Ordering Party: MEPSO JSC

Location: SS BITOLA 2-MACEDONIAN/ALBANIAN BORDER AND SS OHRID

SEASONAL REPORT

Subject:

ASSESSMENT STUDY FOR VULNERABLE TAXONOMIC GROUPS OF FAUNA (BIRDS AND BATS) ALONG THE 400 KV OVERHEAD TRANSMISSION LINE: SS BITOLA 2 – MACEDONIAN/ALBANIAN BORDER AND SS OHRID

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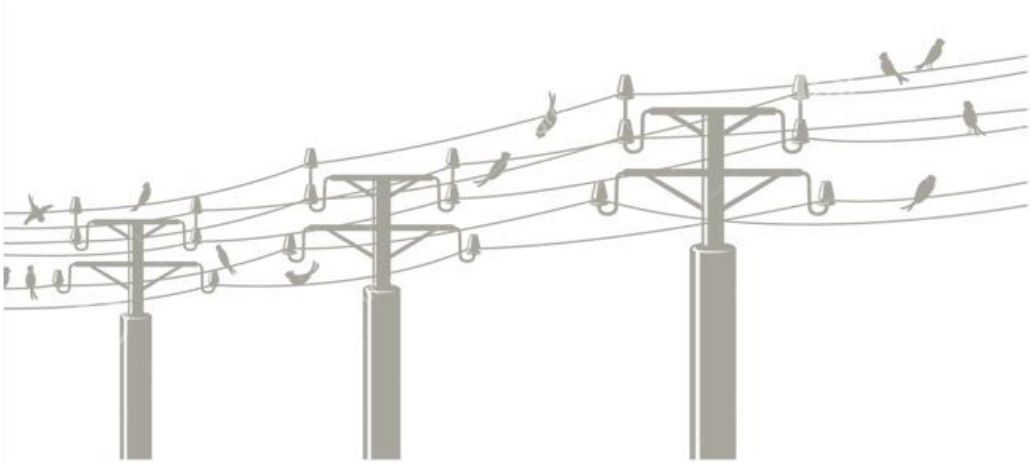
Assessment Study for Vulnerable Taxonomic Groups of Fauna (Birds and Bats) along the 400 kV Overhead Transmission Line: SS Bitola 2 – Macedonian/Albanian border and SS Ohrid

Summer Season Report (2016)



Skopje, 2016

Table of Contents

Abreviations:

MOePP- Ministry for Environment and Spatial Planning

EU – Europian Union

CITES - Convention on International Trade in Endangered Species of Wild Fauna and Flora

AEWA – African-Eurasian Waterbird Agreement

SPA – Special Protection Area

IPA -Important Bird area

SAC – Special Area for Conservation

MES-Macedonian Ecological Society

EBRD- European Bank for Reconstruction and Development

PR - Performance Requirement

ESP- Environmental and Social Policy

ESAP- Environmental and Social Action Plan

ESIA- Environmental and Social Impact Assessment

MEPSO- The Joint Stock Company for Electricity Transmission and Power System Control

CEIM- Civil Engineering Institute Macedonia

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Cover Page Photos: Bitola 2 Generating Step-Up Transformer (back photo); Nesting birds with young: White Stork (Ciconia ciconia) in the village of Kriveni (Resen Municipality); Mixed colony of Greater Mouse-eared Bat (Myotis myotis) and Schreibers' Bat (Miniopterus schreibersii) in the Jaorec Cave, near the village of Velmej (Debarca Municipality).

Ref. Civil Engineering Institute Macedonia (CEIM), Skopje, Macedonia Contract 0902-458/1 with MEPSO Skopje, Macedonia Contract No. 02-1104/2 . Project "Construction of Interconnection 400 kV Transmission Line, SS Bitola 2 – Macedonian/Albanian border and SS Ohrid''

1. GENERAL INFORMATION

1.1 Background

The Joint Stock Company for Electricity Transmission and Power System Control (MEPSO) in state ownership is currently in a pre-construction phase of the project " 400kV Transmission Line, SS Bitola 2 – Macedonian/Albanian border and SS Ohrid" and the overall plan for improvement of the national electricity transmission infrastructure in the western part of Macedonia outlined in the Energy Development Strategy of the Republic of Macedonia until 2030.

The Project will enable AD MEPSO to construct the Macedonian portion of the planned 400 kV cross-border electricity interconnection between Macedonia and Albania, the first interconnection between the two countries, and the introduction of grid efficiency improvements to the MEPSO's infrastructure.

This project is a part of an initiative to establish a major East - West electricity transmission corridor between Bulgaria, Macedonia, Albania and potentially Italy (via a planned submarine cable). This section (Bitola to Macedonia - Albanian border, with substation at Ohrid) is part of the Macedonia / Albania section of that corridor. The project has been identified as a priority for the creation of the regional electricity market in South East Europe, and will contribute to the stability and security of the electricity system of the Balkans, not only for the two countries directly concerned, but also for the electricity systems of the region by closing a 400 kV ring between Albania, Greece, and Macedonia.

MEPSO has prepared an Environmental and Social Impact Assessment (ESIA) study to fulfill the requirements of the national legislation, the related EU Directives, especially: Environmental Impact Assessment (EIA) Directive (2014/52/EU); Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora; Directive 2009/147/EEC of the European Parliament and the Council of Europe on the Conservation of Wild Birds; and the European Bank for Reconstruction and Development's Environmental and Social Policy (EBRD ESP).

The project is considered as "Category A" Project in accordance with the EBRD's Environmental and Social Policy (ESP) of 2008, and its successor EBRD ESP of 2014. The EBRD ESP 2014 Performance Requirements will apply to projects that are initiated after November 07, 2014. The EBRD's requirements are therefore that all elements of the project will meet national environmental, social, health and safety laws and regulations, and be carried out in compliance with relevant EU environmental and social standards, as well as the EBRD's Environmental and Social Policy (ESP) and Performance Requirements (PRs) of 2008 and 2014.

In this context, MEPSO identified the need for an Environmental and Social Action Plan (ESAP) as part of the Environmental and Social Impact Assessment (ESIA) process. The ESAP provides an instructional working document for management of biodiversity impacts during Project design and implementation,

and will be used by MEPSO and its contractors to ensure that necessary measures are implemented to comply with national laws and lender policies.

1.2 Study Objectives

The present report aims to assess and evaluate the vulnerable taxonomic groups of fauna (birds and Bats) along the Project Corridor. The assessment study on birds and bats as proposed under the ESAP's activity No. 6, which is in line with the EBRD Performance Requirement 6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources), foresees the following actions:

6.1. Engagement of qualified experts in biodiversity (flora and fauna) to conduct biological field investigations of areas along the project corridor, in pre-construction phase (design phase) before final design of transmission line route and exact location of power transmission towers is ascertained. The field investigations should be conducted in order to:

support establishing micro-locations of power transmission towers, to avoid impacts on protected plant and animal species, and propose mitigation measures for impacts to biodiversity;

establish locations for construction works at certain periods of the year, to avoid impacts on protected plant and animal species;

ascertain locations for additional seasonal field investigations to verify recommendations on the micro-locations;

ascertain the potential/actual bat roosts and suggest a schedule (timetable) of construction works to avoid unnecessary environmental impacts during key time periods;

ascertain localities for additional field investigations related to birds and bats, in order to locate areas that need additional mitigation measures (installing of bird deflectors, nesting platforms for birds, bat boxes et cetera);

ascertain areas with critical habitats as defined by EBRD ESP PR 6, to offer offset/compensation measures as a last resort if avoidance and mitigation is not possible;

prepare a summary report, after the field investigations are conducted, with mitigation measures rationale, with further recommendations.

6.3. Following the experts' suggestions of point 6.1, bird deflectors should be installed at ascertained locations to minimize the risk of avian mortalities due to transmission line collisions.

6.4. Following recommendations of experts in ornithology of point 6.1, programme on bird mortalities survey at certain localities should be developed; additional mitigation measures to reduce the collision rates should be implemented.

Consequently, the main objectives of the project should be a general assessment and evaluation study on the fauna of birds and bats along the transmission line corridor, on the basis of pre-construction seasonal surveillance and monitoring; predicted impacts and mitigation measures.

Seasonal field surveillance on horizontal and vertical distribution of Birds along the transmission line corridor with special focus on species listed on Annex I of the EU Directive 2009/147/EC; IUCN Globally Threatened Species; Trigger Species of sites designated as Important Bird Areas; Migratory bird species; and bird species of the area, that are at high risk of electrocution and collision.

Seasonal field surveillance on the presence of Bat species, summer shelters, wintering and maternity colonies in accordance with the Eurobats Guidelines for Surveillance and Monitoring of European Bats, with special focus on species listed on Annex II of the EU Directive 92/43/EEC; species listed on the IUCN Red List of Globally Threatened species; and migratory species with wintering and maternity colonies located in shelters along the transmission line route.

1.3. Setting

The Environment and Social Impact Assessment (ESIA) Study on Interconnection 400 kV Overhead Transmission Line from Bitola 2 Generating Step-Up Transformer to the State Border with Albania and Ohrid Step-Down Transformer 400/110 kV predicts construction of about 250 suspension (tangent) and tension (angle) transmission towers (pylons) within a 500 m wide corridor with total length of approximately 100 km.

The 400 kV Overhead Transmission Line starts from Bitola 2 Step-Up transformer located within boundaries of the Mining and Energy Combine “REK Bitola” Thermal Power Plant Area and runs north-westwardly up to the local road Novaci-Dobrushevo; thence crosses the road between the villages Dobromiri and Dolno Agilarci and turns to the west across the Pelagonia Plain passing between the settlements of Trn and Mogila.

At the locality Karamanski Pat the transmission line turns in southwest direction, passing across the main roads of Bitola-Prilep and Bitola-Kichevo; thence passing between the villages Krklino and Kukurechani ascends across the South-western slopes of the Oblakovo-Snegovo Mountain Region. Thence, it descends to the Strezhevo Reservoir Valley passes south of the villages Ramna and Dolentsi running alongside the Bitola-Resen Main Road. Thence, it ascends westwardly to the Southern slopes of Bigla Mountain in direction to the Gjavato Village. Thence, it runs across the Bigla Mountain Ridge to the north of the Gjavato Mountain Pass and continues in northwest direction across the western slopes of Bigla Mountain passing north of the village Sopotsko, west of the village Kriveni, and north of the villages Leva Reka and Krushje. In fact, it follows the current 110 kV transmission line Bitola-Resen-Ohrid-Struga. Thence, in the vicinity of the village of Svinjishta it turns to the west, avoiding the villages of Rasino and Livoishta. Between the villages of Trebenishta and Mesheishta the transmission line passes across the

Ohrid-Skopje Main Road and enters into the Strushko Pole Valley. Thence, the transmission line runs westwardly until North of the Village Volino; thence turns in southwestward direction until south of the village of Moroishta. Thence, it turns to the west, passes across the local road Mislesevo-Moroista and runs in this direction until the locality Belichka Krasta, south of the village Dolna Belitsa. Thence the transmission line corridor turns to the south running between the villages Vishni and Zagrachani across the most South-eastern slopes of Jablanitsa Mountain to the locality Kjafa San on the State Border with Albania.

Regarding the impacts to birds and mitigation measures, the use of a corridor (in this case 500 m wide) for assessment rather than a single line provides an opportunity for small refinements to the transmission line route to be made within the corridor. However, even with the best possible routing, it is likely that sections of the route will still be a risk to birds. The "precautionary principle" should therefore be kept in mind when identifying mitigation measures. Therefore, data on bird species composition within the area along the transmission line route, and species that are at high risk of electrocution and collision, including species that are susceptible to nocturnal collisions will be collected. The line sections with increased collision risk should be suggested to be fitted with wire markers (bird flappers). The proposed mitigation measures are in line with the Bern Convention Recommendation No. 110 (2004) on minimizing adverse effects of above-ground electricity transmission facilities (power lines) on birds; Bonn Convention Resolution 7.4 on electrocution of migratory birds; as well as with the BirdLife International Position Statement on Birds and Power Lines (2007).

Regarding the impacts to bats and mitigation measures, the use of a corridor (500 m wide) provides an opportunity for refinements to the transmission line route to be made within the corridor. The field investigations have obtained precise data on the bat species composition within the area along the transmission line route, and identified the bat species of the area. Overhead power transmission cables and towers rise high enough in space to pose risks of collision of flying bats. There is therefore concern that cumulatively there could be risk of bats crushing into the towers (pylons) especially when they are erected in migratory paths and congregatory habitats such as roosts. There could be positive impacts of towers acting as roosts to some bats. However, constructions of towers should be aligned to habitats that are not critical to bats' breeding and mass migration.

2. ASSESSMENT AND EVALUATION OF BIRDS AND BATS

2.1. Introduction

Ornithological investigations with in the Republic of Macedonia started relatively later in comparison to the other Balkan countries. With a few exceptions, we may say that serious investigations started during the First World War, with the arrival of numerous ornithologists within the German army. As a result of extensive and wide-ranging research, Stressemann (1920) in his monograph publication on the Birds of Macedonia "Avifauna Macedonica" has recorded presence of 260 bird species. After the Second World War, Dimovski & Matveev (1955) on the basis of review of bird collections in the Museums at Struga and Skopje and additional field investigations stated that in the territory of Macedonia, 278 species were present. More recently, Micevski (2002/2003) gives data for the presence of 314 bird species. Petkovski (2010) and Velevski (2012) both, in the checklists of birds of Macedonia give data for the presence of 328 bird species, of which 213 species breed locally, while the others appear during the winter or in periods of migration.

The birds of the Project Area are only scarcely investigated. More precise data are given for the Important Bird and Biodiversity Area MK024: Pelagonia (BirdLife International, 2008) across which the transmission line will pass at its narrowest part. The other two IBAs: MK006: Lake Prespa; and MK005: Lake Ohrid (BirdLife International, 2008) will not be directly affected by the transmission line, as well as the Protected Areas (National Parks) of Pelister and Galichitsa.

On National Level, first data on bats were published by Karaman (1929, 1937) and Martino (1935, 1939). Towards the end of the 1930s, 15 bat species were recorded for Macedonia. In the 1940s and 1950s the study of Macedonian bats seems to have come to a standstill. Additional data were published by Dulic & Mikuska (1966), Felten (1977) Hackethal & Peters (1987) and Bogdanowicz (1990) increasing the number of species to 19. Krystufek et al. (1992) give data for the presence of 23 bat species in Macedonia. Krystufek & Petkovski (2003, 2006) increase the number to 24 bat species. Boshamer et al. (2006) registered three additional species that have not been recorded in Macedonia before. Bekker & Boshamer (2007) confirm the presence of Plecotus auritus for the territory of National Park Galicica, and give first record for the presence of Plecotus macrobullaris in the Republic of Macedonia, on the locality Leva Reka, near Resen. Papadatou et al. (2011) give data for the presence of 19 bat species for the Prespa-Ohrid Region. Micevski et al. (2014) give additional data for 20 already recorded species from seven scattered localities. Stojkoska (2016), within the frames of the Europe Aid Project "Strengthening the Capacities for Implementation of NATURA 2000 in Macedonia" gives National Check List consisting 27 Bat Species (unpublished data).

The bats of the Project Area are only partly investigated. Boshamer et al. (2006) were investigating the bats along the Leva Reka River, as well as Bekker & Boshamer (2007). Papadatou et al. (2011) investigating bats of the Prespa-Ohrid Region also give data for the bats of Leva Reka Area.

2.2. Methodology

2.2.1. Rationale on bats

The terms “surveillance” and “monitoring” have been used somewhat interchangeably in the past, but in fact a distinction can be drawn between the two activities and this is quite important when considering the level of information required. Surveillance is a means of assessing what is happening to populations of a particular species over time. Monitoring involves surveillance, not only of the species in question but, so far as possible, also of the other factors likely to affect populations of that species (Battersby, 2010).

Surveillance of bat populations can generally be carried out in two main ways: by visual counts of roosting bats at hibernation sites, mating and maternity roosts or other summer roosts; and by recording foraging bats along linear transects using bat detector, while walking or using moving vehicle.

Counts at hibernation sites. Some bat species aggregate at hibernation sites during the winter months and it is possible to make annual counts of the number of hibernating bats. Hibernation counts are particularly useful in assessing the importance of a site for conservation purposes; site data collected by monitoring programmes can be used to inform decisions when considering site protection under national and international designations. One advantage of hibernation site monitoring is that multiple species can be encountered at the same site. The extent to which bats occupy hibernation sites depends on the local climate. Counts are best done in January or February, but local research may be required to check this before setting up a monitoring project. The weather conditions can influence the hibernation behaviour of bat species that are tolerant of low temperatures. Usually lower numbers of bats are hibernating if the temperatures are several degrees above 0° C and to much higher numbers if temperatures are just around or below zero. Therefore, cold weather conditions should be preferred within the time period of winter counts. When large numbers are present, it may be better to estimate the area the bats cover through the use of photography or video camera. Strong torches are needed for high ceilings. In some cases binoculars are very helpful.

Counts at maternity roosts. Counts of bats at maternity roosts is a traditional method for monitoring the status of roosts. Information can be used to make an assessment of the importance of the roost at local, regional and national levels through analysis of data. Counts of bats in, or emerging from, maternity roosts have also often been used as a way of monitoring the status of a species. Internal counting is the method most widely used. Colonies are usually highly philopatric and faithful to their roosts throughout the breeding season. In Southern European countries maternity colonies of some species such as *M. schreibersii, R. euryale, M. myotis and M. capaccinii* are often found in mixed groups in warmer caves.

The most suitable species for colony counts are: *Rhinolophus euryale, R. ferrumequinum, R. hipposideros, R. mehelyi, Myotis blythii, M. capaccinii, M. emarginatus, M. myotis, M. nattereri, Miniopterus schreibersii*. Colony counts are less appropriate for species that often use a network of roosts and where individuals frequently change between roosts. Internal counts are also generally not appropriate for crevice dwelling species, where only a proportion of the bats may be seen at any time. Such species include *Pipistrellus pipistrellus, Eptesicus serotinus and Barbastella barbastellus* (Simon et al. 2004).

Surveys at swarming sites. In autumn some species begin to migrate to sites where mating and/or hibernation take place. During this period, large numbers of bats can be encountered at some sites, swarming inside and outside the site. This is primarily a mating event, since it occurs long before hibernation, but probably also serves to check hibernation sites and guide inexperienced juveniles to them. Surveillance of swarming sites can therefore provide a useful data on the status of a number of species over a very large area. The method is suited for those species that appear to use a mating strategy that involves extensive chasing flights in large bat assemblages, these *include Myotis bechsteinii, M. brandtii, M. daubentonii, M. myotis, M. nattereri, M. mystacinus, Eptesicus nilssonii, Barbastella barbastellus, Plecotus auritus and P. austriacus.*

Monitoring of Bats using Bat Detector. Bat detector surveys based on line transects generally do not include prolonged stops at a given point. Surveys are carried out under optimal weather conditions, during “prime time”, i.e. the first three hours after sunset. Line-transect surveys require the observer to follow a pre-determined path of known length; point counts require the observer to listen at a fixed point for a known time. The two methods can be combined to give estimates of relative abundance of species being surveyed.

Bat detector transects along roads using moving vehicles. At a minimum, vehicle-based surveys deliver high quality distributional data for common species and will identify distributional changes with good sensitivity. They will also provide statistically valuable conclusions on population trends of common species along roadsides. This method is generally restricted to open/edge species such as *Pipistrellus spp., Hypsugo savii, Nyctalus spp., Eptesicus spp. and Vespertilio murinus* as they are loud echolocators that are found foraging in open habitats along roadsides. Miniopterus schreibersii might be also suitable. Surveyors drive the route, with survey transect driven no faster than 25 km/h. More transects can be driven to increase survey sensitivity. The distance between each survey transect, combined with the driving speed, makes it highly unlikely that the same bat could be recorded on more than one survey transect. Adding stopping points or sections alongside rivers, canals or at other water bodies means that *Myotis cappacinii and M. daubentonii* could also be detected using this method. A torch could be used to confirm the bat is flying close to the water surface, a behavioural characteristic of Myotis daubentonii (ultrasounds with maximum at 45 kHz, flight 5-15 cm above water surface).

Mistnetting of Bats. Harp-trapping/mistnetting can be used to determine the species present and their relative abundance. Catching should be carried out on dry nights with little wind. Harp traps and mist nets, are not generally recommended for the purposes of monitoring because of the potentially high levels of disturbance to bats. However, they are extremely useful when identification of bats must partly be verified by netting of some specimens. Netting can be the only method to determine the ratio of some species in mixed groups. Furthermore, they may be appropriate when the two main surveillance options, roost counts or bat detector transects, cannot be employed effectively and there are no other current alternatives. Catching can be used to identify bat species that cannot be recognised with a bat detector. Harp traps are preferred to mist nets only at roost entrances. Mist nets are more versatile, light and easy to carry. Bats are capable of detecting and avoiding both harp traps and mist nets, but careful positioning and the element of surprise allows both to be used with considerable success. Capture success declines rapidly if the bats are given time to learn the positions of nets and traps, so it is best to move them every night. The fine mist nets designed for bats are successful, but their efficiency declines rapidly under even moderately windy conditions since bats are better able to detect moving objects. Netting is especially successful in forests and across rivers.

2.2.2. Identification of Birds and Bats

The monitoring of birds was conducted using early morning visual counts along transect lines and previously ascertained locations for point counts. The identification of birds was made using binoculars and telescopes for bird watching and appropriate bird guides including Grant (2000) and Elphick & Woodward (2003), as well as audio records (mobile application with birds sounds).

In the presented report, bats were surveyed using visual inspections at potential over- and underground roosts, visual counts at underground roost, mistnetting of bats in their foraging habitats, using Ecotone Mist Net 719/15 (15m in length, 3m in height, 5 shelves and mesh size of 16x16 mm); using ultrasound detector (Batbox Duet, Batbox Limited, 2A Chanctonfold, Horsham Road, Steyning, West Sussex BN44 3AA, UK) and Batlogger M (Elekon AG, Cheerstrasse 16, CH-6014 Luzern, Switzerland) with subsequent computer analysis of the recorded ultrasound calls (BatExplorer Firmware V 2.4). The captured bats were determined following the determination keys by Dietz & Helversen (2004) and Dietz et al. (2009).

2.2.3. Evaluation of Birds and Bats

The Evaluation of Birds and Bats has been conducted in accordance with the EU Birds Directive (Directive 2009/147/EC), EU Habitats Directive (Directive 92/43/EEC), Bern Convention, Bonn Convention, the IUCN Red List of Globally Threatened Species (2016), the IUCN European Red Lists of Species, National Law on Nature Protection (2004) and EBRD Environmental and Social Policy (2014); EBRD

Performance Requirement (PR 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources).

2.2.3.1. Legal Protection of Birds and Bats

The Evaluation of Birds regarding their Legal Protection has been conducted in accordance with the EU Birds Directive (Directive 2009/147/EC), Bern Convention, Bonn Convention and the National Law on Nature Protection (2004). The Evaluation of Bats regarding their Legal Protection has been conducted in accordance with the EU Habitats Directive (Directive 92/43/EEC), Bern Convention, Bonn Convention and the National Law on Nature Protection (2004).

Birds Directive (Directive 2009/147/EC), former Directive 79/409/EEC. The Directive 2009/147 of the European Parliament and of the Council on the Conservation of Wild Birds. The Birds Directive applies to all EU countries since May 2004. The Birds Directive requires the EU Member States to take a number of measures in order to protect all listed species and their habitats. Measures required by the Birds Directives include:

Annex I. Classify as Special Protection Areas (SPAs) the most suitable territories for species in need of special habitat protection as listed on Annex I.

Annex II. Regulate the hunting of species listed in Annex II.

Annex III. Regulate the trade of species listed in Annex III.

Since Annexes II and III regulate the hunting and trade of species, they were not used in the present report as a selection criterion for "evaluation".

Habitats Directive (Directive 92/43/EEC). The European Community's Directive 92/43/EEC on the Conservation of Natural and Semi-natural Habitats and of Wild Flora and Fauna (The Habitats Directive) was notified with the fundamental purpose of establishing a network of protected areas (Natura 2000) throughout the European Community, designed to maintain the distribution and abundance of threatened species and habitats. Several European bat species are listed in Annex II and all are listed in Annex IV of the Directive, requiring Member States to maintain and restore “favourable conservation status” of the species. Article 11 of the Directive states that “Member States shall undertake surveillance of the conservation status of the natural habitats and species referred to in Article 2 with particular regard to priority natural habitat types and priority species.

Annex II. Animal and plant species of community interest whose conservation requires the designation of special areas of conservation.

Annex IV. Animal and plant species of community interest in need of strict protection.

The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention). It imposes a legal obligation on Parties to protect all breeding and resting sites of the Strictly Protected Species on Appendix II, including all European Bat Species apart from the Common Pipistrelle (Pipistrellus pipistrellus), which is listed on Appendix III (Protected Species).

The Convention on the Conservation of Migratory Species of Wild Animals, Bonn Convention (UNEP/CMS) which recognises that endangered migratory species can be properly protected only if activities are carried out over the entire migratory range of the species. Under Article IV of the Convention, range States for Appendix II species are required to conclude legally binding Agreements for their conservation. The Agreement on the Conservation of Populations of European Bats (UNEP/EUROBATS) came into force in 1994. It is one of the Agreements under Article IV of the Bonn Convention and the first international Agreement devoted to the conservation of bats.

National Law on Nature Protection (2004). Article 37 of the Law on Nature Protection regulates the animal and plant species listed in the category of Strictly Protected Wild Species, while Article 41 regulates the animal and plant species listed in the category of Protected Wild Species. The List of species are prepared mainly following the Bern Convention's Appendix II and Appendix III lists of species.

2.2.3.2. Conservation Status of Birds and Bats

The IUCN Red List of Globally Threatened Species (2016). The Red List distinguishes nine hierarchically related Red List Categories. The present IUCN criteria are based on estimates of rates of decline and extinction risk as well as rarity. All taxa listed as Critically Endangered (CR), Endangered (EN) and Vulnerable (VU) are qualified as Threatened. The category Data Deficient (DD) is not a threatened category, although it indicates a need to obtain more information on a taxon to obtain the appropriate listing. The old IUCN category Lower Risk (LR) in (IUCN 1994) is replaced by Near Threatened (NT), which is close to qualifying for Vulnerable but not Threatened.

The IUCN European Red List of Threatened Species (2016). The IUCN European Red List of Threatened Species is based on the same criteria like the Global Red List, but the estimates of rates of decline, the extinction risk and rarity are restricted exclusively to the European populations of the species.

EBRD Environmental and Social Policy (2014). The European Bank for Reconstruction and Development is committed to promoting "environmentally sound and sustainable development" in the full range of its investment and technical cooperation activities. A project is categorised A when it could result in potentially significant adverse future environmental and/or social impacts which, at the

time of categorisation, cannot readily be identified or assessed, and which, therefore, require a formalised and participatory environmental and social impact assessment process.

The EBRD has adopted a comprehensive set of specific Performance Requirements (PRs) that the projects are expected to meet. Relevant to this report is the EBRD Performance Requirement 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources. This Performance Requirement (PR) recognises that the conservation of biodiversity and sustainable management of living natural resources are fundamental to environmental and social sustainability. The objectives of this PR are to:

- protect and conserve biodiversity using a precautionary approach;
- adopt the mitigation hierarchy 3 approach, with the aim of achieving no net loss of biodiversity, and where appropriate, a net gain of biodiversity;
- promote good international practice (GIP) in the sustainable management and use of living natural resources.

The mitigation hierarchy reflect the commonly accepted hierarchy of "first avoid" then if avoidance is not possible, "minimize and mitigate" and then "offset/compensate" for residual impacts, as a last resort. The most sensitive biodiversity features are defined as "Critical Habitat", which comprise one of the following:

(i) highly threatened or unique ecosystems;
(ii) habitats of significant importance to endangered8 or critically endangered species;
(iii) habitats of significant importance to endemic or geographically restricted species;
(iv) habitats supporting globally significant migratory or congregatory species;
(v) areas associated with key evolutionary processes;
(vi) ecological functions that are vital to maintaining the viability of biodiversity features.

2.3. Assessment and Evaluation of Birds (Summer Season Report)

2.3.1. Results

On the basis of relief and land configuration, in order to improve the quality of field investigation activities and presentation of results, the transmission line corridor was divided into five sections.

Within sections "1" and "5" (Pelagonia and Strushko Pole Plains) due to flat plain terrains, bird observation was conducted using "Line Transect Count Method".

In Pelagonia Plain, bird surveys were conducted along single line transect that runs in East-West direction with total length of 7,000 m, located between the villages of Trn and Krklino (see Figure 1).

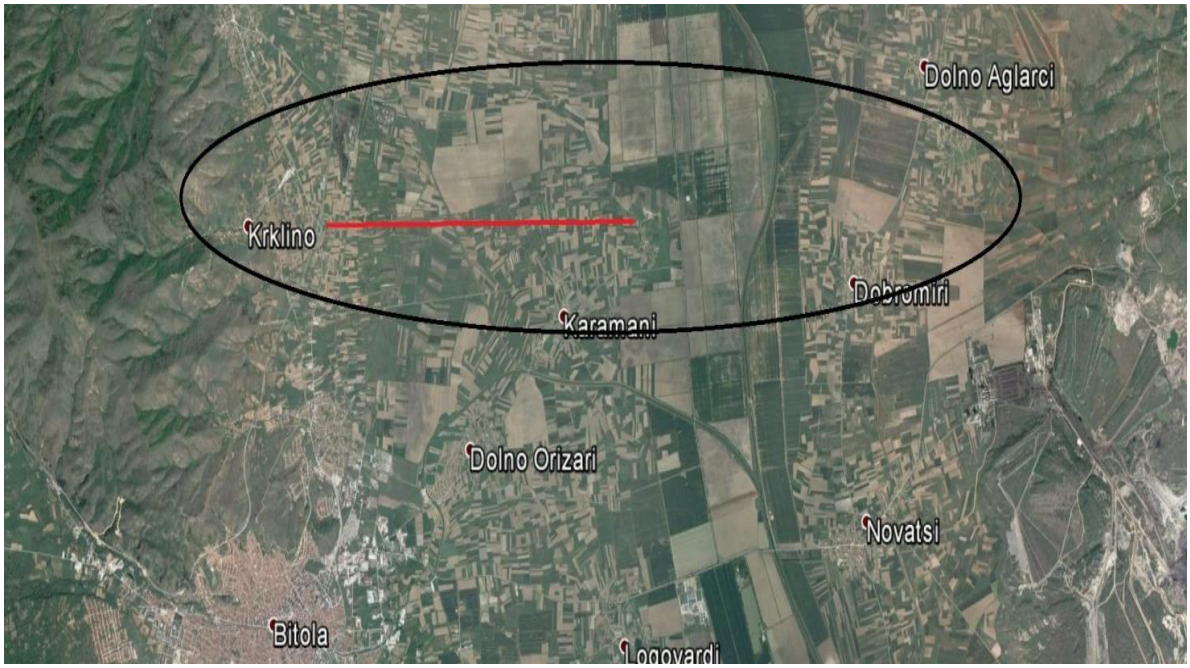

Figure 1. Section 1: Line Transect for Bird Surveys in Pelagonia Plain.

In Strushko Pole Plain, two line transects have been ascertained, the first one, runs from North-east to South-west direction, with total length of 5,000 m, located between the villages of Volino and Moroishta; and the second one, that runs from North to South direction, with total length of 5,000 m, located between the villages of Zagrachani and Radolishta (see Figure 2).

Figure 2. Section 5: Line Transect for Bird Surveys in Strushko Pole Plain.

Figure 3. Section 2: Location of Point Count points for Bird Surveys in Krklino-Gjavato Mountainous Area.

Figure 4. Sections 3 and 4: Location of Point Count points for Bird Surveys in Section 3 (Gjavato-Leva Reka) and Section 4 (Leva Reka-Kuratica) Mountainous Area.

On the other hand, within sections "2", "3", "4", due to mountainous area and low visibility due to terrain features and dense vegetation, birds were identifying either visually, or by their calls using "Point Count Method" on points at previously selected locations (see Figures 3 and 4, above). Important habitat types like small wetlands and birds of prey favorable rocky habitats have also been focused during the bird surveys.

The summer season surveillance and monitoring of birds have been conducted on four occasions, in the period: June 21-22, 2016; July 22-23, 2016; August 08-09, 2016 and August 24-25, 2016.

Altogether, ninety-two species of birds have been recorded, 54 of which are resident, 32 breeding, 3 wintering and 3 passage species. The passerine birds that belong to the order Passeriformes are dominant, represented by 56 species, which is 61% of the total number of recorded species(see Annex 1).

On the other hand, species of Anseriformes, large order of waterfowl, including ducks, geese and swans highly adapted for an aquatic existence at the water surface have not been recorded. It is the same case with representatives of the order Charadriiformes, dominantly wetland species that live near water. From nine families of this order represented at National Level, not a single species has been recorded along the transmission line corridor, notwithstanding the fact that significant wetland habitats are present in close neighborhood of the Project Area, including the large Zhabeni and Bukri Fishponds in Pelagonia, Strezhevo Reservoir between Bitola and Resen; and Prespa and Ohrid natural lakes.

2.3.2. Discussion and Conclusions

On the basis of summer season surveillance and monitoring of birds along the transmission line corridor, 19 species have been selected as focal species for environmental assessments where they are at risk as they are considered to be particularly sensitive, or potentially so, to power lines (electrocution or/and collision). Trigger species of the Important Bird Areas Pelagonia (MK024), Lake Prespa Lake (MK006) and Ohrid Lake (MK005) were also taken into consideration, as well as their legal protection and conservation status (see Table 1).

Table 1. Birds recorded along Transmission Line Corridor during summer season surveys (2016) that are under Legal Protection, Threatened Species, Trigger Species, Migratory Species and Species at high risk of electrocution and collision.

Family Pelecanidae (Pelicans)							
1.	*Pelecanus crispus*	Dalmatian Pelican	R	I	II	I	VU
Family Ciconiidae (Storks)							
2.	*Ciconia ciconia*	White Stork	B	I	II	II	LC
3.	*Ciconia nigra*	Black Stork	B	I	II	II	LC
Family Accipitridae (Hawks, Eagles, Vultures)							
4.	*Pernis apivorus*	Honey Buzzard	W (B)	I	II	-	LC
5.	*Circaetus gallicus*	Short-toed Eagle	B	I	II	-	LC
6.	*Circus aeruginosus*	Marsh Harrier	B	I	II	-	LC
7.	*Circus cyaneus*	Hen Harrier	P	I	II	-	LC/NT
8.	*Buteo buteo*	Common Buzzard	R	-	II	-	LC
9.	*Buteo rufinus*	Long-legged Buzzard	R	I	II	-	LC
10.	*Aquila heliaca*	Imperial Eagle	B	I	II	I	VU/LC
11.	*Aquila chrysaetos*	Golden Eagle	R	I	II	-	LC
Family Falconidae (Falcons)							
12.	*Falco naumanni*	Lesser Kestrel	B	I	II	I	LC
13.	*Falco tinnunculus*	Kestrel	R	-	II	-	LC
14.	*Falco vespertinus*	Red-footed Falcon	P	I	II	I	NT
15.	*Falco peregrinus*	Peregrine Falkon	R	I	II	-	LC
Family Rallidae (Rails);							
16.	*Fulica atra*	Common Coot	R	II	-	II	LC/NT
Family Columbidae (Pigeons)							

17.	*Columba livia*	Rock Dove	R	II	-	-	LC
18.	*Columba palumbus*	Wood Pigeon	R	II	III	-	LC
19.	*Streptopelia turtur*	Turtle Dove	B	II	-	II	VU

R = Resident Species (species likely to occur all year round); B = Breeding Species (species occurs only during spring-summer season); W = Wintering Species (species normally occurs only in winter season); P = Passage Migrant Species (bird species that occurs on passage between breeding and wintering areas).

Evaluation on composition of the selected bird species shows that nine species are resident, seven breeding, one wintering and two passage migrants. It is quite understandable, having in mind that the surveys have been conducted within the summer season. During autumn and winter seasons, the number of breeding species will decrease, while the number of passage and wintering species will increase, respectively.

Regarding Birds' Legal Protection, Directive 2009/147/EC on the conservation of wild birds provides Legal Protection for 13 species of birds in need of special habitat protection as listed on Annex I (see Table 1).

The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) imposes Strict Legal Protection (under Appendix II: Strictly Protected Fauna Species) for all 13 already protected species by the Wild Birds Directive widening the list by two additional species: Common Buzzard (*Buteo buteo*) and Kestrel (*Falco tinnunculus*).

The Convention on the Conservation of Migratory Species of Wild Animals, Bonn Convention (UNEP/CMS) provides Legal Protection for four species under Appendix I. Bonn Convention recognises that Endangered Migratory Species (Appendix I) can be properly protected if activities to prevent, remove, compensate for or minimize, as appropriate, the adverse effects of activities or obstacles that seriously impede or prevent the migration of the species (see Table 1).

Regarding their Conservation Status the IUCN Red List of Threatened Species on Global Level lists three threatened species, all in the Category VU (Vulnerable): Dalmatian Pelican (*Pelecanus crispus*), Turtle Dove (*Streptopelia turtur*) and Imperial Eagle (*Aquila heliaca*). The IUCN Red List of Threatened Species assessment on European Level confirms the threatened status of the first two species in the same category, while the Imperial Eagle evaluate as Least Concern, since the European population is not under threat.

The Transmission line in its Pelagonia Plane's section passes across the narrow part of the Important Bird Area MK024 (Pelagonia), see Figure 5.

Figure 5. Important Bird Area MK024 (Pelagonia) at its narrow part.

The IBA MK024 (Pelagonia) has been designated on the basis of an assessment made in the year 2008 as a results of the presence of three trigger species under Global IBA Criterion A1 (Globally Threatened Species Criterion) i.e. (The site is known regularly to hold significant numbers of a globally threatened species): Dalmatian Pelican (*Pelecanus crispus*), Lesser Kestrel (*Falco naumanni*) and European Roller (*Coracias garrulus*) and six species under European IBA Criterion B2 (The site regularly holds significant numbers of species with an unfavourable conservation status in Europe): Ferruginous Duck (Aythya nyroca), White Stork *(Ciconia ciconia*), Stone Curlew (*Burhinus oedicnemus*), Scops Owl (*Otus scops*), Little Owl (*Athene noctua*) and Lesser Grey Shrike (*Lanius minor*).

Currently, from the above mentioned three trigger species under Global IBA Criterion A1, only Dalmatian Pelican (*Pelecanus crispus*) is evaluated as Globally Threatened Species, while the other two species are included in the IUCN Category Least Concern (LC). However, the recorded 20-30 specimens of Dalmatian Pelican do not represent a stable population, since they only occasionally use the Zhabeni and Bukri Fishponds as feeding sites that are located outside the Project Area. Even on National Level, Dalmatian Pelican is not recognized as a breeding species, due to the fact that the whole regional population is nesting in Mala Prespa in Greece, and the Macedonian portion of Prespa Lake is used exclusively as a foraging site. Finally, nevertheless the pelicans in general are at high risk of both electrocution and collision with power lines, the Dalmatian Pelican is not likely to be at risk of electrocution or collision by construction of the transmission line, since its frequency and abundance not only in Pelagonia, but also in Prespa and Struga Valleys is highly reduced, represented only by occasional vagrant specimens.

The Lesser Kestrel (*Falco naumanni*) population in the year 2002 was estimated at 760-850 pairs, entirely confined to villages and man-made structures of central and northern parts of Pelagonia Plain (Velevski et al., 2010). The assessment of 2013 shows significant population declining to 350 breeding pairs (BirdLife International, 2016). Field surveys conducted within the frames of this project show low frequency and abundance of the species within the Pelagonia section of the Project Area. However, following the Bern Convention's Recommendation No. 110 (2004) on minimising adverse effects of above-ground electricity transmission facilities (power lines) on birds; raptors in general, including the Lesser Kestrel are considered to be particularly sensitive, or potentially so, to power lines. Therefore, certain mitigation measures to avoid and minimize adverse effects will be suggested after obtaining additional data during the next seasonal field surveys.

Regarding the European Roller (*Coracias garrulus*), nevertheless it was chosen as one of the "Trigger" or "Qualifying" bird species for designation of the IBA MK024 with 10-30 breeding pairs, our summer season surveys do not confirmed any presence of the species along the transmission line corridor. Consequently we shall not discuss the species status at this phase of project development.

Concerning, the rest six bird species, used as IBA trigger species for designation of the IBA MK024 under the European IBA Criterion B2, mostly impacted species by the project development will be the White Stork (*Ciconia ciconia*).

Surveys on White Stork population conducted in the year 2002, within the territory of IBA MK024 have resulted in an estimated population of 220-230 breeding pairs (BirdLife International, 2016). Counts on White Storks, on the same IBA, conducted in the year 2012, shows significantly increasing population trend consisted of 320 breeding pairs (Velevski et al., 2013). On National level it is quite significant number, however, on European Level it represents only 0.1% of the total European White Stork population consisted of about 250,000 breeding pairs. In general the White Stork's nesting sites are closely related with human settlements. In the case of this project's transmission line corridor, nesting sites are not located within the corridor boundaries, but they are present in the neighboring villages along the transmission line in Pelagonia Plain as well as in Prespa and Struga Valleys. The Storks (Ciconidae) including both, the White Stork (*Ciconia ciconia*) and Black Stork (*Ciconia nigra*) are qualified as focal species for environmental assessments since they are at highest risk of electrocution and collision, included in Category III (casualties are a major mortality factor; threatening a species with extinction, regionally or on a larger scale). With reference to the aforementioned explanation, appropriate mitigation measures on this species will be recommended especially on the Pelagonia section of the transmission line.

Ferruginous Duck (*Aythya nyroca*), within the territory of IBA MK024 is estimated at 10-15 breeding pairs, strictly restricted to the large fishponds located southward of the transmission line. On national level the Ferruginous Duck population is quite small (20-40 breeding pairs) compared to the European

population estimated between 17,400 and 30,100 pairs. The species has been also recorded in Prespa Lake with 3-10 breeding pairs, while it is absent in Ohrid Lake. Ferruginous Duck has not been recorded within the transmission line corridor, during the summer surveys. Not only, this species but none of the large order of waterfowl highly adapted for an aquatic existence at the water surface has not been recorded. Having in mind the fact that in close neighborhood of transmission line corridor large freshwater bodies are located, including fishponds, one artificial and two natural lakes, lack of waterfowl species is caused by two reasons. Firstly, most of waterfowl are migratory species and during summer season the freshwater bodies are occupied only by locally breeding waterbirds. Secondly, the Project Area is outside the primary and secondary flyways connecting Europe and Africa. On European level, the scale of birds' movement is consisted of over 2 billion passerines, 2.5 million ducks and 2 million raptors migrating from their breeding grounds in Europe and central and western Asia to winter in tropical Africa. Only at Bosphorus which is one of the two major migratory bottlenecks, more than 2 million waterfowl and raptors regularly pass in spring and autumn.

The Stone Curlew (*Burhinus oedicnemus*) has not been recorded during our summer season surveys nevertheless its population was estimated at 10-30 breeding pairs within the IBA MK024 (Pelagonia) and at 200-400 breeding pairs at National Level. The Stone Curlew, like the European Roller both belong to faunal elements whose origin derives from Ponto-Caspian steppes and Irano-Turanian semi-deserts and consequently prefer more arid and semi-arid climate with appropriate habitat types. At European Level the population of Stone Curlew estimates between 53,000 and 88,200 breeding pairs. With regard to the above, except within Pelagonia Plain's section of the transmission line, we do not expect presence of the species along the rest of the corridor.

Medium-sized and small songbirds (Passeriformes), Owls (Strigiformes) and Doves and Pigeons (Columbiformes) (see Annex 1) are all sensitive to power lines, with low risk for casualties as a result of electrocution (Category I) and high risk for casualties as a result of collision (Categories II and III). Representatives of these three orders will be taken into consideration when general mitigation measures will be ascertained, after obtaining additional data during the next seasonal field surveys.

Raptors (Accipitriformes and Falconiformes) (see Table 1) are highly sensitive to power lines, with high risk of casualties as a result of both electrocution and collision. Of all recorded species of the orders Accipitriformes and Falconiformes along the Project Corridor, The Imperial Eagle (*Aquila heliaca*) is the only threatened species included on the IUCN Red List of Threatened Species on Global Level, while on European Level it is evaluated as Least Concern (LC) as a result of a stable population estimated between 1,800 and 2,200 breeding pairs. Within the Project Area, the species has been recorded only in Pelagonia Plain's section of the transmission line corridor. These are vagrant individuals since the nesting sites of 35 breeding pairs recorded on National Level are restricted to Kumanovo Valley, Ovce Pole Plain and the middle course of Vardar River Watershed, between Veles and Demir Kapija Gorge. The species belongs to

the complex of steppic faunal elements and prefers steppe-like, dry open terrains. The vagrant individuals are using Pelagonia Plain only as a foraging site, since for spring and autumn migration they regularly use the flyway that runs along the Vardar River.

On the other hand, during the summer season surveys the Golden Eagle (*Aquila chrysaetos*) has been recorded in the mountainous region of the Project Area, between Pelagonia and Strushko Pole Plains. It is quite reasonable, seeing that the species belongs to boreal (taiga type) complex of species and inhabits most of Northern Europe as well as the mountains in Southern Europe. However, no nesting sites have been ascertained within the transmission line's corridor. On National Level the species is represented by 60-100 breeding pairs, which is less than 1% of the European population represented by 9,300 – 12,300 breeding pairs and less than 0.06% of the global population represented by more than 150,000 breeding pairs.

The preliminary results of summer surveys lead to an initial conclusion that no critical habitats as defined by EBRD ESP PR6 have been ascertained within the Project Corridor. However, it appears that the Project Corridor transects an internationally recognised Important Bird Area (IBA), the Pelagonian IBA, for which the Lesser Kestrel is listed as the key species of interest in this area. This IBA constitutes a Priority Biodiversity Feature, as defined by EBRD ESP PR6, and potentially significant impacts on the Lesser Kestrel. So far, the bird survey shows only a few observations of the Lesser Kestrel. However, following the Bern Convention's Recommendation No. 110 (2004) on minimising adverse effects of above-ground electricity transmission facilities (power lines) on birds; raptors in general, including the Lesser Kestrel are considered to be particularly sensitive, or potentially so, to power lines. Therefore, certain mitigation measures to avoid and minimize adverse effects will be suggested after obtaining additional data during the next seasonal field surveys.

Further surveys are required to establish whether or not it is necessary to make refinements to the transmission line route within the corridor. Moreover, certain sections of the route that are not yet completely defined will cause risk for the birds.After conducting the surveys on the birds in the other three seasons, the line sections with increased collision risk will be precisely defined. Consequently, the one-year monitoring and complete final report (in accordance with the agreement with MEPSO) will give a clear picture of the species diversity, populations state, migratory pathways and impacts of the overhead power transmission line on the birds in order to suggest appropriate mitigation measures.

2.4. Assessment and Evaluation of Bats (Summer Season Report)

2.4.1. Results

Surveillance of bat populations can generally be carried out in two main ways: by visual counts of roosting bats at hibernation sites, mating and maternity roosts or other summer roosts; and by recording foraging bats along linear transects using bat detector, while walking or using moving vehicle.

2.4.1.1. Assessment of bats recorded along line transects and point counts using ultrasound detector

Recordings of foraging bats along line transects were conducted using ultrasound detector Batlogger M, while walking or using moving vehicle, as well as on standpoints for point counts of bats (see Table 2.)

Table 2. Monitoring of bats along Transmission Line Corridor: during summer season (2016) using transects counts and point counts.

