

**Report with attached database
containing the results of the field
surveys (in English),
incl. all documents and reports
developed on the activity, as well as
all primary documents and
information**

In the frame of project:
**"Sustainable bats conservation in the
cross border area"**
1846 BatsConserve

Representing BatMap

/Elena Georgieva/

BatMap

Sofia, 23.04.2019

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Introduction

The purpose of Activity 2: **Upgrading of the available information for bat fauna in the project area** is to build on the knowledge of bat species in the project area. In carrying out the activity, the Contractor has to carry out field studies according to the approved by the Assignor Methodology for conducting field studies of bats and their habitats and a Work Plan.

According to the Technical Specifications of the Assignor and our Technical Proposal, we will implement Activity 2: „**Upgrading of the available information for bat fauna in the project area**“ by performing the following sub-activities:

- *Preparation of a methodology for carrying out field studies of bats and their habitats;*
- *Preparation of field studies;*
- *Performing field studies and gathering the necessary information.*

As a result of the implementation of the activity, the Contractor will submit a **Report, with a database containing the results of the conducted field studies (in English), up to 8 months after signing a performance contract, incl. all documents and reports developed on the activity, as well as all primary documents and information.**

In connection with above mentioned, this Report has been prepared, with a database containing the results of the field studies conducted. All documents and reports developed as well as all primary documents and information are presented as an annex to the report.

1. Implementation of Activity 2: Upgrading of the available information for bat fauna in the project area

The activity was carried out jointly by all partners in the union: Bul Pro Consulting EOOD, NGO OPIMOS and GAP Consulting OOD.

The activity includes the implementation of 3 subactivities:

- Preparation of a methodology for carrying out field studies of bats and their habitats (*the sub-activity is executed and accepted by the Assignor*);
- Preparation of field studies (*the sub-activity is executed and accepted by the Assignor*);
- Performing field studies and gathering the necessary information (*the sub-activity is executed at the time of submission of this report and is due to be accepted by the Assignor*).

1. Preparation of a methodology for carrying out field studies of bats and their habitats (*the sub-activity is executed and accepted by the Assignor*)

In accordance with the requirements of the Assignor and our Technical Proposal for the implementation of Activity 2, we will prepare a Methodology for conducting field studies of bats and their habitats.

In fulfilling these requirements, the above-mentioned Methodology for conducting field studies of bats and their habitats was prepared and submitted to the Assignor.

The methodology is developed separately for all species of bats and their habitats potentially found within the scope of project area - a total of 25 bat species.

The methodology includes a comprehensive bat monitoring approach covering spring and autumn migration, breeding season and wintering.

The methodology has been developed on the basis of the existing bats monitoring methodologies and in accordance with the bat monitoring methodology accepted by the competent authorities in the two countries (or their structures) for the use of studies and analyzes of species and habitats in relation to Reporting on the Habitats Directive, Good practices used in bat monitoring, and current scientific achievements in this field.

The following monitoring parameters are provided:

- species of bats;
- habitat characteristics and potential roosts;
- flight activity;
- assessment of existing threats;
- extent of connectivity of habitats;
- others.

According to the methodology, fieldwork will mainly include daily detour of habitats, night catch and registration of species. One standard man-day is calculated over 5 hours of field work. Under the conditions presented, the minimum number of mandays is 110 and the field days are not less than 55. The field studies will include, but not be limited to: habitat area; structure; function; link to forests in old age; degree of fragmentation; presence of old trees; quality of deadwood.

The methodology includes: development of field form, direct observation in roosts, catch with ornithological nets and ultrasonic identification, etc..

Four types of field forms have been prepared as an annex to the methodology – F1 - a form for mapping bat roosts and assessing conservation status and threats; F2 – a form for counting holes, loose bark, conservation status and places for houses; F3 – a form for catching with nets and F4 – a form for data collection with an ultrasonic detector. The data collected during the fieldwork of the project are described in these forms.

The methodology developed was accepted by the Assignor.

2. Preparation of field studies (*the sub-activity is executed and accepted by the Assignor*)

According to the Technical Proposal of the Contractor and the requirements of the Assignor, the preparation of the field studies includes the **preparation of a Work Plan** and the **establishment of a working team of experts**.

The **Work Plan** prepared by the Contractor includes detailed planning of field visits for the entire survey period and for the entire survey area. The Work plan includes

information for field experts, the necessary equipment (bat detectors, recorders, specialized software for reading sonograms, laptops, cameras, nets, GPS devices, ultrasonic microphones, alpine and bilge equipment, etc.), routes, target observation objects, dates and others.

