work.
- ✓ Offers sources of information and data.
- ✓ Applies a methodology for assessing the reliability of the available information.
- ✓ Participates in the systematization and processing of collected data on species diversity, land cover, habitats of bat species, land use, protected Natura 2000 sites and protected areas, orthophoto or satellite imagery, data on water, soil, geological base, etc., according to its competence.
- ✓ Cooperates actively with all members of the team and provides the necessary assistance in case of expert opinion of key expert "Forestry".
- ✓ If necessary, assist in the preparation of a Report containing an analysis of available data (including spatial data) on bat species in the project territory, incl. applications.
- ✓ Maintains the schedule for the implementation of the activity.
- ✓ If necessary, perform field verification.
- ✓ Others.

#### **5. Key Expert "Habitats" and her obligations to implement Activity 1:**

- ✓ Performs its duties in accordance with the assigned tasks and responsibilities of the Team Leader.

- ✓ Participates actively in defining the territorial scope of work.
- ✓ Offers sources of information and data.
- ✓ Applies a methodology for assessing the reliability of the available information.
- ✓ Participates in the systematization and processing of collected data on species diversity, land cover, habitats of bat species, land use, protected Natura 2000 sites and protected areas, orthophoto or satellite imagery, data on water, soil, geological base, etc., according to its competence.
- ✓ Cooperates actively with all members of the team and provides the necessary assistance in case of expert opinion of key expert "Habitats".
- ✓ If necessary, assist in the preparation of a Report containing an analysis of available data (including spatial data) on bat species in the project territory, incl. applications.
- ✓ Maintains the schedule for the implementation of the activity.
- ✓ If necessary, perform field verification.
- ✓ Others.

## **6. Key experts „GIS and Database“ and their obligations to implement**

### **Activity 1:**

- ✓ Perform their duties in accordance with the assigned tasks and responsibilities of the Team Leader.
- ✓ Support the definition of territorial scope and apply their competencies.
- ✓ Support the processing of collected data on species diversity, land cover, habitats of bat species, land use, protected Natura 2000 sites and protected areas, orthophoto or satellite imagery, data on water, soil, geological base, etc., according to their competence.
- ✓ Responsible for the layout of spatial data and maps according to the Assignor's Technical Specifications, this proposal and applicable standards for mapping species and habitats and their compatibility with the information system of the national authorities responsible for biodiversity conservation in the two countries.

- ✓ Cooperate actively, both with each other and with all team members, and provide the necessary assistance in case of expert opinion of the "GIS and databases".
- ✓ Support the preparation of a Report containing an analysis of available data (including spatial data) on bat species in the project territory, incl. applications.
- ✓ If necessary, prepare the necessary materials for the field verification.
- ✓ Participate in control validation of terrain data (in case of necessity of verification).
- ✓ Follow the schedule for the implementation of the activity.

During implementation of Activity 1, five additional (non-key) experts also participated and their functions and responsibilities did not overlap with the required key experts, and these experts (through their assigned tasks and responsibilities) added to and contributed to the qualitative achievement of the execution of Activity 1, subject of the order:

**1. Non-key expert "Ecologist" and his/her duties:**

- ✓ Make concrete proposals for the results of studies related to the implementation of specific investment proposals, plans, programs and projects that could be applicable for the purposes of Action 1. The ecologist, possessing the necessary knowledge of the legal procedures in the Republic of Bulgaria and the Republic of Greece, will contribute to the implementation of Action 1 by completing the list of sources of information.

**2. Non-Key Expert "Atmospheric Air" and his/her duties:**

- ✓ Provides to key experts basic information on the state of the atmospheric air and the climate in the project territory, which will help the key experts to orientate in the conditions of the project territory and the habitats for hibernation of the bats, the probable species in the project territory (according to the requirements of the temperature and air humidity). Also, this background information will serve as a reference for obtaining additional credible information.

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**3. Non-key expert "Hydrologist and water quality" and his/her duties:**

- ✓ Provides key experts baseline information on hydrographic network and water quality in the project area, on the basis of which key experts can orientate themselves to obtain additional reliable information and / or to perform field verification if necessary.

**4. Non-Key Expert "Bat Monitoring" and his/her duties:**

- ✓ Provides key information to key experts on results of ongoing bat monitoring in the project area, based on which key experts can orientate themselves to provide additional reliable information and/or perform field verification if necessary.

**5. Non-key expert "Regional Development and Civil Engineer" and his/her duties:**

- ✓ Provides to key experts basic information on the presence of abandoned buildings and/or engineering infrastructure, whereby key experts can orientate themselves to provide additional reliable information and/or to perform field verification.

**6. Technical staff and their duties:**

- ✓ Support the technical activity of all key and non-key experts, which contributes to the optimization of the performance of the activity and the improvement of its quality.
- ✓ Acquire the available data and information according to the sources identified by the key experts, which increases efficiency, saving time for key experts to apply their expertise to achieve the desired results and products.
- ✓ Assist if necessary (driver service) of key experts to perform field verification.

### 3. SPECIFIC RESULTS AND PRODUCTS FROM THE IMPLEMENTATION OF ACTIVITY 1

As a result of the implementation of the Activity 1 "Analysis and systematization of available bat data in the project territory" the following results were achieved and the specific products were submitted:

<b>Specific results from the implementation of Activity 1</b>	<b>Specific products from the implementation of Activity 1</b>
<ol style="list-style-type: none"> <li>1. Designated and coordinated project territory.</li> <li>2. Systematized and analyzed available data on bats in the project territory.</li> </ol>	<p>Report containing an analysis of available data (including spatial) of bat species in the project territory.</p>

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<http://natura2000.moew.government.bg/Home/ProtectedSite?code=BG000167&siteType=HabitatDirective>

BG0000220 Dolna Mesta

<http://natura2000.moew.government.bg/Home/ProtectedSite?code=BG0000220&siteType=HabitatDirective>

BG0001023 Rupite – Strumeshnitsa

<http://natura2000.moew.government.bg/Home/ProtectedSite?code=BG0001023&siteType=HabitatDirective>

BG0001028 Sreden Pirin – Alibotush

<http://natura2000.moew.government.bg/Home/ProtectedSite?code=BG0001028&siteType=HabitatDirective>

BG0001030 Rodopi – Zapadni

<http://natura2000.moew.government.bg/Home/ProtectedSite?code=BG0001030&siteType=HabitatDirective>

BG0001032 Rodopi – Iztochni

<http://natura2000.moew.government.bg/Home/ProtectedSite?code=BG0001032&siteType=HabitatDirective>

Others

### **Natura 2000 site standart data forms for Greece**

GR1130009 Limnes Kai Limnothalasses Tis Thrakis - Evryteri Periochi Kai Paraktia

GR14004 Koryfes Orous Falakro

GR1140002 Rodopi (Simyda)

GR1140003 Periochi Elatia, Pyramis Koutra

Others

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## ANNEXES

<b>Annex №</b>	<b>Annex name</b>
1	Sources of information for bats in the project territory
2	Database (spatial data and maps)