No.	Monitoring Site	Type of Monitoring	GPS Coordinates & Altitude		Length (km)
			Start Point	End Point	
1.	Dobromiri–Dolno Aglarci	Line Transect	N 41,064400; E 21,454180 582 m asl	N 41,092300; E 21,473310 584 m asl	3.64
2.	Bitola Road Interchange-Kukurechani	Line Transect	N 41.075828; E 21.341247 597 m asl	N 41.095709; E 21.324489 602 m asl	2,65
3.	Ramna - Bitola-Resen Road Interchange	Line Transect	N 41.087933; E 21.185683 794 m asl	N 41.070965; E 21.224157 911 m asl	4,20
4.	Sopotsko - Bitola-Resen Road Intersection	Line Transect	N 41.085172; E 21.064590 910 m asl	N 41.070389; E 21.037005 880 m asl	2,89
5.	Resen-Ohrid Road Intersection-Leva Reka	Line Transect	N 41.142700;E 21.000366 946 m asl	N 41.159618; E 21.006767 974 m asl	2,12
6.	Resen-Ohrid Road Intersection (Prentov Most) – Rock Quarry	Line Transect	N 41.204761; E 20.903989 858 m asl	N 41.211192; E 20.912892 883 m asl	1,12
7.	Livoishta-Livoishta	Line Transect	N 41.201007; E 20.815989 765 m asl	N 41.201007; E 20.815989 765 m asl	2,30
8.	Livoishta-Trebenishta	Line Transect	N 41.201007; E 20.815989 765 m asl	N 41. 206461; E 20.754872 720 m asl	6,00
9.	Moroishta	Point Count	N 41,198341; E 20,701821; 695 m asl		-
10.	Vishni - Kjafasan State Border Crossing	Line Transect	N 41.196835; E 20.590662 1 084 m asl	N 41.093891; E 20.610357 988 m asl	15,30

Altogether, at 10 monitoring sites along the transmission line corridor, monitoring of foraging bats was performed using ultrasound detector while walking or using moving vehicle and/or combined recordings along transect route and point counts (see Figure 6).

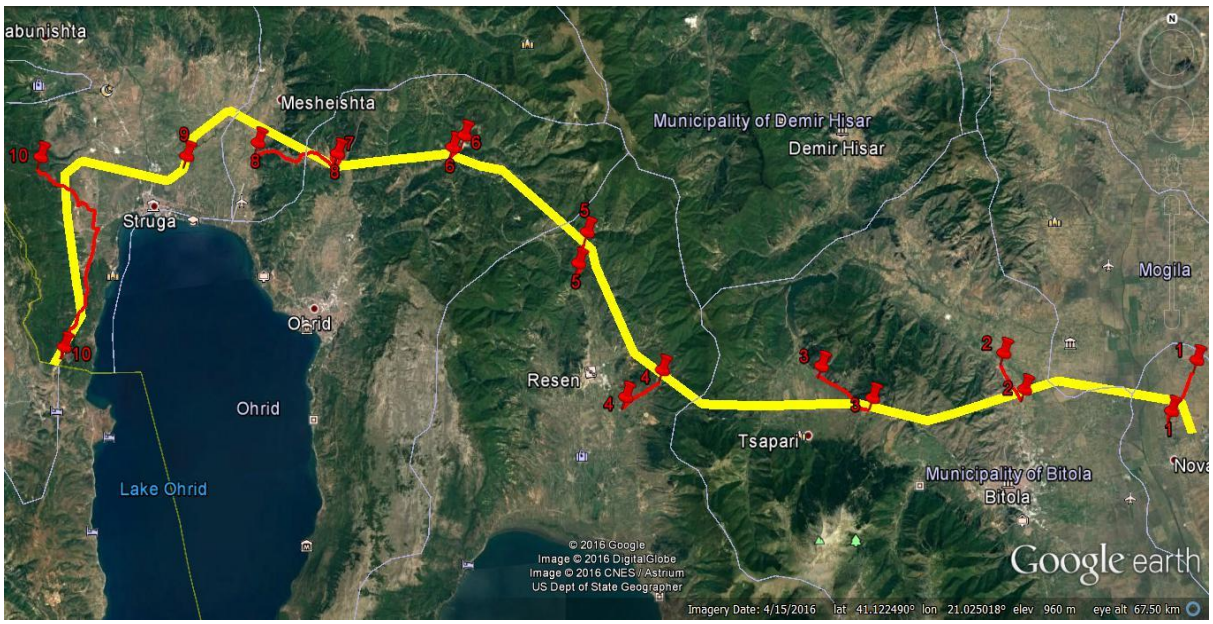

Figure 6. Monitoring sites along the transmission line corridor for monitoring of foraging bats, using ultrasound detector for recording bats along transect routes and standpoints for point counts (1-10). Yellow line: Transmission line corridor; Red lines and numbers: Monitoring sites (see Table 2).

Monitoring Site No. 1: Dobromiri – Dolno Aglarci

On September 05, 2016 surveillance and monitoring of bats on the monitoring site Dobromiri - Dolno Aglarci was conducted. In the period from 07:57 PM until 08:22 PM the presence of foraging bats with ultrasonic Batlogger M along linear transect was recorded, while using moving vehicle. The transect route runs along the local road Novatsi-Dobromiri-Dolno Aglarci-Dedebalci-Dobrushevo-Noshpal. The Dobromiri Village was taken as a start point, with GPS coordinates N 41.06440; E 21.454180 and altitude of 582 m asl m asl. Thence, the transect route runs in North-east direction, passes across the transmission line corridor and ends at the village of Dolno Aglarci, with GPS coordinates N 41.09230; E 21.47331 and an altitude of 584 m asl. Total length of the transect route is 3.64 km (see Figure 7).

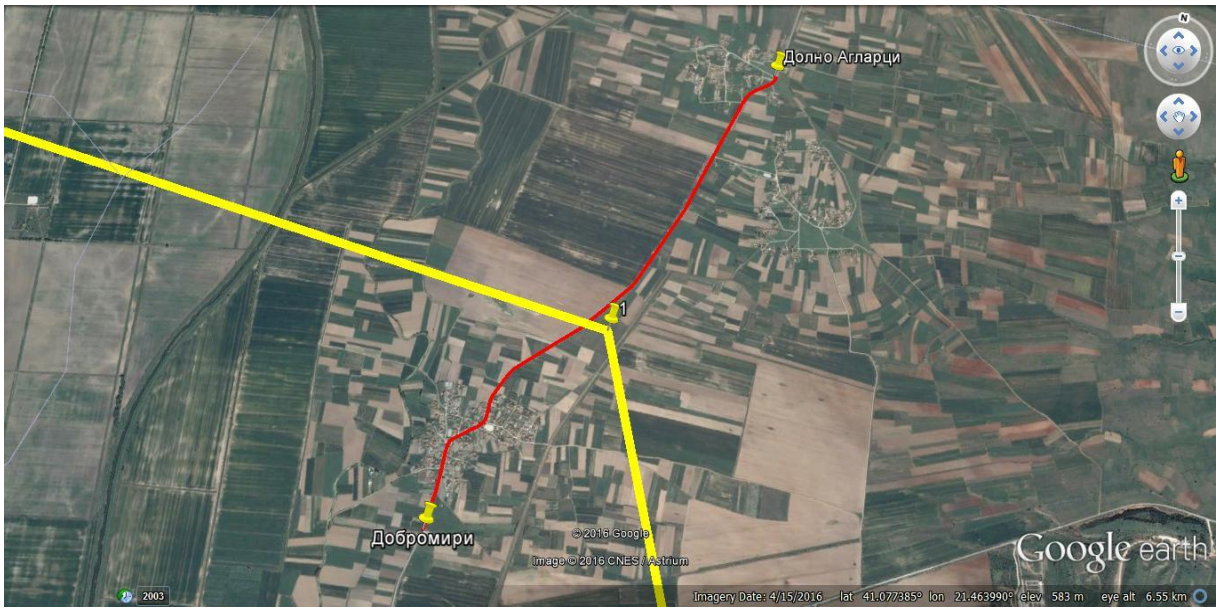

Figure 7. Dobromiri – Dolno Aglarci Monitoring Site (Line Transect). Recording of foraging bats conducted with ultrasonic Batlogger M while using moving vehicle.

The weather was cloudy, wind velocity between 1 and 5 km/h (light air), and air temperature at 07:57 PM (recording start time) 20o C and at 08:22 PM (recording end time) it was 20o C. The recording of bats along the transect route with total length of 3.64 km was conducted, while using moving vehicle and travelled in 12.5 minutes, with an average speed of 17.4 km/h. Thence, recording continued while driving back to the start point. The route runs through Pelagonia Plain, an intensively-managed agricultural land that represents Macedonia's main wheat cultivation region.

The recording of foraging bats with ultrasound detector Batlogger M along line transect while using moving vehicle has resulted in 82 records with 1,520 calls, of which 1 record with 2 calls was not valid, while the rest 81 records with 1,518 calls are valuable data, representing 8 bat species (see Table 3).

Table 3. Dobromiri – Dolno Aglarci Monitoring Site (Line Transect): Computer-aided identification of species, and processed data of records and calls (Summer Season Survey, 2016).

Nr.	Scientific Name	English Common Name	Macedonian Common Name	Number of Records	Number of Calls
Order Chiroptera (Bats);					
Family Vespertilionidae (Vespertilionid Bats)					
1.	*Pipistrellus nathusii*	Nathusius' Pipistrelle	Natusiev pipistrel	23	575
2.	*Pipistrellus kuhlii*	Kuhl's Pipistrelle	Beloraben pipistrel	21	375
3.	*Plecotus auritus*	Brown Long-eared Bat	Kafeav ushest liljak	9	102
4.	*Hypsugo savii*	Savi's Pipistrelle	Saviev pipistrel	8	70
5.	*Nyctalus noctula*	Common Noctule	Lisest vechernik	7	107
6.	*Myotis emarginatus*	Geoffroy's Bat	Troboen nokjnik	6	39
7.	*Pipistrellus pipistrellus*	Common Pipistrelle	Obichen pipistrel	5	223

8.	*Pipistrellus pygmaeus*	Pygmy Pipistrelle	Dzudzest pipistrel	2	27
Total number				**81**	**1,518**

Raw data of Batlogger M recordings on foraging bats along line transect Dobromiri – Dolno Aglarci in Annex 2.1 of this report are presented.

Monitoring Site No. 2: Bitola Road Interchange – Kukurechani

On September 05, 2016 surveillance and monitoring of bats on the monitoring site Resen–Ohrid Road Intersection (Prentov Most) – Rock Quarry was conducted. In the period from 07:05 PM until 07:35 PM the presence of foraging bats with ultrasonic Batlogger M along linear transect was recorded, while using moving vehicle, combined with point count at the transect route endpoint. The transect route runs along the local road Bitola-Kichevo, The Bitola road interchange was taken as a start point, with GPS coordinates N 41.075828; E 21.341247 and altitude of 597 m asl m asl. Thence, the transect route runs in North-west direction to the end point at the village of Kukurechani, with GPS coordinates N 41.095709; E 21.324489 and an altitude of 602 m asl. Total length of the transect route is 2.65 km (see Figure 8).

The weather was cloudy, with light rain intensity, wind velocity between 12 and 19 km/h (gentle breeze), and air temperature at 07:05 PM (recording start time) 22^{o} C and at 07:35 PM (recording end time) again 22^{o} C. The recordings of foraging bats have been conducted using combined methods of point and transect counts. Firstly, recording of bats along the transect route with total length of 2.65 km was conducted, while using moving vehicle and travelled in 10 minutes, with an average speed of 15.9 km/h. Thence, for a period of 10 minutes, foraging bats were recording from a standpoint at the end point of the transect route (Kukurechani Village); thence recording continued while driving back to the start point.

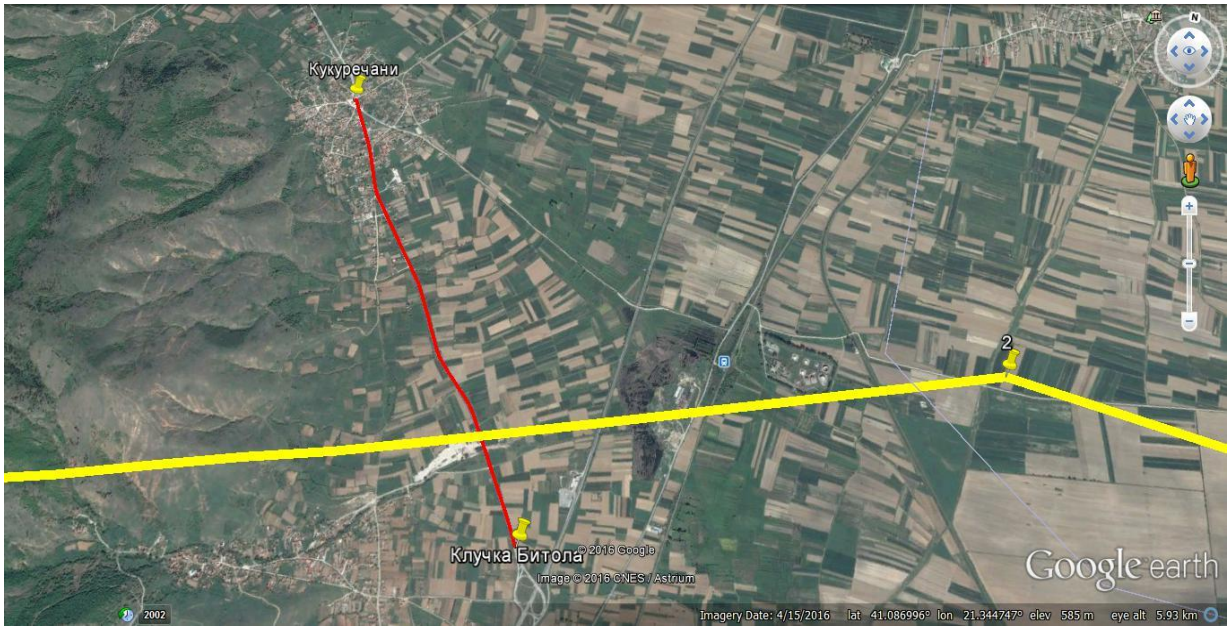

Figure 8. Bitola Road Interchange – Kukurechani Monitoring Site (Line Transect). Recording of foraging bats conducted with ultrasonic Batlogger M while using moving vehicle.

The route runs through Pelagonia Plain, an intensively-managed agricultural land that represents Macedonia's main grain cultivation region.

The recording of foraging bats with ultrasound detector Batlogger M along line transect while using moving vehicle, combined with point count has resulted in 60 records with 826 calls, of which 4 record with 67 calls were not valid, while the rest 56 records with 759 calls are valuable data, representing 9 bat species (see Table 4).

Table 4. Bitola Road Interchange – Kukurechani Monitoring Site (Line Transect): Computer-aided identification of species, and processed data of records and calls (Summer Season Survey, 2016).

Nr.	Scientific Name	English Common Name	Macedonian Common Name	Number of Records	Number of Calls
Order Chiroptera (Bats)					
Family Vespertilionidae (Vespertilionid Bats)					
1.	*Plecotus auritus*	Brown Long-eared Bat	Kafeav ushest liljak	15	191
2.	*Nyctalus noctula*	Common Noctule	Lisest vechernik	13	224
3.	*Hypsugo savii*	Savi's Pipistrelle	Saviev pipistrel	12	130
4.	*Pipistrellus kuhlii*	Kuhl's Pipistrelle	Beloraben pipistrel	10	142
5.	*Pipistrellus pipistrellus*	Common Pipistrelle	Obichen pipistrel	2	12
6.	*Pipistrellus nathusii*	Nathusius' Pipistrelle	Natusiev pipistrel	1	22
7.	*Myotis emarginatus*	Geoffroy's Bat	Troboen nokjnik	1	18
8.	*Myotis bechsteini*	Bechstein's Bat	Behshtainov nokjnik	1	17
9.	*Nyctalus lasiopterus*	Greater Noctule Bat	Golem vechernik	1	3
Total number				**56**	**759**

Raw data of Batlogger M recordings on foraging bats along line transect Bitola Road Interchange - Kukurechani in Annex 2.2 of this report are presented.

Monitoring Site No. 3: Ramna - Bitola-Resen Road Interchange

On August 31, 2016 surveillance and monitoring of bats on the monitoring site Ramna – Bitola-Resen Road Interchange, in the period from 07:50 PM until 08:30 PM was conducted by recording presence of foraging bats with ultrasonic Batlogger M along linear transect, while using moving vehicle. The transect route runs along local road from the village of Ramna as a start point, with GPS coordinates N 41.087933; E 21.185683 and altitude of 794 m asl m asl, up to the South-east to the end point at the road interchange with the main road Bitola - Resen with GPS coordinates N 41.070965; E 21.224157 and an altitude of 911 m asl. Total length of the transect route is 4.20 km (see Figure 9).

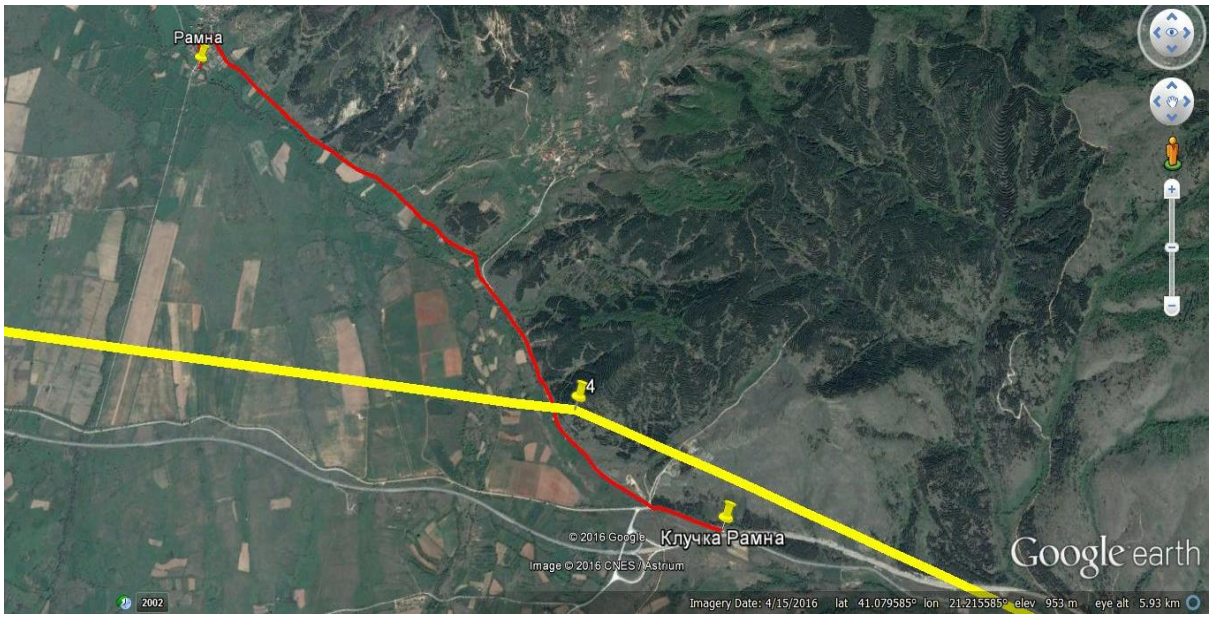

Figure 9. Ramna-Bitola Resen Road Interchange Monitoring Site (Line Transect). Recording of foraging bats was conducted with ultrasonic Batlogger M while using moving vehicle.

The weather was cloudy in part with wind velocity "Calm" (<1 km/h). The air temperature at 07:50 PM (recording start time) was 22o C and at 08:30 PM (recording end time) was 18o C. The distance of 4.20 km (total length of the line transect), while using moving vehicle was travelled in 40 minutes, with an average speed of 6.30 km/h.

Table 5. Ramna-Bitola Resen Road Interchange Monitoring Site (Line Transect): Computer-aided identification of species, and processed data of records and calls (Summer Season Survey, 2016).

Nr.	Scientific Name	English Common Name	Macedonian Common Name	Number of Records	Number of Calls
Order Chiroptera (Bats); (Liljaci)					
Family Vespertilionidae (Vespertilionid Bats); (Glatkonosni liljaci)					
1.	*Pipistrellus nathusii*	Nathusius' Pipistrelle	Natusiev pipistrel	18	1,441
2.	*Pipistrellus kuhlii*	Kuhl's Pipistrelle	Beloraben pipistrel	14	173
3.	*Pipistrellus pygmaeus*	Pygmy Pipistrelle	Dzudzest pipistrel	5	192
4.	*Hypsugo savii*	Savi's Pipistrelle	Saviev pipistrel	5	110
5.	*Nyctalus noctula*	Common Noctule	Lisest vechernik	5	51
6.	*Plecotus auritus*	Brown Long-eared Bat	Kafeav ushest liljak	4	202
7.	*Pipistrellus pipistrellus*	Common Pipistrelle	Obichen pipistrel	3	43
8.	*Nyctalus leisleri*	Leisler's Bat	Shumski vechernik	3	43
9.	*Myotis emarginatus*	Geoffroy's Bat	Troboen nokjnik	2	31
10.	*Miniopterus schreibersii*	Schreibers' Bat	Dolgokrilest Liljak	1	24
11.	*Myotis bechsteini*	Bechstein's Bat	Behshtainov nokjnik	1	13
Total number				**61**	**2,323**

The route at its start point runs through the Ramna village, thence mainly across agricultural land that dominates on the right side of the route, while on the left side hill slopes are dominating, covered by planted forest of black pine.

The recording of foraging bats with ultrasound detector Batlogger M along line transect while using moving vehicle has resulted in 64 records with 2,439 calls, of which 3 records with 116 calls were not valid, while the rest 61 records with 2,323 calls are valuable data, representing 11 bat species (see Table 5). Raw data of Batlogger M recordings on foraging bats along line transect Ramna-Bitola-Resen Road interchange in Annex 2.3 of this report are presented.

Monitoring Site No. 4: Sopotsko - Bitola-Resen Road Intersection

On September 03, 2016 surveillance and monitoring of bats on the monitoring site Sopotsko – Bitola-Resen Road Intersection was conducted. In the period from 07:15 PM until 07:45 PM the presence of foraging bats with ultrasonic Batlogger M along linear transect was recorded, while using moving vehicle. The transect route runs along local road from the village of Sopotsko as a start point, with GPS coordinates N 41. 085172; E 21.064590 and altitude of 910 m asl m asl, down South-westward to the end point at the road intersection with the main road Bitola - Resen with GPS coordinates N 41.070389; E 21.037005 and an altitude of 880 m asl. Total length of the transect route is 2.89 km (see Figure 10).

Figure 10. Sopotsko-Bitola Resen Road Intersection Monitoring Site (Line Transect). Recording of foraging bats conducted with ultrasonic Batlogger M while using moving vehicle.

The weather was cloudy in part with wind velocity “Calm” (<1 km/h). The air temperature at 07:15 PM (recording start time) was 18o C and at 07:45 PM (recording end time) was 16o C. The distance of 2.89 km (total length of the line transect), while using moving vehicle was travelled in 20 minutes, with an average speed of 8.7 km/h. The rest 10 minutes, foraging bats were recording from a standpoint.

The route runs along flattened valley, at its start point through the Sopotsko Village, thence mainly across agricultural land that dominates on the left side of the route, planted with apple-tree orchards and cereals, while on the right side the hill slopes are covered by degraded oak forest.

The recording of foraging bats with ultrasound detector Batlogger M along line transect while using moving vehicle has resulted in 22 records with 508 calls, representing 7 bat species (see Table 6).

Table 6. Sopotsko-Bitola Resen Road Intersection Monitoring Site (Line Transect): Computer-aided identification of species, and processed data of records and calls (Summer Season Survey, 2016).

Nr.	Scientific Name	English Common Name	Macedonian Common Name	Number of Records	Number of Calls
Order Chiroptera (Bats)					
Family Vespertilionidae (Vespertilionid Bats)					
1.	*Pipistrellus kuhlii*	Kuhl's Pipistrelle	Beloraben pipistrel	7	187
2.	*Nyctalus noctula*	Common Noctule	Lisest vechernik	4	44
3.	*Pipistrellus nathusii*	Nathusius' Pipistrelle	Natusiev pipistrel	3	102
4.	*Plecotus auritus*	Brown Long-eared Bat	Kafeav ushest liljak	3	68
5.	*Myotis emarginatus*	Geoffroy's Bat	Troboen nokjnik	3	67
6.	*Myotis capaccinii*	Long-fingered Bat	Dolgoprst nokjnik	1	29
7.	*Nyctalus lasiopterus*	Greater Noctule Bat	Golem vechernik	1	11
Total number				**22**	**508**

Raw data of Batlogger M recordings on foraging bats along line transect Sopotsko-Bitola-Resen Road Intersection in Annex 2.4 of this report are presented.

Monitoring Site No. 5: Resen-Ohrid Road Intersection - Leva Reka

On September 03, 2016 surveillance and monitoring of bats on the monitoring site Resen–Ohrid Road Intersection - Leva Reka Village was conducted. In the period from 08:03 PM until 08:29 PM the presence of foraging bats with ultrasonic Batlogger M along linear transect was recorded, while using moving vehicle. The transect route runs along local road between the road Intersection at the main road Resen-Ohrid and the village of Leva Reka. The road intersection was taken as a start point, with GPS coordinates N 41.142700;E 21.000366 and altitude of 946 m asl m asl, up in North-east direction to the end point at the village of Leva Reka with GPS coordinates N 41.159618; E 21.006767 and an altitude of 974 m asl. Total length of the transect route is 2.12 km (see Figure 11).

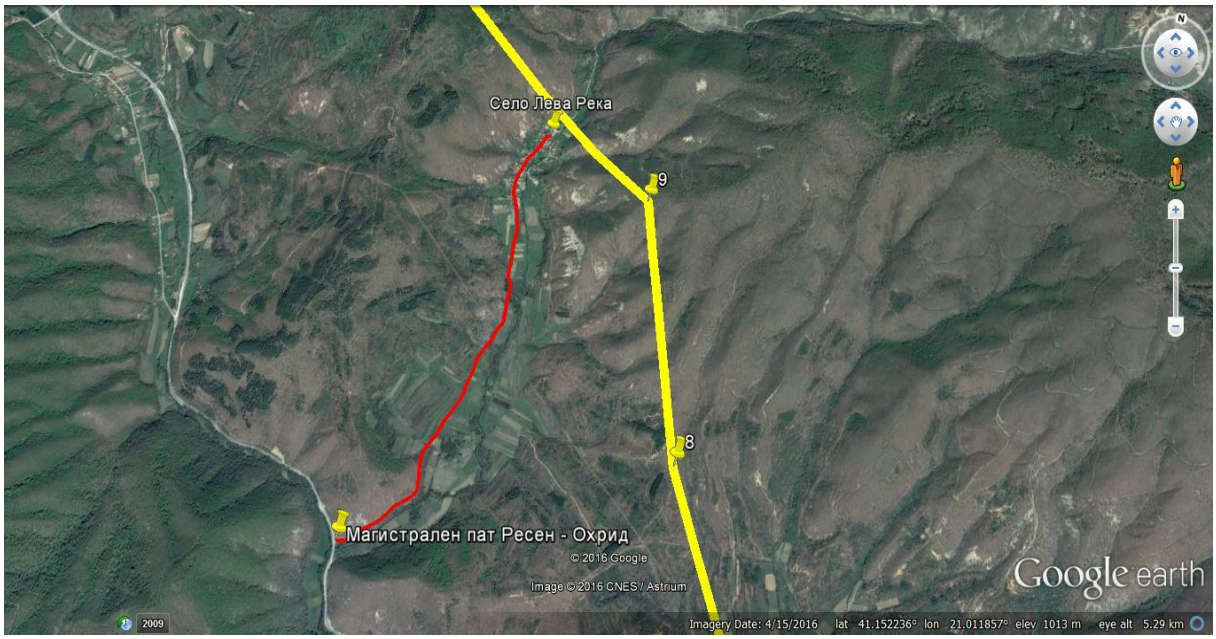

Figure 11. Resen-Ohrid Road Intersection-Leva Reka Monitoring Site (Line Transect). Recording of foraging bats conducted with ultrasonic Batlogger M while using moving vehicle.

The weather was almost clear sky with no clouds with wind velocity "Calm" (<1 km/h). The air temperature at 08:03 PM (recording start time) was 19o C and at 08:29 PM (recording end time) was 13o C. The distance of 2.12 km (total length of the line transect), while using moving vehicle was travelled in 8 minutes, with an average speed of 15.9 km/h. Thence, for a period of 10 minutes, foraging bats were recording from a standpoint; thence recording continued while driving back to the start point.

The route runs along narrow valley of Leva Reka River located among slopes of Plakenska Planina Mountain and at its end point through the Leva Reka Village. The valley is mainly planted with apple-tree orchards, while the hill slopes on both sides are covered by oak forest. The recording of foraging bats with ultrasound detector Batlogger M along line transect while using moving vehicle, combined with point count has resulted in 28 records with 313 calls, representing 8 bat species (see Table 7).

Table 7. Resen-Ohrid Road Intersection – Leva Reka Village Monitoring Site (Line Transect): Computer-aided identification of species, and processed data of records and calls (Summer Season Survey, 2016).

Nr.	Scientific Name	English Common Name	Macedonian Common Name	Number of Records	Number of Calls
Order Chiroptera (Bats); (Liljaci)					
Family Vespertilionidae (Vespertilionid Bats)					
1.	*Pipistrellus pipistrellus*	Common Pipistrelle	Obichen pipistrel	9	62
2.	*Pipistrellus kuhlii*	Kuhl's Pipistrelle	Beloraben pipistrel	7	94
3.	*Hypsugo savii*	Savi's Pipistrelle	Saviev pipistrel	3	35
4.	*Nyctalus noctula*	Common Noctule	Lisest vechernik	3	32
5.	*Pipistrellus nathusii*	Nathusius' Pipistrelle	Natusiev pipistrel	2	51
6.	*Plecotus auritus*	Brown Long-eared Bat	Kafeav ushest liljak	2	25

7.	*Pipistrellus pygmaeus*	Pygmy Pipistrelle	Dzudzest pipistrel	1	9
8.	*Myotis bechsteini*	Bechstein's Bat	Behshtainov nokjnik	1	5
Total number				**28**	**313**

Raw data of Batlogger M recordings on foraging bats along line transect Resen–Ohrid Road Intersection - Leva Reka Village in Annex 2.5 of this report are presented.

Monitoring Site No. 6: Resen-Ohrid Road Intersection (Prentov Most) – Rock Quarry

On September 03, 2016 surveillance and monitoring of bats on the monitoring site Resen–Ohrid Road Intersection (Prentov Most) – Rock Quarry was conducted. In the period from 08:45 PM until 08:29 PM the presence of foraging bats with ultrasonic Batlogger M along linear transect was recorded, while using moving vehicle. The transect route runs along local road between the road Intersection at the main road Resen-Ohrid and the village of Kuratica, up to the Rock Quarry. The road intersection was taken as a start point, with GPS coordinates N 41.204761; E 20.903989 and altitude of 858 m asl m asl, up in North-east direction to the end point at the Rock Quarry with GPS coordinates N 41.211192; E 20.912892 and an altitude of 883 m asl. Total length of the transect route is 1.12 km (see Figure 12).

The weather was clear sky with no clouds and no wind, with air temperature at 08:45 PM (recording start time) was 15o C and at 09:15 PM (recording end time) was 13o C. The recordings of foraging bats have been conducted using combined methods of point and transect counts. Firstly, for a period of 10 minutes, recording was made from a standpoint, at the start point of the transect route. Thence, the distance of 1.12 km (total length of the line transect), while using moving vehicle was travelled in 5 minutes, with an average speed of 13.4 km/h. Thence, for a period of 10 minutes, foraging bats were recording from a standpoint at the end point of the transect route; thence recording continued while driving back to the start point.

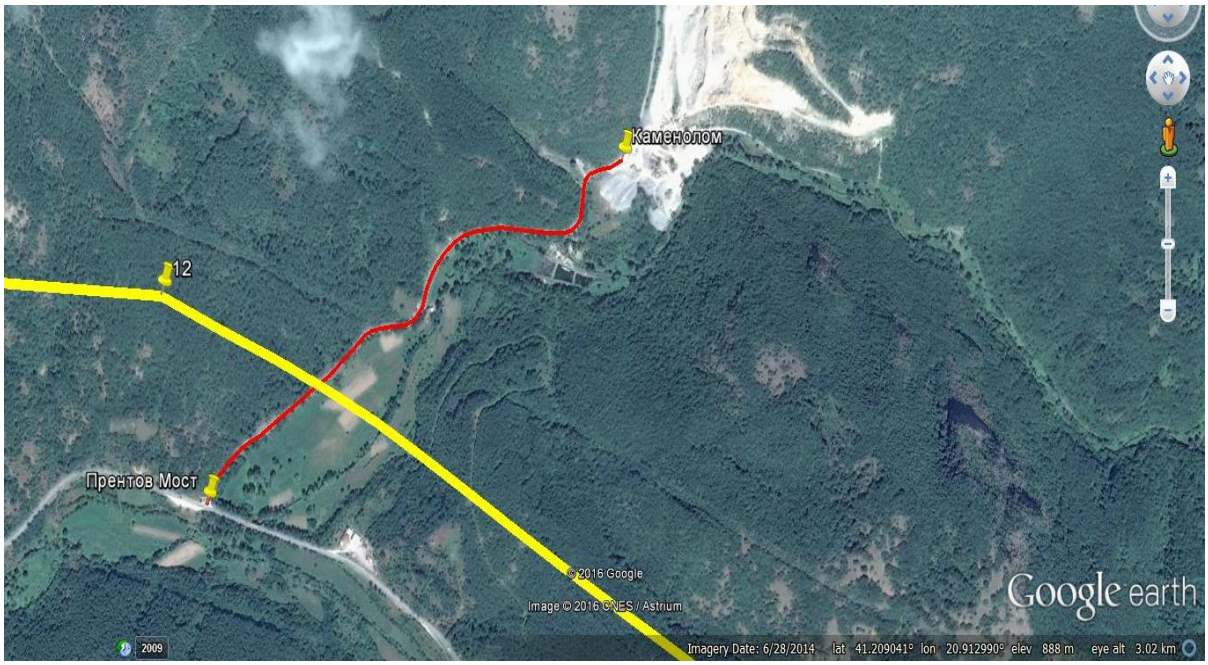

Figure 12. Resen-Ohrid Road Intersection (Prentov Most) – Rock Quarry Monitoring Site (Line Transect). Recording of foraging bats conducted with ultrasonic Batlogger M while using moving vehicle.

The route runs along narrow valley (100 m wide) upstream a river formed by conjunction of two small mountain streams that come from the villages of Kuratica and Rechica. The valley itself is abandoned agricultural land, while the hill slopes on both sides are covered by oak forest. Downstream the Rock Quarry there is three small reservoirs, which are using as fishponds.

The recording of foraging bats with ultrasound detector Batlogger M along line transect while using moving vehicle, combined with point counts has resulted in 28 records with 316 calls, of which 1 record with 3 calls were not valid, while the rest 27 records with 313 calls are valuable data, representing 11 bat species (see Table 8).

Table 8. Resen-Ohrid Road Intersection (Prentov Most) – Rock Quarry Monitoring Site (Line Transect): Computer-aided identification of species, and processed data of records and calls (Summer Season Survey, 2016).

Nr.	Scientific Name	English Common Name	Macedonian Common Name	Number of Records	Number of Calls
Order Chiroptera (Bats); (Liljaci)					
Family Vespertilionidae (Vespertilionid Bats)					
1.	*Nyctalus noctula*	Common Noctule	Lisest vechernik	8	131
2.	*Pipistrellus pipistrellus*	Common Pipistrelle	Obichen pipistrel	6	114
3.	*Pipistrellus kuhlii*	Kuhl's Pipistrelle	Beloraben pipistrel	6	72
4.	*Plecotus auritus*	Brown Long-eared Bat	Kafeav ushest liljak	6	61
5.	*Miniopterus schreibersii*	Schreibers' Bat	Dolgokrilest Liljak	3	77
6.	*Pipistrellus nathusii*	Nathusius' Pipistrelle	Natusiev pipistrel	2	92
7.	*Myotis emarginatus*	Geoffroy's Bat	Troboen nokjnik	2	24
8.	*Pipistrellus pygmaeus*	Pygmy Pipistrelle	Dzudzest pipistrel	1	19
9.	*Hypsugo savii*	Savi's Pipistrelle	Saviev pipistrel	1	13
10.	*Vespertilio murinus*	Parti-coloured Bat	Sharen polnokjnik	1	9
11.	*Nyctalus leisleri*	Leisler's Bat	Shumski vechernik	1	1
Total number				**27**	**613**

Raw data of Batlogger M recordings on foraging bats along line transect Resen–Ohrid Road Intersection (Prentov Most) - Rock Quarry in Annex 2.6 of this report are presented.

Monitoring Site No. 7: Livoishta - Livoishta

Surveillance of foraging bats on Monitoring Site No. 7: Livoishta-Livoishta was conducted on August 16, 2016 in the period from 07:45 PM until 08:33 PM. The transect route was chosen with circular shape to encompass the area of the future Ohrid Step-Down Transformer 400/110 kV. The route starts in the village of Livoishta (N 41.201007; E 20.815989; 765 m asl); thence runs around ending at the same point, with total length of 2.3 km (see Figure 13).

Figure 13. Livoishta-Livoishta Line Transect (Recording of foraging bats was conducted using Batlogger M while walking along the route).

The weather was calm with air temperature of 22oC at the recording start time (07:45 PM). The distance of 2.3 km while walking and recording was travelled in 48 minutes, with an average speed of 2.9 km/h. The area of the route is mainly agricultural land, while the surrounding hills with planted Black Pine (*Pinus nigra*) Forest and degraded natural Oak Forest are covered. Old tree stems have not been recorded. The recording has resulted in 15 records with 182 calls representing 5 bat species (see Table 9).

Table 9. Livoishta-Livoishta Line Transect: Computer-aided identification of species, and processed data of records and calls (Summer Season Survey, 2016).

Nr.	Scientific Name	English Common Name	Macedonian Common Name	Number of Records	Number of Calls
Order Chiroptera (Bats)					
Family Vespertilionidae (Vespertilionid Bats); (Глатконосни лилјаци)					
1.	*Pipistrellus pipistrellus*	Common Pipistrelle	Obichen pipistrel	6	93
2.	*Plecotus auritus*	Brown Long-eared Bat	Kafeav ushest liljak	4	36
3.	*Nyctalus noctula*	Common Noctule	Lisest vechernik	3	28
4.	*Myotis emarginatus*	Geoffroy's Bat	Troboen nokjnik	1	16
5.	*Pipistrellus kuhlii*	Kuhl's Pipistrelle	Beloraben pipistrel	1	9
Total number				**15**	**182**

Raw data of Batlogger M recordings on foraging bats along line transect Livoishta-Livoishta are presented in Annex 2.7 of this report.

Monitoring Site No. 8: Livoishta - Trebenishta

On August 19, 2016 surveillance and monitoring of bats on the monitoring site Livoishta-Trebenishta, in the period from 07:52 PM until 09:15 PM was conducted by recording presence of bats using Batlogger M, while walking along the line transect. The transect route runs along local soil road from the village Livoishta as a start point, with GPS coordinates N 41.201007; E 20.815989 and altitude of 765 m asl, westwards to the end point in the village of Trebenishta with GPS coordinates N 41.206461; E 20.754872 and an altitude of 720 m asl. Total length of the transect route is 6.0 km (see Figure 14)

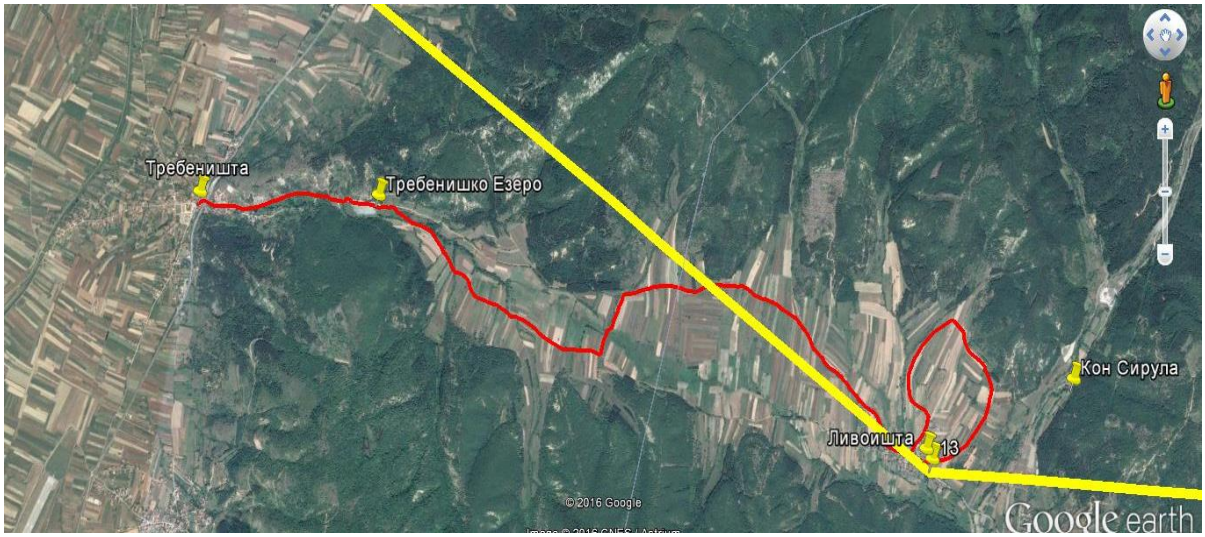

Figure 14. Livoishta-Trebenishta Line Transect (Recording of foraging bats was conducted using Batlogger M while walking along the route).

The weather was cloudy in part with wind velocity "Calm" (<1 km/h). The air temperature at 07:52 PM (recording start time) was 23o C and at 09:15 PM (recording end time) was again 23 o C. The distance of 6.0 km (total length of the line transect) while recording by walking, was travelled in 73 minutes, with an average speed of 4.9 km/h. Short stop of less than 10 minutes for point count was made in front of a small freshwater reservoir, located on the left side of the route, in the vicinity of Trebenishta village.

Table 10. Livoishta-Trebenishta Line Transect: Computer-aided identification of species, and processed data of records and calls (Summer Season Survey, 2016).

Nr.	Scientific Name	English Common Name	Macedonian Common Name	Number of Records	Number of Calls
Order Chiroptera (Bats)					
Family Vespertilionidae (Vespertilionid Bats)					
1.	*Pipistrellus kuhlii*	Kuhl's Pipistrelle	Beloraben pipistrel	45	956
2.	*Pipistrellus pipistrellus*	Common Pipistrelle	Obichen pipistrel	39	1,194
3.	*Plecotus auritus*	Brown Long-eared Bat	Kafeav ushest liljak	29	559
4.	*Nyctalus noctula*	Common Noctule	Lisest vechernik	14	237
5.	*Pipistrellus nathusii*	Nathusius' Pipistrelle	Natusiev pipistrel	8	173
6.	*Myotis bechsteini*	Bechstein's Bat	Behshtainov nokjnik	4	75

7.	*Miniopterus schreibersii*	Schreibers' Bat	Dolgokrilest Liljak	3	35
8.	*Myotis emarginatus*	Geoffroy's Bat	Troboen nokjnik	3	31
9.	*Hypsugo savii*	Savi's Pipistrelle	Saviev pipistrel	2	53
Total number				**147**	**3,313**

The route runs along flattened valley confined by mild slopes of Gorenska Chuka Hill to the South and by Mazatar Mountain slopes to the North. The valley itself is mostly covered by agricultural land with scattered single trees of Oak, Wild Plum and Common Walnut, while the mountain slopes by oak and planted Black Pine forest are overgrown.

The recording of foraging bats along line transect using ultrasound detector Batlogger M while walking in 148 records with 3,389 calls has resulted, of which 1 record with 76 calls was not valid, while the rest 147 records with 3,313 calls are valuable data, representing 9 bat species (see Table 10).

Raw data of Batlogger M recordings on foraging bats along line transect Livoishta-Trebenishta are presented in Annex 2.8 of this report.

Monitoring Site No. 9: Moroishta

On August 28, 2016 surveillance and monitoring of bats on the monitoring site Moroishta, in the period from 07:30 PM until 08:15 was conducted by recording presence of foraging bats using Batlogger M at a standpoint. The standpoint is located southwardly of the village Moroishta, with GPS coordinates N 41,198341; E 20,701821; 695 m asl and altitude of 695 m asl (see Figure 15).

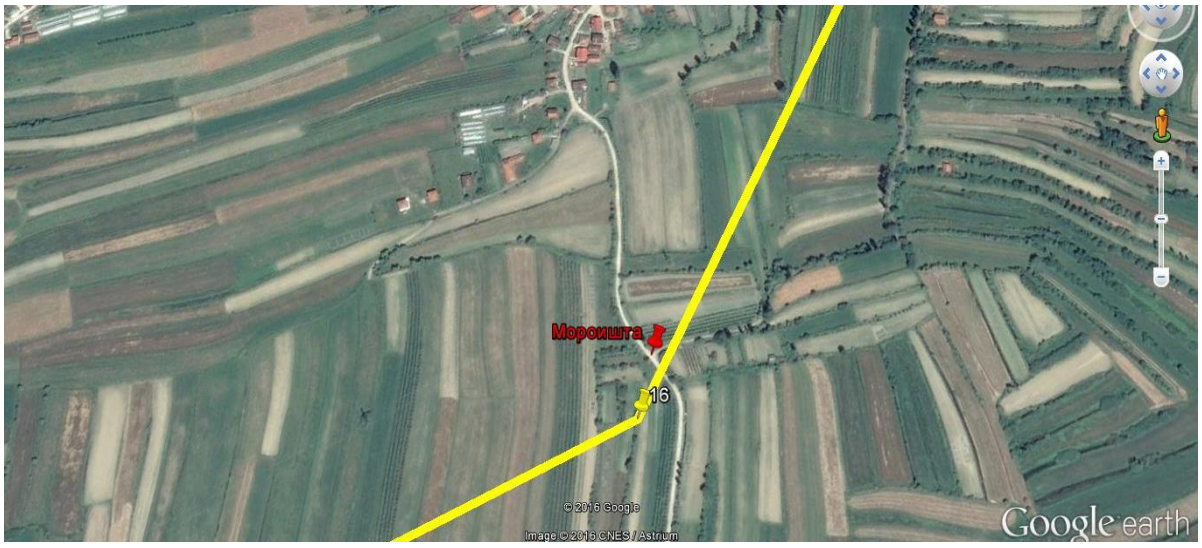

Figure 15. Moroishta Monitoring Site (Point Count). Recording of foraging bats was conducted using Batlogger M at a standpoint.

The weather was cloudy in part with wind velocity "Calm" (<1 km/h). The air temperature at 07:30 PM (recording start time) was 21^{o} C and at 08:15 PM (recording end time) was again 21 ^{o} C.

Table 11. Moroishta Monitoring Site (Point Count): Computer-aided identification of species, and processed data of records and calls (Summer Season Survey, 2016).

Nr.	Scientific Name	English Common Name	Macedonian Common Name	Number of Records	Number of Calls
Order Chiroptera (Bats)					
Family Vespertilionidae (Vespertilionid Bats)					
1.	*Plecotus auritus*	Brown Long-eared Bat	Kafeav ushest liljak	41	855
2.	*Pipistrellus pipistrellus*	Common Pipistrelle	Obichen pipistrel	32	498
3.	*Myotis bechsteini*	Bechstein's Bat	Behshtainov nokjnik	10	160
4.	*Myotis emarginatus*	Geoffroy's Bat	Troboen nokjnik	7	94
5.	*Pipistrellus nathusii*	Nathusius' Pipistrelle	Natusiev pipistrel	5	90
6.	*Nyctalus noctula*	Common Noctule	Lisest vechernik	5	40
7.	*Pipistrellus kuhlii*	Kuhl's Pipistrelle	Beloraben pipistrel	4	126
8.	*Pipistrellus pygmaeus*	Pygmy Pipistrelle	Dzudzest pipistrel	3	109
9.	*Miniopterus schreibersii*	Schreibers' Bat	Dolgokrilest Liljak	2	18
10.	*Nyctalus leisleri*	Leisler's Bat	Shumski vechernik	2	12
11.	*Myotis capaccinii*	Long-fingered Bat	Dolgoprst nokjnik	1	37
12.	*Myotis blythii*	Lesser Mouse-eared Bat	Mal nokjnik	1	28
Total number				**113**	**2,067**

The Moroishta Monitoring Site (standpoint) is located in the middle of Strushko Pole Plain, southward of the village Moroishta. The Strushko Pole Plain is agricultural land with rare, scattered single trees.

The recording of foraging bats using ultrasound detector Batlogger M from a standpoint has resulted in 115 records with 2,241 calls, of which 2 records with 174 calls were not valid, while the rest 113 records with 2,067 calls are valuable data, representing 12 bat species (see Table 11).

Raw data of Batlogger M recordings on foraging bats at the Monitoring Site No. 10: Moroishta in Annex 2.9 of this report are presented.

Monitoring Site No. 10: Vishni - Kjafasan State Border Crossing

On August 30, 2016 surveillance and monitoring of bats on the monitoring site Vishni - Kjafasan State Border Crossing, in the period from 07:30 PM until 08:53 PM was conducted by recording presence of foraging bats with ultrasonic Batlogger M along linear transect, while using moving vehicle. The transect route runs along local road from above the village of Vishni as a start point, with GPS coordinates N 41.196835; E 20.590662 and altitude of 1,084 m asl m asl, down to the South-east until the road intersection with the main road Struga - Kjafasan Border Crossing (N 41.16465; E 20.63788). Thence, the route runs South-westward along the main road to the end point at the Kjafasan State Border Crossing with GPS coordinates N 41.093891; E 20.610357and an altitude of 988 m asl. Total length of the transect route is 15.30 km (see Figure 16).

Figure 16. Vishni-State Border Crossing Kjafasan Monitoring Site (Line Transect). Recording of foraging bats was conducted with ultrasonic Batlogger M while using moving vehicle.

The weather was cloudy in part with wind velocity "Calm" (<1 km/h). The air temperature at 07:30 PM (recording start time) was 16^{o} C and at 08:53 PM (recording end time) was again 18o C. The distance of 15.30 km (total length of the line transect), while using moving vehicle was travelled in 83 minutes, with an average speed of 11.06 km/h.

The route at its start point runs through beach forest, thence across the eastern and South-eastern slopes of Jablanitsa Mountain through degraded oak forest. The recording of foraging bats with ultrasound detector Batlogger M along line transect while using moving vehicle has resulted in 131 records with 1,917 calls, of which 6 records with 67 calls were not valid, while the rest 125 records with 1,850 calls are valuable data, representing 12 bat species (see Table 12).

Table 12. Vishni - Kjafasan State Border Crossing Monitoring Site (Line Transect): Computer-aided identification of species, and processed data of records and calls (Summer Season Survey, 2016).

Nr.	Scientific Name	English Common Name	Macedonian Common Name	Number of Records	Number of Calls
Order Chiroptera (Bats)					
Family Vespertilionidae (Vespertilionid Bats)					
1.	*Pipistrellus kuhlii*	Kuhl's Pipistrelle	Beloraben pipistrel	32	536
2.	*Pipistrellus pipistrellus*	Common Pipistrelle	Obichen pipistrel	29	545
3.	*Plecotus auritus*	Brown Long-eared Bat	Kafeav ushest liljak	22	204
4.	*Nyctalus noctula*	Common Noctule	Lisest vechernik	14	189
5.	*Hypsugo savii*	Savi's Pipistrelle	Saviev pipistrel	11	143
6.	*Pipistrellus nathusii*	Nathusius' Pipistrelle	Natusiev pipistrel	6	143
7.	*Myotis emarginatus*	Geoffroy's Bat	Troboen nokjnik	4	37

8.	*Pipistrellus pygmaeus*	Pygmy Pipistrelle	Dzudzest pipistrel	2	13
9.	*Myotis myotis*	Greater Mouse-eared Bat	Golem Nokjnik	1	17
10.	*Myotis blythii*	Lesser Mouse-eared Bat	Mal nokjnik	1	6
11.	*Myotis bechsteini*	Bechstein's Bat	Behshtainov nokjnik	1	5
Family Rhinolophidae (Horseshoe Bats); (Potkovichestonosni Liljaci)					
12.	*Rhinolophus ferrumequinum*	Greater Horseshoe Bat	Golem Potkovichar	1	12
Total number				**125**	**1,850**

Raw data of Batlogger M recordings on foraging bats along line transect Vishni-Kjafasan State Border Crossing in Annex 2.10 of this report are presented.

The Summer Season Monitoring of bats at 10 monitoring sites using ultrasound detector surveys based on line transects and point counts, while walking or using moving vehicle has resulted in 682 records with 13,184 calls, representing 16 bat species (see Table 13).

Table 13. Monitoring Site (Line Transect): Computer-aided identification of species, and processed data of records and calls (Summer Season Survey, 2016).

Nr.	Scientific Name	English Common Name	Number of Monitoring Sites	Number of Records	Number of Calls
Order Chiroptera (Bats)					
Family Vespertilionidae (Vespertilionid Bats)					
1.	*Pipistrellus kuhlii*	Kuhl's Pipistrelle	10	147	2,490
2.	*Plecotus auritus*	Brown Long-eared Bat	10	135	2,303
3.	*Pipistrellus pipistrellus*	Common Pipistrelle	9	131	2,784
4.	*Nyctalus noctula*	Common Noctule	10	76	1,083
5.	*Pipistrellus nathusii*	Nathusius' Pipistrelle	9	68	2,692
6.	*Hypsugo savii*	Savi's Pipistrelle	7	42	554
7.	*Myotis emarginatus*	Geoffroy's Bat	9	29	317
8.	*Myotis bechsteini*	Bechstein's Bat	6	18	275
9.	*Pipistrellus pygmaeus*	Pygmy Pipistrelle	6	14	369
10.	*Miniopterus schreibersii*	Schreibers' Bat	4	9	154
11.	*Nyctalus leisleri*	Leisler's Bat	3	6	56
12.	*Myotis capaccinii*	Long-fingered Bat	2	2	66
13.	*Nyctalus lasiopterus*	Greater Noctule Bat	2	2	14
14.	*Vespertilio murinus*	Parti-coloured Bat	1	1	9
15.	*Myotis blythii*	Lesser Mouse-eared Bat	1	1	6
Family Rhinolophidae (Horseshoe Bats); (Potkovichestonosni Liljaci)					
16.	*Rhinolophus ferrumequinum*	Greater Horseshoe Bat	1	1	12
Total number				**682**	**13,184**

The Kuhl's Pipistrelle (*Pipistrellus kuhlii*) with 147 records at all 10 monitoring sites is the most frequent species along the transmission line corridor. With 2,490 calls the Kuhl's Pipistrelle is the third most abundant species. The species is relatively abundant in the whole Mediterranean Region and the Middle East. Kuhl's Pipistrelle is also numerous in urban areas across much of its range. It forages over a variety of habitats, including agricultural and urban areas. Recent evidence suggests that urbanization may be beneficial to this species. Maternity colonies are located in crevices in buildings. Winter sites include rock crevices and crevices in buildings.

Brown Long-eared Bat *(Plecotus auritus)* with 135 records at all 10 monitoring sites is the second most frequent species within the Project Area. It is also relatively abundant; with 2,303 calls is the fourth most abundant species. The Brown Long-eared Bat is endemic to Europe, where it is widely distributed south of 65°N and west of the Urals. It is dominantly a woodland species and has very quiet echolocation calls. Brown long-eared bats' echolocation calls range from 25 - 50kHz and peak at 35kHz. Its broad wings and tail allow manoeuvrable, hovering flight, often flying slowly amongst foliage, picking insects off leaves and bark; sometimes land on the ground to catch insects. In winter it is generally solitary, although it may occasionally be found in very small clusters (2-3 animals). Nursery colonies usually number 10-20 females. There have been no recorded population declines throughout most of its range, although loss of broad-leaved forest and particularly of mature trees is a threat in parts of its Mediterranean Range.

The Common Pipistrelle (*Pipistrellus pipistrellus*) has been recorded at 9 monitoring sites. With 131 records it is third most frequent, while with 2,784 calls it is the most abundant species. The Common Pipistrelle is a widespread and abundant Western Palaearctic species, one of the most common bats in many parts of its range. The species has recently been separated into two species, P. *pipistrellus* and P. *pygmaeus*. Their respective distribution and status are not yet fully clarified. Summer roosts are mainly found in buildings and trees, and individuals frequently change roost site through the maternity period. Most winter roost sites are located in crevices in buildings, although cracks in cliffs and caves and possibly holes in trees may also be used. Maternity colonies generally number 25-50 individuals. In winter, it tends to occur singly or in small groups. The species has very distinctive and loud echolocation calls mostly around 45 kHz and can readily be identified using a bat detector.

The Common Noctule (*Nyctalus noctula*) is widespread and abundant species. It has been recorded at all 10 monitoring sites, and is included within the 5 most abundant species with more than 1,000 recorded calls. Noctules are primarily tree dwellers and live mainly in rot holes and woodpecker holes. They hibernate in trees or rock fissures and hollows. Noctules' calls range from 20 to 45kHz and peak at 25kHz. No threats for the species at present, although loss of old trees with holes for roosting is a major factor for population declining.

Nathusius' Pipistrelle (*Pipistrellus nathusii*) was recorded at 9 monitoring sites, and with 2,692 calls is also included in the species that are quiet abundant within the boundaries of the Project Area. It is a Western Palaearctic migratory species. Summer roosts are located in tree holes and buildings, mainly in woodland areas. Winter roost sites include crevices in cliffs, buildings and around the entrance of caves, often in relatively cold, dry, and exposed sites. The majority of roosts are located close to freshwater bodies, and also forages near rivers, lakes and waterlogged areas. Nathusius' Pipistrelle is known in Macedonia from a few localities in the valley of the Vardar River. Echolocation calls of Nathusius' pipistrelle are similar to those of the other pipistrelles. The peak intensity of the call is at about 38kHz (between 36 and 40kHz). The species is widespread and abundant, and there is no evidence of current significant population decline.

The Savi's Pipistrelle (*Hypsugo savii*) is the sixth most abundant bat species within the Project boundaries. Historical data on the presence of this species on several localities in Macedonia are all on the basis of mist netting. It roosts in rock crevices, occasionally in fissures in buildings or under bark, rarely in underground habitats, and the species' roosts are difficult to find, therefore bat detector survey is most recommended method. Savi's Pipistrelle has calls that are distinctive from all other species.

Notwithstanding the Geoffroy's Bat (*Myotis emarginatus*) was recorded at 9 monitoring sites it is less abundant. In Europe it is mainly associated with agricultural landscapes. In summer this bat roosts in underground habitats and in buildings, generally together with Rhinolophus species. It winters in underground sites. In Macedonia, the species has been recorded only on few localities, of which most important is the Bela Voda Cave near Demir Kapija with maternity colony of about 1,000 bats. Geoffroy's Bat has an unusual diet that feeds mainly on spiders and flies. It forages over scrub and grassland.

Bechstein's Bat (*Myotis bechsteini*) has very quiet echolocation, and as a result is difficult to detect. The frequency of most energy is 50kHz. The presence of this rare species at 6 monitoring sites, with 18 records and 275 calls reflect the species status along the transmission corridor as relatively frequent. Bechstein's Bat is a Western Palaearctic species that occurs in central and southern Europe as well as temperate south-western Asia. In Europe, it tends to prefer mature deciduous woodlands of beech and oak with a high proportion of old trees. Densities of this species are highest in forests that are managed according to environmental (rather than strictly economic) principles.

Pygmy Pipistrelle (*Pipistrellus pygmaeus*) is also a Western Palaearctic species, occurring from the British Isles through much of Europe east to Ukraine and western Russia. So far no records have been reported from North Africa or the Middle East Pipistrellus pygmaeus generally appears to be less abundant than *Pipistrellus pipistrellus* that has been also confirmed by our summer season Surveys (see Table 13). Maternity colonies are located in hollow trees, rock crevices and buildings (which provide

warmer sites). No specific data are available on *P. pygmaeus* winter roost sites, but presumably they are similar to those used by *P. pipistrellus*. The species has very distinctive and loud echolocation calls at 55 kHz and can readily be identified using a bat detector.

Schreibers' Bat (*Miniopterus schreibersii*) is typical colonial species that roosts mostly in caves, often in large mixed colonies with other cave-dwelling bat species. The species is widely distributed in Southern Europe, South-west Asia and Northern Africa. Most preferable foraging areas of the species include edges of woodlands.

Leisler's bat (*Nyctalus leisleri*) is naturally a forest species, roosting in tree holes. It is Western Palaearctic species that is widely distributed in Europe but with small populations. Easily differentiated from the other two European Nyctalus species due to its smaller size. In Macedonia, it is relatively rare species; most of the records are made by bat detector, and the only collected specimens by mist-netting are coming from Valandovo. Leisler's bats echolocation calls range from 15 to 45kHz and peak at 25kHz. The calls are occasionally audible to the human ear.

Long-fingered Bat (*Myotis capaccinii*) is Circum Mediterranean species that is closely related to aquatic habitats. It forages over wetlands and waterways. The species roosts in underground habitats, preferably in caves, usually in mixed colonies with Myotis myotis, Myotis blythii and Miniopterus schreibersii. Recording by ultrasonic detector is not most appropriate method for this species where it is sympatric with Myotis daubentonii. In Macedonia the species has been recorded on several localities, including Vardar River, Ohrid and Prespa Lake but always with low abundance.

Greater Noctule Bat (*Nyctalus lasiopterus*) is the largest European bat. This tree-dwelling species is dependent on mature forests and roosts in holes of deciduous trees throughout the year. It is a large, heavy bat with less manoeuvrable flight than other smaller bats and highly associated with water bodies as it seems to need a regular water supply so individuals visit drinking places regularly. This means that mist-netting can be a good method for survey. The species is easy to detect with bat detectors, so it is known that the species' distribution in Europe is genuinely extremely patchy. Little is known about potential threats, but loss of mature woodland and loss of roost sites (in old trees) may have a negative impact on the species.

The Parti-coloured Bat (*Vespertilio murinus*) inhabits temperate zone of the Palaearctic Region, including central and South-eastern Europe. This nocturnal species appears late in the evening, sleeping in narrow crevices during the day. It lives in small colonies and often single individuals are sighted. The Particoloured Bat forages in open areas over various habitat types (forest, dry grassland, agricultural land, urban). It feeds on moths and beetles. In Macedonia, the species appears to be quite rare with low abundance.

The Lesser Mouse-eared Bat (*Myotis blythii*) is a Southwestern Palearctic species that occurs in Southern Europe, Southern parts of Central Europe, and non-arid parts of Southwestern Asia. It forages in scrub and grassland habitats, including farmland and gardens. Maternity colonies are usually found in underground habitats such as caves and mines, and sometimes in buildings. Identification of the difference from *Myotis myotis* is difficult with ultrasonic detectors and also visually in mixed colonies. *Myotis blythii* may have a distinctive white patch on the top of its head, making it distinguishable from *Myotis myotis* while roosting, although identification remains difficult. In Macedonia the Lesser Mouse-eared Bat is relatively frequent cave-dwelling species, with most abundant maternity colony of 2,000 individuals recorded in a disused mine in the village of Rabrovo, near Valandovo.

The Greater Horseshoe Bat (*Rhinolophus ferrumequinum*) has a wide range through the Palaearctic Region, occurring from North Africa and Southern Europe through temperate zone of Asia to Japan. Greater horseshoe bats feed mainly by lowflying hunting. Greater horseshoes bats were originally cave dwellers, but few now use caves in summer – most breeding females use buildings, choosing sites with large entrance holes with access to open roof spaces warmed by the sun. Such sites are normally in larger, older houses, churches and barns. When roosting they hang free with the wings more or less enfolding their body. In Macedonia, the species is quite frequent, most of the records located along the Vardar Valley, however always with low population density.

2.4.1.2. Assessment of bats recorded by visual counts of roosting bats at hibernation/maternity colonies and summer roosts

Visual counts of roosting bats during the summer season surveys have been conducted at the Jaorets Cave (maternity roost) and at an old, abandoned collective farm building in the village of Ramna (see Table 14).

Table 14. Monitoring of bats at hibernation/maternity and summer roosts during summer season (2016) using visual counts.

No.	Monitoring Site	Type of Monitoring	GPS Coordinates & Altitude
11.	Ramna	Summer Roost Count	N 41.087933; E 21.185683; 794 m asl
12.	Jaorets Cave	Maternity Roost Count	N 41.293478; E 20.945033; 1021 m asl

Altogether, at 2 monitoring sites, monitoring of bats was performed using visual counts at one summer roost (Ramna) and one maternity/hibernation roost (Jaorets Cave).

Monitoring Site No. 11: Ramna (Collective Farm Building)

Monitoring of bats by visual counts in summer roost was conducted in the village of Rhamna, while inspecting old abandoned houses and other urban infrastructures for the presence of roosting bats. The site was visited on two occasions, on June 21, 2016 and August 31, 2016. In both cases a small colony of

12 roosting bats of the species Mediterranean Horseshoe Bat (*Rhinolophus euryale)* have been counted in an old abandoned Collective Farm Building (Zadruzhen Dom Ramna) located in the central area of the village, with GPS coordinates N 41.087933; E 21.185683 and altitude of 794 m asl.

Figure 17. Abandoned Collective Farm Building in the village of Ramna used as a summer roost by a small colony of Mediterranean Horseshoe Bat (Rhinolophus euryale).

Figure 18. A small colony of Mediterranean Horseshoe Bat (*Rhinolophus euryale*) roosting in an Abandoned Collective Farm Building in the village of Ramna.

Mediterranean Horseshoe Bat (*Rhinolophus euryale*) is a Western Palaearctic species, occurring in southern Europe, North-west Africa and the Near East. It forages in shrublands, woodland edges and riparian vegetation, feeding on moths and other insects. Summer roosts are located in natural and artificial shelters. In winter it hibernates in underground sites, usually in large caves with a constant microclimate. In Macedonia the species is widespread, but always with low population density, usually at lower altitudes. The highest recorded altitude is Jaorets Cave (1,021 m asl).

Monitoring Site No. 12: Jaorets Cave

Surveillance and monitoring of bats on the Monitoring Site No. 10: Jaorets Cave by visual count of bats at maternity roost was conducted on June 22, 2016 and for summer roost count on August 30, 2016. The Jaorets Cave is located on the South-western slopes of Ilinska Planina Mountain at an altitude of 1,021 m and GPS coordinates N 41.293478; E 20.945033 (see Figure 19).

Figure 19. Jaorets Cave, located on the South-western slopes of Ilinska Planina Mountain (location of the cave: X symbol in red colour).

Notwithstanding the closest aerial distance of Jaorets Cave to Transmission Line Corridor is about 10.5 km, the cave itself represents an important local maternity roost for bats, therefore it was taken as an control monitoring site that could obtain high valuable data for comparative analyses during the construction and operational project phases (see Figure 20).

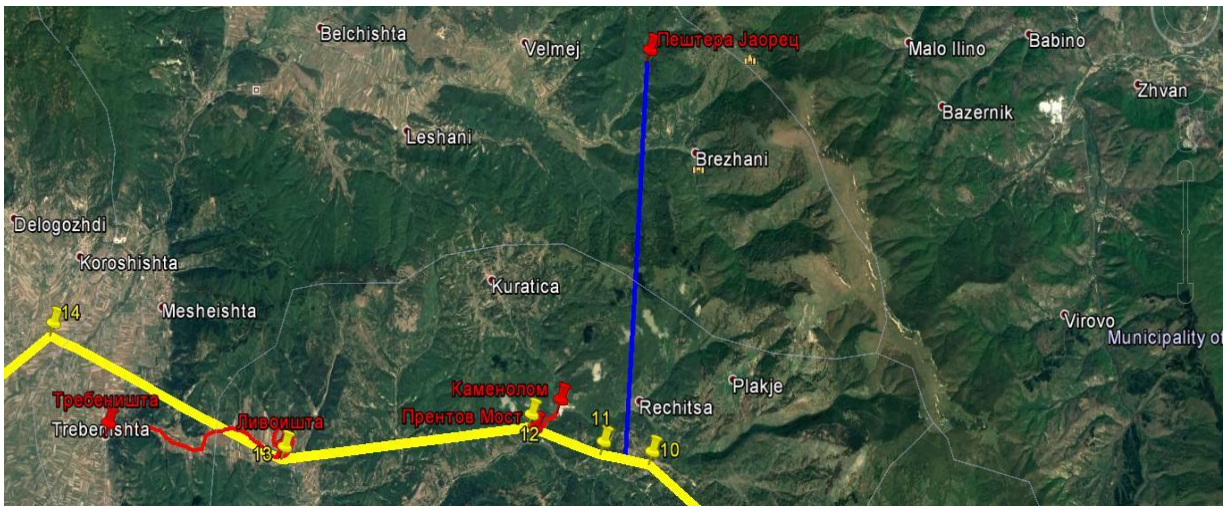

Figure 20. Location of the Jaorets Cave in relation to the Transmission Line Corridor; Yellow Line: Transmission Line Corridor; Blue Line: Aerial Distance from Transmission Line to Jaorets Cave.

The first Survey of the cave (June 22, 2016) has confirmed presence of large mixed colony of bats of about 9,000 – 10,000 individuals, of which the Schreibers' Bat (*Miniopterus schreibersii*) represented by

4,000-4,500 individuals and the Greater Mouse-eared Bat (*Myotis myotis*) with 5,000-5,500 individuals (see figures 21, 22 and 23).

Figure 21. Entrance of Jaorets Cave; Mixed nursery colony in Jaorets Cave (June 22, 2016), respectively.

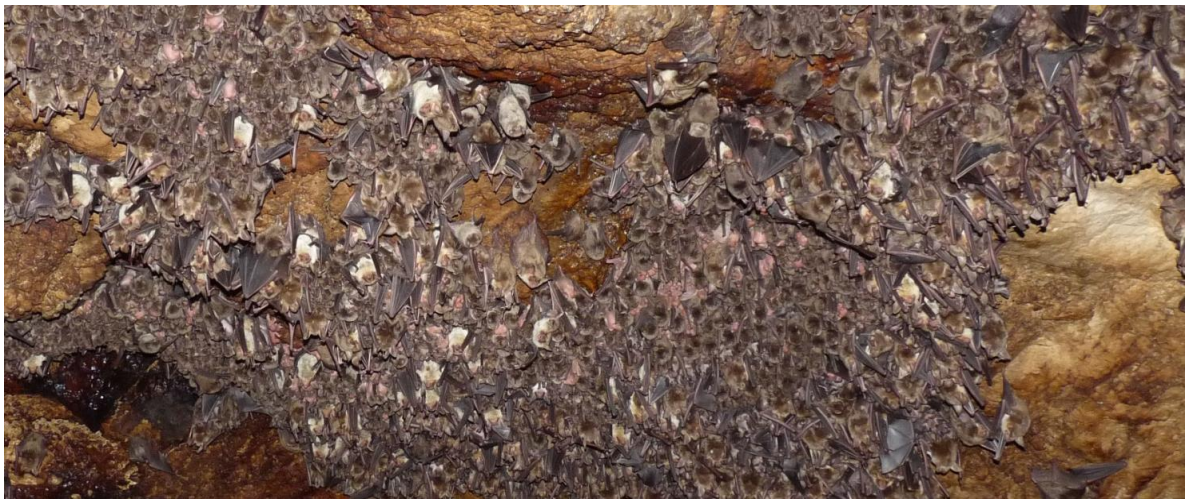

Figure 22. Mixed nursery colony of Schreibers' Bat (*Miniopterus schreibersii*) and Greater Mouse-eared Bat (*Myotis myotis*) in Jaorets Cave (June 22, 2016).

Figure 23. Mixed nursery colony of Schreibers' Bat (*Miniopterus schreibersii*) and Greater Mouse-eared Bat *(Myotis myotis*) in Jaorets Cave (June 22, 2016).

The second Summer visual count of bats in the Jaorets Cave (August 30, 2016) resulted in presence of 2,000 individuals of Schreibers' Bat (*Miniopterus schreibersii*) and only 150 individuals of the Greater Mouse-eared Bat (*Myotis myotis*).

Schreibers' Bat (*Miniopterus schreibersii*) is typical colonial species that roosts mostly in caves, often in large mixed colonies with other cave-dwelling bat species. The species is widely distributed in Southern Europe, South-west Asia and Northern Africa. Visual counts at hibernation/maternity roosts is the best method to assess the size of the colony by estimating the square metre area which the colony covers (1 m^2 corresponds to about 2,000 individuals). Most preferable foraging areas of the species include edges of woodlands.

The Greater Mouse-eared Bat (*Myotis myotis*) is a Western Palaearctic species that occurs in Western, Central and Southern Europe. It forages over deciduous woodland edges, open deciduous woodlands and pastures, flying at low altitudes gleaning from the ground large, ground-dwelling arthropods such as beetles, crickets, and spiders. The Greater Mouse-eared Bat usually forms large nursery colonies in caves. Internal counts in large caves are possible using digital photography (1 m^2 corresponding to about 1,300 specimens). In Macedonia, the Greater Mouse-eared Bat appears as a typical cave-dwelling species, quite frequent with abundant populations.

In Macedonia, by the end of Winter Season bats begin to emerge from hibernation and at the beginning of Spring Season they have mainly come out of hibernation and are active, feeding on most nights and moving between several roost sites. Pregnant females gather together, forming maternity colonies and looking for suitable nursery sites to have their young, usually using the same maternity roost. Males roost on their own or in small groups. Pregnancy lasts between 6 and 9 weeks depending on

the species and can be influenced by weather and availability of food. Females usually give birth to a single baby each year. For 3 - 4 weeks, the young are suckled by their mothers, than they begin to venture out from the maternity roost to forage for food.

Our Summer Season survey of the Jaorets Cave has ascertained presence of mixed maternity colony which indicates that Jaorets Cave is probably regularly used as a significant maternity roost with nursery colonies by at least two species.

2.4.1.3. Evaluation of Bats

Habitats Directive (Directive 92/43/EEC) provides Strict Legal Protection (under Annex IV) for 10 recorded bat species of the Project Area. In addition, eight of the recorded species are listed in Annex II, which is list of species with higher level of Legal Protection i.e. includes species of community interest whose conservation requires designation of special areas of conservation (see Table 15).

Table 15. Legal Protection and Conservation Status of identified Bat Species.

No.	Scientific Name	English Common Name	Directive 92/43/EEC	Bern Convention	Bonn Convention	IUCN Europe	IUCN Global
Order Chiroptera (Bats)							
Family Vespertilionidae (Vespertilionid Bats)							
1.	*Pipistrellus kuhlii*	Kuhl's Pipistrelle	IV	II	II	LC	LC
2.	*Plecotus auritus*	Brown Long-eared Bat	IV	II	II	LC	LC
3.	*Pipistrellus pipistrellus*	Common Pipistrelle	IV	III	II	LC	LC
4.	*Nyctalus noctula*	Common Noctule	IV	II	II	LC	LC
5.	*Pipistrellus nathusii*	Nathusius' Pipistrelle	IV	II	II	LC	LC
6.	*Hypsugo savii*	Savi's Pipistrelle	IV	II	II	LC	LC
7.	*Myotis emarginatus*	Geoffroy's Bat	II	II	II	LC	LC
8.	*Myotis bechsteini*	Bechstein's Bat	II	II	II	VU	NT
9.	*Pipistrellus pygmaeus*	Pygmy Pipistrelle	IV	II	II	LC	LC
10.	*Miniopterus schreibersii*	Schreibers' Bat	II	II	II	NT	NT
11.	*Nyctalus leisleri*	Leisler's Bat	IV	II	II	LC	LC
12.	*Myotis capaccinii*	Long-fingered Bat	II	II	II	VU	VU
13.	*Nyctalus lasiopterus*	Greater Noctule Bat	IV	II	II	VU	VU
14.	*Vespertilio murinus*	Parti-coloured Bat	IV	II	II	LC	LC
15.	*Myotis blythii*	Lesser Mouse-eared Bat	II	II	II	NT	LC
16.	*Myotis myotis*	Greater Mouse-eared Bat	II	II	II	LC	LC
Family Rhinolophidae (Horseshoe Bats)							
17.	*Rhinolophus ferrumequinum*	Greater Horseshoe Bat	II	II	II	NT	LC
18.	*Rhinolophus euryale*	Mediterranean Horseshoe Bat	II	II	II	VU	NT

The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) imposes a legal obligation on Parties to protect all breeding and resting sites of the Strictly Protected Species on Appendix II, including all European Bat Species apart from the Common Pipistrelle (*Pipistrellus pipistrellus*), which is listed on Appendix III (see Table 15).

None of the recorded species is listed in Appendix I (Endangered Migratory Species) under the Convention on the Conservation of Migratory Species of Wild Animals, Bonn Convention (UNEP/CMS). On the contrary, all European bat species, including the recorded species of the Project Area are listed on Appendix II (Migratory Species to be the Subject of Agreements).

Regarding the Conservation Status, under the IUCN Red List of Globally Threatened Species (2016) as well as the European Red List of Threatened Species (2016) only the Greater Noctule Bat (*Nyctalus leisleri*) and the Long-fingered Bat (*Myotis capaccinii*) are qualified as threatened species, evaluated as Vulnerable (VU) on both Global and European Lever. Another two species: Bechstein's Bat (*Myotis bechsteini*) and Mediterranean Horseshoe Bat (Rhinolophus euryale) are also qualified as threatened species in the category Vulnerable (VU), but only at European level. All other 14 bat species are ranked in the categories Least Concern (LC) and Near Threatened (NT) which are not qualified as categories of threatened species

2.4.2. Discussion and Conclusions

The Summer Season surveillance and monitoring of bats along the transmission line corridor has been conducted at 12 monitoring sites using combined methodology. The monitoring of bats on 10 monitoring sites using ultrasound detector for recording foraging bats along line transects/point counts has resulted in 682 records with 13,184 calls, representing 16 bat species. At another two monitoring sites, the monitoring of bats has been conducted by visual counts at one summer shelter and one underground roosting site that have resulted in more than 10,000 recorded individuals, representing three bat species.

Altogether, the Summer Season monitoring of the Project Area has ascertained presence of 18 bat species with high level of species frequency and population abundance, which is direct reflection of the quality of composition and area remaining intact. These first results, coupled with the results of the next seasons surveys will obtain valuable basis of data to indicate whether the transmission line construction will cause adverse impact on bats recorded on open/edge foraging habitats.

Regarding the cave-dwelling species, the Summer Season Surveys are not sufficient to ascertain any impact assessment. Further surveillances and monitoring of bats during the autumn and winter seasons and especially during the Spring Season will be indispensable for appropriate comparative analysis and valuable impact assessment.

The Autumn Season survey in November will obtain data if the Jaorets Cave is regularly used by bats as a Swarming Site. Mating season usually begins by the end of October. Males of most species use

special calls to attract females. During this period, large numbers of bats can be encountered, swarming inside and outside the site. This is primarily a mating event, since it occurs long before hibernation, but probably also serves to check hibernation sites and guide inexperienced juveniles to them. The mated females store the sperm and do not become pregnant until the spring, when the weather gets warmer. The Winter Season survey (January-February) will obtain data if the Jaorets Cave is regularly used by bats as a Hibernation Roost.

The mist-netting across/nearby aquatic habitats will be conducted during the spring season to confirm presence/absence of bat species that are closely related to freshwater bodies: Daubenton's Bat (*Myotis daubentonii*), and Long-fingered Bat (*Myotis cappacinii*). So far only one of these two species has been recorded within the boundaries of the Project Area.

The preliminary results of summer surveys lead to an initial conclusion that no critical habitats as defined by EBRD ESP PR6 have been ascertained within the Project Corridor. Therefore, refinements to the transmission line route within the corridor are not necessary to be made. After conducting the surveys on the bats in the other three seasons, the line sections with increased collision risk will be precisely defined. Consequently, the one-year monitoring and complete final report (in accordance with the agreement with MEPSO) will give a clear picture of the species diversity, populations state, migratory pathways and impacts of the over head power transmission line on the bats in order to suggest appropriate mitigation measures.

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4. ANNEXES

Annex 1: Birds (Summer Season Surveys)-2016

Bird Species recorded along Transmission Line Corridor during summer season surveys (2016) with their Range Status

Taxonomic Group/Species		English Common Name	Macedonian Common Name	Range Status
Order Gaviiformes				
Family Gaviidae (Divers); (Morski Nurkachi)				
Order Podicipediformes				
Family Podicipedidae (Grebes); (Nurkachi)				
Order Pelecaniformes				
Family Phalacrocoracidae (Cormorants); (Kormorani)				
Family Pelecanidae (Pelicans); (Pelikani)				
1.	*Pelecanus crispus*	Dalmatian Pelican	Dalmatinski (Kadroglav) Pelikan	R
Order Ciconiiformes				
Family Ardeidae (Herons, Egrets, Bitterns); (Chapji)				
2.	*Botaurus stellaris*	Eurasian Bittern	Voden Bik; Bukavec	R
3.	*Ardea cinerea*	Grey Heron	Siva Chapja	B (R)
Family Ciconiidae (Storks); (Shtrkovi)				
4.	*Ciconia ciconia*	White Stork	Bel Shtrk	B
5.	*Ciconia nigra*	Black Stork	Crn Shtrk	B
Family Threskiornithidae (Ibises, Spoonbills); (Ibisi, Chapji Lazhicharki)				
Order Phoenicopteriformes				
Family Phoenicopteridae (Flamingos); (Flaminga)				
Order Anseriformes				
Family Anatidae (Swans, Geese, Ducks); (Lebedi, Guski, Shatki)				
Order Accipitriformes				
Family Accipitridae (Hawks, Eagles, Vultures); (Orli, Eji, Lunji, Jastrebi)				
6.	*Pernis apivorus*	Honey Buzzard	Jastreb Osojad	W (B)
7.	*Circaetus gallicus*	Short-toed Eagle	Orel Zmijar	B
8.	*Circus aeruginosus*	Marsh Harrier	Blatna Eja	B
9.	*Circus cyaneus*	Hen Harrier	Polska Eja	P
10.	*Accipiter gentilis*	Goshawk	Jastreb Kokoshkar	R
11.	*Accipiter nisus*	Eurasian Sparrowhawk	Jastreb Vrapchar	R
12.	*Buteo buteo*	Common Buzzard	Obichen Jastreb Gluvchar	R
13.	*Buteo rufinus*	Long-legged Buzzard	Lisest Jastreb Gluvchar	R
14.	*Aquila heliaca*	Imperial Eagle	Carski (Krstat) Orel	B
15.	*Aquila chrysaetos*	Golden Eagle	Skalest (Zlaten) Orel	R
Family Pandionidae (Osprey); (Orli Ribari)				

Order Falconiformes				
Family Falconidae (Falcons); (Sokoli)				
16.	*Falco naumanni*	Lesser Kestrel	Stepska Vetrushka (Mala Vetrushka)	B
17.	*Falco tinnunculus*	Kestrel	Obichna Vetrushka	R
18.	*Falco vespertinus*	Red-footed Falcon	Vecherna (Crvenonoga) Vetrushka	P
19.	*Falco subbuteo*	Hobby	Sokol Lastovichar	B
20.	*Falco peregrinus*	Peregrine Falkon	Siv Sokol	R
Order Galliformes				
Family Tetraonidae (Grouse); (Tetrebi)				
Family Phasianidae (Partridges, Quails, Pheasants); (Erebici, Potpoloshki, Fazani))				
21.	*Perdix perdix*	Common Partridge	Polska Erebica	R
Order Gruiformes				
Family Rallidae (Rails); (Blatni Kokoshki)				
22.	*Gallinula chloropus*	Moorhen	Zelenonoga Blatna Kokoshka	B
23.	*Fulica atra*	Common Coot	Liska	R
Family Gruidae (Cranes); (Zheravi)				
Family Otididae (Bustards); (Droplji)				
Order Charadriiformes				
Family Haematopodidae (Oystercatchers); (Shkolkojadi Mochvarki)				
Family Recurvirostridae (Avocets and Stilts); (Sabjarki)				
Family Burhinidae (Stone Curlews); (Churulinci)				
Family Glareolidae (Pratincoles and Coursers); (Blatni Lastovici)				
Family Charadriidae (Plovers); (Dozhdosvirci)				
Family Scolopacidae (Typical Waders), (Vistinski Mochvarki)				
Family Stercorariidae (Skuas); (Moreletnici)				
Family Laridae (Gulls); (Galebi)				
Family Sternidae (Terns); (Vrtimushki)				
Order Columbiformes				
Family Columbidae (Pigeons); (Gulabi, Grlici i Gugutki)				
24.	*Columba livia*	Rock Dove	Div Gulab	R
25.	*Columba palumbus*	Wood Pigeon	Gulab Grivnesh	R
26.	*Streptopelia decaocto*	Collared Dove	Gugutka	R
27.	*Streptopelia turtur*	Turtle Dove	Grlica	B
Order Cuculiformes				
Family Cuculidae (Cuckoos); (Kukavici)				
28.	*Cuculus canorus*	Eurasian Cuckoo	Obicna Kukavica	B
Order Strigiformes				
Family Tytonidae (Barn Owls); (Zabuleni Utki)				

Family Strigidae (Typical Owls); (Utki Vistinski)				
29.	*Otus scops*	Scops Owl	Kjuk	R (B)
30.	*Athene noctua*	Little Owl	Domashna Kukumjavka	R
Order Caprimulgiformes				
Family Caprimulgidae (Nightjars); (Nokjni Lastovici)				
Order Apodiformes				
Family Apodidae (Swifts); (Pishtarki)				
31.	*Apus apus*	Common Swift	Obichna Pishtarka	B
Order Coraciiformes				
Family Alcedinidae (Kingfishers); (Ribarchinja)				
Family Meropidae (Bee-eaters); (Pchelarki)				
32.	*Merops apiaster*	European Bee-eater	Pcelarka	B
Family Coraciidae (Rollers); (Smrdivrani)				
Family Upupidae (Hoopoes); (Pupunci)				
33.	*Upupa epops*	Hoopoe	Pupunec	B
Order Piciformes				
Family Picidae (Wrynecks, Woodpeckers); (Vrtivratki, Klukajdrvci)				
34.	*Picus viridis*	Green Woodpecker	Zelen Klukajdrvec	R
35.	*Dendrocopos major*	Great Spotted Woodpecker	Golem Sharen Klukajdrvec	R
36.	*Dendrocopos syriacus*	Syrian Woodpecker	Sirijski Sharen Klukajdrvec	R
Order Passeriformes				
Family Alaudidae (Larks); (Chuchuligi)				
37.	*Calandrella brachydactyla*	Hume's Short-toed Lark	Mala Chuchuliga	B
38.	*Lullula arborea*	Woodlark	Shumska Chuchuliga	R
39.	*Alauda arvensis*	Skylark	Polska Chuchuliga	R
Family Hirundinidae (Swallows and Martins); (Lastovici)				
40.	*Hirundo rustica*	Swallow	Selska Lastovica	B
41.	*Hirundo daurica*	Red-rumped Swallow	Crvenokrsta Lastovica	B
42.	*Delichon urbica*	House Martin	Gradska Lastovica	B
Family Motacillidae (Pipits, Wagtails); (Tresiopashki, Trepetlivki)				
43.	*Anthus campestris*	Tawny Pipit	Polska Trepetlivka	B
44.	*Motacilla alba*	Pied/White Wagtail	Mala (Bela) Tresiopashka	R
45.	*Motacilla flava*	Yellow/Blue-headed Wagtail	Zholta Tresiopashka	B
Family Bombycillidae (Waxwings and Hypocolius); (Svilarki)				
Family Cinclidae (Dippers); (Vodni Kosovi)				
46.	*Cinclus cinclus*	Common Dipper	Voden Kos	R
Family Troglodytidae (Wrens); (Palchinja)				
Family Prunellidae (Dunnocks); (Zavirachki)				
47.	*Prunella modularis*	European Dunnock	Sivogushesta Zavirachka	R
Family Turdidae (Thrushes, chats, Wheatears and Robins); (Drozdovi)				
48.	*Erithacus rubecula*	Robin	Crvenogushka	R
49.	*Luscinia megarhynchos*	Nightingale	Slavej	B
50.	*Phoenicurus ochruros*	Black Redstart	Planinska Crvenoopashka	R
51.	*Saxicola torquata*	Common Stonechat	Crnogushesto Livadarche	R (B)

52.	*Oenanthe oenanthe*	Eurasian Wheatear	Sivo Kamenjarche	B
53.	*Turdus merula*	Blackbird	Kos	R
Family Sylvidae (Warblers); (Grmusharki)				
54.	*Cettia cetti*	Cetti's Warbler	Svilarche	R
55.	*Acrocephalus scirpaceus*	Red Warbler	Obichno Trskarche	B
56.	*Sylvia cantillans*	Supalpine Warbler	Crvenogushesto Koprivarche	B
57.	*Sylvia atricapilla*	Blackcap	Crnoglavo Koprivarche	R (B)
58.	*Phylloscopus collybita*	Chiffchiff	Elov Pevec	R
59.	*Phylloscopus trochilus*	Willow Warbler	Brezov Pevec	P
Family Muscicapidae (Flycatchers); (Muvarchinja)				
60.	*Muscicapa striata*	Spotted Flycatcher	Pegavo Muvarche	B
61.	*Ficedula albicollis*	Collared Flycatcher	Beloshijesto Muvarche	B
Family Timaliidae (Babblers); (Mustakjesti Sipki)				
Family Aegithalidae (Long-tailed Tits); (Dolgoopashesti Sipki)				
Family Paridae (Tits); (Sipki Vistinski)				
62.	*Parus cristatus*	Crested Tit	Cuculesta Sipka	R
63.	*Parus caeruleus*	Blue Tit	Sina Sipka	R
64.	*Parus major*	Great Tit	Golema Sipka	R
Family Sittidae (Nuthatches); (Lazachki)				
65.	*Sitta europaea*	Common Nuthatch	Shumska Lazachka	R
Family Tichodromadidae (Wallcreepers); (Karpolazachki)				
Family Certhiidae (Treecreepers); (Drvolazachki)				
Family Remizidae (Penduline Tits); (Sipki Torbarki)				
Family Oriolidae (Orioles); (Zholni)				
66.	*Oriolus oriolus*	Golden Oriole	Zholna (Vuga)	B
Family Laniidae (Shrikes); (Svrachinja)				
67.	*Lanius collurio*	Red-backed Shrike	Crvenogrbo Svrache	B
68.	*Lanius minor*	Lesser Grey Shrike	Malo Sivo Svrache	B
69.	*Lanius excubitor*	Great Grey Shrike	Golemo Sivo Svrache	W
70.	*Lanius senator*	Woodchat Shrike	Crvenoglavo Svrache	B
Family Corvidae (Jays, Magpies, Crows); (Cavki, Vrani, Strachki, Gavrani, Galki)				
71.	*Garrulus glandarius*	Eurasian Jay	Sojka	R
72.	*Pica pica*	Magpie	Strachka	R
73.	*Corvus monedula*	Jackdaw	Chavka	R
74.	*Corvus corone cornix*	Carrion/Hooded Crow	Siva Vrana	R
75.	*Corvus corax*	Raven	Gavran	R
Family Sturnidae (Starlings); (Skolovranci)				
76.	*Sturnus vulgaris*	Common Starling	Obichen Skolovranec	R
Family Passeridae (Sparrows, Rock Sparrows, Snow Finches); (Vrapci, Vrapci Kamenjari, Snezhni Vrapchinja)				
77.	*Passer domesticus*	House Sparrow	Domashno Vrapche	R
78.	*Passer hispaniolensis*	Spanish Sparrow	Shpansko Vrapche	R
79.	*Passer montanus*	Tree Sparrow	Polsko Vrapche	R
Family Fringillidae (Finches); (Chinki)				
80.	*Fringilla coelebs*	Chaffinch	Bukova Chinka	R
81.	*Serinus serinus*	Serin	Zholtarche (Div Kanarinec)	R (B)

82.	*Carduelis chloris*	Greenfinch	Zelenushka	R (W)
83.	*Carduelis carduelis*	Goldfinch	Bilbilche; Kadnka (Shtiglic)	R
84.	*Carduelis cannabina*	Linnet	Konopljarche	R
85.	*Carduelis flammea*	Common Redpoll	Ogneno Konopljarche	W
86.	*Pyrrhula pyrrhula*	Bullfinch	Crvenushka (Zimovka)	R
87.	*Coccothraustes coccothraustes*	Hawfinch	Creshnarka (Debelokluna Chinka)	R
Family Emberizidae (Buntings); (Ovesarki)				
88.	*Emberiza citrinella*	Yellowhammer	Zholta Ovesarka	R
89.	*Emberiza cirlus*	Cirl Bunting	Zelenogushesta Ovesarka	R
90.	*Emberiza hortulana*	Ortolan Bunting	Gradinarska Ovesarka	B
91.	*Emberiza melanocephala*	Black-headed Bunting	Crnoglava Ovesarka	B
92.	*Miliaria calandra*	Corn Bunting	Siva (Golema) Ovesarka	R

R = Resident Species (species likely to occur all year round); B = Breeding Species (species occurs only during spring-summer season); W = Wintering Species (species normally occurs only in winter season); P = Passage Migrant Species (bird species that occurs on passage between breeding and wintering areas.

Annex 2: Bats (Summer Season Surveys)-2016

Annex 2.1. Dobromiri – Dolno Aglarci Monitoring Site (Line Transect): Raw data of Batlogger M recordings on foraging bats along line transect using moving vehicle (Summer Season Survey, 2016).

Nr.	Recording Code	Number of Calls	Peak Freq. (kHz)	Suggested species	% of certainty
1.	15050777	12	39.6	*Pipistrellus kuhlii*	64%
2.	15050778	12	38.5	*Pipistrellus kuhlii*	75%
3.	15050779	18	34.2	*Plecotus auritus*	60%
4.	15050780	18	37.6	*Pipistrellus nathusii*	81%
5.	15050781	9	39.6	*Myotis emarginatus*	58%
6.	15050782	8	37.8	*Pipistrellus kuhlii*	64%
7.	15050783	66	40.5	*Pipistrellus nathusii*	58%
8.	15050784	42	37.4	*Pipistrellus nathusii*	64%
9.	15050785	27	37.5	*Pipistrellus nathusii*	79%
10.	15050786	13	37.3	*Pipistrellus kuhlii*	60%
11.	15050787	7	33.7	*Hypsugo savii*	73%
12.	15050788	13	34.8	*Nyctalus noctula*	57%
13.	15050789	6	45.7	*Plecotus auritus*	66%
14.	15050790	11	40.0	*Pipistrellus nathusii*	76%
15.	15050791	7	37.3	*Myotis emarginatus*	61%
16.	15050792	9	42.3	*Plecotus auritus*	65%
17.	15050793	4	32.6	*Plecotus auritus*	63%
18.	15050794	10	32.9	*Hypsugo savii*	62%
19.	15050795	8	45.3	*Pipistrellus pipistrellus*	65%
20.	15050796	4	43.0	*Myotis emarginatus*	59%
21.	15050797	9	33.4	*Plecotus auritus*	57%
22.	15050798	2	24.6	No suggestions	
23.	15050799	32	24.9	*Nyctalus noctula*	35%
24.	15050800	16	40.5	*Pipistrellus kuhlii*	60%
25.	15050801	14	34.9	*Pipistrellus kuhlii*	69%
26.	15050802	18	33.2	*Plecotus auritus*	29%
27.	15050803	5	33.1	*Hypsugo savii*	71%
28.	15050804	3	33.8	*Hypsugo savii*	32%
29.	15050805	22	37.1	*Plecotus auritus*	34%
30.	15050806	9	37.2	*Pipistrellus kuhlii*	58%
31.	15050807	1	33.9	*Hypsugo savii*	28%
32.	15050808	26	25.3	*Nyctalus noctula*	67%
33.	15050809	7	45.0	*Myotis emarginatus*	49%
34.	15050810	15	27.5	*Nyctalus noctula*	65%
35.	15050811	19	43.7	*Pipistrellus pipistrellus*	34%
36.	15050812	13	31.3	*Nyctalus noctula*	64%
37.	15050813	2	34.3	*Hypsugo savii*	34%
38.	15050814	14	34.3	*Hypsugo savii*	73%
39.	15050815	16	40.3	*Pipistrellus kuhlii*	77%
40.	15050816	19	51.9	*Pipistrellus pygmaeus*	43%
41.	15050817	8	52.1	*Pipistrellus pygmaeus*	72%
42.	15050818	4	38.0	*Nyctalus noctula*	55%
43.	15050819	4	32.5	*Nyctalus noctula*	67%
44.	15050820	8	49.0	*Pipistrellus pipistrellus*	66%
45.	15050821	4	49.7	*Myotis emarginatus*	58%
46.	15050822	6	39.1	*Pipistrellus nathusii*	65%

47.	15050823	30	38.2	*Pipistrellus nathusii*	83%
48.	15050824	5	39.8	*Pipistrellus nathusii*	81%
49.	15050825	11	38.6	*Pipistrellus kuhlii*	74%
50.	15050826	10	39.9	*Pipistrellus kuhlii*	71%
51.	15050827	8	42.7	*Myotis emarginatus*	56%
52.	15050828	9	48.2	*Pipistrellus pipistrellus*	31%
53.	15050829	10	49.9	*Plecotus auritus*	54%
54.	15050830	22	39.1	*Pipistrellus nathusii*	80%
55.	15050831	6	43.8	*Plecotus auritus*	58%
56.	15050832	3	36.6	*Pipistrellus kuhlii*	38%
57.	15050833	8	37.5	*Pipistrellus kuhlii*	76%
58.	15050834	45	38.4	*Pipistrellus kuhlii*	73%
59.	15050835	14	39.9	*Pipistrellus kuhlii*	72%
60.	15050836	16	38.4	*Pipistrellus nathusii*	86%
61.	15050837	19	37.7	*Pipistrellus nathusii*	80%
62.	15050838	26	36.6	*Pipistrellus kuhlii*	73%
63.	15050839	19	37.1	*Pipistrellus kuhlii*	75%
64.	15050840	27	36.8	*Pipistrellus kuhlii*	72%
65.	15050841	23	40.3	*Pipistrellus nathusii*	69%
66.	15050842	20	38.2	*Pipistrellus nathusii*	74%
67.	15050843	20	37.7	*Pipistrellus kuhlii*	73%
68.	15050844	10	36.4	*Pipistrellus nathusii*	62%
69.	15050845	28	38.8	*Pipistrellus nathusii*	53%
70.	15050846	25	37.3	*Pipistrellus kuhlii*	83%
71.	15050847	13	36.0	*Pipistrellus nathusii*	73%
72.	15050848	9	40.3	*Pipistrellus kuhlii*	79%
73.	15050849	34	41.7	*Pipistrellus nathusii*	65%
74.	15050850	24	38.9	*Pipistrellus nathusii*	80%
75.	15050851	36	39.4	*Pipistrellus nathusii*	84%
76.	15050852	58	40.0	*Pipistrellus nathusii*	45%
77.	15050853	58	40.3	*Pipistrellus kuhlii*	68%
78.	15050854	16	38.3	*Pipistrellus nathusii*	76%
79.	15050855	33	38.5	*Pipistrellus nathusii*	54%
80.	15050856	18	40.9	*Pipistrellus nathusii*	78%
81.	15050857	179	45.1	*Pipistrellus pipistrellus*	39%
82.	15050858	28	35.9	*Hypsugo savii*	58%

Annex 2.2. Bitola Road Interchange – Kukurechani Monitoring Site (Line Transect): Raw data of Batlogger M recordings on foraging bats along line transect using moving vehicle (Summer Season Survey, 2016).

Nr.	Recording Code	Number of Calls	Peak Freq. (kHz)	Suggested species	% of certainty
1.	15050717	20	41.7	Pipistrellus kuhlii	61%
2.	15050718	11	27.0	Plecotus auritus	63%
3.	15050719	6	31.8	Plecotus auritus	63%
4.	15050720	17	36.2	Pipistrellus kuhlii	65%
5.	15050721	10	35.1	Nyctalus noctula	67%
6.	15050722	8	36.5	No suggestions	
7.	15050723	7	36.3	Pipistrellus kuhlii	47%
8.	15050724	10	32.4	Hypsugo savii	73%
9.	15050725	21	35.2	Hypsugo savii	40%

10.	15050726	14	35.2	Plecotus auritus	32%
11.	15050727	19	35.0	Plecotus auritus	30%
12.	15050728	5	32.3	Plecotus auritus	61%
13.	15050729	9	34.6	Hypsugo savii	71%
14.	15050730	12	35.3	Pipistrellus kuhlii	75%
15.	15050731	45	29.4	Plecotus auritus	45%
16.	15050732	20	33.6	Plecotus auritus	29%
17.	15050733	12	34.0	Plecotus auritus	59%
18.	15050734	9	34.0	Hypsugo savii	66%
19.	15050735	6	41.0	Pipistrellus kuhlii	66%
20.	15050736	13	34.5	Hypsugo savii	74%
21.	15050737	53	21.4	No suggestions	
22.	15050738	7	34.9	Pipistrellus kuhlii	79%
23.	15050739	7	31.3	Nyctalus noctula	66%
24.	15050740	58	35.6	Nyctalus noctula	36%
25.	15050741	41	38.1	Nyctalus noctula	38%
26.	15050742	21	33.3	Nyctalus noctula	60%
27.	15050743	4	31.1	Nyctalus noctula	67%
28.	15050744	3	32.1	No suggestions	
29.	15050745	9	34.1	Nyctalus noctula	62%
30.	15050746	9	26.9	Nyctalus noctula	64%
31.	15050747	5	31.3	Hypsugo savii	73%
32.	15050748	4	31.9	Hypsugo savii	72%
33.	15050749	17	39.6	Myotis bechsteinii	30%
34.	15050750	18	51.2	Plecotus auritus	35%
35.	15050751	19	33.3	Hypsugo savii	40%
36.	15050752	11	32.3	Hypsugo savii	68%
37.	15050753	6	36.2	Plecotus auritus	64%
38.	15050754	8	28.6	Plecotus auritus	57%
39.	15050755	18	31.9	Hypsugo savii	70%
40.	15050756	2	30.7	Hypsugo savii	25%
41.	15050757	18	35.6	Myotis emarginatus	35%
42.	15050758	3	17.8	Nyctalus lasiopterus	34%
43.	15050759	12	29.9	Nyctalus noctula	47%
44.	15050760	36	23.1	Nyctalus noctula	65%
45.	15050761	5	45.8	Pipistrellus pipistrellus	60%
46.	15050762	3	54.8	No suggestions	
47.	15050763	3	38.2	Plecotus auritus	26%
48.	15050764	3	39.5	Plecotus auritus	26%
49.	15050765	9	33.6	Hypsugo savii	66%
50.	15050766	12	34.5	Nyctalus noctula	60%
51.	15050767	2	33.1	Nyctalus noctula	28%
52.	15050768	22	41.1	Pipistrellus nathusii	79%
53.	15050769	9	41.0	Pipistrellus kuhlii	75%
54.	15050770	23	45.7	Pipistrellus kuhlii	55%
55.	15050771	27	38.6	Pipistrellus kuhlii	62%
56.	15050772	14	40.2	Pipistrellus kuhlii	73%
57.	15050773	15	42.6	Plecotus auritus	61%
58.	15050774	3	30.5	Nyctalus noctula	31%
59.	15050775	6	29.8	Plecotus auritus	59%
60.	15050776	7	44.9	Pipistrellus pipistrellus	63%

Annex 2.3. Ramna – Bitola-Resen Road Interchange Monitoring Site (Line Transect): Raw data of Batlogger M recordings on foraging bats along line transect using moving vehicle (Summer Season Survey, 2016).

Nr.	Recording Code	Number of Calls	Peak Freq. (kHz)	Suggested species	% of certainty
1.	15050565	7	26.5	*Nyctalus leisleri*	68%
2.	15050566	8	25.7	*Nyctalus noctula*	77%
3.	15050567	6	24.2	*Nyctalus leisleri*	71%
4.	15050568	30	25.6	*Nyctalus leisleri*	77%
5.	15050569	3	37.1	*Pipistrellus kuhlii*	40%
6.	15050570	11	37.0	*Pipistrellus kuhlii*	79%
7.	15050571	8	40.1	*Pipistrellus kuhlii*	61%
8.	15050572	59	52.8	*Pipistrellus pygmaeus*	54%
9.	15050573	9	45.6	*Plecotus auritus*	54%
10.	15050574	47	52.5	*Pipistrellus pygmaeus*	67%
11.	15050575	9	53.3	*Pipistrellus pygmaeus*	72%
12.	15050576	24	52.3	*Miniopterus schreibersii*	75%
13.	15050577	19	44.6	*Pipistrellus pipistrellus*	73%
14.	15050578	3	23.1	*Nyctalus noctula*	41%
15.	15050579	10	38.2	*Pipistrellus kuhlii*	64%
16.	15050580	11	37.9	*Nyctalus noctula*	58%
17.	15050581	31	34.1	*Hypsugo savii*	79%
18.	15050582	9	28.1	*Nyctalus noctula*	66%
19.	15050583	10	39.1	*Pipistrellus kuhlii*	79%
20.	15050584	8	36.8	*Pipistrellus kuhlii*	65%
21.	15050585	10	60.9	*Myotis emarginatus*	59%
22.	15050586	23	37.5	*Pipistrellus kuhlii*	53%
23.	15050587	22	39.7	*Pipistrellus nathusii*	79%
24.	15050588	33	38.3	*Pipistrellus nathusii*	67%
25.	15050589	2	35.6	*Pipistrellus kuhlii*	33%
26.	15050590	2	40.6	No suggestions	-
27.	15050591	12	36.1	*Hypsugo savii*	82%
28.	15050592	17	34.2	*Hypsugo savii*	82%
29.	15050593	20	32.3	*Nyctalus noctula*	57%
30.	15050594	6	41.5	*Plecotus auritus*	61%
31.	15050595	13	42.2	*Pipistrellus pipistrellus*	80%
32.	15050596	Not recorded calls			
33.	15050597	7	41.9	*Pipistrellus kuhlii*	62%
34.	15050598	1	37.5	*Pipistrellus kuhlii*	29%
35.	15050599	10	35.5	*Pipistrellus kuhlii*	63%
36.	15050600	60	52.1	*Pipistrellus pygmaeus*	65%
37.	15050601	17	52.0	*Pipistrellus pygmaeus*	78%
38.	15050602	22	37.9	*Pipistrellus nathusii*	81%
39.	15050603	50	38.1	*Pipistrellus kuhlii*	69%
40.	15050604	126	38.0	*Pipistrellus nathusii*	54%
41.	15050605	23	39.1	*Pipistrellus nathusii*	82%
42.	15050606	17	39.7	*Pipistrellus nathusii*	76%
43.	15050607	371	39.4	*Pipistrellus nathusii*	28%
44.	15050608	13	36.1	*Hypsugo savii*	80%
45.	15050609	24	40.4	*Pipistrellus nathusii*	82%
46.	15050610	28	36.7	*Pipistrellus nathusii*	80%
47.	15050611	37	36.4	*Hypsugo savii*	71%
48.	15050612	43	36.7	*Pipistrellus nathusii*	37%

49.	15050613	137	38.3	*Pipistrellus nathusii*	36%
50.	15050614	13	40.7	*Myotis bechsteinii*	51%
51.	15050615	11	44.2	*Pipistrellus pipistrellus*	68%
52.	15050616	114	40.3	No suggestions	-
53.	15050617	21	41.4	*Myotis emarginatus*	53%
54.	15050618	94	41.5	*Plecotus auritus*	51%
55.	15050619	124	39.7	*Pipistrellus nathusii*	53%
56.	15050620	11	42.1	*Pipistrellus kuhlii*	74%
57.	15050621	62	40.1	*Pipistrellus nathusii*	43%
58.	15050622	84	39.5	*Pipistrellus nathusii*	35%
59.	15050623	84	40.6	*Pipistrellus nathusii*	35%
60.	15050624	141	40.4	*Pipistrellus nathusii*	46%
61.	15050625	88	40.9	*Pipistrellus nathusii*	50%
62.	15050626	12	40.1	*Pipistrellus nathusii*	75%
63.	15050627	19	42.5	*Pipistrellus kuhlii*	66%
64.	15050628	93	40.0	*Plecotus auritus*	48%

Annex 2.4. Sopotsko – Bitola-Resen Road Intersection Monitoring Site (Line Transect): Raw data of Batlogger M recordings on foraging bats along line transect using moving vehicle (Summer Season Survey, 2016).

Nr.	Recording Code	Number of Calls	Peak Freq. (kHz)	Suggested species	% of certainty
1.	15050629	10	41.0	*Pipistrellus nathusii*	64%
2.	15050630	13	31.1	*Nyctalus noctula*	67%
3.	15050631	14	29.7	*Nyctalus noctula*	59%
4.	15050632	18	35.8	*Pipistrellus kuhlii*	62%
5.	15050633	28	40.2	*Pipistrellus kuhlii*	38%
6.	15050634	22	41.1	*Plecotus auritus*	74%
7.	15050635	5	32.7	*Nyctalus noctula*	67%
8.	15050636	64	39.1	*Pipistrellus kuhlii*	59%
9.	15050637	34	56.8	*Myotis emarginatus*	71%
10.	15050638	20	58.8	*Myotis emarginatus*	73%
11.	15050639	16	38.0	*Pipistrellus kuhlii*	78%
12.	15050640	24	39.6	*Plecotus auritus*	72%
13.	15050641	13	58.2	*Myotis emarginatus*	78%
14.	15050642	20	39.1	*Pipistrellus kuhlii*	38%
15.	15050643	13	40.2	*Pipistrellus kuhlii*	63%
16.	15050644	11	19.9	*Nyctalus lasiopterus*	74%
17.	15050645	28	38.9	*Pipistrellus nathusii*	53%
18.	15050646	22	46.3	*Plecotus auritus*	55%
19.	15050647	64	39.8	*Pipistrellus nathusii*	62%
20.	15050648	12	31.7	*Nyctalus noctula*	57%
21.	15050649	29	43.3	*Myotis capaccinii*	66%
22.	15050650	28	43.1	*Pipistrellus kuhlii*	68%

Annex 2.5. Bitola-Resen Road Intersection – Leva Reka Village Monitoring Site (Line Transect): Raw data of Batlogger M recordings on foraging bats along line transect using moving vehicle (Summer Season Survey, 2016).

Nr.	Recording Code	Number of Calls	Peak Freq. (kHz)	Suggested species	% of certainty
1.	15050651	3	50.3	*Pipistrellus pipistrellus*	38%
2.	15050652	6	49.1	*Pipistrellus pipistrellus*	77%
3.	15050653	9	50.0	*Pipistrellus pygmaeus*	74%
4.	15050654	18	42.5	*Pipistrellus kuhlii*	78%
5.	15050655	3	43.6	*Pipistrellus pipistrellus*	31%
6.	15050656	9	36.2	*Pipistrellus nathusii*	81%
7.	15050657	42	37.5	*Pipistrellus nathusii*	41%
8.	15050658	12	34.2	*Hypsugo savii*	61%
9.	15050659	9	39.5	*Pipistrellus kuhlii*	77%
10.	15050660	6	35.2	*Hypsugo savii*	78%
11.	15050661	8	38.9	*Pipistrellus kuhlii*	65%
12.	15050662	15	41.6	*Plecotus auritus*	55%
13.	15050663	10	44.0	*Plecotus auritus*	68%
14.	15050664	10	46.8	*Pipistrellus pipistrellus*	64%
15.	15050665	13	46.8	*Pipistrellus pipistrellus*	72%
16.	15050666	4	45.2	*Pipistrellus pipistrellus*	59%
17.	15050667	4	46.5	*Pipistrellus pipistrellus*	80%
18.	15050668	17	35.1	*Hypsugo savii*	77%
19.	15050669	14	27.7	*Nyctalus noctula*	65%
20.	15050670	14	49.6	*Pipistrellus pipistrellus*	85%
21.	15050671	8	41.8	*Pipistrellus kuhlii*	64%
22.	15050672	11	31.9	*Nyctalus noctula*	68%
23.	15050673	1	36.0	*Pipistrellus kuhlii*	34%
24.	15050674	5	47.8	*Pipistrellus pipistrellus*	57%
25.	15050675	10	37.0	*Pipistrellus kuhlii*	73%
26.	15050676	5	41.0	*Myotis bechsteinii*	52%
27.	15050677	7	35.1	*Nyctalus noctula*	59%
28.	15050678	40	37.0	*Pipistrellus kuhlii*	56%

Annex 2.6. Prentov Most Road Intersection – Rock Quarry Monitoring Site (Line Transect): Raw data of Batlogger M recordings on foraging bats along line transect using moving vehicle (Summer Season Survey, 2016).

Nr.	Recording Code	Number of Calls	Peak Freq. (kHz)	Suggested species	% of certainty
1.	15050679	14	35.5	*Pipistrellus kuhlii*	65%
2.	15050680	13	38.7	*Pipistrellus kuhlii*	83%
3.	15050681	9	24.8	*Vespertilio murinus*	73%
4.	15050682	16	29.4	*Nyctalus noctula*	57%
5.	15050683	8	29.2	*Nyctalus noctula*	64%
6.	15050684	19	49.6	*Myotis emarginatus*	67%
7.	15050685	9	38.7	*Plecotus auritus*	62%
8.	15050686	26	49.7	*Plecotus auritus*	62%
9.	15050687	4	42.2	*Plecotus auritus*	71%
10.	15050688	6	50.7	*Pipistrellus pipistrellus*	63%
11.	15050689	22	40.8	*Nyctalus noctula*	47%
12.	15050690	23	35.8	*Pipistrellus kuhlii*	52%
13.	15050691	5	49.4	*Pipistrellus pipistrellus*	64%

14.	15050692	12	40.5	*Plecotus auritus*	55%
15.	15050693	13	35.4	*Pipistrellus kuhlii*	33%
16.	15050694	12	28.2	*Nyctalus noctula*	67%
17.	15050695	13	34.8	*Hypsugo savii*	79%
18.	15050696	12	39.2	*Pipistrellus nathusii*	75%
19.	15050697	80	39.5	*Pipistrellus nathusii*	59%
20.	15050698	33	41.2	*Nyctalus noctula*	48%
21.	15050699	7	40.9	*Pipistrellus kuhlii*	70%
22.	15050700	19	37.7	*Nyctalus noctula*	57%
23.	15050701	2	36.0	*Pipistrellus kuhlii*	38%
24.	15050702	18	34.5	*Nyctalus noctula*	57%
25.	15050703	16	51.5	*Miniopterus schreibersii*	33%
26.	15050704	4	48.2	*Plecotus auritus*	59%
27.	15050705	3	38.6	No suggestions	
28.	15050706	57	48.0	*Pipistrellus pipistrellus*	43%
29.	15050707	13	44.4	*Pipistrellus pipistrellus*	63%
30.	15050708	19	55.8	*Pipistrellus pygmaeus*	67%
31.	15050709	21	50.9	*Pipistrellus pipistrellus*	58%
32.	15050710	6	49.4	*Plecotus auritus*	63%
33.	15050711	42	56.5	*Miniopterus schreibersii*	36%
34.	15050712	12	49.9	*Pipistrellus pipistrellus*	70%
35.	15050713	19	54.1	*Miniopterus schreibersii*	76%
36.	15050714	3	32.5	*Nyctalus noctula*	25%
37.	15050715	1	25.9	*Nyctalus leisleri*	34%
38.	15050716	5	37.8	*Myotis emarginatus*	56%

Annex 2.7. Livoishta-Livoishta Monitoring Site (Line Transect): Raw data of Batlogger M recordings on foraging bats along line transect (Summer Season Survey, 2016).

Nr.	Recording Code	Number of Calls	Peak Freq. (kHz)	Suggested species	% of certainty
1.	15050050	8	42.8	*Plecotus auritus*	56%
2.	15050051	19	48.2	*Pipistrellus pipistrellus*	74 %
3.	15050052	8	42.8	*Pipistrellus pipistrellus*	66 %
4.	15050053	16	44.7	*Pipistrellus pipistrellus*	66 %
5.	15050054	16	34.2	*Myotis emarginatus*	52 %
6.	15050055	9	36.8	*Pipistrellus kuhlii*	64 %
7.	15050056	14	43.4	*Pipistrellus pipistrellus*	59 %
8.	15050057	9	42.4	*Pipistrellus pipistrellus*	51 %
9.	15050058	8	40.3	*Plecotus auritus*	55 %
10.	15050059	5	30.6	*Nyctalus noctula*	64 %
11.	15050060	13	43.4	*Plecotus auritus*	57 %
12.	15050061	7	49.0	*Plecotus auritus*	55 %
13.	15050062	12	38.7	*Nyctalus noctula*	63 %
14.	15050063	11	37.0	*Nyctalus noctula*	54 %
15.	15050064	27	48.6	*Pipistrellus pipistrellus*	47 %

Annex 2.8. Livoishta-Trebenishta Monitoring Site (Line Transect): Raw data of Batlogger M recordings on foraging bats along line transect (Summer Season Survey, 2016).

Nr.	Recording Code	Number of Calls	Peak Freq. (kHz)	Suggested species	% of certainty
1.	15050073	49	46.1	*Pipistrellus pipistrellus*	47%
2.	15050074	17	26.1	*Nyctalus noctula*	70%
3.	15050075	47	40.9	*Pipistrellus kuhlii*	65%
4.	15050076	10	43.5	*Pipistrellus pipistrellus*	62%
5.	15050077	28	44.9	*Pipistrellus pipistrellus*	60%
6.	15050078	12	38.1	*Myotis emerginatus*	49%
7.	15050079	5	31.6	*Plecotus auritus*	66%
8.	15050080	29	39.8	*Pipistrellus kuhlii*	59%
9.	15050081	39	42.3	*Plecotus auritus*	60%
10.	15050082	36	37.6	*Pipistrellus kuhlii*	62%
11.	15050083	6	32.4	*Nyctalus noctula*	66%
12.	15050084	12	43.1	*Plecotus auritus*	55%
13.	15050085	33	44.6	*Pipistrellus pipistrellus*	58%
14.	15050086	11	46.9	*Myotis emerginatus*	70%
15.	15050087	10	41.7	*Pipistrellus kuhlii*	58%
16.	15050088	13	34.6	*Plecotus auritus*	62%
17.	15050089	6	43.6	*Pipistrellus kuhlii*	60%
18.	15050090	5	46.6	*Plecotus auritus*	65%
19.	15050091	3	50.4	*Miniopterus schreibersii*	32%
20.	15050092	6	50.5	*Pipistrellus pipistrellus*	78%
21.	15050093	6	51.5	*Miniopterus schreibersii*	77%
22.	15050094	13	36.4	*Pipistrellus kuhlii*	72%
23.	15050095	8	36.8	*Pipistrellus nathusii*	79%
24.	15050096	21	40.5	*Myotis bechsteinii*	52%
25.	15050097	11	40.1	*Pipistrellus kuhlii*	66%
26.	15050098	9	43.5	*Pipistrellus kuhlii*	57%
27.	15050099	4	39.7	*Pipistrellus kuhlii*	78%
28.	15050100	29	43.7	*Myotis bechsteinii*	69%
29.	15050101	18	50.3	*Pipistrellus pipistrellus*	85%
30.	15050102	20	37.8	*Pipistrellus kuhlii*	77%
31.	15050103	14	41.9	*Pipistrellus pipistrellus*	56%
32.	15050104	12	41.8	*Pipistrellus kuhlii*	57%
33.	15050105	16	39.2	*Pipistrellus kuhlii*	76%
34.	15050106	36	46.7	*Pipistrellus pipistrellus*	57%
35.	15050107	26	52.9	*Miniopterus schreibersii*	71%
36.	15050108	9	43.8	*Pipistrellus pipistrellus*	67%
37.	15050109	19	38.4	*Pipistrellus nathusii*	69%
38.	15050110	14	38.2	*Pipistrellus kuhlii*	82%
39.	15050111	5	45.5	*Pipistrellus pipistrellus*	73%
40.	15050112	15	38.3	*Pipistrellus kuhlii*	82%
41.	15050113	15	36.4	*Myotis bechsteinii*	55%
42.	15050114	8	34.8	*Plecotus auritus*	66%
43.	15050115	19	36.6	*Nyctalus noctula*	56%
44.	15050116	17	31.3	*Plecotus auritus*	52%
45.	15050117	17	35.0	*Pipistrellus nathusii*	59%
46.	15050118	61	42.0	*Pipistrellus kuhlii*	50%
47.	15050119	20	44.7	*Pipistrellus pipistrellus*	77%
48.	15050120	16	42.4	*Pipistrellus pipistrellus*	63%
49.	15050121	63	42.7	*Pipistrellus pipistrellus*	43%

50.	15050122	8	50.0	*Myotis emerginatus*	55%
51.	15050123	40	41.8	*Plecotus auritus*	62%
52.	15050124	50	38.4	*Plecotus auritus*	33%
53.	15050125	9	43.5	*Pipistrellus pipistrellus*	64%
54.	15050126	17	46.0	*Pipistrellus pipistrellus*	73%
55.	15050127	70	44.1	*Plecotus auritus*	43%
56.	15050128	44	45.2	*Pipistrellus pipistrellus*	47%
57.	15050129	11	48.6	*Pipistrellus pipistrellus*	69%
58.	15050130	20	46.2	*Plecotus auritus*	62%
59.	15050131	28	43.9	*Pipistrellus pipistrellus*	64%
60.	15050132	61	47.2	*Pipistrellus pipistrellus*	56%
61.	15050133	47	44.6	*Pipistrellus pipistrellus*	59%
62.	15050134	11	42.4	*Plecotus auritus*	59%
63.	15050135	9	47.0	*Pipistrellus pipistrellus*	63%
64.	15050136	34	42.7	*Plecotus auritus*	57%
65.	15050137	14	43.6	*Pipistrellus pipistrellus*	62%
66.	15050138	10	39.3	*Myotis bechsteinii*	59%
67.	15050139	14	40.4	*Plecotus auritus*	64%
68.	15050140	67	39.0	*Pipistrellus kuhlii*	35%
69.	15050141	18	30.7	*Nyctalus noctula*	56%
70.	15050142	7	42.9	*Plecotus auritus*	58%
71.	15050143	46	45.7	*Pipistrellus pipistrellus*	44%
72.	15050144	14	41.8	*Plecotus auritus*	48%
73.	15050145	20	41.8	*Plecotus auritus*	64%
74.	15050146	22	43.9	*Pipistrellus pipistrellus*	75%
75.	15050147	27	39.3	*Pipistrellus nathusii*	50%
76.	15050148	16	36.4	*Pipistrellus kuhlii*	60%
77.	15050149	13	41.9	*Pipistrellus kuhlii*	62%
78.	15050150	5	42.8	*Pipistrellus kuhlii*	78%
79.	15050151	108	44.2	*Pipistrellus pipistrellus*	47%
80.	15050152	26	44.1	*Pipistrellus pipistrellus*	63%
81.	15050153	8	38.8	*Plecotus auritus*	61%
82.	15050154	66	45.5	*Pipistrellus pipistrellus*	55%
83.	15050155	18	45.0	*Pipistrellus pipistrellus*	58%
84.	15050156	8	42.0	*Plecotus auritus*	64%
85.	15050157	23	43.7	*Pipistrellus pipistrellus*	70%
86.	15050158	35	43.2	*Pipistrellus pipistrellus*	58%
87.	15050159	46	44.2	*Pipistrellus pipistrellus*	50%
88.	15050160	26	40.1	*Plecotus auritus*	58%
89.	15050161	14	35.6	*Plecotus auritus*	61%
90.	15050162	12	30.1	*Plecotus auritus*	63%
91.	15050163	76	43.8	No suggestions	-
92.	15050164	104	44.9	*Pipistrellus pipistrellus*	30%
93.	15050165	20	43.7	*Pipistrellus pipistrellus*	75%
94.	15050166	30	46.4	*Pipistrellus pipistrellus*	63%
95.	15050167	22	40.3	*Pipistrellus kuhlii*	50%
96.	15050168	23	43.8	*Pipistrellus pipistrellus*	60%
97.	15050169	29	42.3	*Pipistrellus pipistrellus*	64%
98.	15050170	8	44.9	*Plecotus auritus*	64%
99.	15050171	9	31.1	*Nyctalus noctula*	65%
100.	15050172	34	35.3	*Hypsugo savii*	61%
101.	15050173	31	36.8	*Pipistrellus kuhlii*	54%
102.	15050174	17	35.6	*Pipistrellus kuhlii*	69%

103.	15050175	19	34.2	*Hypsugo savii*	57%
104.	15050176	23	34.0	*Nyctalus noctula*	63%
105.	15050177	15	33.4	*Nyctalus noctula*	64%
106.	15050178	22	41.2	*Plecotus auritus*	52%
107.	15050179	6	45.0	*Plecotus auritus*	66%
108.	15050180	20	32.6	*Plecotus auritus*	56%
109.	15050181	24	40.3	*Pipistrellus kuhlii*	62%
110.	15050182	15	38.5	*Plecotus auritus*	61%
111.	15050183	22	32.1	*Nyctalus noctula*	61%
112.	15050184	7	40.2	*Pipistrellus kuhlii*	63%
113.	15050185	15	38.9	*Nyctalus noctula*	57%
114.	15050186	17	35.4	*Nyctalus noctula*	61%
115.	15050187	34	38.5	*Pipistrellus kuhlii*	71%
116.	15050188	26	39.5	*Nyctalus noctula*	56%
117.	15050189	18	46.6	*Pipistrellus pipistrellus*	58%
118.	15050190	15	35.0	*Nyctalus noctula*	64%
119.	15050191	15	34.9	*Nyctalus noctula*	66%
120.	15050192	8	36.2	*Pipistrellus kuhlii*	79%
121.	15050193	24	37.4	*Plecotus auritus*	59%
122.	15050194	37	39.2	*Pipistrellus kuhlii*	73%
123.	15050195	20	40.9	*Pipistrellus nathusii*	53%
124.	15050196	20	40.5	*Pipistrellus kuhlii*	63%
125.	15050197	14	42.9	*Pipistrellus pipistrellus*	62%
126.	15050198	6	39.9	*Pipistrellus kuhlii*	72%
127.	15050199	28	42.2	*Pipistrellus kuhlii*	66%
128.	15050200	45	41.0	*Pipistrellus kuhlii*	45%
129.	15050201	20	37.0	*Pipistrellus kuhlii*	81%
130.	15050202	17	38.6	*Pipistrellus kuhlii*	65%
131.	15050203	19	41.4	*Pipistrellus kuhlii*	74%
132.	15050204	19	43.2	*Pipistrellus pipistrellus*	71%
133.	15050205	20	34.1	*Nyctalus noctula*	61%
134.	15050206	45	38.2	*Pipistrellus nathusii*	55%
135.	15050207	22	39.0	*Pipistrellus nathusii*	77%
136.	15050208	13	35.8	*Pipistrellus kuhlii*	62%
137.	15050209	15	38.4	*Pipistrellus nathusii*	83%
138.	15050210	12	42.3	*Pipistrellus kuhlii*	80%
139.	15050211	17	39.0	*Plecotus auritus*	62%
140.	15050212	27	38.5	*Pipistrellus kuhlii*	75%
141.	15050213	14	42.3	*Pipistrellus kuhlii*	65%
142.	15050214	21	40.9	*Pipistrellus kuhlii*	51%
143.	15050215	16	40.4	*Pipistrellus kuhlii*	72%
144.	15050216	24	41.3	*Pipistrellus kuhlii*	67%
145.	15050217	38	42.0	*Pipistrellus kuhlii*	56%
146.	15050218	23	40.8	*Pipistrellus kuhlii*	75%
147.	15050219	21	39.8	*Pipistrellus kuhlii*	66%
148.	15050220	8	37.6	*Pipistrellus kuhlii*	79%

Annex 2.9. Moroishta Monitoring Site (Point Count): Raw data of Batlogger M recordings on foraging bats (Summer Season Survey, 2016).

Nr.	Recording Code	Number of Calls	Peak Freq. (kHz)	Suggested species	% of certainty
1.	15050221	11	52.9	*Miniopterus schreibersii*	71%
2.	15050222	5	29.2	*Plecotus auritus*	60%
3.	15050223	10	43.4	*Myotis emerginatus*	54%
4.	15050224	8	38.0	*Myotis emerginatus*	53%
5.	15050225	14	37.6	*Myotis emerginatus*	60%
6.	15050226	14	42.2	*Pipistrellus pipistrellus*	56%
7.	15050227	23	48.3	*Pipistrellus pipistrellus*	54%
8.	15050228	36	59.8	*Myotis emerginatus*	69%
9.	15050229	12	51.1	*Pipistrellus pipistrellus*	64%
10.	15050230	5	27.7	*Nyctalus noctula*	58%
11.	15050231	8	50.5	*Plecotus auritus*	66%
12.	15050232	6	41.8	*Plecotus auritus*	67%
13.	15050233	32	48.4	*Plecotus auritus*	57%
14.	15050234	4	52.3	*Pipistrellus pipistrellus*	72%
15.	15050235	16	48.5	*Plecotus auritus*	56%
16.	15050236	11	48.7	*Pipistrellus pipistrellus*	66%
17.	15050237	37	58.1	*Pipistrellus pygmaeus*	38%
18.	15050238	12	47.1	*Pipistrellus pipistrellus*	60%
19.	15050239	7	31.9	*Nyctalus noctula*	63%
20.	15050240	6	27.9	*Nyctalus noctula*	63%
21.	15050241	12	45.5	*Plecotus auritus*	57%
22.	15050242	19	37.6	*Myotis bechsteinii*	53%
23.	15050243	3	38.6	*Myotis emerginatus*	62%
24.	15050244	27	44.3	*Pipistrellus pipistrellus*	72%
25.	15050245	53	40.7	*Pipistrellus kuhlii*	62%
26.	15050246	61	55.9	*Pipistrellus pygmaeus*	49%
27.	15050247	47	40.3	No suggestions	-
28.	15050248	10	39.5	*Plecotus auritus*	54%
29.	15050249	16	45.1	*Pipistrellus pipistrellus*	59%
30.	15050250	13	41.0	*Myotis bechsteinii*	59%
31.	15050251	20	45.8	*Myotis bechsteinii*	58%
32.	15050252	11	34.8	*Nyctalus noctula*	58%
33.	15050253	26	44.0	*Plecotus auritus*	56%
34.	15050254	14	42.4	*Plecotus auritus*	56%
35.	15050255	30	42.5	*Plecotus auritus*	66%
36.	15050256	7	52.8	*Miniopterus schreibersii*	69%
37.	15050257	11	51.6	*Pipistrellus pygmaeus*	76%
38.	15050258	11	30.9	*Nyctalus noctula*	56%
39.	15050259	34	42.2	*Pipistrellus kuhlii*	73%
40.	15050260	11	44.4	*Myotis bechsteinii*	70%
41.	15050261	9	44.2	*Myotis bechsteinii*	68%
42.	15050262	30	40.5	*Plecotus auritus*	59%
43.	15050263	13	36.0	*Plecotus auritus*	62%
44.	15050264	31	44.3	*Myotis bechsteinii*	65%
45.	15050265	60	44.4	*Plecotus auritus*	48%
46.	15050266	21	44.0	*Pipistrellus kuhlii*	67%
47.	15050267	39	44.2	*Plecotus auritus*	65%
48.	15050268	14	47.9	*Plecotus auritus*	64%
49.	15050269	14	48.1	*Plecotus auritus*	65%

50.	15050270	19	49.2	*Pipistrellus pipistrellus*	62%
51.	15050271	8	49.3	*Pipistrellus pipistrellus*	62%
52.	15050272	13	44.1	*Plecotus auritus*	66%
53.	15050273	28	35.7	*Myotis blythii*	49%
54.	15050274	23	48.6	*Plecotus auritus*	56%
55.	15050275	16	48.1	*Myotis emerginatus*	66%
56.	15050276	13	46.6	*Plecotus auritus*	61%
57.	15050277	27	46.8	*Pipistrellus pipistrellus*	59%
58.	15050278	7	49.3	*Myotis emerginatus*	71%
59.	15050279	9	49.2	*Pipistrellus pipistrellus*	76%
60.	15050280	14	46.3	*Pipistrellus pipistrellus*	63%
61.	15050281	21	47.1	*Plecotus auritus*	57%
62.	15050282	14	48.1	*Plecotus auritus*	61%
63.	15050283	7	42.0	*Myotis bechsteinii*	64%
64.	15050284	32	47.4	*Pipistrellus pipistrellus*	68%
65.	15050285	7	45.1	*Pipistrellus pipistrellus*	66%
66.	15050286	30	47.2	*Pipistrellus pipistrellus*	57%
67.	15050287	11	48.8	*Pipistrellus pipistrellus*	61%
68.	15050288	16	48.9	*Plecotus auritus*	59%
69.	15050289	11	46.6	*Plecotus auritus*	61%
70.	15050290	9	50.7	*Pipistrellus pipistrellus*	74%
71.	15050291	5	47.8	*Pipistrellus pipistrellus*	76%
72.	15050292	7	43.6	*Plecotus auritus*	61%
73.	15050293	6	49.4	*Pipistrellus pipistrellus*	70%
74.	15050294	3	24.7	*Nyctalus leisleri*	37%
75.	15050295	18	35.1	*Pipistrellus kuhlii*	61%
76.	15050296	13	45.2	*Pipistrellus pipistrellus*	66%
77.	15050297	10	45.7	*Myotis bechsteinii*	70%
78.	15050298	19	44.0	*Plecotus auritus*	63%
79.	15050299	20	43.9	*Plecotus auritus*	63%
80.	15050300	22	45.8	*Plecotus auritus*	60%
81.	15050301	77	49.0	*Plecotus auritus*	46%
82.	15050302	18	42.4	*Plecotus auritus*	72%
83.	15050303	27	47.9	*Pipistrellus pipistrellus*	64%
84.	15050304	13	47.9	*Pipistrellus pipistrellus*	68%
85.	15050305	33	48.3	*Plecotus auritus*	53%
86.	15050306	25	49.1	*Pipistrellus pipistrellus*	48%
87.	15050307	13	49.1	*Pipistrellus pipistrellus*	74%
88.	15050308	14	48.7	*Plecotus auritus*	56%
89.	15050309	23	46.0	*Plecotus auritus*	63%
90.	15050310	37	43.1	*Myotis capaccinii*	73%
91.	15050311	32	46.9	*Pipistrellus pipistrellus*	57%
92.	15050312	12	46.0	*Pipistrellus pipistrellus*	74%
93.	15050313	12	47.1	*Pipistrellus pipistrellus*	62%
94.	15050314	9	47.2	*Plecotus auritus*	64%
95.	15050315	9	46.7	*Pipistrellus pipistrellus*	72%
96.	15050316	8	44.7	*Myotis bechsteinii*	74%
97.	15050317	16	46.3	*Plecotus auritus*	52%
98.	15050318	15	46.7	*Pipistrellus pipistrellus*	63%
99.	15050319	45	43.6	*Plecotus auritus*	53%
100.	15050320	10	49.9	*Plecotus auritus*	65%
101.	15050321	127	47.7	No suggestions	-
102.	15050322	18	50.0	*Pipistrellus pipistrellus*	53%

103.	15050323	10	38.1	*Pipistrellus nathusii*	75%
104.	15050324	13	37.6	*Pipistrellus nathusii*	84%
105.	15050325	30	39.3	*Pipistrellus nathusii*	78%
106.	15050326	24	39.2	*Pipistrellus nathusii*	81%
107.	15050327	13	46.8	*Plecotus auritus*	55%
108.	15050328	32	45.3	*Myotis bechsteinii*	61%
109.	15050329	9	26.7	*Nyctalus leisleri*	76%
110.	15050330	13	36.4	*Pipistrellus nathusii*	71%
111.	15050331	25	43.8	*Plecotus auritus*	54%
112.	15050332	20	42.2	*Plecotus auritus*	60%
113.	15050333	11	49.7	*Plecotus auritus*	64%
114.	15050334	33	47.2	*Plecotus auritus*	59%
115.	15050335	13	44.3	*Pipistrellus pipistrellus*	70%

Annex 2.10. Vishni - Kjafasan State Border Crossing Monitoring Site (Line Transect): Raw data of Batlogger M recordings on foraging bats along line transect using moving vehicle (Summer Season Survey, 2016).

Nr.	Recording Code	Number of Calls	Peak Freq. (kHz)	Suggested species	% of certainty
1.	15050434	3	35.8	*Nyctalus noctula*	33%
2.	15050435	67	36.8	*Pipistrellus nathusii*	64%
3.	15050436	4	40.4	*Pipistrellus nathusii*	66%
4.	15050437	3	47.4	*Pipistrellus pipistrellus*	27%
5.	15050438	3	41.4	No suggestions	-
6.	15050439	12	74.2	*Rhinolophus ferrumeqineum*	56%
7.	15050440	11	41.6	*Plecotus auritus*	55%
8.	15050441	7	32.4	*Nyctalus noctula*	59%
9.	15050442	9	41.3	*Pipistrellus kuhlii*	52%
10.	15050443	10	40.7	*Plecotus auritus*	60%
11.	15050444	1	46.4	*Pipistrellus pipistrellus*	35%
12.	15050445	4	50.0	*Myotis emarginatus*	58%
13.	15050446	15	41.0	*Plecotus auritus*	48%
14.	15050447	5	39.6	*Myotis bechsteinii*	52%
15.	15050448	3	38.6	*Plecotus auritus*	26%
16.	15050449	3	48.2	*Pipistrellus pipistrellus*	36%
17.	15050450	7	41.3	*Plecotus auritus*	26%
18.	15050451	5	43.2	*Pipistrellus pipistrellus*	63%
19.	15050452	2	39.7	*Plecotus auritus*	26%
20.	15050453	4	48.8	*Plecotus auritus*	52%
21.	15050454	8	45.2	*Pipistrellus pipistrellus*	52%
22.	15050455	2	31.6	*Nyctalus noctula*	26%
23.	15050456	3	35.0	No suggestions	-
24.	15050457	17	32.6	*Myotis myotis*	51%
25.	15050458	7	33.8	*Nyctalus noctula*	65%
26.	15050459	33	40.2	*Pipistrellus kuhlii*	59%
27.	15050460	20	34.4	*Hypsugo savii*	68%
28.	15050461	11	47.6	*Plecotus auritus*	55%
29.	15050462	11	27.0	*Nyctalus noctula*	70%
30.	15050463	17	43.1	*Plecotus auritus*	65%
31.	15050464	10	47.7	*Pipistrellus pipistrellus*	68%
32.	15050465	14	44.9	*Pipistrellus pipistrellus*	60%
33.	15050466	11	35.8	*Plecotus auritus*	63%

34.	15050467	22	48.2	*Pipistrellus pipistrellus*	79%
35.	15050468	12	49.7	*Pipistrellus pipistrellus*	70%
36.	15050469	15	34.7	*Nyctalus noctula*	67%
37.	15050470	6	34.8	*Hypsugo savii*	79%
38.	15050471	11	38.5	*Pipistrellus kuhlii*	73%
39.	15050472	9	32.9	*Hypsugo savii*	71%
40.	15050473	5	41.5	*Plecotus auritus*	61%
41.	15050474	16	46.4	*Pipistrellus pipistrellus*	74%
42.	15050475	24	43.1	*Pipistrellus pipistrellus*	60%
43.	15050476	9	42.7	*Pipistrellus pipistrellus*	76%
44.	15050477	43	43.1	*Pipistrellus pipistrellus*	55%
45.	15050478	6	43.5	*Pipistrellus pipistrellus*	63%
46.	15050479	135	46.9	*Pipistrellus pipistrellus*	30%
47.	15050480	1	44.3	*Pipistrellus pipistrellus*	35%
48.	15050481	7	36.1	*Nyctalus noctula*	59%
49.	15050482	35	36.5	*Nyctalus noctula*	52%
50.	15050483	18	38.6	*Pipistrellus kuhlii*	77%
51.	15050484	8	37.0	*Plecotus auritus*	60%
52.	15050485	12	37.7	*Pipistrellus nathusii*	83%
53.	15050486	1	51.9	*Pipistrellus pygmaeus*	26%
54.	15050487	35	20.5	*Nyctalus noctula*	59%
55.	15050488	32	40.8	*Pipistrellus kuhlii*	70%
56.	15050489	2	42.4	No suggestions	-
57.	15050490	9	50.7	*Myotis emarginatus*	61%
58.	15050491	13	48.9	*Pipistrellus pipistrellus*	52%
59.	15050492	12	53.2	*Pipistrellus pygmaeus*	40%
60.	15050493	11	34.9	*Pipistrellus kuhlii*	78%
61.	15050494	18	36.8	*Nyctalus noctula*	53%
62.	15050495	8	34.1	*Hypsugo savii*	40%
63.	15050496	12	40.2	*Nyctalus noctula*	59%
64.	15050497	9	42.8	*Pipistrellus pipistrellus*	61%
65.	15050498	16	36.4	*Plecotus auritus*	59%
66.	15050499	19	34.3	*Hypsugo savii*	69%
67.	15050500	15	34.3	*Hypsugo savii*	72%
68.	15050501	10	46.4	*Pipistrellus pipistrellus*	63%
69.	15050502	12	42.1	*Myotis emarginatus*	51%
70.	15050503	2	27.9	No suggestions	-
71.	15050504	12	51.2	*Myotis emarginatus*	63%
72.	15050505	7	47.7	*Pipistrellus pipistrellus*	32%
73.	15050506	2	51.0	No suggestions	-
74.	15050507	23	34.8	*Pipistrellus kuhlii*	64%
75.	15050508	12	34.7	*Hypsugo savii*	67%
76.	15050509	16	36.3	*Pipistrellus kuhlii*	69%
77.	15050510	13	35.0	*Pipistrellus kuhlii*	71%
78.	15050511	6	34.8	*Myotis blythii*	62%
79.	15050512	15	38.8	*Plecotus auritus*	49%
80.	15050513	10	36.6	*Pipistrellus kuhlii*	74%
81.	15050514	21	37.0	*Pipistrellus kuhlii*	42%
82.	15050515	55	36.0	No suggestions	-
83.	15050516	37	35.4	*Pipistrellus kuhlii*	39%
84.	15050517	19	38.9	*Pipistrellus kuhlii*	74%
85.	15050518	6	39.0	*Nyctalus noctula*	65%
86.	15050519	7	34.5	*Hypsugo savii*	71%

87.	15050520	3	34.5	*Hypsugo savii*	32%
88.	15050521	22	36.9	*Pipistrellus kuhlii*	46%
89.	15050522	18	36.8	*Pipistrellus kuhlii*	48%
90.	15050523	12	37.0	*Pipistrellus kuhlii*	62%
91.	15050524	7	35.9	*Pipistrellus kuhlii*	74%
92.	15050525	14	35.9	*Pipistrellus kuhlii*	46%
93.	15050526	21	36.0	*Pipistrellus kuhlii*	63%
94.	15050527	19	36.0	*Pipistrellus nathusii*	68%
95.	15050528	18	38.3	*Pipistrellus kuhlii*	43%
96.	15050529	10	36.3	*Plecotus auritus*	61%
97.	15050530	10	38.7	*Pipistrellus kuhlii*	38%
98.	15050531	10	42.2	*Plecotus auritus*	58%
99.	15050532	27	34.3	*Hypsugo savii*	65%
100.	15050533	10	42.4	*Pipistrellus pipistrellus*	55%
101.	15050534	9	38.7	*Nyctalus noctula*	59%
102.	15050535	2	48.2	*Pipistrellus pipistrellus*	37%
103.	15050536	13	48.5	*Pipistrellus pipistrellus*	76%
104.	15050537	13	40.2	*Pipistrellus nathusii*	77%
105.	15050538	10	37.8	*Pipistrellus kuhlii*	66%
106.	15050539	6	47.0	*Pipistrellus pipistrellus*	69%
107.	15050540	6	34.7	*Plecotus auritus*	62%
108.	15050541	18	41.6	*Pipistrellus kuhlii*	64%
109.	15050542	10	37.5	*Pipistrellus kuhlii*	78%
110.	15050543	10	49.0	*Pipistrellus pipistrellus*	75%
111.	15050544	3	36.0	*Pipistrellus kuhlii*	39%
112.	15050545	4	43.8	*Plecotus auritus*	68%
113.	15050546	17	33.9	*Hypsugo savii*	71%
114.	15050547	11	46.8	*Pipistrellus pipistrellus*	80%
115.	15050548	52	43.6	*Pipistrellus pipistrellus*	58%
116.	15050549	26	42.8	*Pipistrellus kuhlii*	54%
117.	15050550	31	42.5	*Pipistrellus pipistrellus*	68%
118.	15050551	12	44.5	*Plecotus auritus*	57%
119.	15050552	59	44.7	*Pipistrellus pipistrellus*	40%
120.	15050553	40	42.8	*Pipistrellus kuhlii*	52%
121.	15050554	19	40.1	*Pipistrellus kuhlii*	60%
122.	15050555	9	38.5	*Plecotus auritus*	60%
123.	15050556	7	38.8	*Plecotus auritus*	65%
124.	15050557	11	40.6	*Plecotus auritus*	51%
125.	15050558	5	38.8	*Pipistrellus kuhlii*	76%
126.	15050559	3	42.7	*Pipistrellus kuhlii*	27%
127.	15050560	28	38.1	*Pipistrellus nathusii*	87%
128.	15050561	6	39.5	*Pipistrellus kuhlii*	75%
129.	15050562	11	37.8	*Pipistrellus kuhlii*	67%
130.	15050563	22	30.0	*Nyctalus noctula*	63%
131.	15050564	10	41.7	*Pipistrellus kuhlii*	78%

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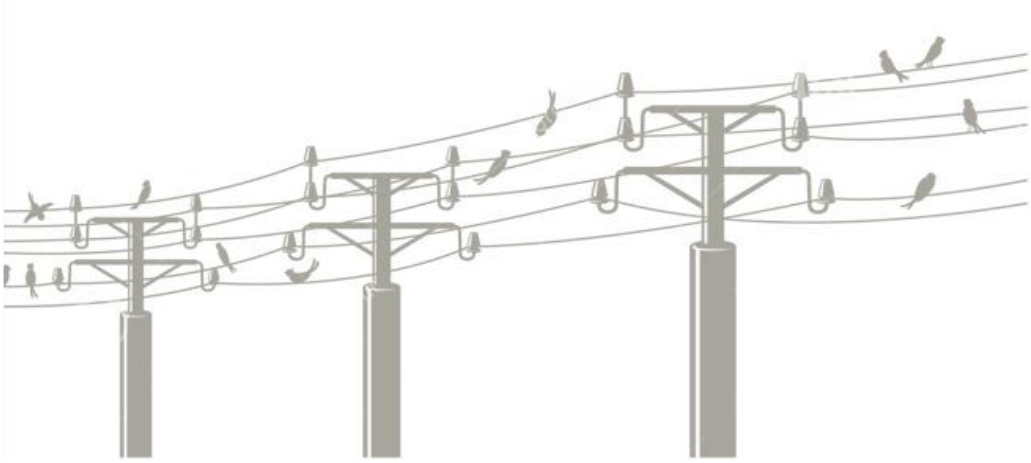
Assessment Study for Vulnerable Taxonomic Groups of Fauna (Birds and Bats) along the 400 kV Overhead Transmission Line: SS Bitola 2 – Macedonian/Albanian border and SS Ohrid

Summer Season Report (2016)



Skopje, 2016

Table of Contents

Abreviations:

MOePP- Ministry for Environment and Spatial Planning

EU – Europian Union

CITES - Convention on International Trade in Endangered Species of Wild Fauna and Flora

AEWA – African-Eurasian Waterbird Agreement

SPA – Special Protection Area

IPA -Important Bird area

SAC – Special Area for Conservation

MES-Macedonian Ecological Society

EBRD- European Bank for Reconstruction and Development

PR - Performance Requirement

ESP- Environmental and Social Policy

ESAP- Environmental and Social Action Plan

ESIA- Environmental and Social Impact Assessment

MEPSO- The Joint Stock Company for Electricity Transmission and Power System Control

CEIM- Civil Engineering Institute Macedonia

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Cover Page Photos: Bitola 2 Generating Step-Up Transformer (back photo); Nesting birds with young: White Stork (Ciconia ciconia) in the village of Kriveni (Resen Municipality); Mixed colony of Greater Mouse-eared Bat (Myotis myotis) and Schreibers' Bat (Miniopterus schreibersii) in the Jaorec Cave, near the village of Velmej (Debarca Municipality).

Ref. Civil Engineering Institute Macedonia (CEIM), Skopje, Macedonia Contract 0902-458/1 with MEPSO Skopje, Macedonia Contract No. 02-114/2 . Project "Construction of Interconnection 400 kV Transmission Line, SS Bitola 2 – Macedonian/Albanian border and SS Ohrid''

1. GENERAL INFORMATION

1.1 Background

The Joint Stock Company for Electricity Transmission and Power System Control (MEPSO) in state ownership is currently in a pre-construction phase of the project " 400kV Transmission Line, SS Bitola 2 – Macedonian/Albanian border and SS Ohrid" and the overall plan for improvement of the national electricity transmission infrastructure in the western part of Macedonia outlined in the Energy Development Strategy of the Republic of Macedonia until 2030.

The Project will enable AD MEPSO to construct the Macedonian portion of the planned 400 kV cross-border electricity interconnection between Macedonia and Albania, the first interconnection between the two countries, and the introduction of grid efficiency improvements to the MEPSO's infrastructure.

This project is a part of an initiative to establish a major East - West electricity transmission corridor between Bulgaria, Macedonia, Albania and potentially Italy (via a planned submarine cable). This section (Bitola to Macedonia - Albanian border, with substation at Ohrid) is part of the Macedonia / Albania section of that corridor. The project has been identified as a priority for the creation of the regional electricity market in South East Europe, and will contribute to the stability and security of the electricity system of the Balkans, not only for the two countries directly concerned, but also for the electricity systems of the region by closing a 400 kV ring between Albania, Greece, and Macedonia.

MEPSO has prepared an Environmental and Social Impact Assessment (ESIA) study to fulfill the requirements of the national legislation, the related EU Directives, especially: Environmental Impact Assessment (EIA) Directive (2014/52/EU); Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora; Directive 2009/147/EEC of the European Parliament and the Council of Europe on the Conservation of Wild Birds; and the European Bank for Reconstruction and Development's Environmental and Social Policy (EBRD ESP).

The project is considered as "Category A" Project in accordance with the EBRD's Environmental and Social Policy (ESP) of 2008, and its successor EBRD ESP of 2014. The EBRD ESP 2014 Performance Requirements will apply to projects that are initiated after November 07, 2014. The EBRD's requirements are therefore that all elements of the project will meet national environmental, social, health and safety laws and regulations, and be carried out in compliance with relevant EU environmental and social standards, as well as the EBRD's Environmental and Social Policy (ESP) and Performance Requirements (PRs) of 2008 and 2014.

In this context, MEPSO identified the need for an Environmental and Social Action Plan (ESAP) as part of the Environmental and Social Impact Assessment (ESIA) process. The ESAP provides an instructional working document for management of biodiversity impacts during Project design and implementation,

and will be used by MEPSO and its contractors to ensure that necessary measures are implemented to comply with national laws and lender policies.

1.2 Study Objectives

The present report aims to assess and evaluate the vulnerable taxonomic groups of fauna (birds and Bats) along the Project Corridor. The assessment study on birds and bats as proposed under the ESAP's activity No. 6, which is in line with the EBRD Performance Requirement 6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources), foresees the following actions:

6.1. Engagement of qualified experts in biodiversity (flora and fauna) to conduct biological field investigations of areas along the project corridor, in pre-construction phase (design phase) before final design of transmission line route and exact location of power transmission towers is ascertained. The field investigations should be conducted in order to:

support establishing micro-locations of power transmission towers, to avoid impacts on protected plant and animal species, and propose mitigation measures for impacts to biodiversity;

establish locations for construction works at certain periods of the year, to avoid impacts on protected plant and animal species;

ascertain locations for additional seasonal field investigations to verify recommendations on the micro-locations;

ascertain the potential/actual bat roosts and suggest a schedule (timetable) of construction works to avoid unnecessary environmental impacts during key time periods;

ascertain localities for additional field investigations related to birds and bats, in order to locate areas that need additional mitigation measures (installing of bird deflectors, nesting platforms for birds, bat boxes et cetera);

ascertain areas with critical habitats as defined by EBRD ESP PR 6, to offer offset/compensation measures as a last resort if avoidance and mitigation is not possible;

prepare a summary report, after the field investigations are conducted, with mitigation measures rationale, with further recommendations.

6.3. Following the experts' suggestions of point 6.1, bird deflectors should be installed at ascertained locations to minimize the risk of avian mortalities due to transmission line collisions.

6.4. Following recommendations of experts in ornithology of point 6.1, programme on bird mortalities survey at certain localities should be developed; additional mitigation measures to reduce the collision rates should be implemented.

Consequently, the main objectives of the project should be a general assessment and evaluation study on the fauna of birds and bats along the transmission line corridor, on the basis of pre-construction seasonal surveillance and monitoring; predicted impacts and mitigation measures.

Seasonal field surveillance on horizontal and vertical distribution of Birds along the transmission line corridor with special focus on species listed on Annex I of the EU Directive 2009/147/EC; IUCN Globally Threatened Species; Trigger Species of sites designated as Important Bird Areas; Migratory bird species; and bird species of the area, that are at high risk of electrocution and collision.

Seasonal field surveillance on the presence of Bat species, summer shelters, wintering and maternity colonies in accordance with the Eurobats Guidelines for Surveillance and Monitoring of European Bats, with special focus on species listed on Annex II of the EU Directive 92/43/EEC; species listed on the IUCN Red List of Globally Threatened species; and migratory species with wintering and maternity colonies located in shelters along the transmission line route.

1.3. Setting

The Environment and Social Impact Assessment (ESIA) Study on Interconnection 400 kV Overhead Transmission Line from Bitola 2 Generating Step-Up Transformer to the State Border with Albania and Ohrid Step-Down Transformer 400/110 kV predicts construction of about 250 suspension (tangent) and tension (angle) transmission towers (pylons) within a 500 m wide corridor with total length of approximately 100 km.

The 400 kV Overhead Transmission Line starts from Bitola 2 Step-Up transformer located within boundaries of the Mining and Energy Combine “REK Bitola” Thermal Power Plant Area and runs north-westwardly up to the local road Novaci-Dobrushevo; thence crosses the road between the villages Dobromiri and Dolno Agilarci and turns to the west across the Pelagonia Plain passing between the settlements of Trn and Mogila.

At the locality Karamanski Pat the transmission line turns in southwest direction, passing across the main roads of Bitola-Prilep and Bitola-Kichevo; thence passing between the villages Krklino and Kukurechani ascends across the South-western slopes of the Oblakovo-Snegovo Mountain Region. Thence, it descends to the Strezhevo Reservoir Valley passes south of the villages Ramna and Dolentsi running alongside the Bitola-Resen Main Road. Thence, it ascends westwardly to the Southern slopes of Bigla Mountain in direction to the Gjavato Village. Thence, it runs across the Bigla Mountain Ridge to the north of the Gjavato Mountain Pass and continues in northwest direction across the western slopes of Bigla Mountain passing north of the village Sopotsko, west of the village Kriveni, and north of the villages Leva Reka and Krushje. In fact, it follows the current 110 kV transmission line Bitola-Resen-Ohrid-Struga. Thence, in the vicinity of the village of Svinjishta it turns to the west, avoiding the villages of Rasino and Livoishta. Between the villages of Trebenishta and Mesheishta the transmission line passes across the

Ohrid-Skopje Main Road and enters into the Strushko Pole Valley. Thence, the transmission line runs westwardly until North of the Village Volino; thence turns in southwestward direction until south of the village of Moroishta. Thence, it turns to the west, passes across the local road Mislesevo-Moroista and runs in this direction until the locality Belichka Krasta, south of the village Dolna Belitsa. Thence the transmission line corridor turns to the south running between the villages Vishni and Zagrachani across the most South-eastern slopes of Jablanitsa Mountain to the locality Kjafa San on the State Border with Albania.

Regarding the impacts to birds and mitigation measures, the use of a corridor (in this case 500 m wide) for assessment rather than a single line provides an opportunity for small refinements to the transmission line route to be made within the corridor. However, even with the best possible routing, it is likely that sections of the route will still be a risk to birds. The “precautionary principle” should therefore be kept in mind when identifying mitigation measures. Therefore, data on bird species composition within the area along the transmission line route, and species that are at high risk of electrocution and collision, including species that are susceptible to nocturnal collisions will be collected. The line sections with increased collision risk should be suggested to be fitted with wire markers (bird flappers). The proposed mitigation measures are in line with the Bern Convention Recommendation No. 110 (2004) on minimizing adverse effects of above-ground electricity transmission facilities (power lines) on birds; Bonn Convention Resolution 7.4 on electrocution of migratory birds; as well as with the BirdLife International Position Statement on Birds and Power Lines (2007).

Regarding the impacts to bats and mitigation measures, the use of a corridor (500 m wide) provides an opportunity for refinements to the transmission line route to be made within the corridor. The field investigations have obtained precise data on the bat species composition within the area along the transmission line route, and identified the bat species of the area. Overhead power transmission cables and towers rise high enough in space to pose risks of collision of flying bats. There is therefore concern that cumulatively there could be risk of bats crushing into the towers (pylons) especially when they are erected in migratory paths and congregatory habitats such as roosts. There could be positive impacts of towers acting as roosts to some bats. However, constructions of towers should be aligned to habitats that are not critical to bats’ breeding and mass migration.

2. ASSESSMENT AND EVALUATION OF BIRDS AND BATS

2.1. Introduction

Ornithological investigations with in the Republic of Macedonia started relatively later in comparison to the other Balkan countries. With a few exceptions, we may say that serious investigations started during the First World War, with the arrival of numerous ornithologists within the German army. As a result of extensive and wide-ranging research, Stressemann (1920) in his monograph publication on the Birds of Macedonia "Avifauna Macedonica" has recorded presence of 260 bird species. After the Second World War, Dimovski & Matveev (1955) on the basis of review of bird collections in the Museums at Struga and Skopje and additional field investigations stated that in the territory of Macedonia, 278 species were present. More recently, Micevski (2002/2003) gives data for the presence of 314 bird species. Petkovski (2010) and Velevski (2012) both, in the checklists of birds of Macedonia give data for the presence of 328 bird species, of which 213 species breed locally, while the others appear during the winter or in periods of migration.

The birds of the Project Area are only scarcely investigated. More precise data are given for the Important Bird and Biodiversity Area MK024: Pelagonia (BirdLife International, 2008) across which the transmission line will pass at its narrowest part. The other two IBAs: MK006: Lake Prespa; and MK005: Lake Ohrid (BirdLife International, 2008) will not be directly affected by the transmission line, as well as the Protected Areas (National Parks) of Pelister and Galichitsa.

On National Level, first data on bats were published by Karaman (1929, 1937) and Martino (1935, 1939). Towards the end of the 1930s, 15 bat species were recorded for Macedonia. In the 1940s and 1950s the study of Macedonian bats seems to have come to a standstill. Additional data were published by Dulic & Mikuska (1966), Felten (1977) Hackethal & Peters (1987) and Bogdanowicz (1990) increasing the number of species to 19. Krystufek et al. (1992) give data for the presence of 23 bat species in Macedonia. Krystufek & Petkovski (2003, 2006) increase the number to 24 bat species. Boshamer et al. (2006) registered three additional species that have not been recorded in Macedonia before. Bekker & Boshamer (2007) confirm the presence of Plecotus auritus for the territory of National Park Galicica, and give first record for the presence of Plecotus macrobullaris in the Republic of Macedonia, on the locality Leva Reka, near Resen. Papadatou et al. (2011) give data for the presence of 19 bat species for the Prespa-Ohrid Region. Micevski et al. (2014) give additional data for 20 already recorded species from seven scattered localities. Stojkoska (2016), within the frames of the Europe Aid Project "Strengthening the Capacities for Implementation of NATURA 2000 in Macedonia" gives National Check List consisting 27 Bat Species (unpublished data).

The bats of the Project Area are only partly investigated. Boshamer et al. (2006) were investigating the bats along the Leva Reka River, as well as Bekker & Boshamer (2007). Papadatou et al. (2011) investigating bats of the Prespa-Ohrid Region also give data for the bats of Leva Reka Area.

2.2. Methodology

2.2.1. Rationale on bats

The terms "surveillance" and "monitoring" have been used somewhat interchangeably in the past, but in fact a distinction can be drawn between the two activities and this is quite important when considering the level of information required. Surveillance is a means of assessing what is happening to populations of a particular species over time. Monitoring involves surveillance, not only of the species in question but, so far as possible, also of the other factors likely to affect populations of that species (Battersby, 2010).

Surveillance of bat populations can generally be carried out in two main ways: by visual counts of roosting bats at hibernation sites, mating and maternity roosts or other summer roosts; and by recording foraging bats along linear transects using bat detector, while walking or using moving vehicle.

Counts at hibernation sites. Some bat species aggregate at hibernation sites during the winter months and it is possible to make annual counts of the number of hibernating bats. Hibernation counts are particularly useful in assessing the importance of a site for conservation purposes; site data collected by monitoring programmes can be used to inform decisions when considering site protection under national and international designations. One advantage of hibernation site monitoring is that multiple species can be encountered at the same site. The extent to which bats occupy hibernation sites depends on the local climate. Counts are best done in January or February, but local research may be required to check this before setting up a monitoring project. The weather conditions can influence the hibernation behaviour of bat species that are tolerant of low temperatures. Usually lower numbers of bats are hibernating if the temperatures are several degrees above 0° C and to much higher numbers if temperatures are just around or below zero. Therefore, cold weather conditions should be preferred within the time period of winter counts. When large numbers are present, it may be better to estimate the area the bats cover through the use of photography or video camera. Strong torches are needed for high ceilings. In some cases binoculars are very helpful.

Counts at maternity roosts. Counts of bats at maternity roosts is a traditional method for monitoring the status of roosts. Information can be used to make an assessment of the importance of the roost at local, regional and national levels through analysis of data. Counts of bats in, or emerging from, maternity roosts have also often been used as a way of monitoring the status of a species. Internal counting is the method most widely used. Colonies are usually highly philopatric and faithful to their roosts throughout the breeding season. In Southern European countries maternity colonies of some species such as *M. schreibersii, R. euryale, M. myotis and M. capaccinii* are often found in mixed groups in warmer caves.

The most suitable species for colony counts are: *Rhinolophus euryale, R. ferrumequinum, R. hipposideros, R. mehelyi, Myotis blythii, M. capaccinii, M. emarginatus, M. myotis, M. nattereri, Miniopterus schreibersii*. Colony counts are less appropriate for species that often use a network of roosts and where individuals frequently change between roosts. Internal counts are also generally not appropriate for crevice dwelling species, where only a proportion of the bats may be seen at any time. Such species include *Pipistrellus pipistrellus, Eptesicus serotinus and Barbastella barbastellus* (Simon et al. 2004).

Surveys at swarming sites. In autumn some species begin to migrate to sites where mating and/or hibernation take place. During this period, large numbers of bats can be encountered at some sites, swarming inside and outside the site. This is primarily a mating event, since it occurs long before hibernation, but probably also serves to check hibernation sites and guide inexperienced juveniles to them. Surveillance of swarming sites can therefore provide a useful data on the status of a number of species over a very large area. The method is suited for those species that appear to use a mating strategy that involves extensive chasing flights in large bat assemblages, these *include Myotis bechsteinii, M. brandtii, M. daubentonii, M. myotis, M. nattereri, M. mystacinus, Eptesicus nilssonii, Barbastella barbastellus, Plecotus auritus and P. austriacus.*

Monitoring of Bats using Bat Detector. Bat detector surveys based on line transects generally do not include prolonged stops at a given point. Surveys are carried out under optimal weather conditions, during “prime time”, i.e. the first three hours after sunset. Line-transect surveys require the observer to follow a pre-determined path of known length; point counts require the observer to listen at a fixed point for a known time. The two methods can be combined to give estimates of relative abundance of species being surveyed.

Bat detector transects along roads using moving vehicles. At a minimum, vehicle-based surveys deliver high quality distributional data for common species and will identify distributional changes with good sensitivity. They will also provide statistically valuable conclusions on population trends of common species along roadsides. This method is generally restricted to open/edge species such as *Pipistrellus spp., Hypsugo savii, Nyctalus spp., Eptesicus spp. and Vespertilio murinus* as they are loud echolocators that are found foraging in open habitats along roadsides. Miniopterus schreibersii might be also suitable. Surveyors drive the route, with survey transect driven no faster than 25 km/h. More transects can be driven to increase survey sensitivity. The distance between each survey transect, combined with the driving speed, makes it highly unlikely that the same bat could be recorded on more than one survey transect. Adding stopping points or sections alongside rivers, canals or at other water bodies means that *Myotis cappacinii and M. daubentonii* could also be detected using this method. A torch could be used to confirm the bat is flying close to the water surface, a behavioural characteristic of Myotis daubentonii (ultrasounds with maximum at 45 kHz, flight 5-15 cm above water surface).

Mistnetting of Bats. Harp-trapping/mistnetting can be used to determine the species present and their relative abundance. Catching should be carried out on dry nights with little wind. Harp traps and mist nets, are not generally recommended for the purposes of monitoring because of the potentially high levels of disturbance to bats. However, they are extremely useful when identification of bats must partly be verified by netting of some specimens. Netting can be the only method to determine the ratio of some species in mixed groups. Furthermore, they may be appropriate when the two main surveillance options, roost counts or bat detector transects, cannot be employed effectively and there are no other current alternatives. Catching can be used to identify bat species that cannot be recognised with a bat detector. Harp traps are preferred to mist nets only at roost entrances. Mist nets are more versatile, light and easy to carry. Bats are capable of detecting and avoiding both harp traps and mist nets, but careful positioning and the element of surprise allows both to be used with considerable success. Capture success declines rapidly if the bats are given time to learn the positions of nets and traps, so it is best to move them every night. The fine mist nets designed for bats are successful, but their efficiency declines rapidly under even moderately windy conditions since bats are better able to detect moving objects. Netting is especially successful in forests and across rivers.

2.2.2. Identification of Birds and Bats

The monitoring of birds was conducted using early morning visual counts along transect lines and previously ascertained locations for point counts. The identification of birds was made using binoculars and telescopes for bird watching and appropriate bird guides including Grant (2000) and Elphick & Woodward (2003), as well as audio records (mobile application with birds sounds).

In the presented report, bats were surveyed using visual inspections at potential over- and underground roosts, visual counts at underground roost, mistnetting of bats in their foraging habitats, using Ecotone Mist Net 719/15 (15m in length, 3m in height, 5 shelves and mesh size of 16x16 mm); using ultrasound detector (Batbox Duet, Batbox Limited, 2A Chanctonfold, Horsham Road, Steyning, West Sussex BN44 3AA, UK) and Batlogger M (Elekon AG, Cheerstrasse 16, CH-6014 Luzern, Switzerland) with subsequent computer analysis of the recorded ultrasound calls (BatExplorer Firmware V 2.4). The captured bats were determined following the determination keys by Dietz & Helversen (2004) and Dietz et al. (2009).

2.2.3. Evaluation of Birds and Bats

The Evaluation of Birds and Bats has been conducted in accordance with the EU Birds Directive (Directive 2009/147/EC), EU Habitats Directive (Directive 92/43/EEC), Bern Convention, Bonn Convention, the IUCN Red List of Globally Threatened Species (2016), the IUCN European Red Lists of Species, National Law on Nature Protection (2004) and EBRD Environmental and Social Policy (2014); EBRD

Performance Requirement (PR 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources).

2.2.3.1. Legal Protection of Birds and Bats

The Evaluation of Birds regarding their Legal Protection has been conducted in accordance with the EU Birds Directive (Directive 2009/147/EC), Bern Convention, Bonn Convention and the National Law on Nature Protection (2004). The Evaluation of Bats regarding their Legal Protection has been conducted in accordance with the EU Habitats Directive (Directive 92/43/EEC), Bern Convention, Bonn Convention and the National Law on Nature Protection (2004).

Birds Directive (Directive 2009/147/EC), former Directive 79/409/EEC. The Directive 2009/147 of the European Parliament and of the Council on the Conservation of Wild Birds. The Birds Directive applies to all EU countries since May 2004. The Birds Directive requires the EU Member States to take a number of measures in order to protect all listed species and their habitats. Measures required by the Birds Directives include:

Annex I. Classify as Special Protection Areas (SPAs) the most suitable territories for species in need of special habitat protection as listed on Annex I.

Annex II. Regulate the hunting of species listed in Annex II.

Annex III. Regulate the trade of species listed in Annex III.

Since Annexes II and III regulate the hunting and trade of species, they were not used in the present report as a selection criterion for "evaluation".

Habitats Directive (Directive 92/43/EEC). The European Community's Directive 92/43/EEC on the Conservation of Natural and Semi-natural Habitats and of Wild Flora and Fauna (The Habitats Directive) was notified with the fundamental purpose of establishing a network of protected areas (Natura 2000) throughout the European Community, designed to maintain the distribution and abundance of threatened species and habitats. Several European bat species are listed in Annex II and all are listed in Annex IV of the Directive, requiring Member States to maintain and restore “favourable conservation status” of the species. Article 11 of the Directive states that “Member States shall undertake surveillance of the conservation status of the natural habitats and species referred to in Article 2 with particular regard to priority natural habitat types and priority species.

Annex II. Animal and plant species of community interest whose conservation requires the designation of special areas of conservation.

Annex IV. Animal and plant species of community interest in need of strict protection.

The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention). It imposes a legal obligation on Parties to protect all breeding and resting sites of the Strictly Protected Species on Appendix II, including all European Bat Species apart from the Common Pipistrelle (Pipistrellus pipistrellus), which is listed on Appendix III (Protected Species).

The Convention on the Conservation of Migratory Species of Wild Animals, Bonn Convention (UNEP/CMS) which recognises that endangered migratory species can be properly protected only if activities are carried out over the entire migratory range of the species. Under Article IV of the Convention, range States for Appendix II species are required to conclude legally binding Agreements for their conservation. The Agreement on the Conservation of Populations of European Bats (UNEP/EUROBATS) came into force in 1994. It is one of the Agreements under Article IV of the Bonn Convention and the first international Agreement devoted to the conservation of bats.

National Law on Nature Protection (2004). Article 37 of the Law on Nature Protection regulates the animal and plant species listed in the category of Strictly Protected Wild Species, while Article 41 regulates the animal and plant species listed in the category of Protected Wild Species. The List of species are prepared mainly following the Bern Convention's Appendix II and Appendix III lists of species.

2.2.3.2. Conservation Status of Birds and Bats

The IUCN Red List of Globally Threatened Species (2016). The Red List distinguishes nine hierarchically related Red List Categories. The present IUCN criteria are based on estimates of rates of decline and extinction risk as well as rarity. All taxa listed as Critically Endangered (CR), Endangered (EN) and Vulnerable (VU) are qualified as Threatened. The category Data Deficient (DD) is not a threatened category, although it indicates a need to obtain more information on a taxon to obtain the appropriate listing. The old IUCN category Lower Risk (LR) in (IUCN 1994) is replaced by Near Threatened (NT), which is close to qualifying for Vulnerable but not Threatened.

The IUCN European Red List of Threatened Species (2016). The IUCN European Red List of Threatened Species is based on the same criteria like the Global Red List, but the estimates of rates of decline, the extinction risk and rarity are restricted exclusively to the European populations of the species.

EBRD Environmental and Social Policy (2014). The European Bank for Reconstruction and Development is committed to promoting "environmentally sound and sustainable development" in the full range of its investment and technical cooperation activities. A project is categorised A when it could result in potentially significant adverse future environmental and/or social impacts which, at the

time of categorisation, cannot readily be identified or assessed, and which, therefore, require a formalised and participatory environmental and social impact assessment process.

The EBRD has adopted a comprehensive set of specific Performance Requirements (PRs) that the projects are expected to meet. Relevant to this report is the EBRD Performance Requirement 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources. This Performance Requirement (PR) recognises that the conservation of biodiversity and sustainable management of living natural resources are fundamental to environmental and social sustainability. The objectives of this PR are to:

- protect and conserve biodiversity using a precautionary approach;
- adopt the mitigation hierarchy 3 approach, with the aim of achieving no net loss of biodiversity, and where appropriate, a net gain of biodiversity;
- promote good international practice (GIP) in the sustainable management and use of living natural resources.

The mitigation hierarchy reflect the commonly accepted hierarchy of "first avoid" then if avoidance is not possible, "minimize and mitigate" and then "offset/compensate" for residual impacts, as a last resort. The most sensitive biodiversity features are defined as "Critical Habitat", which comprise one of the following:

(i) highly threatened or unique ecosystems;
(ii) habitats of significant importance to endangered8 or critically endangered species;
(iii) habitats of significant importance to endemic or geographically restricted species;
(iv) habitats supporting globally significant migratory or congregatory species;
(v) areas associated with key evolutionary processes;
(vi) ecological functions that are vital to maintaining the viability of biodiversity features.

2.3. Assessment and Evaluation of Birds (Summer Season Report)

2.3.1. Results

On the basis of relief and land configuration, in order to improve the quality of field investigation activities and presentation of results, the transmission line corridor was divided into five sections.

Within sections "1" and "5" (Pelagonia and Strushko Pole Plains) due to flat plain terrains, bird observation was conducted using "Line Transect Count Method".

In Pelagonia Plain, bird surveys were conducted along single line transect that runs in East-West direction with total length of 7,000 m, located between the villages of Trn and Krklino (see Figure 1).

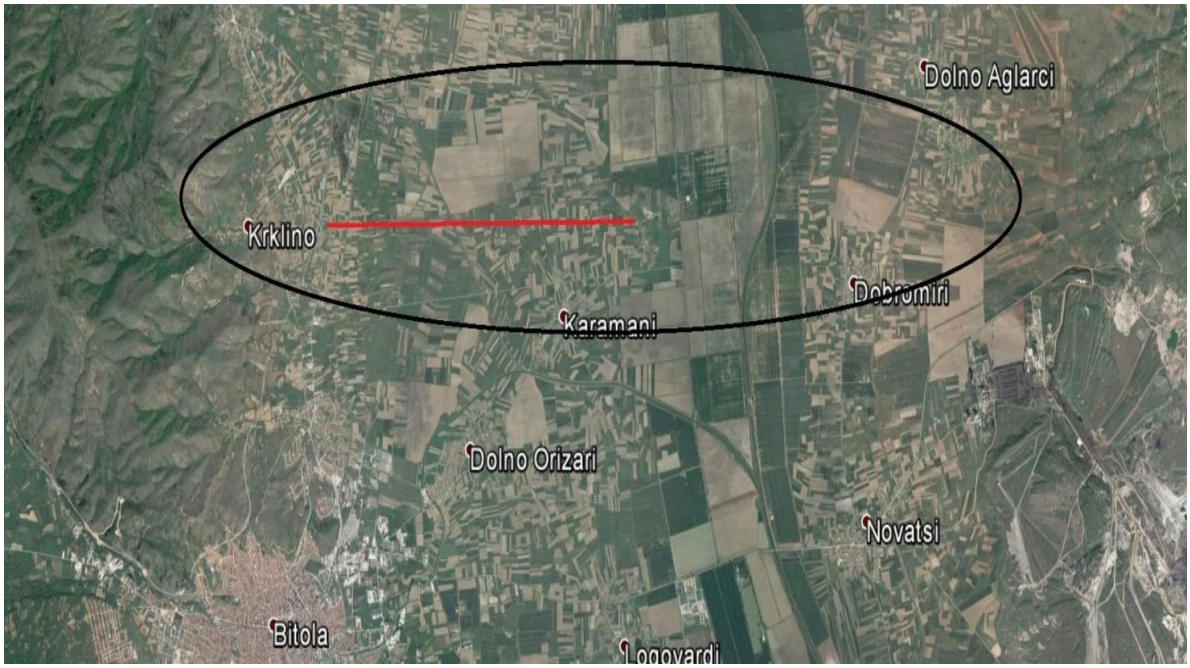

Figure 1. Section 1: Line Transect for Bird Surveys in Pelagonia Plain.

In Strushko Pole Plain, two line transects have been ascertained, the first one, runs from North-east to South-west direction, with total length of 5,000 m, located between the villages of Volino and Moroishta; and the second one, that runs from North to South direction, with total length of 5,000 m, located between the villages of Zagrachani and Radolishta (see Figure 2).

Figure 2. Section 5: Line Transect for Bird Surveys in Strushko Pole Plain.

Figure 3. Section 2: Location of Point Count points for Bird Surveys in Krklino-Gjavato Mountainous Area.

Figure 4. Sections 3 and 4: Location of Point Count points for Bird Surveys in Section 3 (Gjavato-Leva Reka) and Section 4 (Leva Reka-Kuratica) Mountainous Area.

On the other hand, within sections "2", "3", "4", due to mountainous area and low visibility due to terrain features and dense vegetation, birds were identifying either visually, or by their calls using "Point Count Method" on points at previously selected locations (see Figures 3 and 4, above). Important habitat types like small wetlands and birds of prey favorable rocky habitats have also been focused during the bird surveys.

The summer season surveillance and monitoring of birds have been conducted on four occasions, in the period: June 21-22, 2016; July 22-23, 2016; August 08-09, 2016 and August 24-25, 2016.

Altogether, ninety-two species of birds have been recorded, 54 of which are resident, 32 breeding, 3 wintering and 3 passage species. The passerine birds that belong to the order Passeriformes are dominant, represented by 56 species, which is 61% of the total number of recorded species(see Annex 1).

On the other hand, species of Anseriformes, large order of waterfowl, including ducks, geese and swans highly adapted for an aquatic existence at the water surface have not been recorded. It is the same case with representatives of the order Charadriiformes, dominantly wetland species that live near water. From nine families of this order represented at National Level, not a single species has been recorded along the transmission line corridor, notwithstanding the fact that significant wetland habitats are present in close neighborhood of the Project Area, including the large Zhabeni and Bukri Fishponds in Pelagonia, Strezhevo Reservoir between Bitola and Resen; and Prespa and Ohrid natural lakes.

2.3.2. Discussion and Conclusions

On the basis of summer season surveillance and monitoring of birds along the transmission line corridor, 19 species have been selected as focal species for environmental assessments where they are at risk as they are considered to be particularly sensitive, or potentially so, to power lines (electrocution or/and collision). Trigger species of the Important Bird Areas Pelagonia (MK024), Lake Prespa Lake (MK006) and Ohrid Lake (MK005) were also taken into consideration, as well as their legal protection and conservation status (see Table 1).

Table 1. Birds recorded along Transmission Line Corridor during summer season surveys (2016) that are under Legal Protection, Threatened Species, Trigger Species, Migratory Species and Species at high risk of electrocution and collision.

Family Pelecanidae (Pelicans)							
1.	*Pelecanus crispus*	Dalmatian Pelican	R	I	II	I	VU
Family Ciconiidae (Storks)							
2.	*Ciconia ciconia*	White Stork	B	I	II	II	LC
3.	*Ciconia nigra*	Black Stork	B	I	II	II	LC
Family Accipitridae (Hawks, Eagles, Vultures)							
4.	*Pernis apivorus*	Honey Buzzard	W (B)	I	II	-	LC
5.	*Circaetus gallicus*	Short-toed Eagle	B	I	II	-	LC
6.	*Circus aeruginosus*	Marsh Harrier	B	I	II	-	LC
7.	*Circus cyaneus*	Hen Harrier	P	I	II	-	LC/NT
8.	*Buteo buteo*	Common Buzzard	R	-	II	-	LC
9.	*Buteo rufinus*	Long-legged Buzzard	R	I	II	-	LC
10.	*Aquila heliaca*	Imperial Eagle	B	I	II	I	VU/LC
11.	*Aquila chrysaetos*	Golden Eagle	R	I	II	-	LC
Family Falconidae (Falcons)							
12.	*Falco naumanni*	Lesser Kestrel	B	I	II	I	LC
13.	*Falco tinnunculus*	Kestrel	R	-	II	-	LC
14.	*Falco vespertinus*	Red-footed Falcon	P	I	II	I	NT
15.	*Falco peregrinus*	Peregrine Falkon	R	I	II	-	LC
Family Rallidae (Rails);							
16.	*Fulica atra*	Common Coot	R	II	-	II	LC/NT
Family Columbidae (Pigeons)							

17.	*Columba livia*	Rock Dove	R	II	-	-	LC
18.	*Columba palumbus*	Wood Pigeon	R	II	III	-	LC
19.	*Streptopelia turtur*	Turtle Dove	B	II	-	II	VU

R = Resident Species (species likely to occur all year round); B = Breeding Species (species occurs only during spring-summer season); W = Wintering Species (species normally occurs only in winter season); P = Passage Migrant Species (bird species that occurs on passage between breeding and wintering areas).

Evaluation on composition of the selected bird species shows that nine species are resident, seven breeding, one wintering and two passage migrants. It is quite understandable, having in mind that the surveys have been conducted within the summer season. During autumn and winter seasons, the number of breeding species will decrease, while the number of passage and wintering species will increase, respectively.

Regarding Birds' Legal Protection, Directive 2009/147/EC on the conservation of wild birds provides Legal Protection for 13 species of birds in need of special habitat protection as listed on Annex I (see Table 1).

The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) imposes Strict Legal Protection (under Appendix II: Strictly Protected Fauna Species) for all 13 already protected species by the Wild Birds Directive widening the list by two additional species: Common Buzzard (*Buteo buteo*) and Kestrel (*Falco tinnunculus*).

The Convention on the Conservation of Migratory Species of Wild Animals, Bonn Convention (UNEP/CMS) provides Legal Protection for four species under Appendix I. Bonn Convention recognises that Endangered Migratory Species (Appendix I) can be properly protected if activities to prevent, remove, compensate for or minimize, as appropriate, the adverse effects of activities or obstacles that seriously impede or prevent the migration of the species (see Table 1).

Regarding their Conservation Status the IUCN Red List of Threatened Species on Global Level lists three threatened species, all in the Category VU (Vulnerable): Dalmatian Pelican (*Pelecanus crispus*), Turtle Dove (*Streptopelia turtur*) and Imperial Eagle (*Aquila heliaca*). The IUCN Red List of Threatened Species assessment on European Level confirms the threatened status of the first two species in the same category, while the Imperial Eagle evaluate as Least Concern, since the European population is not under threat.

The Transmission line in its Pelagonia Plane's section passes across the narrow part of the Important Bird Area MK024 (Pelagonia), see Figure 5.

Figure 5. Important Bird Area MK024 (Pelagonia) at its narrow part.

The IBA MK024 (Pelagonia) has been designated on the basis of an assessment made in the year 2008 as a results of the presence of three trigger species under Global IBA Criterion A1 (Globally Threatened Species Criterion) i.e. (The site is known regularly to hold significant numbers of a globally threatened species): Dalmatian Pelican (*Pelecanus crispus*), Lesser Kestrel (*Falco naumanni*) and European Roller (*Coracias garrulus*) and six species under European IBA Criterion B2 (The site regularly holds significant numbers of species with an unfavourable conservation status in Europe): Ferruginous Duck (Aythya nyroca), White Stork *(Ciconia ciconia*), Stone Curlew (*Burhinus oedicnemus*), Scops Owl (*Otus scops*), Little Owl (*Athene noctua*) and Lesser Grey Shrike (*Lanius minor*).

Currently, from the above mentioned three trigger species under Global IBA Criterion A1, only Dalmatian Pelican (*Pelecanus crispus*) is evaluated as Globally Threatened Species, while the other two species are included in the IUCN Category Least Concern (LC). However, the recorded 20-30 specimens of Dalmatian Pelican do not represent a stable population, since they only occasionally use the Zhabeni and Bukri Fishponds as feeding sites that are located outside the Project Area. Even on National Level, Dalmatian Pelican is not recognized as a breeding species, due to the fact that the whole regional population is nesting in Mala Prespa in Greece, and the Macedonian portion of Prespa Lake is used exclusively as a foraging site. Finally, nevertheless the pelicans in general are at high risk of both electrocution and collision with power lines, the Dalmatian Pelican is not likely to be at risk of electrocution or collision by construction of the transmission line, since its frequency and abundance not only in Pelagonia, but also in Prespa and Struga Valleys is highly reduced, represented only by occasional vagrant specimens.

The Lesser Kestrel (*Falco naumanni*) population in the year 2002 was estimated at 760-850 pairs, entirely confined to villages and man-made structures of central and northern parts of Pelagonia Plain (Velevski et al., 2010). The assessment of 2013 shows significant population declining to 350 breeding pairs (BirdLife International, 2016). Field surveys conducted within the frames of this project show low frequency and abundance of the species within the Pelagonia section of the Project Area. However, following the Bern Convention's Recommendation No. 110 (2004) on minimising adverse effects of above-ground electricity transmission facilities (power lines) on birds; raptors in general, including the Lesser Kestrel are considered to be particularly sensitive, or potentially so, to power lines. Therefore, certain mitigation measures to avoid and minimize adverse effects will be suggested after obtaining additional data during the next seasonal field surveys.

Regarding the European Roller (*Coracias garrulus*), nevertheless it was chosen as one of the "Trigger" or "Qualifying" bird species for designation of the IBA MK024 with 10-30 breeding pairs, our summer season surveys do not confirmed any presence of the species along the transmission line corridor. Consequently we shall not discuss the species status at this phase of project development.

Concerning, the rest six bird species, used as IBA trigger species for designation of the IBA MK024 under the European IBA Criterion B2, mostly impacted species by the project development will be the White Stork (*Ciconia ciconia*).

Surveys on White Stork population conducted in the year 2002, within the territory of IBA MK024 have resulted in an estimated population of 220-230 breeding pairs (BirdLife International, 2016). Counts on White Storks, on the same IBA, conducted in the year 2012, shows significantly increasing population trend consisted of 320 breeding pairs (Velevski et al., 2013). On National level it is quite significant number, however, on European Level it represents only 0.1% of the total European White Stork population consisted of about 250,000 breeding pairs. In general the White Stork's nesting sites are closely related with human settlements. In the case of this project's transmission line corridor, nesting sites are not located within the corridor boundaries, but they are present in the neighboring villages along the transmission line in Pelagonia Plain as well as in Prespa and Struga Valleys. The Storks (Ciconidae) including both, the White Stork (*Ciconia ciconia*) and Black Stork (*Ciconia nigra*) are qualified as focal species for environmental assessments since they are at highest risk of electrocution and collision, included in Category III (casualties are a major mortality factor; threatening a species with extinction, regionally or on a larger scale). With reference to the aforementioned explanation, appropriate mitigation measures on this species will be recommended especially on the Pelagonia section of the transmission line.

Ferruginous Duck (*Aythya nyroca*), within the territory of IBA MK024 is estimated at 10-15 breeding pairs, strictly restricted to the large fishponds located southward of the transmission line. On national level the Ferruginous Duck population is quite small (20-40 breeding pairs) compared to the European

population estimated between 17,400 and 30,100 pairs. The species has been also recorded in Prespa Lake with 3-10 breeding pairs, while it is absent in Ohrid Lake. Ferruginous Duck has not been recorded within the transmission line corridor, during the summer surveys. Not only, this species but none of the large order of waterfowl highly adapted for an aquatic existence at the water surface has not been recorded. Having in mind the fact that in close neighborhood of transmission line corridor large freshwater bodies are located, including fishponds, one artificial and two natural lakes, lack of waterfowl species is caused by two reasons. Firstly, most of waterfowl are migratory species and during summer season the freshwater bodies are occupied only by locally breeding waterbirds. Secondly, the Project Area is outside the primary and secondary flyways connecting Europe and Africa. On European level, the scale of birds' movement is consisted of over 2 billion passerines, 2.5 million ducks and 2 million raptors migrating from their breeding grounds in Europe and central and western Asia to winter in tropical Africa. Only at Bosphorus which is one of the two major migratory bottlenecks, more than 2 million waterfowl and raptors regularly pass in spring and autumn.

The Stone Curlew (*Burhinus oedicnemus*) has not been recorded during our summer season surveys nevertheless its population was estimated at 10-30 breeding pairs within the IBA MK024 (Pelagonia) and at 200-400 breeding pairs at National Level. The Stone Curlew, like the European Roller both belong to faunal elements whose origin derives from Ponto-Caspian steppes and Irano-Turanian semi-deserts and consequently prefer more arid and semi-arid climate with appropriate habitat types. At European Level the population of Stone Curlew estimates between 53,000 and 88,200 breeding pairs. With regard to the above, except within Pelagonia Plain's section of the transmission line, we do not expect presence of the species along the rest of the corridor.

Medium-sized and small songbirds (Passeriformes), Owls (Strigiformes) and Doves and Pigeons (Columbiformes) (see Annex 1) are all sensitive to power lines, with low risk for casualties as a result of electrocution (Category I) and high risk for casualties as a result of collision (Categories II and III). Representatives of these three orders will be taken into consideration when general mitigation measures will be ascertained, after obtaining additional data during the next seasonal field surveys.

Raptors (Accipitriformes and Falconiformes) (see Table 1) are highly sensitive to power lines, with high risk of casualties as a result of both electrocution and collision. Of all recorded species of the orders Accipitriformes and Falconiformes along the Project Corridor, The Imperial Eagle (*Aquila heliaca*) is the only threatened species included on the IUCN Red List of Threatened Species on Global Level, while on European Level it is evaluated as Least Concern (LC) as a result of a stable population estimated between 1,800 and 2,200 breeding pairs. Within the Project Area, the species has been recorded only in Pelagonia Plain's section of the transmission line corridor. These are vagrant individuals since the nesting sites of 35 breeding pairs recorded on National Level are restricted to Kumanovo Valley, Ovce Pole Plain and the middle course of Vardar River Watershed, between Veles and Demir Kapija Gorge. The species belongs to

the complex of steppic faunal elements and prefers steppe-like, dry open terrains. The vagrant individuals are using Pelagonia Plain only as a foraging site, since for spring and autumn migration they regularly use the flyway that runs along the Vardar River.

On the other hand, during the summer season surveys the Golden Eagle (*Aquila chrysaetos*) has been recorded in the mountainous region of the Project Area, between Pelaginia and Strushko Pole Plains. It is quite reasonable, seeing that the species belongs to boreal (taiga type) complex of species and inhabits most of Northern Europe as well as the mountains in Southern Europe. However, no nesting sites have been ascertained within the transmission line's corridor. On National Level the species is represented by 60-100 breeding pairs, which is less than 1% of the European population represented by 9,300 – 12,300 breeding pairs and less than 0.06% of the global population represented by more than 150,000 breeding pairs.

The preliminary results of summer surveys lead to an initial conclusion that no critical habitats as defined by EBRD ESP PR6 have been ascertained within the Project Corridor. However, it appears that the Project Corridor transects an internationally recognised Important Bird Area (IBA), the Pelagonian IBA, for which the Lesser Kestrel is listed as the key species of interest in this area. This IBA constitutes a Priority Biodiversity Feature, as defined by EBRD ESP PR6, and potentially significant impacts on the Lesser Kestrel specifically in this IBA could trigger changes and refinements to the alignment. So far, the bird survey shows only a few observations of the Lesser Kestrel and none in the Pelagonia plain. Further surveys of the Lesser Kestrel specifically in the Pelagonian IBA are required to establish whether or not it is necessary to make refinements to the transmission line route within the corridor. Moreover, certain sections of the route that are not yet completely defined will cause risk for the birds.After conducting the surveys on the birds in the other three seasons, the line sections with increased collision risk will be precisely defined. Consequently, the one-year monitoring and complete final report (in accordance with the agreement with MEPSO) will give a clear picture of the species diversity, populations state, migratory pathways and impacts of the overhead power transmission line on the birds in order to suggest appropriate mitigation measures.

2.4. Assessment and Evaluation of Bats (Summer Season Report)

2.4.1. Results

Surveillance of bat populations can generally be carried out in two main ways: by visual counts of roosting bats at hibernation sites, mating and maternity roosts or other summer roosts; and by recording foraging bats along linear transects using bat detector, while walking or using moving vehicle.

2.4.1.1. Assessment of bats recorded along line transects and point counts using ultrasound detector

Recordings of foraging bats along line transects were conducted using ultrasound detector Batlogger M, while walking or using moving vehicle, as well as on standpoints for point counts of bats (see Table 2.)

Table 2. Monitoring of bats along Transmission Line Corridor: during summer season (2016) using transects counts and point counts.

No.	Monitoring Site	Type of Monitoring	GPS Coordinates & Altitude		Length (km)
			Start Point	End Point	
1.	Dobromiri–Dolno Aglarci	Line Transect	N 41,064400; E 21,454180 582 m asl	N 41,092300; E 21,473310 584 m asl	3.64
2.	Bitola Road Interchange-Kukurechani	Line Transect	N 41.075828; E 21.341247 597 m asl	N 41.095709; E 21.324489 602 m asl	2,65
3.	Ramna - Bitola-Resen Road Interchange	Line Transect	N 41.087933; E 21.185683 794 m asl	N 41.070965; E 21.224157 911 m asl	4,20
4.	Sopotsko - Bitola-Resen Road Intersection	Line Transect	N 41.085172; E 21.064590 910 m asl	N 41.070389; E 21.037005 880 m asl	2,89
5.	Resen-Ohrid Road Intersection-Leva Reka	Line Transect	N 41.142700;E 21.000366 946 m asl	N 41.159618; E 21.006767 974 m asl	2,12
6.	Resen-Ohrid Road Intersection (Prentov Most) – Rock Quarry	Line Transect	N 41.204761; E 20.903989 858 m asl	N 41.211192; E 20.912892 883 m asl	1,12
7.	Livoishta-Livoishta	Line Transect	N 41.201007; E 20.815989 765 m asl	N 41.201007; E 20.815989 765 m asl	2,30
8.	Livoishta-Trebenishta	Line Transect	N 41.201007; E 20.815989 765 m asl	N 41. 206461; E 20.754872 720 m asl	6,00
9.	Moroishta	Point Count	N 41,198341; E 20,701821; 695 m asl		-
10.	Vishni - Kjafasan State Border Crossing	Line Transect	N 41.196835; E 20.590662 1 084 m asl	N 41.093891; E 20.610357 988 m asl	15,30

Altogether, at 10 monitoring sites along the transmission line corridor, monitoring of foraging bats was performed using ultrasound detector while walking or using moving vehicle and/or combined recordings along transect route and point counts (see Figure 6).

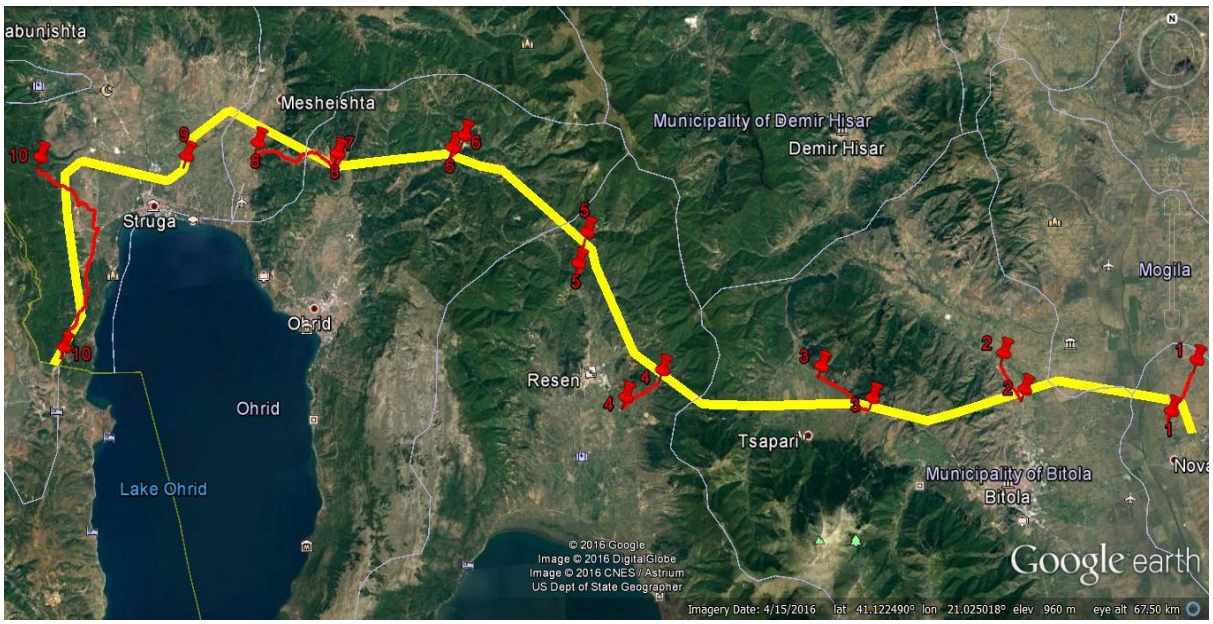

Figure 6. Monitoring sites along the transmission line corridor for monitoring of foraging bats, using ultrasound detector for recording bats along transect routes and standpoints for point counts (1-10). Yellow line: Transmission line corridor; Red lines and numbers: Monitoring sites (see Table 2).

Monitoring Site No. 1: Dobromiri – Dolno Aglarci

On September 05, 2016 surveillance and monitoring of bats on the monitoring site Dobromiri - Dolno Aglarci was conducted. In the period from 07:57 PM until 08:22 PM the presence of foraging bats with ultrasonic Batlogger M along linear transect was recorded, while using moving vehicle. The transect route runs along the local road Novatsi-Dobromiri-Dolno Aglarci-Dedebalci-Dobrushevo-Noshpal. The Dobromiri Village was taken as a start point, with GPS coordinates N 41.06440; E 21.454180 and altitude of 582 m asl m asl. Thence, the transect route runs in North-east direction, passes across the transmission line corridor and ends at the village of Dolno Aglarci, with GPS coordinates N 41.09230; E 21.47331 and an altitude of 584 m asl. Total length of the transect route is 3.64 km (see Figure 7).

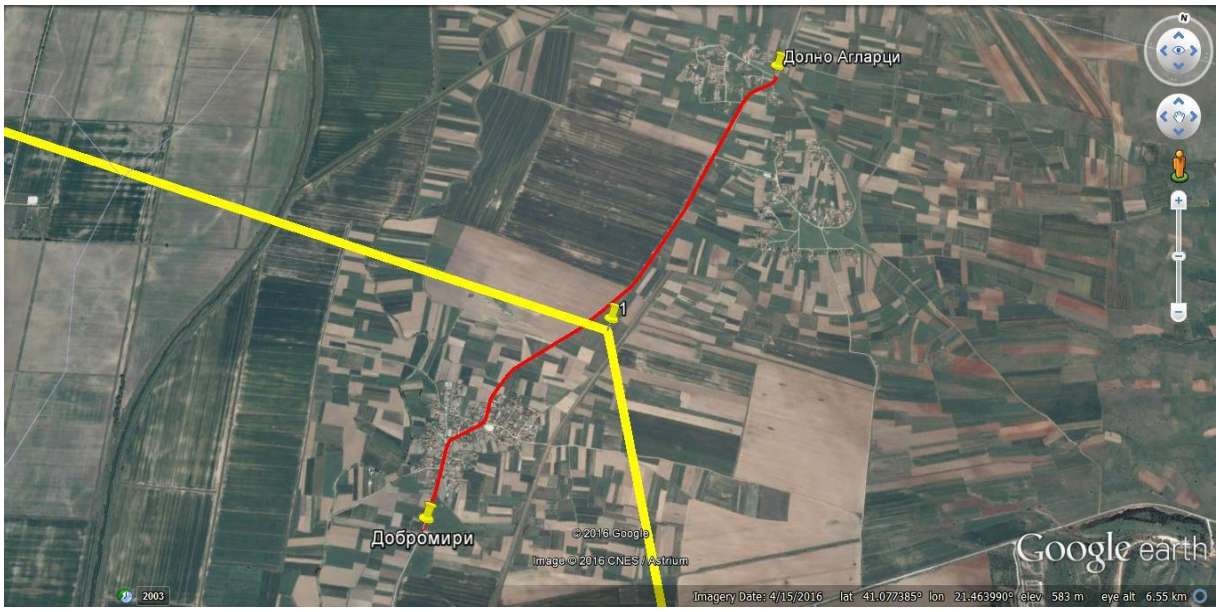

Figure 7. Dobromiri – Dolno Aglarci Monitoring Site (Line Transect). Recording of foraging bats conducted with ultrasonic Batlogger M while using moving vehicle.

The weather was cloudy, wind velocity between 1 and 5 km/h (light air), and air temperature at 07:57 PM (recording start time) 20o C and at 08:22 PM (recording end time) it was 20o C. The recording of bats along the transect route with total length of 3.64 km was conducted, while using moving vehicle and travelled in 12.5 minutes, with an average speed of 17.4 km/h. Thence, recording continued while driving back to the start point. The route runs through Pelagonia Plain, an intensively-managed agricultural land that represents Macedonia's main wheat cultivation region.

The recording of foraging bats with ultrasound detector Batlogger M along line transect while using moving vehicle has resulted in 82 records with 1,520 calls, of which 1 record with 2 calls was not valid, while the rest 81 records with 1,518 calls are valuable data, representing 8 bat species (see Table 3).

Table 3. Dobromiri – Dolno Aglarci Monitoring Site (Line Transect): Computer-aided identification of species, and processed data of records and calls (Summer Season Survey, 2016).

Nr.	Scientific Name	English Common Name	Macedonian Common Name	Number of Records	Number of Calls
Order Chiroptera (Bats);					
Family Vespertilionidae (Vespertilionid Bats)					
1.	*Pipistrellus nathusii*	Nathusius' Pipistrelle	Natusiev pipistrel	23	575
2.	*Pipistrellus kuhlii*	Kuhl's Pipistrelle	Beloraben pipistrel	21	375
3.	*Plecotus auritus*	Brown Long-eared Bat	Kafeav ushest liljak	9	102
4.	*Hypsugo savii*	Savi's Pipistrelle	Saviev pipistrel	8	70
5.	*Nyctalus noctula*	Common Noctule	Lisest vechernik	7	107
6.	*Myotis emarginatus*	Geoffroy's Bat	Troboen nokjnik	6	39
7.	*Pipistrellus pipistrellus*	Common Pipistrelle	Obichen pipistrel	5	223

8.	*Pipistrellus pygmaeus*	Pygmy Pipistrelle	Dzudzest pipistrel	2	27
Total number				**81**	**1,518**

Raw data of Batlogger M recordings on foraging bats along line transect Dobromiri – Dolno Aglarci in Annex 2.1 of this report are presented.

Monitoring Site No. 2: Bitola Road Interchange – Kukurechani

On September 05, 2016 surveillance and monitoring of bats on the monitoring site Resen–Ohrid Road Intersection (Prentov Most) – Rock Quarry was conducted. In the period from 07:05 PM until 07:35 PM the presence of foraging bats with ultrasonic Batlogger M along linear transect was recorded, while using moving vehicle, combined with point count at the transect route endpoint. The transect route runs along the local road Bitola-Kichevo, The Bitola road interchange was taken as a start point, with GPS coordinates N 41.075828; E 21.341247 and altitude of 597 m asl m asl. Thence, the transect route runs in North-west direction to the end point at the village of Kukurechani, with GPS coordinates N 41.095709; E 21.324489 and an altitude of 602 m asl. Total length of the transect route is 2.65 km (see Figure 8).

The weather was cloudy, with light rain intensity, wind velocity between 12 and 19 km/h (gentle breeze), and air temperature at 07:05 PM (recording start time) 22^{o} C and at 07:35 PM (recording end time) again 22^{o} C. The recordings of foraging bats have been conducted using combined methods of point and transect counts. Firstly, recording of bats along the transect route with total length of 2.65 km was conducted, while using moving vehicle and travelled in 10 minutes, with an average speed of 15.9 km/h. Thence, for a period of 10 minutes, foraging bats were recording from a standpoint at the end point of the transect route (Kukurechani Village); thence recording continued while driving back to the start point.

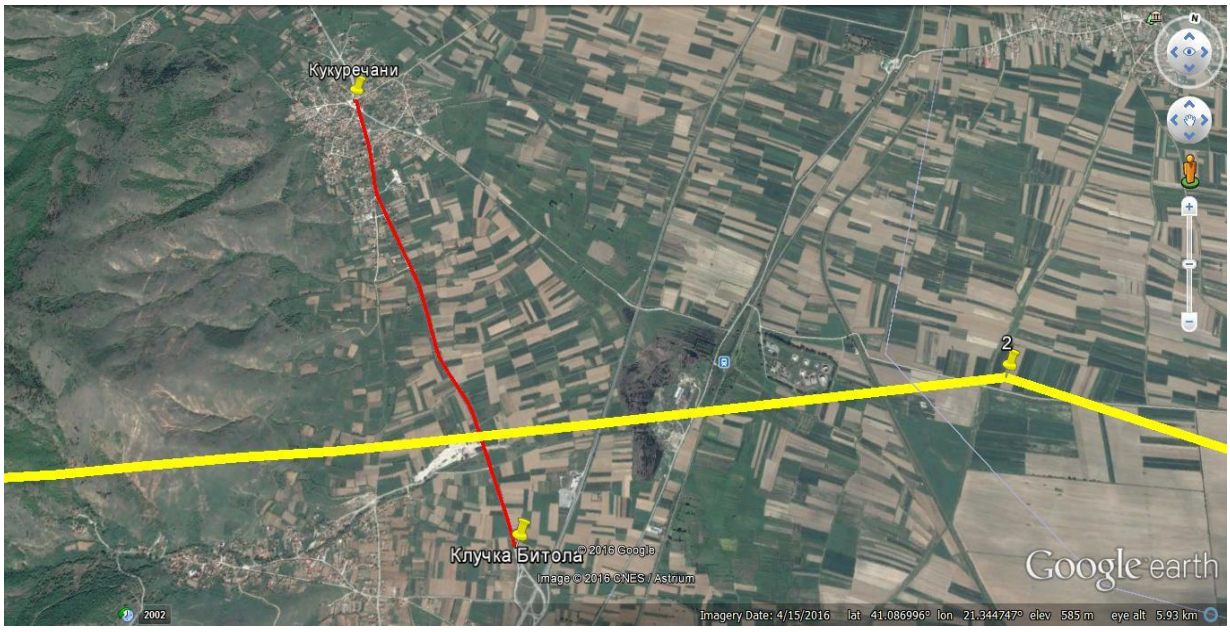

Figure 8. Bitola Road Interchange – Kukurechani Monitoring Site (Line Transect). Recording of foraging bats conducted with ultrasonic Batlogger M while using moving vehicle.

The route runs through Pelagonia Plain, an intensively-managed agricultural land that represents Macedonia's main grain cultivation region.

The recording of foraging bats with ultrasound detector Batlogger M along line transect while using moving vehicle, combined with point count has resulted in 60 records with 826 calls, of which 4 record with 67 calls were not valid, while the rest 56 records with 759 calls are valuable data, representing 9 bat species (see Table 4).

Table 4. Bitola Road Interchange – Kukurechani Monitoring Site (Line Transect): Computer-aided identification of species, and processed data of records and calls (Summer Season Survey, 2016).

Nr.	Scientific Name	English Common Name	Macedonian Common Name	Number of Records	Number of Calls
Order Chiroptera (Bats)					
Family Vespertilionidae (Vespertilionid Bats)					
1.	*Plecotus auritus*	Brown Long-eared Bat	Kafeav ushest liljak	15	191
2.	*Nyctalus noctula*	Common Noctule	Lisest vechernik	13	224
3.	*Hypsugo savii*	Savi's Pipistrelle	Saviev pipistrel	12	130
4.	*Pipistrellus kuhlii*	Kuhl's Pipistrelle	Beloraben pipistrel	10	142
5.	*Pipistrellus pipistrellus*	Common Pipistrelle	Obichen pipistrel	2	12
6.	*Pipistrellus nathusii*	Nathusius' Pipistrelle	Natusiev pipistrel	1	22
7.	*Myotis emarginatus*	Geoffroy's Bat	Troboen nokjnik	1	18
8.	*Myotis bechsteini*	Bechstein's Bat	Behshtainov nokjnik	1	17
9.	*Nyctalus lasiopterus*	Greater Noctule Bat	Golem vechernik	1	3
Total number				**56**	**759**

Raw data of Batlogger M recordings on foraging bats along line transect Bitola Road Interchange - Kukurechani in Annex 2.2 of this report are presented.

Monitoring Site No. 3: Ramna - Bitola-Resen Road Interchange

On August 31, 2016 surveillance and monitoring of bats on the monitoring site Ramna – Bitola-Resen Road Interchange, in the period from 07:50 PM until 08:30 PM was conducted by recording presence of foraging bats with ultrasonic Batlogger M along linear transect, while using moving vehicle. The transect route runs along local road from the village of Ramna as a start point, with GPS coordinates N 41.087933; E 21.185683 and altitude of 794 m asl m asl, up to the South-east to the end point at the road interchange with the main road Bitola - Resen with GPS coordinates N 41.070965; E 21.224157 and an altitude of 911 m asl. Total length of the transect route is 4.20 km (see Figure 9).

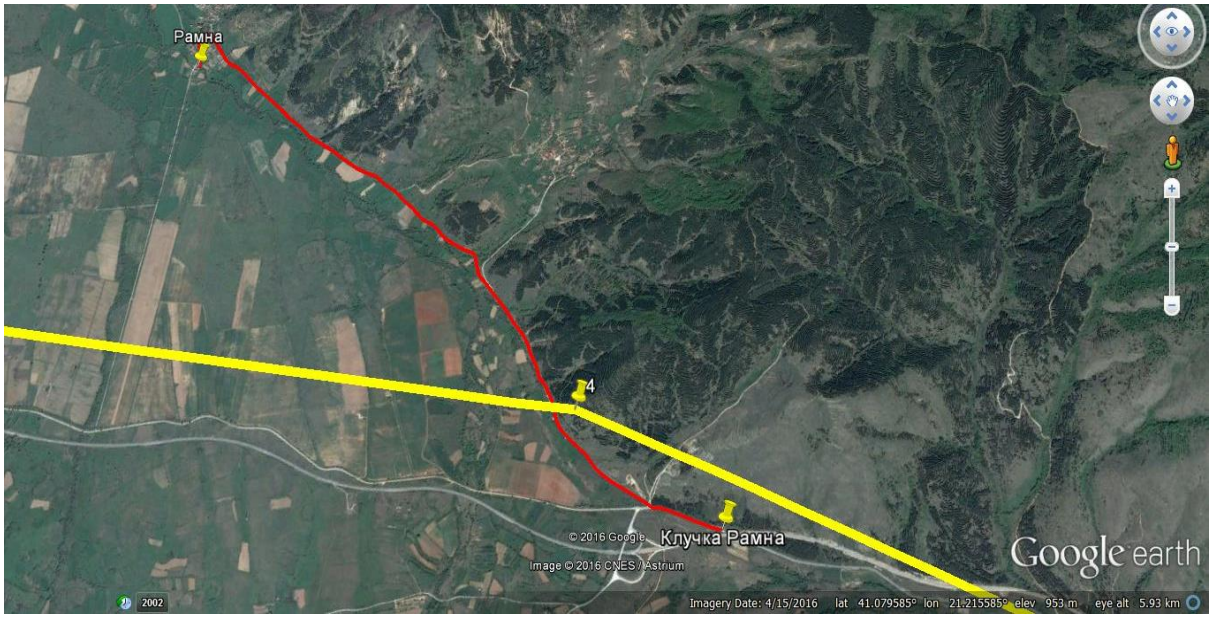

Figure 9. Ramna-Bitola Resen Road Interchange Monitoring Site (Line Transect). Recording of foraging bats was conducted with ultrasonic Batlogger M while using moving vehicle.

The weather was cloudy in part with wind velocity "Calm" (<1 km/h). The air temperature at 07:50 PM (recording start time) was 22o C and at 08:30 PM (recording end time) was 18o C. The distance of 4.20 km (total length of the line transect), while using moving vehicle was travelled in 40 minutes, with an average speed of 6.30 km/h.

Table 5. Ramna-Bitola Resen Road Interchange Monitoring Site (Line Transect): Computer-aided identification of species, and processed data of records and calls (Summer Season Survey, 2016).

Nr.	Scientific Name	English Common Name	Macedonian Common Name	Number of Records	Number of Calls
Order Chiroptera (Bats); (Liljaci)					
Family Vespertilionidae (Vespertilionid Bats); (Glatkonosni liljaci)					
1.	*Pipistrellus nathusii*	Nathusius' Pipistrelle	Natusiev pipistrel	18	1,441
2.	*Pipistrellus kuhlii*	Kuhl's Pipistrelle	Beloraben pipistrel	14	173
3.	*Pipistrellus pygmaeus*	Pygmy Pipistrelle	Dzudzest pipistrel	5	192
4.	*Hypsugo savii*	Savi's Pipistrelle	Saviev pipistrel	5	110
5.	*Nyctalus noctula*	Common Noctule	Lisest vechernik	5	51
6.	*Plecotus auritus*	Brown Long-eared Bat	Kafeav ushest liljak	4	202
7.	*Pipistrellus pipistrellus*	Common Pipistrelle	Obichen pipistrel	3	43
8.	*Nyctalus leisleri*	Leisler's Bat	Shumski vechernik	3	43
9.	*Myotis emarginatus*	Geoffroy's Bat	Troboen nokjnik	2	31
10.	*Miniopterus schreibersii*	Schreibers' Bat	Dolgokrilest Liljak	1	24
11.	*Myotis bechsteini*	Bechstein's Bat	Behshtainov nokjnik	1	13
Total number				**61**	**2,323**

The route at its start point runs through the Ramna village, thence mainly across agricultural land that dominates on the right side of the route, while on the left side hill slopes are dominating, covered by planted forest of black pine.

The recording of foraging bats with ultrasound detector Batlogger M along line transect while using moving vehicle has resulted in 64 records with 2,439 calls, of which 3 records with 116 calls were not valid, while the rest 61 records with 2,323 calls are valuable data, representing 11 bat species (see Table 5). Raw data of Batlogger M recordings on foraging bats along line transect Ramna-Bitola-Resen Road interchange in Annex 2.3 of this report are presented.

Monitoring Site No. 4: Sopotsko - Bitola-Resen Road Intersection

On September 03, 2016 surveillance and monitoring of bats on the monitoring site Sopotsko – Bitola-Resen Road Intersection was conducted. In the period from 07:15 PM until 07:45 PM the presence of foraging bats with ultrasonic Batlogger M along linear transect was recorded, while using moving vehicle. The transect route runs along local road from the village of Sopotsko as a start point, with GPS coordinates N 41. 085172; E 21.064590 and altitude of 910 m asl m asl, down South-westward to the end point at the road intersection with the main road Bitola - Resen with GPS coordinates N 41.070389; E 21.037005 and an altitude of 880 m asl. Total length of the transect route is 2.89 km (see Figure 10).

Figure 10. Sopotsko-Bitola Resen Road Intersection Monitoring Site (Line Transect). Recording of foraging bats conducted with ultrasonic Batlogger M while using moving vehicle.

The weather was cloudy in part with wind velocity “Calm” (<1 km/h). The air temperature at 07:15 PM (recording start time) was 18o C and at 07:45 PM (recording end time) was 16o C. The distance of 2.89 km (total length of the line transect), while using moving vehicle was travelled in 20 minutes, with an average speed of 8.7 km/h. The rest 10 minutes, foraging bats were recording from a standpoint.

The route runs along flattened valley, at its start point through the Sopotsko Village, thence mainly across agricultural land that dominates on the left side of the route, planted with apple-tree orchards and cereals, while on the right side the hill slopes are covered by degraded oak forest.

The recording of foraging bats with ultrasound detector Batlogger M along line transect while using moving vehicle has resulted in 22 records with 508 calls, representing 7 bat species (see Table 6).

Table 6. Sopotsko-Bitola Resen Road Intersection Monitoring Site (Line Transect): Computer-aided identification of species, and processed data of records and calls (Summer Season Survey, 2016).

Nr.	Scientific Name	English Common Name	Macedonian Common Name	Number of Records	Number of Calls
Order Chiroptera (Bats)					
Family Vespertilionidae (Vespertilionid Bats)					
1.	*Pipistrellus kuhlii*	Kuhl's Pipistrelle	Beloraben pipistrel	7	187
2.	*Nyctalus noctula*	Common Noctule	Lisest vechernik	4	44
3.	*Pipistrellus nathusii*	Nathusius' Pipistrelle	Natusiev pipistrel	3	102
4.	*Plecotus auritus*	Brown Long-eared Bat	Kafeav ushest liljak	3	68
5.	*Myotis emarginatus*	Geoffroy's Bat	Troboen nokjnik	3	67
6.	*Myotis capaccinii*	Long-fingered Bat	Dolgoprst nokjnik	1	29
7.	*Nyctalus lasiopterus*	Greater Noctule Bat	Golem vechernik	1	11
Total number				**22**	**508**

Raw data of Batlogger M recordings on foraging bats along line transect Sopotsko-Bitola-Resen Road Intersection in Annex 2.4 of this report are presented.

Monitoring Site No. 5: Resen-Ohrid Road Intersection - Leva Reka

On September 03, 2016 surveillance and monitoring of bats on the monitoring site Resen–Ohrid Road Intersection - Leva Reka Village was conducted. In the period from 08:03 PM until 08:29 PM the presence of foraging bats with ultrasonic Batlogger M along linear transect was recorded, while using moving vehicle. The transect route runs along local road between the road Intersection at the main road Resen-Ohrid and the village of Leva Reka. The road intersection was taken as a start point, with GPS coordinates N 41.142700;E 21.000366 and altitude of 946 m asl m asl, up in North-east direction to the end point at the village of Leva Reka with GPS coordinates N 41.159618; E 21.006767 and an altitude of 974 m asl. Total length of the transect route is 2.12 km (see Figure 11).

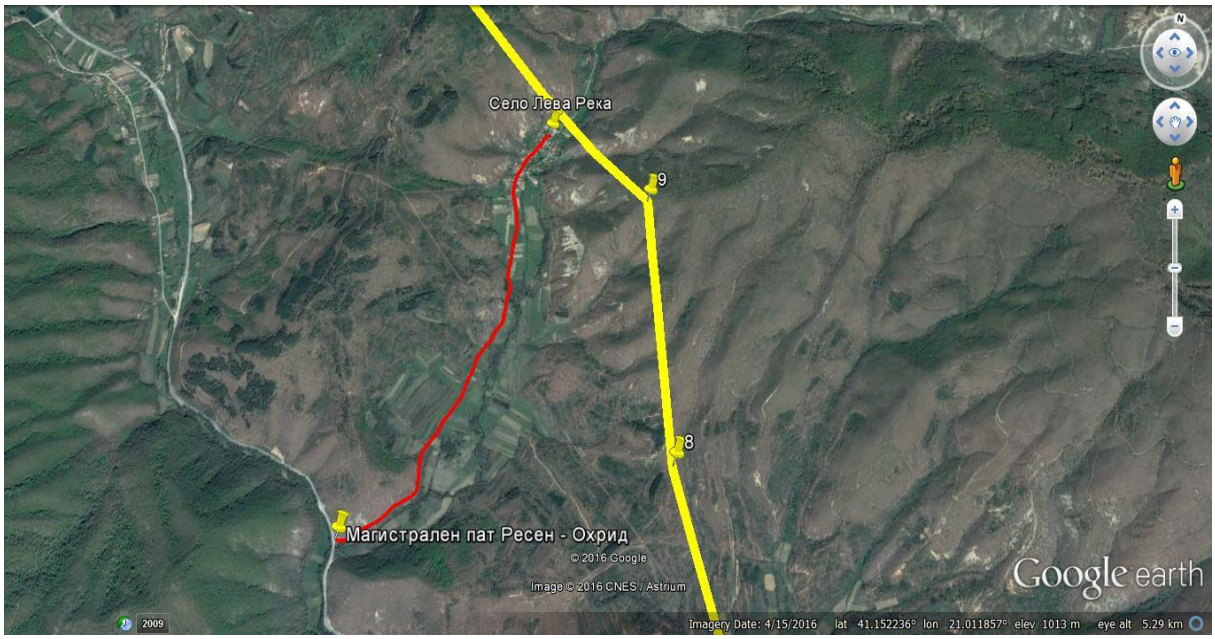

Figure 11. Resen-Ohrid Road Intersection-Leva Reka Monitoring Site (Line Transect). Recording of foraging bats conducted with ultrasonic Batlogger M while using moving vehicle.

The weather was almost clear sky with no clouds with wind velocity "Calm" (<1 km/h). The air temperature at 08:03 PM (recording start time) was 19o C and at 08:29 PM (recording end time) was 13o C. The distance of 2.12 km (total length of the line transect), while using moving vehicle was travelled in 8 minutes, with an average speed of 15.9 km/h. Thence, for a period of 10 minutes, foraging bats were recording from a standpoint; thence recording continued while driving back to the start point.

The route runs along narrow valley of Leva Reka River located among slopes of Plakenska Planina Mountain and at its end point through the Leva Reka Village. The valley is mainly planted with apple-tree orchards, while the hill slopes on both sides are covered by oak forest. The recording of foraging bats with ultrasound detector Batlogger M along line transect while using moving vehicle, combined with point count has resulted in 28 records with 313 calls, representing 8 bat species (see Table 7).

Table 7. Resen-Ohrid Road Intersection – Leva Reka Village Monitoring Site (Line Transect): Computer-aided identification of species, and processed data of records and calls (Summer Season Survey, 2016).

Nr.	Scientific Name	English Common Name	Macedonian Common Name	Number of Records	Number of Calls
Order Chiroptera (Bats); (Liljaci)					
Family Vespertilionidae (Vespertilionid Bats)					
1.	*Pipistrellus pipistrellus*	Common Pipistrelle	Obichen pipistrel	9	62
2.	*Pipistrellus kuhlii*	Kuhl's Pipistrelle	Beloraben pipistrel	7	94
3.	*Hypsugo savii*	Savi's Pipistrelle	Saviev pipistrel	3	35
4.	*Nyctalus noctula*	Common Noctule	Lisest vechernik	3	32
5.	*Pipistrellus nathusii*	Nathusius' Pipistrelle	Natusiev pipistrel	2	51
6.	*Plecotus auritus*	Brown Long-eared Bat	Kafeav ushest liljak	2	25

7.	*Pipistrellus pygmaeus*	Pygmy Pipistrelle	Dzudzest pipistrel	1	9
8.	*Myotis bechsteini*	Bechstein's Bat	Behshtainov nokjnik	1	5
Total number				**28**	**313**

Raw data of Batlogger M recordings on foraging bats along line transect Resen–Ohrid Road Intersection - Leva Reka Village in Annex 2.5 of this report are presented.

Monitoring Site No. 6: Resen-Ohrid Road Intersection (Prentov Most) – Rock Quarry

On September 03, 2016 surveillance and monitoring of bats on the monitoring site Resen–Ohrid Road Intersection (Prentov Most) – Rock Quarry was conducted. In the period from 08:45 PM until 08:29 PM the presence of foraging bats with ultrasonic Batlogger M along linear transect was recorded, while using moving vehicle. The transect route runs along local road between the road Intersection at the main road Resen-Ohrid and the village of Kuratica, up to the Rock Quarry. The road intersection was taken as a start point, with GPS coordinates N 41.204761; E 20.903989 and altitude of 858 m asl m asl, up in North-east direction to the end point at the Rock Quarry with GPS coordinates N 41.211192; E 20.912892 and an altitude of 883 m asl. Total length of the transect route is 1.12 km (see Figure 12).

The weather was clear sky with no clouds and no wind, with air temperature at 08:45 PM (recording start time) was 15o C and at 09:15 PM (recording end time) was 13o C. The recordings of foraging bats have been conducted using combined methods of point and transect counts. Firstly, for a period of 10 minutes, recording was made from a standpoint, at the start point of the transect route. Thence, the distance of 1.12 km (total length of the line transect), while using moving vehicle was travelled in 5 minutes, with an average speed of 13.4 km/h. Thence, for a period of 10 minutes, foraging bats were recording from a standpoint at the end point of the transect route; thence recording continued while driving back to the start point.

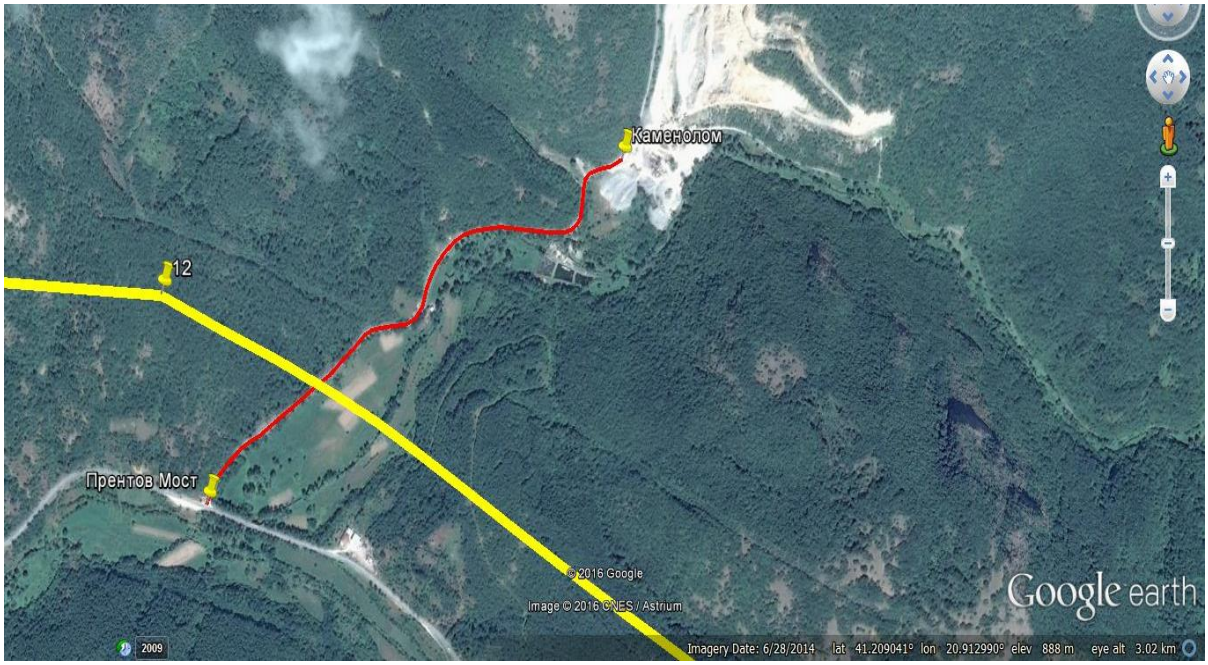

Figure 12. Resen-Ohrid Road Intersection (Prentov Most) – Rock Quarry Monitoring Site (Line Transect). Recording of foraging bats conducted with ultrasonic Batlogger M while using moving vehicle.

The route runs along narrow valley (100 m wide) upstream a river formed by conjunction of two small mountain streams that come from the villages of Kuratica and Rechica. The valley itself is abandoned agricultural land, while the hill slopes on both sides are covered by oak forest. Downstream the Rock Quarry there is three small reservoirs, which are using as fishponds.

The recording of foraging bats with ultrasound detector Batlogger M along line transect while using moving vehicle, combined with point counts has resulted in 28 records with 316 calls, of which 1 record with 3 calls were not valid, while the rest 27 records with 313 calls are valuable data, representing 11 bat species (see Table 8).

Table 8. Resen-Ohrid Road Intersection (Prentov Most) – Rock Quarry Monitoring Site (Line Transect): Computer-aided identification of species, and processed data of records and calls (Summer Season Survey, 2016).

Nr.	Scientific Name	English Common Name	Macedonian Common Name	Number of Records	Number of Calls
Order Chiroptera (Bats); (Liljaci)					
Family Vespertilionidae (Vespertilionid Bats)					
1.	*Nyctalus noctula*	Common Noctule	Lisest vechernik	8	131
2.	*Pipistrellus pipistrellus*	Common Pipistrelle	Obichen pipistrel	6	114
3.	*Pipistrellus kuhlii*	Kuhl's Pipistrelle	Beloraben pipistrel	6	72
4.	*Plecotus auritus*	Brown Long-eared Bat	Kafeav ushest liljak	6	61
5.	*Miniopterus schreibersii*	Schreibers' Bat	Dolgokrilest Liljak	3	77
6.	*Pipistrellus nathusii*	Nathusius' Pipistrelle	Natusiev pipistrel	2	92
7.	*Myotis emarginatus*	Geoffroy's Bat	Troboen nokjnik	2	24
8.	*Pipistrellus pygmaeus*	Pygmy Pipistrelle	Dzudzest pipistrel	1	19
9.	*Hypsugo savii*	Savi's Pipistrelle	Saviev pipistrel	1	13
10.	*Vespertilio murinus*	Parti-coloured Bat	Sharen polnokjnik	1	9
11.	*Nyctalus leisleri*	Leisler's Bat	Shumski vechernik	1	1
Total number				**27**	**613**

Raw data of Batlogger M recordings on foraging bats along line transect Resen–Ohrid Road Intersection (Prentov Most) - Rock Quarry in Annex 2.6 of this report are presented.

Monitoring Site No. 7: Livoishta - Livoishta

Surveillance of foraging bats on Monitoring Site No. 7: Livoishta-Livoishta was conducted on August 16, 2016 in the period from 07:45 PM until 08:33 PM. The transect route was chosen with circular shape to encompass the area of the future Ohrid Step-Down Transformer 400/110 kV. The route starts in the village of Livoishta (N 41.201007; E 20.815989; 765 m asl); thence runs around ending at the same point, with total length of 2.3 km (see Figure 13).

Figure 13. Livoishta-Livoishta Line Transect (Recording of foraging bats was conducted using Batlogger M while walking along the route).

The weather was calm with air temperature of 22oC at the recording start time (07:45 PM). The distance of 2.3 km while walking and recording was travelled in 48 minutes, with an average speed of 2.9 km/h. The area of the route is mainly agricultural land, while the surrounding hills with planted Black Pine (*Pinus nigra*) Forest and degraded natural Oak Forest are covered. Old tree stems have not been recorded. The recording has resulted in 15 records with 182 calls representing 5 bat species (see Table 9).

Table 9. Livoishta-Livoishta Line Transect: Computer-aided identification of species, and processed data of records and calls (Summer Season Survey, 2016).

Nr.	Scientific Name	English Common Name	Macedonian Common Name	Number of Records	Number of Calls
Order Chiroptera (Bats)					
Family Vespertilionidae (Vespertilionid Bats); (Глатконосни лилјаци)					
1.	*Pipistrellus pipistrellus*	Common Pipistrelle	Obichen pipistrel	6	93
2.	*Plecotus auritus*	Brown Long-eared Bat	Kafeav ushest liljak	4	36
3.	*Nyctalus noctula*	Common Noctule	Lisest vechernik	3	28
4.	*Myotis emarginatus*	Geoffroy's Bat	Troboen nokjnik	1	16
5.	*Pipistrellus kuhlii*	Kuhl's Pipistrelle	Beloraben pipistrel	1	9
Total number				**15**	**182**

Raw data of Batlogger M recordings on foraging bats along line transect Livoishta-Livoishta are presented in Annex 2.7 of this report.

Monitoring Site No. 8: Livoishta - Trebenishta

On August 19, 2016 surveillance and monitoring of bats on the monitoring site Livoishta-Trebenishta, in the period from 07:52 PM until 09:15 PM was conducted by recording presence of bats using Batlogger M, while walking along the line transect. The transect route runs along local soil road from the village Livoishta as a start point, with GPS coordinates N 41.201007; E 20.815989 and altitude of 765 m asl, westwards to the end point in the village of Trebenishta with GPS coordinates N 41.206461; E 20.754872 and an altitude of 720 m asl. Total length of the transect route is 6.0 km (see Figure 14)

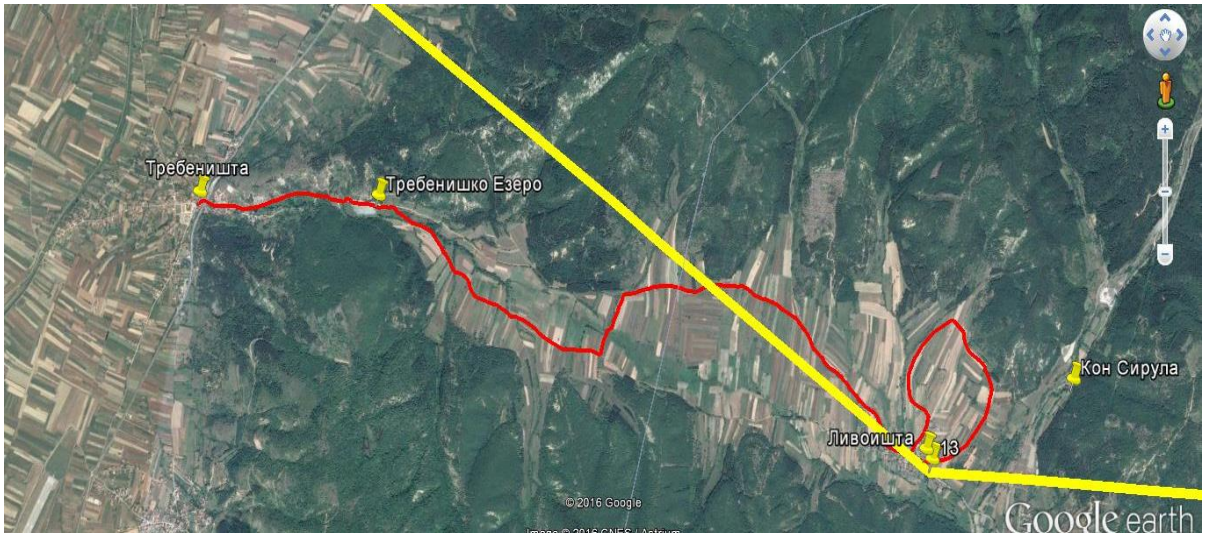

Figure 14. Livoishta-Trebenishta Line Transect (Recording of foraging bats was conducted using Batlogger M while walking along the route).

The weather was cloudy in part with wind velocity "Calm" (<1 km/h). The air temperature at 07:52 PM (recording start time) was 23o C and at 09:15 PM (recording end time) was again 23 o C. The distance of 6.0 km (total length of the line transect) while recording by walking, was travelled in 73 minutes, with an average speed of 4.9 km/h. Short stop of less than 10 minutes for point count was made in front of a small freshwater reservoir, located on the left side of the route, in the vicinity of Trebenishta village.

Table 10. Livoishta-Trebenishta Line Transect: Computer-aided identification of species, and processed data of records and calls (Summer Season Survey, 2016).

Nr.	Scientific Name	English Common Name	Macedonian Common Name	Number of Records	Number of Calls
Order Chiroptera (Bats)					
Family Vespertilionidae (Vespertilionid Bats)					
1.	*Pipistrellus kuhlii*	Kuhl's Pipistrelle	Beloraben pipistrel	45	956
2.	*Pipistrellus pipistrellus*	Common Pipistrelle	Obichen pipistrel	39	1,194
3.	*Plecotus auritus*	Brown Long-eared Bat	Kafeav ushest liljak	29	559
4.	*Nyctalus noctula*	Common Noctule	Lisest vechernik	14	237
5.	*Pipistrellus nathusii*	Nathusius' Pipistrelle	Natusiev pipistrel	8	173
6.	*Myotis bechsteini*	Bechstein's Bat	Behshtainov nokjnik	4	75

7.	*Miniopterus schreibersii*	Schreibers' Bat	Dolgokrilest Liljak	3	35
8.	*Myotis emarginatus*	Geoffroy's Bat	Troboen nokjnik	3	31
9.	*Hypsugo savii*	Savi's Pipistrelle	Saviev pipistrel	2	53
Total number				**147**	**3,313**

The route runs along flattened valley confined by mild slopes of Gorenska Chuka Hill to the South and by Mazatar Mountain slopes to the North. The valley itself is mostly covered by agricultural land with scattered single trees of Oak, Wild Plum and Common Walnut, while the mountain slopes by oak and planted Black Pine forest are overgrown.

The recording of foraging bats along line transect using ultrasound detector Batlogger M while walking in 148 records with 3,389 calls has resulted, of which 1 record with 76 calls was not valid, while the rest 147 records with 3,313 calls are valuable data, representing 9 bat species (see Table 10).

Raw data of Batlogger M recordings on foraging bats along line transect Livoishta-Trebenishta are presented in Annex 2.8 of this report.

Monitoring Site No. 9: Moroishta

On August 28, 2016 surveillance and monitoring of bats on the monitoring site Moroishta, in the period from 07:30 PM until 08:15 was conducted by recording presence of foraging bats using Batlogger M at a standpoint. The standpoint is located southwardly of the village Moroishta, with GPS coordinates N 41,198341; E 20,701821; 695 m asl and altitude of 695 m asl (see Figure 15).

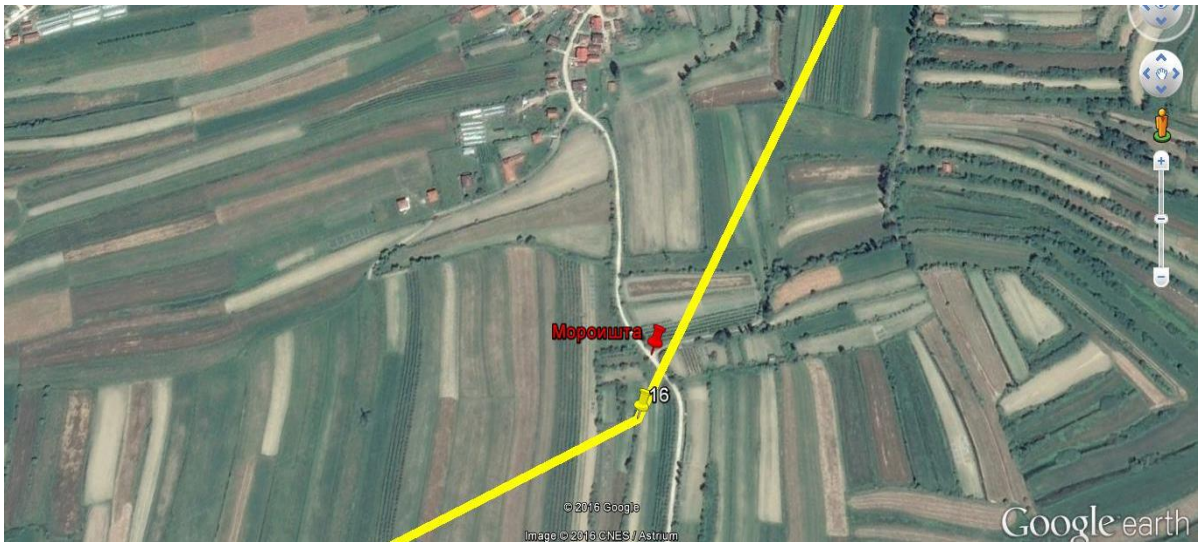

Figure 15. Moroishta Monitoring Site (Point Count). Recording of foraging bats was conducted using Batlogger M at a standpoint.

The weather was cloudy in part with wind velocity "Calm" (<1 km/h). The air temperature at 07:30 PM (recording start time) was 21^{o} C and at 08:15 PM (recording end time) was again 21 ^{o} C.

Table 11. Moroishta Monitoring Site (Point Count): Computer-aided identification of species, and processed data of records and calls (Summer Season Survey, 2016).

Nr.	Scientific Name	English Common Name	Macedonian Common Name	Number of Records	Number of Calls
Order Chiroptera (Bats)					
Family Vespertilionidae (Vespertilionid Bats)					
1.	*Plecotus auritus*	Brown Long-eared Bat	Kafeav ushest liljak	41	855
2.	*Pipistrellus pipistrellus*	Common Pipistrelle	Obichen pipistrel	32	498
3.	*Myotis bechsteini*	Bechstein's Bat	Behshtainov nokjnik	10	160
4.	*Myotis emarginatus*	Geoffroy's Bat	Troboen nokjnik	7	94
5.	*Pipistrellus nathusii*	Nathusius' Pipistrelle	Natusiev pipistrel	5	90
6.	*Nyctalus noctula*	Common Noctule	Lisest vechernik	5	40
7.	*Pipistrellus kuhlii*	Kuhl's Pipistrelle	Beloraben pipistrel	4	126
8.	*Pipistrellus pygmaeus*	Pygmy Pipistrelle	Dzudzest pipistrel	3	109
9.	*Miniopterus schreibersii*	Schreibers' Bat	Dolgokrilest Liljak	2	18
10.	*Nyctalus leisleri*	Leisler's Bat	Shumski vechernik	2	12
11.	*Myotis capaccinii*	Long-fingered Bat	Dolgoprst nokjnik	1	37
12.	*Myotis blythii*	Lesser Mouse-eared Bat	Mal nokjnik	1	28
Total number				**113**	**2,067**

The Moroishta Monitoring Site (standpoint) is located in the middle of Strushko Pole Plain, southward of the village Moroishta. The Strushko Pole Plain is agricultural land with rare, scattered single trees.

The recording of foraging bats using ultrasound detector Batlogger M from a standpoint has resulted in 115 records with 2,241 calls, of which 2 records with 174 calls were not valid, while the rest 113 records with 2,067 calls are valuable data, representing 12 bat species (see Table 11).

Raw data of Batlogger M recordings on foraging bats at the Monitoring Site No. 10: Moroishta in Annex 2.9 of this report are presented.

Monitoring Site No. 10: Vishni - Kjafasan State Border Crossing

On August 30, 2016 surveillance and monitoring of bats on the monitoring site Vishni - Kjafasan State Border Crossing, in the period from 07:30 PM until 08:53 PM was conducted by recording presence of foraging bats with ultrasonic Batlogger M along linear transect, while using moving vehicle. The transect route runs along local road from above the village of Vishni as a start point, with GPS coordinates N 41.196835; E 20.590662 and altitude of 1,084 m asl m asl, down to the South-east until the road intersection with the main road Struga - Kjafasan Border Crossing (N 41.16465; E 20.63788). Thence, the route runs South-westward along the main road to the end point at the Kjafasan State Border Crossing with GPS coordinates N 41.093891; E 20.610357and an altitude of 988 m asl. Total length of the transect route is 15.30 km (see Figure 16).

Figure 16. Vishni-State Border Crossing Kjafasan Monitoring Site (Line Transect). Recording of foraging bats was conducted with ultrasonic Batlogger M while using moving vehicle.

The weather was cloudy in part with wind velocity "Calm" (<1 km/h). The air temperature at 07:30 PM (recording start time) was 16^{o} C and at 08:53 PM (recording end time) was again 18o C. The distance of 15.30 km (total length of the line transect), while using moving vehicle was travelled in 83 minutes, with an average speed of 11.06 km/h.

The route at its start point runs through beach forest, thence across the eastern and South-eastern slopes of Jablanitsa Mountain through degraded oak forest. The recording of foraging bats with ultrasound detector Batlogger M along line transect while using moving vehicle has resulted in 131 records with 1,917 calls, of which 6 records with 67 calls were not valid, while the rest 125 records with 1,850 calls are valuable data, representing 12 bat species (see Table 12).

Table 12. Vishni - Kjafasan State Border Crossing Monitoring Site (Line Transect): Computer-aided identification of species, and processed data of records and calls (Summer Season Survey, 2016).

Nr.	Scientific Name	English Common Name	Macedonian Common Name	Number of Records	Number of Calls
Order Chiroptera (Bats)					
Family Vespertilionidae (Vespertilionid Bats)					
1.	*Pipistrellus kuhlii*	Kuhl's Pipistrelle	Beloraben pipistrel	32	536
2.	*Pipistrellus pipistrellus*	Common Pipistrelle	Obichen pipistrel	29	545
3.	*Plecotus auritus*	Brown Long-eared Bat	Kafeav ushest liljak	22	204
4.	*Nyctalus noctula*	Common Noctule	Lisest vechernik	14	189
5.	*Hypsugo savii*	Savi's Pipistrelle	Saviev pipistrel	11	143
6.	*Pipistrellus nathusii*	Nathusius' Pipistrelle	Natusiev pipistrel	6	143
7.	*Myotis emarginatus*	Geoffroy's Bat	Troboen nokjnik	4	37

8.	*Pipistrellus pygmaeus*	Pygmy Pipistrelle	Dzudzest pipistrel	2	13
9.	*Myotis myotis*	Greater Mouse-eared Bat	Golem Nokjnik	1	17
10.	*Myotis blythii*	Lesser Mouse-eared Bat	Mal nokjnik	1	6
11.	*Myotis bechsteini*	Bechstein's Bat	Behshtainov nokjnik	1	5
Family Rhinolophidae (Horseshoe Bats); (Potkovichestonosni Liljaci)					
12.	*Rhinolophus ferrumequinum*	Greater Horseshoe Bat	Golem Potkovichar	1	12
Total number				**125**	**1,850**

Raw data of Batlogger M recordings on foraging bats along line transect Vishni-Kjafasan State Border Crossing in Annex 2.10 of this report are presented.

The Summer Season Monitoring of bats at 10 monitoring sites using ultrasound detector surveys based on line transects and point counts, while walking or using moving vehicle has resulted in 682 records with 13,184 calls, representing 16 bat species (see Table 13).

Table 13. Monitoring Site (Line Transect): Computer-aided identification of species, and processed data of records and calls (Summer Season Survey, 2016).

Nr.	Scientific Name	English Common Name	Number of Monitoring Sites	Number of Records	Number of Calls
Order Chiroptera (Bats)					
Family Vespertilionidae (Vespertilionid Bats)					
1.	*Pipistrellus kuhlii*	Kuhl's Pipistrelle	10	147	2,490
2.	*Plecotus auritus*	Brown Long-eared Bat	10	135	2,303
3.	*Pipistrellus pipistrellus*	Common Pipistrelle	9	131	2,784
4.	*Nyctalus noctula*	Common Noctule	10	76	1,083
5.	*Pipistrellus nathusii*	Nathusius' Pipistrelle	9	68	2,692
6.	*Hypsugo savii*	Savi's Pipistrelle	7	42	554
7.	*Myotis emarginatus*	Geoffroy's Bat	9	29	317
8.	*Myotis bechsteini*	Bechstein's Bat	6	18	275
9.	*Pipistrellus pygmaeus*	Pygmy Pipistrelle	6	14	369
10.	*Miniopterus schreibersii*	Schreibers' Bat	4	9	154
11.	*Nyctalus leisleri*	Leisler's Bat	3	6	56
12.	*Myotis capaccinii*	Long-fingered Bat	2	2	66
13.	*Nyctalus lasiopterus*	Greater Noctule Bat	2	2	14
14.	*Vespertilio murinus*	Parti-coloured Bat	1	1	9
15.	*Myotis blythii*	Lesser Mouse-eared Bat	1	1	6
Family Rhinolophidae (Horseshoe Bats); (Potkovichestonosni Liljaci)					
16.	*Rhinolophus ferrumequinum*	Greater Horseshoe Bat	1	1	12
Total number				**682**	**13,184**

The Kuhl's Pipistrelle (*Pipistrellus kuhlii*) with 147 records at all 10 monitoring sites is the most frequent species along the transmission line corridor. With 2,490 calls the Kuhl's Pipistrelle is the third most abundant species. The species is relatively abundant in the whole Mediterranean Region and the Middle East. Kuhl's Pipistrelle is also numerous in urban areas across much of its range. It forages over a variety of habitats, including agricultural and urban areas. Recent evidence suggests that urbanization may be beneficial to this species. Maternity colonies are located in crevices in buildings. Winter sites include rock crevices and crevices in buildings.

Brown Long-eared Bat *(Plecotus auritus)* with 135 records at all 10 monitoring sites is the second most frequent species within the Project Area. It is also relatively abundant; with 2,303 calls is the fourth most abundant species. The Brown Long-eared Bat is endemic to Europe, where it is widely distributed south of 65°N and west of the Urals. It is dominantly a woodland species and has very quiet echolocation calls. Brown long-eared bats' echolocation calls range from 25 - 50kHz and peak at 35kHz. Its broad wings and tail allow manoeuvrable, hovering flight, often flying slowly amongst foliage, picking insects off leaves and bark; sometimes land on the ground to catch insects. In winter it is generally solitary, although it may occasionally be found in very small clusters (2-3 animals). Nursery colonies usually number 10-20 females. There have been no recorded population declines throughout most of its range, although loss of broad-leaved forest and particularly of mature trees is a threat in parts of its Mediterranean Range.

The Common Pipistrelle (*Pipistrellus pipistrellus*) has been recorded at 9 monitoring sites. With 131 records it is third most frequent, while with 2,784 calls it is the most abundant species. The Common Pipistrelle is a widespread and abundant Western Palaearctic species, one of the most common bats in many parts of its range. The species has recently been separated into two species, P*. pipistrellus* and P. *pygmaeus*. Their respective distribution and status are not yet fully clarified. Summer roosts are mainly found in buildings and trees, and individuals frequently change roost site through the maternity period. Most winter roost sites are located in crevices in buildings, although cracks in cliffs and caves and possibly holes in trees may also be used. Maternity colonies generally number 25-50 individuals. In winter, it tends to occur singly or in small groups. The species has very distinctive and loud echolocation calls mostly around 45 kHz and can readily be identified using a bat detector.

The Common Noctule (*Nyctalus noctula*) is widespread and abundant species. It has been recorded at all 10 monitoring sites, and is included within the 5 most abundant species with more than 1,000 recorded calls. Noctules are primarily tree dwellers and live mainly in rot holes and woodpecker holes. They hibernate in trees or rock fissures and hollows. Noctules' calls range from 20 to 45kHz and peak at 25kHz. No threats for the species at present, although loss of old trees with holes for roosting is a major factor for population declining.

Nathusius' Pipistrelle (*Pipistrellus nathusii*) was recorded at 9 monitoring sites, and with 2,692 calls is also included in the species that are quiet abundant within the boundaries of the Project Area. It is a Western Palaearctic migratory species. Summer roosts are located in tree holes and buildings, mainly in woodland areas. Winter roost sites include crevices in cliffs, buildings and around the entrance of caves, often in relatively cold, dry, and exposed sites. The majority of roosts are located close to freshwater bodies, and also forages near rivers, lakes and waterlogged areas. Nathusius' Pipistrelle is known in Macedonia from a few localities in the valley of the Vardar River. Echolocation calls of Nathusius' pipistrelle are similar to those of the other pipistrelles. The peak intensity of the call is at about 38kHz (between 36 and 40kHz). The species is widespread and abundant, and there is no evidence of current significant population decline.

The Savi's Pipistrelle (*Hypsugo savii*) is the sixth most abundant bat species within the Project boundaries. Historical data on the presence of this species on several localities in Macedonia are all on the basis of mist netting. It roosts in rock crevices, occasionally in fissures in buildings or under bark, rarely in underground habitats, and the species' roosts are difficult to find, therefore bat detector survey is most recommended method. Savi's Pipistrelle has calls that are distinctive from all other species.

Notwithstanding the Geoffroy's Bat (*Myotis emarginatus*) was recorded at 9 monitoring sites it is less abundant. In Europe it is mainly associated with agricultural landscapes. In summer this bat roosts in underground habitats and in buildings, generally together with Rhinolophus species. It winters in underground sites. In Macedonia, the species has been recorded only on few localities, of which most important is the Bela Voda Cave near Demir Kapija with maternity colony of about 1,000 bats. Geoffroy's Bat has an unusual diet that feeds mainly on spiders and flies. It forages over scrub and grassland.

Bechstein's Bat (*Myotis bechsteini*) has very quiet echolocation, and as a result is difficult to detect. The frequency of most energy is 50kHz. The presence of this rare species at 6 monitoring sites, with 18 records and 275 calls reflect the species status along the transmission corridor as relatively frequent. Bechstein's Bat is a Western Palaearctic species that occurs in central and southern Europe as well as temperate south-western Asia. In Europe, it tends to prefer mature deciduous woodlands of beech and oak with a high proportion of old trees. Densities of this species are highest in forests that are managed according to environmental (rather than strictly economic) principles.

Pygmy Pipistrelle (*Pipistrellus pygmaeus*) is also a Western Palaearctic species, occurring from the British Isles through much of Europe east to Ukraine and western Russia. So far no records have been reported from North Africa or the Middle East Pipistrellus pygmaeus generally appears to be less abundant than *Pipistrellus pipistrellus* that has been also confirmed by our summer season Surveys (see Table 13). Maternity colonies are located in hollow trees, rock crevices and buildings (which provide

warmer sites). No specific data are available on *P. pygmaeus* winter roost sites, but presumably they are similar to those used by *P. pipistrellus*. The species has very distinctive and loud echolocation calls at 55 kHz and can readily be identified using a bat detector.

Schreibers' Bat (*Miniopterus schreibersii*) is typical colonial species that roosts mostly in caves, often in large mixed colonies with other cave-dwelling bat species. The species is widely distributed in Southern Europe, South-west Asia and Northern Africa. Most preferable foraging areas of the species include edges of woodlands.

Leisler's bat (*Nyctalus leisleri*) is naturally a forest species, roosting in tree holes. It is Western Palaearctic species that is widely distributed in Europe but with small populations. Easily differentiated from the other two European Nyctalus species due to its smaller size. In Macedonia, it is relatively rare species; most of the records are made by bat detector, and the only collected specimens by mist-netting are coming from Valandovo. Leisler's bats echolocation calls range from 15 to 45kHz and peak at 25kHz. The calls are occasionally audible to the human ear.

Long-fingered Bat (*Myotis capaccinii*) is Circum Mediterranean species that is closely related to aquatic habitats. It forages over wetlands and waterways. The species roosts in underground habitats, preferably in caves, usually in mixed colonies with Myotis myotis, Myotis blythii and Miniopterus schreibersii. Recording by ultrasonic detector is not most appropriate method for this species where it is sympatric with Myotis daubentonii. In Macedonia the species has been recorded on several localities, including Vardar River, Ohrid and Prespa Lake but always with low abundance.

Greater Noctule Bat (*Nyctalus lasiopterus*) is the largest European bat. This tree-dwelling species is dependent on mature forests and roosts in holes of deciduous trees throughout the year. It is a large, heavy bat with less manoeuvrable flight than other smaller bats and highly associated with water bodies as it seems to need a regular water supply so individuals visit drinking places regularly. This means that mist-netting can be a good method for survey. The species is easy to detect with bat detectors, so it is known that the species' distribution in Europe is genuinely extremely patchy. Little is known about potential threats, but loss of mature woodland and loss of roost sites (in old trees) may have a negative impact on the species.

The Parti-coloured Bat (*Vespertilio murinus*) inhabits temperate zone of the Palaearctic Region, including central and South-eastern Europe. This nocturnal species appears late in the evening, sleeping in narrow crevices during the day. It lives in small colonies and often single individuals are sighted. The Particoloured Bat forages in open areas over various habitat types (forest, dry grassland, agricultural land, urban). It feeds on moths and beetles. In Macedonia, the species appears to be quite rare with low abundance.

The Lesser Mouse-eared Bat (*Myotis blythii*) is a Southwestern Palearctic species that occurs in Southern Europe, Southern parts of Central Europe, and non-arid parts of Southwestern Asia. It forages in scrub and grassland habitats, including farmland and gardens. Maternity colonies are usually found in underground habitats such as caves and mines, and sometimes in buildings. Identification of the difference from *Myotis myotis* is difficult with ultrasonic detectors and also visually in mixed colonies. *Myotis blythii* may have a distinctive white patch on the top of its head, making it distinguishable from *Myotis myotis* while roosting, although identification remains difficult. In Macedonia the Lesser Mouse-eared Bat is relatively frequent cave-dwelling species, with most abundant maternity colony of 2,000 individuals recorded in a disused mine in the village of Rabrovo, near Valandovo.

The Greater Horseshoe Bat (*Rhinolophus ferrumequinum*) has a wide range through the Palaearctic Region, occurring from North Africa and Southern Europe through temperate zone of Asia to Japan. Greater horseshoe bats feed mainly by lowflying hunting. Greater horseshoes bats were originally cave dwellers, but few now use caves in summer – most breeding females use buildings, choosing sites with large entrance holes with access to open roof spaces warmed by the sun. Such sites are normally in larger, older houses, churches and barns. When roosting they hang free with the wings more or less enfolding their body. In Macedonia, the species is quite frequent, most of the records located along the Vardar Valley, however always with low population density.

2.4.1.2. Assessment of bats recorded by visual counts of roosting bats at hibernation/maternity colonies and summer roosts

Visual counts of roosting bats during the summer season surveys have been conducted at the Jaorets Cave (maternity roost) and at an old, abandoned collective farm building in the village of Ramna (see Table 14).

Table 14. Monitoring of bats at hibernation/maternity and summer roosts during summer season (2016) using visual counts.

No.	Monitoring Site	Type of Monitoring	GPS Coordinates & Altitude
11.	Ramna	Summer Roost Count	N 41.087933; E 21.185683; 794 m asl
12.	Jaorets Cave	Maternity Roost Count	N 41.293478; E 20.945033; 1021 m asl

Altogether, at 2 monitoring sites, monitoring of bats was performed using visual counts at one summer roost (Ramna) and one maternity/hibernation roost (Jaorets Cave).

Monitoring Site No. 11: Ramna (Collective Farm Building)

Monitoring of bats by visual counts in summer roost was conducted in the village of Rhamna, while inspecting old abandoned houses and other urban infrastructures for the presence of roosting bats. The site was visited on two occasions, on June 21, 2016 and August 31, 2016. In both cases a small colony of

12 roosting bats of the species Mediterranean Horseshoe Bat (*Rhinolophus euryale)* have been counted in an old abandoned Collective Farm Building (Zadruzhen Dom Ramna) located in the central area of the village, with GPS coordinates N 41.087933; E 21.185683 and altitude of 794 m asl.

Figure 17. Abandoned Collective Farm Building in the village of Ramna used as a summer roost by a small colony of Mediterranean Horseshoe Bat (Rhinolophus euryale).

Figure 18. A small colony of Mediterranean Horseshoe Bat (*Rhinolophus euryale*) roosting in an Abandoned Collective Farm Building in the village of Ramna.

Mediterranean Horseshoe Bat (*Rhinolophus euryale*) is a Western Palaearctic species, occurring in southern Europe, North-west Africa and the Near East. It forages in shrublands, woodland edges and riparian vegetation, feeding on moths and other insects. Summer roosts are located in natural and artificial shelters. In winter it hibernates in underground sites, usually in large caves with a constant microclimate. In Macedonia the species is widespread, but always with low population density, usually at lower altitudes. The highest recorded altitude is Jaorets Cave (1,021 m asl).

Monitoring Site No. 12: Jaorets Cave

Surveillance and monitoring of bats on the Monitoring Site No. 10: Jaorets Cave by visual count of bats at maternity roost was conducted on June 22, 2016 and for summer roost count on August 30, 2016. The Jaorets Cave is located on the South-western slopes of Ilinska Planina Mountain at an altitude of 1,021 m and GPS coordinates N 41.293478; E 20.945033 (see Figure 19).

Figure 19. Jaorets Cave, located on the South-western slopes of Ilinska Planina Mountain (location of the cave: X symbol in red colour).

Notwithstanding the closest aerial distance of Jaorets Cave to Transmission Line Corridor is about 10.5 km, the cave itself represents an important local maternity roost for bats, therefore it was taken as an control monitoring site that could obtain high valuable data for comparative analyses during the construction and operational project phases (see Figure 20).

Figure 20. Location of the Jaorets Cave in relation to the Transmission Line Corridor; Yellow Line: Transmission Line Corridor; Blue Line: Aerial Distance from Transmission Line to Jaorets Cave.

The first Survey of the cave (June 22, 2016) has confirmed presence of large mixed colony of bats of about 9,000 – 10,000 individuals, of which the Schreibers' Bat (*Miniopterus schreibersii*) represented by

4,000-4,500 individuals and the Greater Mouse-eared Bat (*Myotis myotis*) with 5,000-5,500 individuals (see figures 21, 22 and 23).

Figure 21. Entrance of Jaorets Cave; Mixed nursery colony in Jaorets Cave (June 22, 2016), respectively.

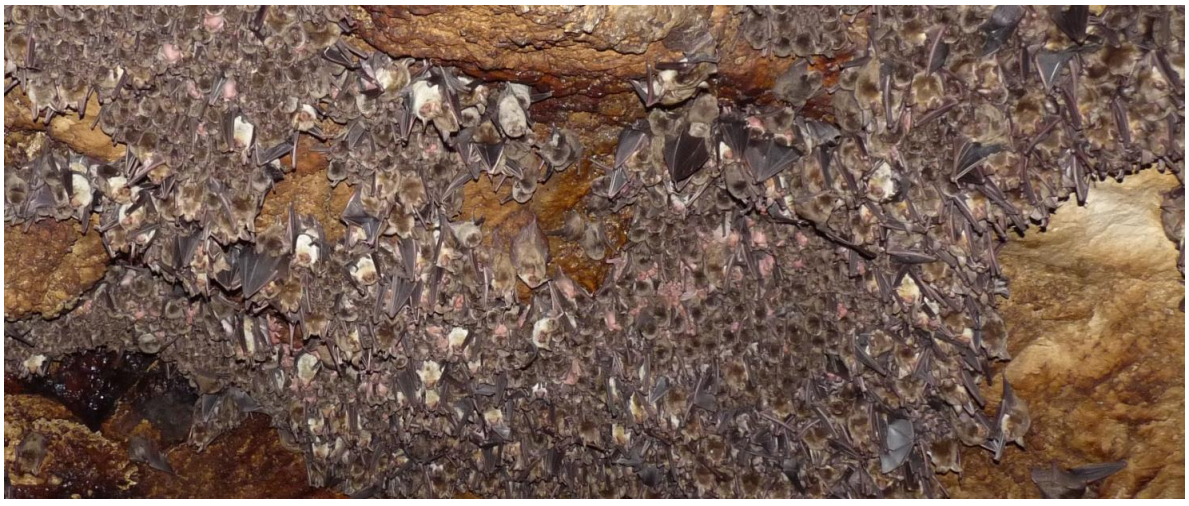

Figure 22. Mixed nursery colony of Schreibers' Bat (*Miniopterus schreibersii*) and Greater Mouse-eared Bat (*Myotis myotis*) in Jaorets Cave (June 22, 2016).

Figure 23. Mixed nursery colony of Schreibers' Bat (*Miniopterus schreibersii*) and Greater Mouse-eared Bat *(Myotis myotis*) in Jaorets Cave (June 22, 2016).

The second Summer visual count of bats in the Jaorets Cave (August 30, 2016) resulted in presence of 2,000 individuals of Schreibers' Bat (*Miniopterus schreibersii*) and only 150 individuals of the Greater Mouse-eared Bat (*Myotis myotis*).

Schreibers' Bat (*Miniopterus schreibersii*) is typical colonial species that roosts mostly in caves, often in large mixed colonies with other cave-dwelling bat species. The species is widely distributed in Southern Europe, South-west Asia and Northern Africa. Visual counts at hibernation/maternity roosts is the best method to assess the size of the colony by estimating the square metre area which the colony covers (1 m^2 corresponds to about 2,000 individuals). Most preferable foraging areas of the species include edges of woodlands.

The Greater Mouse-eared Bat (*Myotis myotis*) is a Western Palaearctic species that occurs in Western, Central and Southern Europe. It forages over deciduous woodland edges, open deciduous woodlands and pastures, flying at low altitudes gleaning from the ground large, ground-dwelling arthropods such as beetles, crickets, and spiders. The Greater Mouse-eared Bat usually forms large nursery colonies in caves. Internal counts in large caves are possible using digital photography (1 m^2 corresponding to about 1,300 specimens). In Macedonia, the Greater Mouse-eared Bat appears as a typical cave-dwelling species, quite frequent with abundant populations.

In Macedonia, by the end of Winter Season bats begin to emerge from hibernation and at the beginning of Spring Season they have mainly come out of hibernation and are active, feeding on most nights and moving between several roost sites. Pregnant females gather together, forming maternity colonies and looking for suitable nursery sites to have their young, usually using the same maternity roost. Males roost on their own or in small groups. Pregnancy lasts between 6 and 9 weeks depending on

the species and can be influenced by weather and availability of food. Females usually give birth to a single baby each year. For 3 - 4 weeks, the young are suckled by their mothers, than they begin to venture out from the maternity roost to forage for food.

Our Summer Season survey of the Jaorets Cave has ascertained presence of mixed maternity colony which indicates that Jaorets Cave is probably regularly used as a significant maternity roost with nursery colonies by at least two species.

2.4.1.3. Evaluation of Bats

Habitats Directive (Directive 92/43/EEC) provides Strict Legal Protection (under Annex IV) for 10 recorded bat species of the Project Area. In addition, eight of the recorded species are listed in Annex II, which is list of species with higher level of Legal Protection i.e. includes species of community interest whose conservation requires designation of special areas of conservation (see Table 15).

Table 15. Legal Protection and Conservation Status of identified Bat Species.

No.	Scientific Name	English Common Name	Directive 92/43/EEC	Bern Convention	Bonn Convention	IUCN Europe	IUCN Global
Order Chiroptera (Bats)							
Family Vespertilionidae (Vespertilionid Bats)							
1.	*Pipistrellus kuhlii*	Kuhl's Pipistrelle	IV	II	II	LC	LC
2.	*Plecotus auritus*	Brown Long-eared Bat	IV	II	II	LC	LC
3.	*Pipistrellus pipistrellus*	Common Pipistrelle	IV	III	II	LC	LC
4.	*Nyctalus noctula*	Common Noctule	IV	II	II	LC	LC
5.	*Pipistrellus nathusii*	Nathusius' Pipistrelle	IV	II	II	LC	LC
6.	*Hypsugo savii*	Savi's Pipistrelle	IV	II	II	LC	LC
7.	*Myotis emarginatus*	Geoffroy's Bat	II	II	II	LC	LC
8.	*Myotis bechsteini*	Bechstein's Bat	II	II	II	VU	NT
9.	*Pipistrellus pygmaeus*	Pygmy Pipistrelle	IV	II	II	LC	LC
10.	*Miniopterus schreibersii*	Schreibers' Bat	II	II	II	NT	NT
11.	*Nyctalus leisleri*	Leisler's Bat	IV	II	II	LC	LC
12.	*Myotis capaccinii*	Long-fingered Bat	II	II	II	VU	VU
13.	*Nyctalus lasiopterus*	Greater Noctule Bat	IV	II	II	VU	VU
14.	*Vespertilio murinus*	Parti-coloured Bat	IV	II	II	LC	LC
15.	*Myotis blythii*	Lesser Mouse-eared Bat	II	II	II	NT	LC
16.	*Myotis myotis*	Greater Mouse-eared Bat	II	II	II	LC	LC
Family Rhinolophidae (Horseshoe Bats)							
17.	*Rhinolophus ferrumequinum*	Greater Horseshoe Bat	II	II	II	NT	LC
18.	*Rhinolophus euryale*	Mediterranean Horseshoe Bat	II	II	II	VU	NT

The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) imposes a legal obligation on Parties to protect all breeding and resting sites of the Strictly Protected Species on Appendix II, including all European Bat Species apart from the Common Pipistrelle (*Pipistrellus pipistrellus*), which is listed on Appendix III (see Table 15).

None of the recorded species is listed in Appendix I (Endangered Migratory Species) under the Convention on the Conservation of Migratory Species of Wild Animals, Bonn Convention (UNEP/CMS). On the contrary, all European bat species, including the recorded species of the Project Area are listed on Appendix II (Migratory Species to be the Subject of Agreements).

Regarding the Conservation Status, under the IUCN Red List of Globally Threatened Species (2016) as well as the European Red List of Threatened Species (2016) only the Greater Noctule Bat (*Nyctalus leisleri*) and the Long-fingered Bat (*Myotis capaccinii*) are qualified as threatened species, evaluated as Vulnerable (VU) on both Global and European Lever. Another two species: Bechstein's Bat (*Myotis bechsteini*) and Mediterranean Horseshoe Bat (Rhinolophus euryale) are also qualified as threatened species in the category Vulnerable (VU), but only at European level. All other 14 bat species are ranked in the categories Least Concern (LC) and Near Threatened (NT) which are not qualified as categories of threatened species

2.4.2. Discussion and Conclusions

The Summer Season surveillance and monitoring of bats along the transmission line corridor has been conducted at 12 monitoring sites using combined methodology. The monitoring of bats on 10 monitoring sites using ultrasound detector for recording foraging bats along line transects/point counts has resulted in 682 records with 13,184 calls, representing 16 bat species. At another two monitoring sites, the monitoring of bats has been conducted by visual counts at one summer shelter and one underground roosting site that have resulted in more than 10,000 recorded individuals, representing three bat species.

Altogether, the Summer Season monitoring of the Project Area has ascertained presence of 18 bat species with high level of species frequency and population abundance, which is direct reflection of the quality of composition and area remaining intact. These first results, coupled with the results of the next seasons surveys will obtain valuable basis of data to indicate whether the transmission line construction will cause adverse impact on bats recorded on open/edge foraging habitats.

Regarding the cave-dwelling species, the Summer Season Surveys are not sufficient to ascertain any impact assessment. Further surveillances and monitoring of bats during the autumn and winter seasons and especially during the Spring Season will be indispensable for appropriate comparative analysis and valuable impact assessment.

The Autumn Season survey in November will obtain data if the Jaorets Cave is regularly used by bats as a Swarming Site. Mating season usually begins by the end of October. Males of most species use

special calls to attract females. During this period, large numbers of bats can be encountered, swarming inside and outside the site. This is primarily a mating event, since it occurs long before hibernation, but probably also serves to check hibernation sites and guide inexperienced juveniles to them. The mated females store the sperm and do not become pregnant until the spring, when the weather gets warmer. The Winter Season survey (January-February) will obtain data if the Jaorets Cave is regularly used by bats as a Hibernation Roost.

The mist-netting across/nearby aquatic habitats will be conducted during the spring season to confirm presence/absence of bat species that are closely related to freshwater bodies: Daubenton's Bat (*Myotis daubentonii*), and Long-fingered Bat (*Myotis cappacinii*). So far only one of these two species has been recorded within the boundaries of the Project Area.

The preliminary results of summer surveys lead to an initial conclusion that no critical habitats as defined by EBRD ESP PR6 have been ascertained within the Project Corridor. Therefore, refinements to the transmission line route within the corridor are not necessary to be made. After conducting the surveys on the bats in the other three seasons, the line sections with increased collision risk will be precisely defined. Consequently, the one-year monitoring and complete final report (in accordance with the agreement with MEPSO) will give a clear picture of the species diversity, populations state, migratory pathways and impacts of the over head power transmission line on the bats in order to suggest appropriate mitigation measures.

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4. ANNEXES

Annex 1: Birds (Summer Season Surveys)-2016

Bird Species recorded along Transmission Line Corridor during summer season surveys (2016) with their Range Status

Taxonomic Group/Species		English Common Name	Macedonian Common Name	Range Status
Order Gaviiformes				
Family Gaviidae (Divers); (Morski Nurkachi)				
Order Podicipediformes				
Family Podicipedidae (Grebes); (Nurkachi)				
Order Pelecaniformes				
Family Phalacrocoracidae (Cormorants); (Kormorani)				
Family Pelecanidae (Pelicans); (Pelikani)				
1.	*Pelecanus crispus*	Dalmatian Pelican	Dalmatinski (Kadroglav) Pelikan	R
Order Ciconiiformes				
Family Ardeidae (Herons, Egrets, Bitterns); (Chapji)				
2.	*Botaurus stellaris*	Eurasian Bittern	Voden Bik; Bukavec	R
3.	*Ardea cinerea*	Grey Heron	Siva Chapja	B (R)
Family Ciconiidae (Storks); (Shtrkovi)				
4.	*Ciconia ciconia*	White Stork	Bel Shtrk	B
5.	*Ciconia nigra*	Black Stork	Crn Shtrk	B
Family Threskiornithidae (Ibises, Spoonbills); (Ibisi, Chapji Lazhicharki)				
Order Phoenicopteriformes				
Family Phoenicopteridae (Flamingos); (Flaminga)				
Order Anseriformes				
Family Anatidae (Swans, Geese, Ducks); (Lebedi, Guski, Shatki)				
Order Accipitriformes				
Family Accipitridae (Hawks, Eagles, Vultures); (Orli, Eji, Lunji, Jastrebi)				
6.	*Pernis apivorus*	Honey Buzzard	Jastreb Osojad	W (B)
7.	*Circaetus gallicus*	Short-toed Eagle	Orel Zmijar	B
8.	*Circus aeruginosus*	Marsh Harrier	Blatna Eja	B
9.	*Circus cyaneus*	Hen Harrier	Polska Eja	P
10.	*Accipiter gentilis*	Goshawk	Jastreb Kokoshkar	R
11.	*Accipiter nisus*	Eurasian Sparrowhawk	Jastreb Vrapchar	R
12.	*Buteo buteo*	Common Buzzard	Obichen Jastreb Gluvchar	R
13.	*Buteo rufinus*	Long-legged Buzzard	Lisest Jastreb Gluvchar	R
14.	*Aquila heliaca*	Imperial Eagle	Carski (Krstat) Orel	B
15.	*Aquila chrysaetos*	Golden Eagle	Skalest (Zlaten) Orel	R
Family Pandionidae (Osprey); (Orli Ribari)				

Order Falconiformes				
Family Falconidae (Falcons); (Sokoli)				
16.	*Falco naumanni*	Lesser Kestrel	Stepska Vetrushka (Mala Vetrushka)	B
17.	*Falco tinnunculus*	Kestrel	Obichna Vetrushka	R
18.	*Falco vespertinus*	Red-footed Falcon	Vecherna (Crvenonoga) Vetrushka	P
19.	*Falco subbuteo*	Hobby	Sokol Lastovichar	B
20.	*Falco peregrinus*	Peregrine Falkon	Siv Sokol	R
Order Galliformes				
Family Tetraonidae (Grouse); (Tetrebi)				
Family Phasianidae (Partridges, Quails, Pheasants); (Erebici, Potpoloshki, Fazani))				
21.	*Perdix perdix*	Common Partridge	Polska Erebica	R
Order Gruiformes				
Family Rallidae (Rails); (Blatni Kokoshki)				
22.	*Gallinula chloropus*	Moorhen	Zelenonoga Blatna Kokoshka	B
23.	*Fulica atra*	Common Coot	Liska	R
Family Gruidae (Cranes); (Zheravi)				
Family Otididae (Bustards); (Droplji)				
Order Charadriiformes				
Family Haematopodidae (Oystercatchers); (Shkolkojadi Mochvarki)				
Family Recurvirostridae (Avocets and Stilts); (Sabjarki)				
Family Burhinidae (Stone Curlews); (Churulinci)				
Family Glareolidae (Pratincoles and Coursers); (Blatni Lastovici)				
Family Charadriidae (Plovers); (Dozhdosvirci)				
Family Scolopacidae (Typical Waders), (Vistinski Mochvarki)				
Family Stercorariidae (Skuas); (Moreletnici)				
Family Laridae (Gulls); (Galebi)				
Family Sternidae (Terns); (Vrtimushki)				
Order Columbiformes				
Family Columbidae (Pigeons); (Gulabi, Grlici i Gugutki)				
24.	*Columba livia*	Rock Dove	Div Gulab	R
25.	*Columba palumbus*	Wood Pigeon	Gulab Grivnesh	R
26.	*Streptopelia decaocto*	Collared Dove	Gugutka	R
27.	*Streptopelia turtur*	Turtle Dove	Grlica	B
Order Cuculiformes				
Family Cuculidae (Cuckoos); (Kukavici)				
28.	*Cuculus canorus*	Eurasian Cuckoo	Obicna Kukavica	B
Order Strigiformes				
Family Tytonidae (Barn Owls); (Zabuleni Utki)				

Family Strigidae (Typical Owls); (Utki Vistinski)				
29.	*Otus scops*	Scops Owl	Kjuk	R (B)
30.	*Athene noctua*	Little Owl	Domashna Kukumjavka	R
Order Caprimulgiformes				
Family Caprimulgidae (Nightjars); (Nokjni Lastovici)				
Order Apodiformes				
Family Apodidae (Swifts); (Pishtarki)				
31.	*Apus apus*	Common Swift	Obichna Pishtarka	B
Order Coraciiformes				
Family Alcedinidae (Kingfishers); (Ribarchinja)				
Family Meropidae (Bee-eaters); (Pchelarki)				
32.	*Merops apiaster*	European Bee-eater	Pcelarka	B
Family Coraciidae (Rollers); (Smrdivrani)				
Family Upupidae (Hoopoes); (Pupunci)				
33.	*Upupa epops*	Hoopoe	Pupunec	B
Order Piciformes				
Family Picidae (Wrynecks, Woodpeckers); (Vrtivratki, Klukajdrvci)				
34.	*Picus viridis*	Green Woodpecker	Zelen Klukajdrvec	R
35.	*Dendrocopos major*	Great Spotted Woodpecker	Golem Sharen Klukajdrvec	R
36.	*Dendrocopos syriacus*	Syrian Woodpecker	Sirijski Sharen Klukajdrvec	R
Order Passeriformes				
Family Alaudidae (Larks); (Chuchuligi)				
37.	*Calandrella brachydactyla*	Hume's Short-toed Lark	Mala Chuchuliga	B
38.	*Lullula arborea*	Woodlark	Shumska Chuchuliga	R
39.	*Alauda arvensis*	Skylark	Polska Chuchuliga	R
Family Hirundinidae (Swallows and Martins); (Lastovici)				
40.	*Hirundo rustica*	Swallow	Selska Lastovica	B
41.	*Hirundo daurica*	Red-rumped Swallow	Crvenokrsta Lastovica	B
42.	*Delichon urbica*	House Martin	Gradska Lastovica	B
Family Motacillidae (Pipits, Wagtails); (Tresiopashki, Trepetlivki)				
43.	*Anthus campestris*	Tawny Pipit	Polska Trepetlivka	B
44.	*Motacilla alba*	Pied/White Wagtail	Mala (Bela) Tresiopashka	R
45.	*Motacilla flava*	Yellow/Blue-headed Wagtail	Zholta Tresiopashka	B
Family Bombycillidae (Waxwings and Hypocolius); (Svilarki)				
Family Cinclidae (Dippers); (Vodni Kosovi)				
46.	*Cinclus cinclus*	Common Dipper	Voden Kos	R
Family Troglodytidae (Wrens); (Palchinja)				
Family Prunellidae (Dunnocks); (Zavirachki)				
47.	*Prunella modularis*	European Dunnock	Sivogushesta Zavirachka	R
Family Turdidae (Thrushes, chats, Wheatears and Robins); (Drozdovi)				
48.	*Erithacus rubecula*	Robin	Crvenogushka	R
49.	*Luscinia megarhynchos*	Nightingale	Slavej	B
50.	*Phoenicurus ochruros*	Black Redstart	Planinska Crvenoopashka	R
51.	*Saxicola torquata*	Common Stonechat	Crnogushesto Livadarche	R (B)

52.	*Oenanthe oenanthe*	Eurasian Wheatear	Sivo Kamenjarche	B
53.	*Turdus merula*	Blackbird	Kos	R
Family Sylvidae (Warblers); (Grmusharki)				
54.	*Cettia cetti*	Cetti's Warbler	Svilarche	R
55.	*Acrocephalus scirpaceus*	Red Warbler	Obichno Trskarche	B
56.	*Sylvia cantillans*	Supalpine Warbler	Crvenogushesto Koprivarche	B
57.	*Sylvia atricapilla*	Blackcap	Crnoglavo Koprivarche	R (B)
58.	*Phylloscopus collybita*	Chiffchiff	Elov Pevec	R
59.	*Phylloscopus trochilus*	Willow Warbler	Brezov Pevec	P
Family Muscicapidae (Flycatchers); (Muvarchinja)				
60.	*Muscicapa striata*	Spotted Flycatcher	Pegavo Muvarche	B
61.	*Ficedula albicollis*	Collared Flycatcher	Beloshijesto Muvarche	B
Family Timaliidae (Babblers); (Mustakjesti Sipki)				
Family Aegithalidae (Long-tailed Tits); (Dolgoopashesti Sipki)				
Family Paridae (Tits); (Sipki Vistinski)				
62.	*Parus cristatus*	Crested Tit	Cuculesta Sipka	R
63.	*Parus caeruleus*	Blue Tit	Sina Sipka	R
64.	*Parus major*	Great Tit	Golema Sipka	R
Family Sittidae (Nuthatches); (Lazachki)				
65.	*Sitta europaea*	Common Nuthatch	Shumska Lazachka	R
Family Tichodromadidae (Wallcreepers); (Karpolazachki)				
Family Certhiidae (Treecreepers); (Drvolazachki)				
Family Remizidae (Penduline Tits); (Sipki Torbarki)				
Family Oriolidae (Orioles); (Zholni)				
66.	*Oriolus oriolus*	Golden Oriole	Zholna (Vuga)	B
Family Laniidae (Shrikes); (Svrachinja)				
67.	*Lanius collurio*	Red-backed Shrike	Crvenogrbo Svrache	B
68.	*Lanius minor*	Lesser Grey Shrike	Malo Sivo Svrache	B
69.	*Lanius excubitor*	Great Grey Shrike	Golemo Sivo Svrache	W
70.	*Lanius senator*	Woodchat Shrike	Crvenoglavo Svrache	B
Family Corvidae (Jays, Magpies, Crows); (Cavki, Vrani, Strachki, Gavrani, Galki)				
71.	*Garrulus glandarius*	Eurasian Jay	Sojka	R
72.	*Pica pica*	Magpie	Strachka	R
73.	*Corvus monedula*	Jackdaw	Chavka	R
74.	*Corvus corone cornix*	Carrion/Hooded Crow	Siva Vrana	R
75.	*Corvus corax*	Raven	Gavran	R
Family Sturnidae (Starlings); (Skolovranci)				
76.	*Sturnus vulgaris*	Common Starling	Obichen Skolovranec	R
Family Passeridae (Sparrows, Rock Sparrows, Snow Finches); (Vrapci, Vrapci Kamenjari, Snezhni Vrapchinja)				
77.	*Passer domesticus*	House Sparrow	Domashno Vrapche	R
78.	*Passer hispaniolensis*	Spanish Sparrow	Shpansko Vrapche	R
79.	*Passer montanus*	Tree Sparrow	Polsko Vrapche	R
Family Fringillidae (Finches); (Chinki)				
80.	*Fringilla coelebs*	Chaffinch	Bukova Chinka	R
81.	*Serinus serinus*	Serin	Zholtarche (Div Kanarinec)	R (B)

82.	*Carduelis chloris*	Greenfinch	Zelenushka	R (W)
83.	*Carduelis carduelis*	Goldfinch	Bilbilche; Kadnka (Shtiglic)	R
84.	*Carduelis cannabina*	Linnet	Konopljarche	R
85.	*Carduelis flammea*	Common Redpoll	Ogneno Konopljarche	W
86.	*Pyrrhula pyrrhula*	Bullfinch	Crvenushka (Zimovka)	R
87.	*Coccothraustes coccothraustes*	Hawfinch	Creshnarka (Debelokluna Chinka)	R
Family Emberizidae (Buntings); (Ovesarki)				
88.	*Emberiza citrinella*	Yellowhammer	Zholta Ovesarka	R
89.	*Emberiza cirlus*	Cirl Bunting	Zelenogushesta Ovesarka	R
90.	*Emberiza hortulana*	Ortolan Bunting	Gradinarska Ovesarka	B
91.	*Emberiza melanocephala*	Black-headed Bunting	Crnoglava Ovesarka	B
92.	*Miliaria calandra*	Corn Bunting	Siva (Golema) Ovesarka	R

R = Resident Species (species likely to occur all year round); B = Breeding Species (species occurs only during spring-summer season); W = Wintering Species (species normally occurs only in winter season); P = Passage Migrant Species (bird species that occurs on passage between breeding and wintering areas.

Annex 2: Bats (Summer Season Surveys)-2016

Annex 2.1. Dobromiri – Dolno Aglarci Monitoring Site (Line Transect): Raw data of Batlogger M recordings on foraging bats along line transect using moving vehicle (Summer Season Survey, 2016).

Nr.	Recording Code	Number of Calls	Peak Freq. (kHz)	Suggested species	% of certainty
1.	15050777	12	39.6	*Pipistrellus kuhlii*	64%
2.	15050778	12	38.5	*Pipistrellus kuhlii*	75%
3.	15050779	18	34.2	*Plecotus auritus*	60%
4.	15050780	18	37.6	*Pipistrellus nathusii*	81%
5.	15050781	9	39.6	*Myotis emarginatus*	58%
6.	15050782	8	37.8	*Pipistrellus kuhlii*	64%
7.	15050783	66	40.5	*Pipistrellus nathusii*	58%
8.	15050784	42	37.4	*Pipistrellus nathusii*	64%
9.	15050785	27	37.5	*Pipistrellus nathusii*	79%
10.	15050786	13	37.3	*Pipistrellus kuhlii*	60%
11.	15050787	7	33.7	*Hypsugo savii*	73%
12.	15050788	13	34.8	*Nyctalus noctula*	57%
13.	15050789	6	45.7	*Plecotus auritus*	66%
14.	15050790	11	40.0	*Pipistrellus nathusii*	76%
15.	15050791	7	37.3	*Myotis emarginatus*	61%
16.	15050792	9	42.3	*Plecotus auritus*	65%
17.	15050793	4	32.6	*Plecotus auritus*	63%
18.	15050794	10	32.9	*Hypsugo savii*	62%
19.	15050795	8	45.3	*Pipistrellus pipistrellus*	65%
20.	15050796	4	43.0	*Myotis emarginatus*	59%
21.	15050797	9	33.4	*Plecotus auritus*	57%
22.	15050798	2	24.6	No suggestions	
23.	15050799	32	24.9	*Nyctalus noctula*	35%
24.	15050800	16	40.5	*Pipistrellus kuhlii*	60%
25.	15050801	14	34.9	*Pipistrellus kuhlii*	69%
26.	15050802	18	33.2	*Plecotus auritus*	29%
27.	15050803	5	33.1	*Hypsugo savii*	71%
28.	15050804	3	33.8	*Hypsugo savii*	32%
29.	15050805	22	37.1	*Plecotus auritus*	34%
30.	15050806	9	37.2	*Pipistrellus kuhlii*	58%
31.	15050807	1	33.9	*Hypsugo savii*	28%
32.	15050808	26	25.3	*Nyctalus noctula*	67%
33.	15050809	7	45.0	*Myotis emarginatus*	49%
34.	15050810	15	27.5	*Nyctalus noctula*	65%
35.	15050811	19	43.7	*Pipistrellus pipistrellus*	34%
36.	15050812	13	31.3	*Nyctalus noctula*	64%
37.	15050813	2	34.3	*Hypsugo savii*	34%
38.	15050814	14	34.3	*Hypsugo savii*	73%
39.	15050815	16	40.3	*Pipistrellus kuhlii*	77%
40.	15050816	19	51.9	*Pipistrellus pygmaeus*	43%
41.	15050817	8	52.1	*Pipistrellus pygmaeus*	72%
42.	15050818	4	38.0	*Nyctalus noctula*	55%
43.	15050819	4	32.5	*Nyctalus noctula*	67%
44.	15050820	8	49.0	*Pipistrellus pipistrellus*	66%
45.	15050821	4	49.7	*Myotis emarginatus*	58%
46.	15050822	6	39.1	*Pipistrellus nathusii*	65%

47.	15050823	30	38.2	*Pipistrellus nathusii*	83%
48.	15050824	5	39.8	*Pipistrellus nathusii*	81%
49.	15050825	11	38.6	*Pipistrellus kuhlii*	74%
50.	15050826	10	39.9	*Pipistrellus kuhlii*	71%
51.	15050827	8	42.7	*Myotis emarginatus*	56%
52.	15050828	9	48.2	*Pipistrellus pipistrellus*	31%
53.	15050829	10	49.9	*Plecotus auritus*	54%
54.	15050830	22	39.1	*Pipistrellus nathusii*	80%
55.	15050831	6	43.8	*Plecotus auritus*	58%
56.	15050832	3	36.6	*Pipistrellus kuhlii*	38%
57.	15050833	8	37.5	*Pipistrellus kuhlii*	76%
58.	15050834	45	38.4	*Pipistrellus kuhlii*	73%
59.	15050835	14	39.9	*Pipistrellus kuhlii*	72%
60.	15050836	16	38.4	*Pipistrellus nathusii*	86%
61.	15050837	19	37.7	*Pipistrellus nathusii*	80%
62.	15050838	26	36.6	*Pipistrellus kuhlii*	73%
63.	15050839	19	37.1	*Pipistrellus kuhlii*	75%
64.	15050840	27	36.8	*Pipistrellus kuhlii*	72%
65.	15050841	23	40.3	*Pipistrellus nathusii*	69%
66.	15050842	20	38.2	*Pipistrellus nathusii*	74%
67.	15050843	20	37.7	*Pipistrellus kuhlii*	73%
68.	15050844	10	36.4	*Pipistrellus nathusii*	62%
69.	15050845	28	38.8	*Pipistrellus nathusii*	53%
70.	15050846	25	37.3	*Pipistrellus kuhlii*	83%
71.	15050847	13	36.0	*Pipistrellus nathusii*	73%
72.	15050848	9	40.3	*Pipistrellus kuhlii*	79%
73.	15050849	34	41.7	*Pipistrellus nathusii*	65%
74.	15050850	24	38.9	*Pipistrellus nathusii*	80%
75.	15050851	36	39.4	*Pipistrellus nathusii*	84%
76.	15050852	58	40.0	*Pipistrellus nathusii*	45%
77.	15050853	58	40.3	*Pipistrellus kuhlii*	68%
78.	15050854	16	38.3	*Pipistrellus nathusii*	76%
79.	15050855	33	38.5	*Pipistrellus nathusii*	54%
80.	15050856	18	40.9	*Pipistrellus nathusii*	78%
81.	15050857	179	45.1	*Pipistrellus pipistrellus*	39%
82.	15050858	28	35.9	*Hypsugo savii*	58%

Annex 2.2. Bitola Road Interchange – Kukurechani Monitoring Site (Line Transect): Raw data of Batlogger M recordings on foraging bats along line transect using moving vehicle (Summer Season Survey, 2016).

Nr.	Recording Code	Number of Calls	Peak Freq. (kHz)	Suggested species	% of certainty
1.	15050717	20	41.7	Pipistrellus kuhlii	61%
2.	15050718	11	27.0	Plecotus auritus	63%
3.	15050719	6	31.8	Plecotus auritus	63%
4.	15050720	17	36.2	Pipistrellus kuhlii	65%
5.	15050721	10	35.1	Nyctalus noctula	67%
6.	15050722	8	36.5	No suggestions	
7.	15050723	7	36.3	Pipistrellus kuhlii	47%
8.	15050724	10	32.4	Hypsugo savii	73%
9.	15050725	21	35.2	Hypsugo savii	40%

10.	15050726	14	35.2	Plecotus auritus	32%
11.	15050727	19	35.0	Plecotus auritus	30%
12.	15050728	5	32.3	Plecotus auritus	61%
13.	15050729	9	34.6	Hypsugo savii	71%
14.	15050730	12	35.3	Pipistrellus kuhlii	75%
15.	15050731	45	29.4	Plecotus auritus	45%
16.	15050732	20	33.6	Plecotus auritus	29%
17.	15050733	12	34.0	Plecotus auritus	59%
18.	15050734	9	34.0	Hypsugo savii	66%
19.	15050735	6	41.0	Pipistrellus kuhlii	66%
20.	15050736	13	34.5	Hypsugo savii	74%
21.	15050737	53	21.4	No suggestions	
22.	15050738	7	34.9	Pipistrellus kuhlii	79%
23.	15050739	7	31.3	Nyctalus noctula	66%
24.	15050740	58	35.6	Nyctalus noctula	36%
25.	15050741	41	38.1	Nyctalus noctula	38%
26.	15050742	21	33.3	Nyctalus noctula	60%
27.	15050743	4	31.1	Nyctalus noctula	67%
28.	15050744	3	32.1	No suggestions	
29.	15050745	9	34.1	Nyctalus noctula	62%
30.	15050746	9	26.9	Nyctalus noctula	64%
31.	15050747	5	31.3	Hypsugo savii	73%
32.	15050748	4	31.9	Hypsugo savii	72%
33.	15050749	17	39.6	Myotis bechsteinii	30%
34.	15050750	18	51.2	Plecotus auritus	35%
35.	15050751	19	33.3	Hypsugo savii	40%
36.	15050752	11	32.3	Hypsugo savii	68%
37.	15050753	6	36.2	Plecotus auritus	64%
38.	15050754	8	28.6	Plecotus auritus	57%
39.	15050755	18	31.9	Hypsugo savii	70%
40.	15050756	2	30.7	Hypsugo savii	25%
41.	15050757	18	35.6	Myotis emarginatus	35%
42.	15050758	3	17.8	Nyctalus lasiopterus	34%
43.	15050759	12	29.9	Nyctalus noctula	47%
44.	15050760	36	23.1	Nyctalus noctula	65%
45.	15050761	5	45.8	Pipistrellus pipistrellus	60%
46.	15050762	3	54.8	No suggestions	
47.	15050763	3	38.2	Plecotus auritus	26%
48.	15050764	3	39.5	Plecotus auritus	26%
49.	15050765	9	33.6	Hypsugo savii	66%
50.	15050766	12	34.5	Nyctalus noctula	60%
51.	15050767	2	33.1	Nyctalus noctula	28%
52.	15050768	22	41.1	Pipistrellus nathusii	79%
53.	15050769	9	41.0	Pipistrellus kuhlii	75%
54.	15050770	23	45.7	Pipistrellus kuhlii	55%
55.	15050771	27	38.6	Pipistrellus kuhlii	62%
56.	15050772	14	40.2	Pipistrellus kuhlii	73%
57.	15050773	15	42.6	Plecotus auritus	61%
58.	15050774	3	30.5	Nyctalus noctula	31%
59.	15050775	6	29.8	Plecotus auritus	59%
60.	15050776	7	44.9	Pipistrellus pipistrellus	63%

Annex 2.3. Ramna – Bitola-Resen Road Interchange Monitoring Site (Line Transect): Raw data of Batlogger M recordings on foraging bats along line transect using moving vehicle (Summer Season Survey, 2016).

Nr.	Recording Code	Number of Calls	Peak Freq. (kHz)	Suggested species	% of certainty
1.	15050565	7	26.5	*Nyctalus leisleri*	68%
2.	15050566	8	25.7	*Nyctalus noctula*	77%
3.	15050567	6	24.2	*Nyctalus leisleri*	71%
4.	15050568	30	25.6	*Nyctalus leisleri*	77%
5.	15050569	3	37.1	*Pipistrellus kuhlii*	40%
6.	15050570	11	37.0	*Pipistrellus kuhlii*	79%
7.	15050571	8	40.1	*Pipistrellus kuhlii*	61%
8.	15050572	59	52.8	*Pipistrellus pygmaeus*	54%
9.	15050573	9	45.6	*Plecotus auritus*	54%
10.	15050574	47	52.5	*Pipistrellus pygmaeus*	67%
11.	15050575	9	53.3	*Pipistrellus pygmaeus*	72%
12.	15050576	24	52.3	*Miniopterus schreibersii*	75%
13.	15050577	19	44.6	*Pipistrellus pipistrellus*	73%
14.	15050578	3	23.1	*Nyctalus noctula*	41%
15.	15050579	10	38.2	*Pipistrellus kuhlii*	64%
16.	15050580	11	37.9	*Nyctalus noctula*	58%
17.	15050581	31	34.1	*Hypsugo savii*	79%
18.	15050582	9	28.1	*Nyctalus noctula*	66%
19.	15050583	10	39.1	*Pipistrellus kuhlii*	79%
20.	15050584	8	36.8	*Pipistrellus kuhlii*	65%
21.	15050585	10	60.9	*Myotis emarginatus*	59%
22.	15050586	23	37.5	*Pipistrellus kuhlii*	53%
23.	15050587	22	39.7	*Pipistrellus nathusii*	79%
24.	15050588	33	38.3	*Pipistrellus nathusii*	67%
25.	15050589	2	35.6	*Pipistrellus kuhlii*	33%
26.	15050590	2	40.6	No suggestions	-
27.	15050591	12	36.1	*Hypsugo savii*	82%
28.	15050592	17	34.2	*Hypsugo savii*	82%
29.	15050593	20	32.3	*Nyctalus noctula*	57%
30.	15050594	6	41.5	*Plecotus auritus*	61%
31.	15050595	13	42.2	*Pipistrellus pipistrellus*	80%
32.	15050596	Not recorded calls			
33.	15050597	7	41.9	*Pipistrellus kuhlii*	62%
34.	15050598	1	37.5	*Pipistrellus kuhlii*	29%
35.	15050599	10	35.5	*Pipistrellus kuhlii*	63%
36.	15050600	60	52.1	*Pipistrellus pygmaeus*	65%
37.	15050601	17	52.0	*Pipistrellus pygmaeus*	78%
38.	15050602	22	37.9	*Pipistrellus nathusii*	81%
39.	15050603	50	38.1	*Pipistrellus kuhlii*	69%
40.	15050604	126	38.0	*Pipistrellus nathusii*	54%
41.	15050605	23	39.1	*Pipistrellus nathusii*	82%
42.	15050606	17	39.7	*Pipistrellus nathusii*	76%
43.	15050607	371	39.4	*Pipistrellus nathusii*	28%
44.	15050608	13	36.1	*Hypsugo savii*	80%
45.	15050609	24	40.4	*Pipistrellus nathusii*	82%
46.	15050610	28	36.7	*Pipistrellus nathusii*	80%
47.	15050611	37	36.4	*Hypsugo savii*	71%
48.	15050612	43	36.7	*Pipistrellus nathusii*	37%

49.	15050613	137	38.3	*Pipistrellus nathusii*	36%
50.	15050614	13	40.7	*Myotis bechsteinii*	51%
51.	15050615	11	44.2	*Pipistrellus pipistrellus*	68%
52.	15050616	114	40.3	No suggestions	-
53.	15050617	21	41.4	*Myotis emarginatus*	53%
54.	15050618	94	41.5	*Plecotus auritus*	51%
55.	15050619	124	39.7	*Pipistrellus nathusii*	53%
56.	15050620	11	42.1	*Pipistrellus kuhlii*	74%
57.	15050621	62	40.1	*Pipistrellus nathusii*	43%
58.	15050622	84	39.5	*Pipistrellus nathusii*	35%
59.	15050623	84	40.6	*Pipistrellus nathusii*	35%
60.	15050624	141	40.4	*Pipistrellus nathusii*	46%
61.	15050625	88	40.9	*Pipistrellus nathusii*	50%
62.	15050626	12	40.1	*Pipistrellus nathusii*	75%
63.	15050627	19	42.5	*Pipistrellus kuhlii*	66%
64.	15050628	93	40.0	*Plecotus auritus*	48%

Annex 2.4. Sopotsko – Bitola-Resen Road Intersection Monitoring Site (Line Transect): Raw data of Batlogger M recordings on foraging bats along line transect using moving vehicle (Summer Season Survey, 2016).

Nr.	Recording Code	Number of Calls	Peak Freq. (kHz)	Suggested species	% of certainty
1.	15050629	10	41.0	*Pipistrellus nathusii*	64%
2.	15050630	13	31.1	*Nyctalus noctula*	67%
3.	15050631	14	29.7	*Nyctalus noctula*	59%
4.	15050632	18	35.8	*Pipistrellus kuhlii*	62%
5.	15050633	28	40.2	*Pipistrellus kuhlii*	38%
6.	15050634	22	41.1	*Plecotus auritus*	74%
7.	15050635	5	32.7	*Nyctalus noctula*	67%
8.	15050636	64	39.1	*Pipistrellus kuhlii*	59%
9.	15050637	34	56.8	*Myotis emarginatus*	71%
10.	15050638	20	58.8	*Myotis emarginatus*	73%
11.	15050639	16	38.0	*Pipistrellus kuhlii*	78%
12.	15050640	24	39.6	*Plecotus auritus*	72%
13.	15050641	13	58.2	*Myotis emarginatus*	78%
14.	15050642	20	39.1	*Pipistrellus kuhlii*	38%
15.	15050643	13	40.2	*Pipistrellus kuhlii*	63%
16.	15050644	11	19.9	*Nyctalus lasiopterus*	74%
17.	15050645	28	38.9	*Pipistrellus nathusii*	53%
18.	15050646	22	46.3	*Plecotus auritus*	55%
19.	15050647	64	39.8	*Pipistrellus nathusii*	62%
20.	15050648	12	31.7	*Nyctalus noctula*	57%
21.	15050649	29	43.3	*Myotis capaccinii*	66%
22.	15050650	28	43.1	*Pipistrellus kuhlii*	68%

Annex 2.5. Bitola-Resen Road Intersection – Leva Reka Village Monitoring Site (Line Transect): Raw data of Batlogger M recordings on foraging bats along line transect using moving vehicle (Summer Season Survey, 2016).

Nr.	Recording Code	Number of Calls	Peak Freq. (kHz)	Suggested species	% of certainty
1.	15050651	3	50.3	*Pipistrellus pipistrellus*	38%
2.	15050652	6	49.1	*Pipistrellus pipistrellus*	77%
3.	15050653	9	50.0	*Pipistrellus pygmaeus*	74%
4.	15050654	18	42.5	*Pipistrellus kuhlii*	78%
5.	15050655	3	43.6	*Pipistrellus pipistrellus*	31%
6.	15050656	9	36.2	*Pipistrellus nathusii*	81%
7.	15050657	42	37.5	*Pipistrellus nathusii*	41%
8.	15050658	12	34.2	*Hypsugo savii*	61%
9.	15050659	9	39.5	*Pipistrellus kuhlii*	77%
10.	15050660	6	35.2	*Hypsugo savii*	78%
11.	15050661	8	38.9	*Pipistrellus kuhlii*	65%
12.	15050662	15	41.6	*Plecotus auritus*	55%
13.	15050663	10	44.0	*Plecotus auritus*	68%
14.	15050664	10	46.8	*Pipistrellus pipistrellus*	64%
15.	15050665	13	46.8	*Pipistrellus pipistrellus*	72%
16.	15050666	4	45.2	*Pipistrellus pipistrellus*	59%
17.	15050667	4	46.5	*Pipistrellus pipistrellus*	80%
18.	15050668	17	35.1	*Hypsugo savii*	77%
19.	15050669	14	27.7	*Nyctalus noctula*	65%
20.	15050670	14	49.6	*Pipistrellus pipistrellus*	85%
21.	15050671	8	41.8	*Pipistrellus kuhlii*	64%
22.	15050672	11	31.9	*Nyctalus noctula*	68%
23.	15050673	1	36.0	*Pipistrellus kuhlii*	34%
24.	15050674	5	47.8	*Pipistrellus pipistrellus*	57%
25.	15050675	10	37.0	*Pipistrellus kuhlii*	73%
26.	15050676	5	41.0	*Myotis bechsteinii*	52%
27.	15050677	7	35.1	*Nyctalus noctula*	59%
28.	15050678	40	37.0	*Pipistrellus kuhlii*	56%

Annex 2.6. Prentov Most Road Intersection – Rock Quarry Monitoring Site (Line Transect): Raw data of Batlogger M recordings on foraging bats along line transect using moving vehicle (Summer Season Survey, 2016).

Nr.	Recording Code	Number of Calls	Peak Freq. (kHz)	Suggested species	% of certainty
1.	15050679	14	35.5	*Pipistrellus kuhlii*	65%
2.	15050680	13	38.7	*Pipistrellus kuhlii*	83%
3.	15050681	9	24.8	*Vespertilio murinus*	73%
4.	15050682	16	29.4	*Nyctalus noctula*	57%
5.	15050683	8	29.2	*Nyctalus noctula*	64%
6.	15050684	19	49.6	*Myotis emarginatus*	67%
7.	15050685	9	38.7	*Plecotus auritus*	62%
8.	15050686	26	49.7	*Plecotus auritus*	62%
9.	15050687	4	42.2	*Plecotus auritus*	71%
10.	15050688	6	50.7	*Pipistrellus pipistrellus*	63%
11.	15050689	22	40.8	*Nyctalus noctula*	47%
12.	15050690	23	35.8	*Pipistrellus kuhlii*	52%
13.	15050691	5	49.4	*Pipistrellus pipistrellus*	64%

14.	15050692	12	40.5	*Plecotus auritus*	55%
15.	15050693	13	35.4	*Pipistrellus kuhlii*	33%
16.	15050694	12	28.2	*Nyctalus noctula*	67%
17.	15050695	13	34.8	*Hypsugo savii*	79%
18.	15050696	12	39.2	*Pipistrellus nathusii*	75%
19.	15050697	80	39.5	*Pipistrellus nathusii*	59%
20.	15050698	33	41.2	*Nyctalus noctula*	48%
21.	15050699	7	40.9	*Pipistrellus kuhlii*	70%
22.	15050700	19	37.7	*Nyctalus noctula*	57%
23.	15050701	2	36.0	*Pipistrellus kuhlii*	38%
24.	15050702	18	34.5	*Nyctalus noctula*	57%
25.	15050703	16	51.5	*Miniopterus schreibersii*	33%
26.	15050704	4	48.2	*Plecotus auritus*	59%
27.	15050705	3	38.6	No suggestions	
28.	15050706	57	48.0	*Pipistrellus pipistrellus*	43%
29.	15050707	13	44.4	*Pipistrellus pipistrellus*	63%
30.	15050708	19	55.8	*Pipistrellus pygmaeus*	67%
31.	15050709	21	50.9	*Pipistrellus pipistrellus*	58%
32.	15050710	6	49.4	*Plecotus auritus*	63%
33.	15050711	42	56.5	*Miniopterus schreibersii*	36%
34.	15050712	12	49.9	*Pipistrellus pipistrellus*	70%
35.	15050713	19	54.1	*Miniopterus schreibersii*	76%
36.	15050714	3	32.5	*Nyctalus noctula*	25%
37.	15050715	1	25.9	*Nyctalus leisleri*	34%
38.	15050716	5	37.8	*Myotis emarginatus*	56%

Annex 2.7. Livoishta-Livoishta Monitoring Site (Line Transect): Raw data of Batlogger M recordings on foraging bats along line transect (Summer Season Survey, 2016).

Nr.	Recording Code	Number of Calls	Peak Freq. (kHz)	Suggested species	% of certainty
1.	15050050	8	42.8	*Plecotus auritus*	56%
2.	15050051	19	48.2	*Pipistrellus pipistrellus*	74 %
3.	15050052	8	42.8	*Pipistrellus pipistrellus*	66 %
4.	15050053	16	44.7	*Pipistrellus pipistrellus*	66 %
5.	15050054	16	34.2	*Myotis emarginatus*	52 %
6.	15050055	9	36.8	*Pipistrellus kuhlii*	64 %
7.	15050056	14	43.4	*Pipistrellus pipistrellus*	59 %
8.	15050057	9	42.4	*Pipistrellus pipistrellus*	51 %
9.	15050058	8	40.3	*Plecotus auritus*	55 %
10.	15050059	5	30.6	*Nyctalus noctula*	64 %
11.	15050060	13	43.4	*Plecotus auritus*	57 %
12.	15050061	7	49.0	*Plecotus auritus*	55 %
13.	15050062	12	38.7	*Nyctalus noctula*	63 %
14.	15050063	11	37.0	*Nyctalus noctula*	54 %
15.	15050064	27	48.6	*Pipistrellus pipistrellus*	47 %

Annex 2.8. Livoishta-Trebenishta Monitoring Site (Line Transect): Raw data of Batlogger M recordings on foraging bats along line transect (Summer Season Survey, 2016).

Nr.	Recording Code	Number of Calls	Peak Freq. (kHz)	Suggested species	% of certainty
1.	15050073	49	46.1	*Pipistrellus pipistrellus*	47%
2.	15050074	17	26.1	*Nyctalus noctula*	70%
3.	15050075	47	40.9	*Pipistrellus kuhlii*	65%
4.	15050076	10	43.5	*Pipistrellus pipistrellus*	62%
5.	15050077	28	44.9	*Pipistrellus pipistrellus*	60%
6.	15050078	12	38.1	*Myotis emerginatus*	49%
7.	15050079	5	31.6	*Plecotus auritus*	66%
8.	15050080	29	39.8	*Pipistrellus kuhlii*	59%
9.	15050081	39	42.3	*Plecotus auritus*	60%
10.	15050082	36	37.6	*Pipistrellus kuhlii*	62%
11.	15050083	6	32.4	*Nyctalus noctula*	66%
12.	15050084	12	43.1	*Plecotus auritus*	55%
13.	15050085	33	44.6	*Pipistrellus pipistrellus*	58%
14.	15050086	11	46.9	*Myotis emerginatus*	70%
15.	15050087	10	41.7	*Pipistrellus kuhlii*	58%
16.	15050088	13	34.6	*Plecotus auritus*	62%
17.	15050089	6	43.6	*Pipistrellus kuhlii*	60%
18.	15050090	5	46.6	*Plecotus auritus*	65%
19.	15050091	3	50.4	*Miniopterus schreibersii*	32%
20.	15050092	6	50.5	*Pipistrellus pipistrellus*	78%
21.	15050093	6	51.5	*Miniopterus schreibersii*	77%
22.	15050094	13	36.4	*Pipistrellus kuhlii*	72%
23.	15050095	8	36.8	*Pipistrellus nathusii*	79%
24.	15050096	21	40.5	*Myotis bechsteinii*	52%
25.	15050097	11	40.1	*Pipistrellus kuhlii*	66%
26.	15050098	9	43.5	*Pipistrellus kuhlii*	57%
27.	15050099	4	39.7	*Pipistrellus kuhlii*	78%
28.	15050100	29	43.7	*Myotis bechsteinii*	69%
29.	15050101	18	50.3	*Pipistrellus pipistrellus*	85%
30.	15050102	20	37.8	*Pipistrellus kuhlii*	77%
31.	15050103	14	41.9	*Pipistrellus pipistrellus*	56%
32.	15050104	12	41.8	*Pipistrellus kuhlii*	57%
33.	15050105	16	39.2	*Pipistrellus kuhlii*	76%
34.	15050106	36	46.7	*Pipistrellus pipistrellus*	57%
35.	15050107	26	52.9	*Miniopterus schreibersii*	71%
36.	15050108	9	43.8	*Pipistrellus pipistrellus*	67%
37.	15050109	19	38.4	*Pipistrellus nathusii*	69%
38.	15050110	14	38.2	*Pipistrellus kuhlii*	82%
39.	15050111	5	45.5	*Pipistrellus pipistrellus*	73%
40.	15050112	15	38.3	*Pipistrellus kuhlii*	82%
41.	15050113	15	36.4	*Myotis bechsteinii*	55%
42.	15050114	8	34.8	*Plecotus auritus*	66%
43.	15050115	19	36.6	*Nyctalus noctula*	56%
44.	15050116	17	31.3	*Plecotus auritus*	52%
45.	15050117	17	35.0	*Pipistrellus nathusii*	59%
46.	15050118	61	42.0	*Pipistrellus kuhlii*	50%
47.	15050119	20	44.7	*Pipistrellus pipistrellus*	77%
48.	15050120	16	42.4	*Pipistrellus pipistrellus*	63%
49.	15050121	63	42.7	*Pipistrellus pipistrellus*	43%

50.	15050122	8	50.0	*Myotis emerginatus*	55%
51.	15050123	40	41.8	*Plecotus auritus*	62%
52.	15050124	50	38.4	*Plecotus auritus*	33%
53.	15050125	9	43.5	*Pipistrellus pipistrellus*	64%
54.	15050126	17	46.0	*Pipistrellus pipistrellus*	73%
55.	15050127	70	44.1	*Plecotus auritus*	43%
56.	15050128	44	45.2	*Pipistrellus pipistrellus*	47%
57.	15050129	11	48.6	*Pipistrellus pipistrellus*	69%
58.	15050130	20	46.2	*Plecotus auritus*	62%
59.	15050131	28	43.9	*Pipistrellus pipistrellus*	64%
60.	15050132	61	47.2	*Pipistrellus pipistrellus*	56%
61.	15050133	47	44.6	*Pipistrellus pipistrellus*	59%
62.	15050134	11	42.4	*Plecotus auritus*	59%
63.	15050135	9	47.0	*Pipistrellus pipistrellus*	63%
64.	15050136	34	42.7	*Plecotus auritus*	57%
65.	15050137	14	43.6	*Pipistrellus pipistrellus*	62%
66.	15050138	10	39.3	*Myotis bechsteinii*	59%
67.	15050139	14	40.4	*Plecotus auritus*	64%
68.	15050140	67	39.0	*Pipistrellus kuhlii*	35%
69.	15050141	18	30.7	*Nyctalus noctula*	56%
70.	15050142	7	42.9	*Plecotus auritus*	58%
71.	15050143	46	45.7	*Pipistrellus pipistrellus*	44%
72.	15050144	14	41.8	*Plecotus auritus*	48%
73.	15050145	20	41.8	*Plecotus auritus*	64%
74.	15050146	22	43.9	*Pipistrellus pipistrellus*	75%
75.	15050147	27	39.3	*Pipistrellus nathusii*	50%
76.	15050148	16	36.4	*Pipistrellus kuhlii*	60%
77.	15050149	13	41.9	*Pipistrellus kuhlii*	62%
78.	15050150	5	42.8	*Pipistrellus kuhlii*	78%
79.	15050151	108	44.2	*Pipistrellus pipistrellus*	47%
80.	15050152	26	44.1	*Pipistrellus pipistrellus*	63%
81.	15050153	8	38.8	*Plecotus auritus*	61%
82.	15050154	66	45.5	*Pipistrellus pipistrellus*	55%
83.	15050155	18	45.0	*Pipistrellus pipistrellus*	58%
84.	15050156	8	42.0	*Plecotus auritus*	64%
85.	15050157	23	43.7	*Pipistrellus pipistrellus*	70%
86.	15050158	35	43.2	*Pipistrellus pipistrellus*	58%
87.	15050159	46	44.2	*Pipistrellus pipistrellus*	50%
88.	15050160	26	40.1	*Plecotus auritus*	58%
89.	15050161	14	35.6	*Plecotus auritus*	61%
90.	15050162	12	30.1	*Plecotus auritus*	63%
91.	15050163	76	43.8	No suggestions	-
92.	15050164	104	44.9	*Pipistrellus pipistrellus*	30%
93.	15050165	20	43.7	*Pipistrellus pipistrellus*	75%
94.	15050166	30	46.4	*Pipistrellus pipistrellus*	63%
95.	15050167	22	40.3	*Pipistrellus kuhlii*	50%
96.	15050168	23	43.8	*Pipistrellus pipistrellus*	60%
97.	15050169	29	42.3	*Pipistrellus pipistrellus*	64%
98.	15050170	8	44.9	*Plecotus auritus*	64%
99.	15050171	9	31.1	*Nyctalus noctula*	65%
100.	15050172	34	35.3	*Hypsugo savii*	61%
101.	15050173	31	36.8	*Pipistrellus kuhlii*	54%
102.	15050174	17	35.6	*Pipistrellus kuhlii*	69%

103.	15050175	19	34.2	*Hypsugo savii*	57%
104.	15050176	23	34.0	*Nyctalus noctula*	63%
105.	15050177	15	33.4	*Nyctalus noctula*	64%
106.	15050178	22	41.2	*Plecotus auritus*	52%
107.	15050179	6	45.0	*Plecotus auritus*	66%
108.	15050180	20	32.6	*Plecotus auritus*	56%
109.	15050181	24	40.3	*Pipistrellus kuhlii*	62%
110.	15050182	15	38.5	*Plecotus auritus*	61%
111.	15050183	22	32.1	*Nyctalus noctula*	61%
112.	15050184	7	40.2	*Pipistrellus kuhlii*	63%
113.	15050185	15	38.9	*Nyctalus noctula*	57%
114.	15050186	17	35.4	*Nyctalus noctula*	61%
115.	15050187	34	38.5	*Pipistrellus kuhlii*	71%
116.	15050188	26	39.5	*Nyctalus noctula*	56%
117.	15050189	18	46.6	*Pipistrellus pipistrellus*	58%
118.	15050190	15	35.0	*Nyctalus noctula*	64%
119.	15050191	15	34.9	*Nyctalus noctula*	66%
120.	15050192	8	36.2	*Pipistrellus kuhlii*	79%
121.	15050193	24	37.4	*Plecotus auritus*	59%
122.	15050194	37	39.2	*Pipistrellus kuhlii*	73%
123.	15050195	20	40.9	*Pipistrellus nathusii*	53%
124.	15050196	20	40.5	*Pipistrellus kuhlii*	63%
125.	15050197	14	42.9	*Pipistrellus pipistrellus*	62%
126.	15050198	6	39.9	*Pipistrellus kuhlii*	72%
127.	15050199	28	42.2	*Pipistrellus kuhlii*	66%
128.	15050200	45	41.0	*Pipistrellus kuhlii*	45%
129.	15050201	20	37.0	*Pipistrellus kuhlii*	81%
130.	15050202	17	38.6	*Pipistrellus kuhlii*	65%
131.	15050203	19	41.4	*Pipistrellus kuhlii*	74%
132.	15050204	19	43.2	*Pipistrellus pipistrellus*	71%
133.	15050205	20	34.1	*Nyctalus noctula*	61%
134.	15050206	45	38.2	*Pipistrellus nathusii*	55%
135.	15050207	22	39.0	*Pipistrellus nathusii*	77%
136.	15050208	13	35.8	*Pipistrellus kuhlii*	62%
137.	15050209	15	38.4	*Pipistrellus nathusii*	83%
138.	15050210	12	42.3	*Pipistrellus kuhlii*	80%
139.	15050211	17	39.0	*Plecotus auritus*	62%
140.	15050212	27	38.5	*Pipistrellus kuhlii*	75%
141.	15050213	14	42.3	*Pipistrellus kuhlii*	65%
142.	15050214	21	40.9	*Pipistrellus kuhlii*	51%
143.	15050215	16	40.4	*Pipistrellus kuhlii*	72%
144.	15050216	24	41.3	*Pipistrellus kuhlii*	67%
145.	15050217	38	42.0	*Pipistrellus kuhlii*	56%
146.	15050218	23	40.8	*Pipistrellus kuhlii*	75%
147.	15050219	21	39.8	*Pipistrellus kuhlii*	66%
148.	15050220	8	37.6	*Pipistrellus kuhlii*	79%

Annex 2.9. Moroishta Monitoring Site (Point Count): Raw data of Batlogger M recordings on foraging bats (Summer Season Survey, 2016).

Nr.	Recording Code	Number of Calls	Peak Freq. (kHz)	Suggested species	% of certainty
1.	15050221	11	52.9	*Miniopterus schreibersii*	71%
2.	15050222	5	29.2	*Plecotus auritus*	60%
3.	15050223	10	43.4	*Myotis emerginatus*	54%
4.	15050224	8	38.0	*Myotis emerginatus*	53%
5.	15050225	14	37.6	*Myotis emerginatus*	60%
6.	15050226	14	42.2	*Pipistrellus pipistrellus*	56%
7.	15050227	23	48.3	*Pipistrellus pipistrellus*	54%
8.	15050228	36	59.8	*Myotis emerginatus*	69%
9.	15050229	12	51.1	*Pipistrellus pipistrellus*	64%
10.	15050230	5	27.7	*Nyctalus noctula*	58%
11.	15050231	8	50.5	*Plecotus auritus*	66%
12.	15050232	6	41.8	*Plecotus auritus*	67%
13.	15050233	32	48.4	*Plecotus auritus*	57%
14.	15050234	4	52.3	*Pipistrellus pipistrellus*	72%
15.	15050235	16	48.5	*Plecotus auritus*	56%
16.	15050236	11	48.7	*Pipistrellus pipistrellus*	66%
17.	15050237	37	58.1	*Pipistrellus pygmaeus*	38%
18.	15050238	12	47.1	*Pipistrellus pipistrellus*	60%
19.	15050239	7	31.9	*Nyctalus noctula*	63%
20.	15050240	6	27.9	*Nyctalus noctula*	63%
21.	15050241	12	45.5	*Plecotus auritus*	57%
22.	15050242	19	37.6	*Myotis bechsteinii*	53%
23.	15050243	3	38.6	*Myotis emerginatus*	62%
24.	15050244	27	44.3	*Pipistrellus pipistrellus*	72%
25.	15050245	53	40.7	*Pipistrellus kuhlii*	62%
26.	15050246	61	55.9	*Pipistrellus pygmaeus*	49%
27.	15050247	47	40.3	No suggestions	-
28.	15050248	10	39.5	*Plecotus auritus*	54%
29.	15050249	16	45.1	*Pipistrellus pipistrellus*	59%
30.	15050250	13	41.0	*Myotis bechsteinii*	59%
31.	15050251	20	45.8	*Myotis bechsteinii*	58%
32.	15050252	11	34.8	*Nyctalus noctula*	58%
33.	15050253	26	44.0	*Plecotus auritus*	56%
34.	15050254	14	42.4	*Plecotus auritus*	56%
35.	15050255	30	42.5	*Plecotus auritus*	66%
36.	15050256	7	52.8	*Miniopterus schreibersii*	69%
37.	15050257	11	51.6	*Pipistrellus pygmaeus*	76%
38.	15050258	11	30.9	*Nyctalus noctula*	56%
39.	15050259	34	42.2	*Pipistrellus kuhlii*	73%
40.	15050260	11	44.4	*Myotis bechsteinii*	70%
41.	15050261	9	44.2	*Myotis bechsteinii*	68%
42.	15050262	30	40.5	*Plecotus auritus*	59%
43.	15050263	13	36.0	*Plecotus auritus*	62%
44.	15050264	31	44.3	*Myotis bechsteinii*	65%
45.	15050265	60	44.4	*Plecotus auritus*	48%
46.	15050266	21	44.0	*Pipistrellus kuhlii*	67%
47.	15050267	39	44.2	*Plecotus auritus*	65%
48.	15050268	14	47.9	*Plecotus auritus*	64%
49.	15050269	14	48.1	*Plecotus auritus*	65%

50.	15050270	19	49.2	*Pipistrellus pipistrellus*	62%
51.	15050271	8	49.3	*Pipistrellus pipistrellus*	62%
52.	15050272	13	44.1	*Plecotus auritus*	66%
53.	15050273	28	35.7	*Myotis blythii*	49%
54.	15050274	23	48.6	*Plecotus auritus*	56%
55.	15050275	16	48.1	*Myotis emerginatus*	66%
56.	15050276	13	46.6	*Plecotus auritus*	61%
57.	15050277	27	46.8	*Pipistrellus pipistrellus*	59%
58.	15050278	7	49.3	*Myotis emerginatus*	71%
59.	15050279	9	49.2	*Pipistrellus pipistrellus*	76%
60.	15050280	14	46.3	*Pipistrellus pipistrellus*	63%
61.	15050281	21	47.1	*Plecotus auritus*	57%
62.	15050282	14	48.1	*Plecotus auritus*	61%
63.	15050283	7	42.0	*Myotis bechsteinii*	64%
64.	15050284	32	47.4	*Pipistrellus pipistrellus*	68%
65.	15050285	7	45.1	*Pipistrellus pipistrellus*	66%
66.	15050286	30	47.2	*Pipistrellus pipistrellus*	57%
67.	15050287	11	48.8	*Pipistrellus pipistrellus*	61%
68.	15050288	16	48.9	*Plecotus auritus*	59%
69.	15050289	11	46.6	*Plecotus auritus*	61%
70.	15050290	9	50.7	*Pipistrellus pipistrellus*	74%
71.	15050291	5	47.8	*Pipistrellus pipistrellus*	76%
72.	15050292	7	43.6	*Plecotus auritus*	61%
73.	15050293	6	49.4	*Pipistrellus pipistrellus*	70%
74.	15050294	3	24.7	*Nyctalus leisleri*	37%
75.	15050295	18	35.1	*Pipistrellus kuhlii*	61%
76.	15050296	13	45.2	*Pipistrellus pipistrellus*	66%
77.	15050297	10	45.7	*Myotis bechsteinii*	70%
78.	15050298	19	44.0	*Plecotus auritus*	63%
79.	15050299	20	43.9	*Plecotus auritus*	63%
80.	15050300	22	45.8	*Plecotus auritus*	60%
81.	15050301	77	49.0	*Plecotus auritus*	46%
82.	15050302	18	42.4	*Plecotus auritus*	72%
83.	15050303	27	47.9	*Pipistrellus pipistrellus*	64%
84.	15050304	13	47.9	*Pipistrellus pipistrellus*	68%
85.	15050305	33	48.3	*Plecotus auritus*	53%
86.	15050306	25	49.1	*Pipistrellus pipistrellus*	48%
87.	15050307	13	49.1	*Pipistrellus pipistrellus*	74%
88.	15050308	14	48.7	*Plecotus auritus*	56%
89.	15050309	23	46.0	*Plecotus auritus*	63%
90.	15050310	37	43.1	*Myotis capaccinii*	73%
91.	15050311	32	46.9	*Pipistrellus pipistrellus*	57%
92.	15050312	12	46.0	*Pipistrellus pipistrellus*	74%
93.	15050313	12	47.1	*Pipistrellus pipistrellus*	62%
94.	15050314	9	47.2	*Plecotus auritus*	64%
95.	15050315	9	46.7	*Pipistrellus pipistrellus*	72%
96.	15050316	8	44.7	*Myotis bechsteinii*	74%
97.	15050317	16	46.3	*Plecotus auritus*	52%
98.	15050318	15	46.7	*Pipistrellus pipistrellus*	63%
99.	15050319	45	43.6	*Plecotus auritus*	53%
100.	15050320	10	49.9	*Plecotus auritus*	65%
101.	15050321	127	47.7	No suggestions	-
102.	15050322	18	50.0	*Pipistrellus pipistrellus*	53%

103.	15050323	10	38.1	*Pipistrellus nathusii*	75%
104.	15050324	13	37.6	*Pipistrellus nathusii*	84%
105.	15050325	30	39.3	*Pipistrellus nathusii*	78%
106.	15050326	24	39.2	*Pipistrellus nathusii*	81%
107.	15050327	13	46.8	*Plecotus auritus*	55%
108.	15050328	32	45.3	*Myotis bechsteinii*	61%
109.	15050329	9	26.7	*Nyctalus leisleri*	76%
110.	15050330	13	36.4	*Pipistrellus nathusii*	71%
111.	15050331	25	43.8	*Plecotus auritus*	54%
112.	15050332	20	42.2	*Plecotus auritus*	60%
113.	15050333	11	49.7	*Plecotus auritus*	64%
114.	15050334	33	47.2	*Plecotus auritus*	59%
115.	15050335	13	44.3	*Pipistrellus pipistrellus*	70%

Annex 2.10. Vishni - Kjafasan State Border Crossing Monitoring Site (Line Transect): Raw data of Batlogger M recordings on foraging bats along line transect using moving vehicle (Summer Season Survey, 2016).

Nr.	Recording Code	Number of Calls	Peak Freq. (kHz)	Suggested species	% of certainty
1.	15050434	3	35.8	*Nyctalus noctula*	33%
2.	15050435	67	36.8	*Pipistrellus nathusii*	64%
3.	15050436	4	40.4	*Pipistrellus nathusii*	66%
4.	15050437	3	47.4	*Pipistrellus pipistrellus*	27%
5.	15050438	3	41.4	No suggestions	-
6.	15050439	12	74.2	*Rhinolophus ferrumeqineum*	56%
7.	15050440	11	41.6	*Plecotus auritus*	55%
8.	15050441	7	32.4	*Nyctalus noctula*	59%
9.	15050442	9	41.3	*Pipistrellus kuhlii*	52%
10.	15050443	10	40.7	*Plecotus auritus*	60%
11.	15050444	1	46.4	*Pipistrellus pipistrellus*	35%
12.	15050445	4	50.0	*Myotis emarginatus*	58%
13.	15050446	15	41.0	*Plecotus auritus*	48%
14.	15050447	5	39.6	*Myotis bechsteinii*	52%
15.	15050448	3	38.6	*Plecotus auritus*	26%
16.	15050449	3	48.2	*Pipistrellus pipistrellus*	36%
17.	15050450	7	41.3	*Plecotus auritus*	26%
18.	15050451	5	43.2	*Pipistrellus pipistrellus*	63%
19.	15050452	2	39.7	*Plecotus auritus*	26%
20.	15050453	4	48.8	*Plecotus auritus*	52%
21.	15050454	8	45.2	*Pipistrellus pipistrellus*	52%
22.	15050455	2	31.6	*Nyctalus noctula*	26%
23.	15050456	3	35.0	No suggestions	-
24.	15050457	17	32.6	*Myotis myotis*	51%
25.	15050458	7	33.8	*Nyctalus noctula*	65%
26.	15050459	33	40.2	*Pipistrellus kuhlii*	59%
27.	15050460	20	34.4	*Hypsugo savii*	68%
28.	15050461	11	47.6	*Plecotus auritus*	55%
29.	15050462	11	27.0	*Nyctalus noctula*	70%
30.	15050463	17	43.1	*Plecotus auritus*	65%
31.	15050464	10	47.7	*Pipistrellus pipistrellus*	68%
32.	15050465	14	44.9	*Pipistrellus pipistrellus*	60%
33.	15050466	11	35.8	*Plecotus auritus*	63%

34.	15050467	22	48.2	*Pipistrellus pipistrellus*	79%
35.	15050468	12	49.7	*Pipistrellus pipistrellus*	70%
36.	15050469	15	34.7	*Nyctalus noctula*	67%
37.	15050470	6	34.8	*Hypsugo savii*	79%
38.	15050471	11	38.5	*Pipistrellus kuhlii*	73%
39.	15050472	9	32.9	*Hypsugo savii*	71%
40.	15050473	5	41.5	*Plecotus auritus*	61%
41.	15050474	16	46.4	*Pipistrellus pipistrellus*	74%
42.	15050475	24	43.1	*Pipistrellus pipistrellus*	60%
43.	15050476	9	42.7	*Pipistrellus pipistrellus*	76%
44.	15050477	43	43.1	*Pipistrellus pipistrellus*	55%
45.	15050478	6	43.5	*Pipistrellus pipistrellus*	63%
46.	15050479	135	46.9	*Pipistrellus pipistrellus*	30%
47.	15050480	1	44.3	*Pipistrellus pipistrellus*	35%
48.	15050481	7	36.1	*Nyctalus noctula*	59%
49.	15050482	35	36.5	*Nyctalus noctula*	52%
50.	15050483	18	38.6	*Pipistrellus kuhlii*	77%
51.	15050484	8	37.0	*Plecotus auritus*	60%
52.	15050485	12	37.7	*Pipistrellus nathusii*	83%
53.	15050486	1	51.9	*Pipistrellus pygmaeus*	26%
54.	15050487	35	20.5	*Nyctalus noctula*	59%
55.	15050488	32	40.8	*Pipistrellus kuhlii*	70%
56.	15050489	2	42.4	No suggestions	-
57.	15050490	9	50.7	*Myotis emarginatus*	61%
58.	15050491	13	48.9	*Pipistrellus pipistrellus*	52%
59.	15050492	12	53.2	*Pipistrellus pygmaeus*	40%
60.	15050493	11	34.9	*Pipistrellus kuhlii*	78%
61.	15050494	18	36.8	*Nyctalus noctula*	53%
62.	15050495	8	34.1	*Hypsugo savii*	40%
63.	15050496	12	40.2	*Nyctalus noctula*	59%
64.	15050497	9	42.8	*Pipistrellus pipistrellus*	61%
65.	15050498	16	36.4	*Plecotus auritus*	59%
66.	15050499	19	34.3	*Hypsugo savii*	69%
67.	15050500	15	34.3	*Hypsugo savii*	72%
68.	15050501	10	46.4	*Pipistrellus pipistrellus*	63%
69.	15050502	12	42.1	*Myotis emarginatus*	51%
70.	15050503	2	27.9	No suggestions	-
71.	15050504	12	51.2	*Myotis emarginatus*	63%
72.	15050505	7	47.7	*Pipistrellus pipistrellus*	32%
73.	15050506	2	51.0	No suggestions	-
74.	15050507	23	34.8	*Pipistrellus kuhlii*	64%
75.	15050508	12	34.7	*Hypsugo savii*	67%
76.	15050509	16	36.3	*Pipistrellus kuhlii*	69%
77.	15050510	13	35.0	*Pipistrellus kuhlii*	71%
78.	15050511	6	34.8	*Myotis blythii*	62%
79.	15050512	15	38.8	*Plecotus auritus*	49%
80.	15050513	10	36.6	*Pipistrellus kuhlii*	74%
81.	15050514	21	37.0	*Pipistrellus kuhlii*	42%
82.	15050515	55	36.0	No suggestions	-
83.	15050516	37	35.4	*Pipistrellus kuhlii*	39%
84.	15050517	19	38.9	*Pipistrellus kuhlii*	74%
85.	15050518	6	39.0	*Nyctalus noctula*	65%
86.	15050519	7	34.5	*Hypsugo savii*	71%

87.	15050520	3	34.5	*Hypsugo savii*	32%
88.	15050521	22	36.9	*Pipistrellus kuhlii*	46%
89.	15050522	18	36.8	*Pipistrellus kuhlii*	48%
90.	15050523	12	37.0	*Pipistrellus kuhlii*	62%
91.	15050524	7	35.9	*Pipistrellus kuhlii*	74%
92.	15050525	14	35.9	*Pipistrellus kuhlii*	46%
93.	15050526	21	36.0	*Pipistrellus kuhlii*	63%
94.	15050527	19	36.0	*Pipistrellus nathusii*	68%
95.	15050528	18	38.3	*Pipistrellus kuhlii*	43%
96.	15050529	10	36.3	*Plecotus auritus*	61%
97.	15050530	10	38.7	*Pipistrellus kuhlii*	38%
98.	15050531	10	42.2	*Plecotus auritus*	58%
99.	15050532	27	34.3	*Hypsugo savii*	65%
100.	15050533	10	42.4	*Pipistrellus pipistrellus*	55%
101.	15050534	9	38.7	*Nyctalus noctula*	59%
102.	15050535	2	48.2	*Pipistrellus pipistrellus*	37%
103.	15050536	13	48.5	*Pipistrellus pipistrellus*	76%
104.	15050537	13	40.2	*Pipistrellus nathusii*	77%
105.	15050538	10	37.8	*Pipistrellus kuhlii*	66%
106.	15050539	6	47.0	*Pipistrellus pipistrellus*	69%
107.	15050540	6	34.7	*Plecotus auritus*	62%
108.	15050541	18	41.6	*Pipistrellus kuhlii*	64%
109.	15050542	10	37.5	*Pipistrellus kuhlii*	78%
110.	15050543	10	49.0	*Pipistrellus pipistrellus*	75%
111.	15050544	3	36.0	*Pipistrellus kuhlii*	39%
112.	15050545	4	43.8	*Plecotus auritus*	68%
113.	15050546	17	33.9	*Hypsugo savii*	71%
114.	15050547	11	46.8	*Pipistrellus pipistrellus*	80%
115.	15050548	52	43.6	*Pipistrellus pipistrellus*	58%
116.	15050549	26	42.8	*Pipistrellus kuhlii*	54%
117.	15050550	31	42.5	*Pipistrellus pipistrellus*	68%
118.	15050551	12	44.5	*Plecotus auritus*	57%
119.	15050552	59	44.7	*Pipistrellus pipistrellus*	40%
120.	15050553	40	42.8	*Pipistrellus kuhlii*	52%
121.	15050554	19	40.1	*Pipistrellus kuhlii*	60%
122.	15050555	9	38.5	*Plecotus auritus*	60%
123.	15050556	7	38.8	*Plecotus auritus*	65%
124.	15050557	11	40.6	*Plecotus auritus*	51%
125.	15050558	5	38.8	*Pipistrellus kuhlii*	76%
126.	15050559	3	42.7	*Pipistrellus kuhlii*	27%
127.	15050560	28	38.1	*Pipistrellus nathusii*	87%
128.	15050561	6	39.5	*Pipistrellus kuhlii*	75%
129.	15050562	11	37.8	*Pipistrellus kuhlii*	67%
130.	15050563	22	30.0	*Nyctalus noctula*	63%
131.	15050564	10	41.7	*Pipistrellus kuhlii*	78%