The field studies are planned equally on the project territory within the boundaries of Bulgaria and of Greece.

The field studies will be conducted in full accordance with the approved by the Assignor methodology for conducting field studies of bats and their habitats and Work plan.

Fieldwork will mainly include daily detour of habitats, night catch and registration of species composition. One standard man-day is calculated over 5 hours of field work. Under the conditions presented, the minimum number of man-days is 110 and the field days are not less than 55.

For the purpose of fieldwork, the Contractor has provided all the necessary equipment, incl. bat detectors, recorders, specialized software for reading of sonograms, nets, alpine equipment, etc., in accordance with the approved methodology for conducting field studies of bats and their habitats.

The Work plan has been prepared by country for the relevant polygons and has been accepted by the Contracting Assignor.

The Contractor has formed a **working team of experts**, defining the human resource - a management team and staff for the implementation of Activity 2 and the duties of the expert (s).

In connection with the implementation of Activity 2, the Contractor organized and conducted training. The aim of the training was to make all field experts involved in the project implementation familiar with it in detail, objectives, expected results, deadlines, etc. As well as the experts to learn how to work with the equipment provided and to apply a methodology for conducting field studies of bats and their habitats so that they can apply it freely.

3. Performing field studies and gathering the necessary information (*the sub-activity is executed at the time of submission of this report and is due to be accepted by the Assignor*).

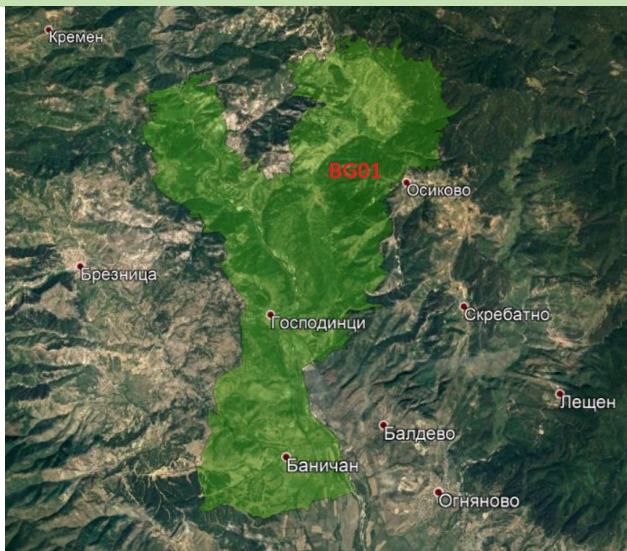
According to the Technical Proposal of the Contractor and the requirements of the Assignor, field studies will be carried out in full accordance with the methodology approved by the Assignor for conducting field studies of bats and their habitats and a Work Plan.

In fulfillment of the above mentioned requirements, the Contractor carried out field work on the project - in the project area approved by the Assignor (survey polygons), in accordance with the Methodology for Field studies and Work plan accepted by the Assignor.

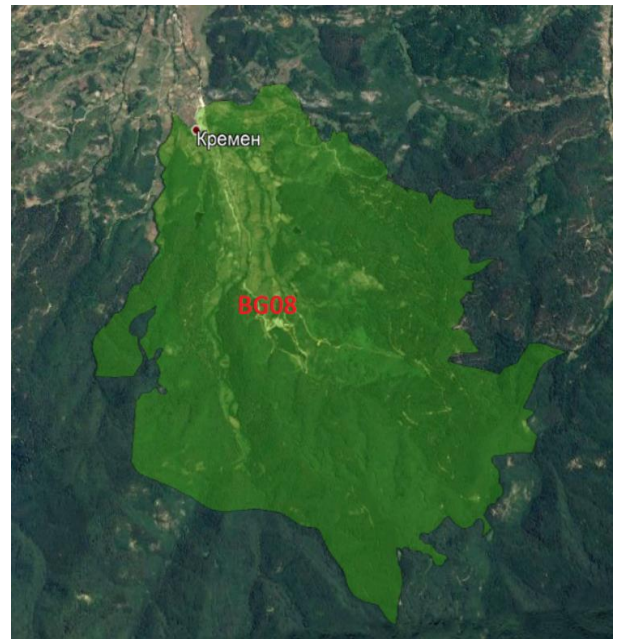
The fieldwork was carried out in all identified survey polygons in both countries - a total of 17:

Project area (survey polygons)

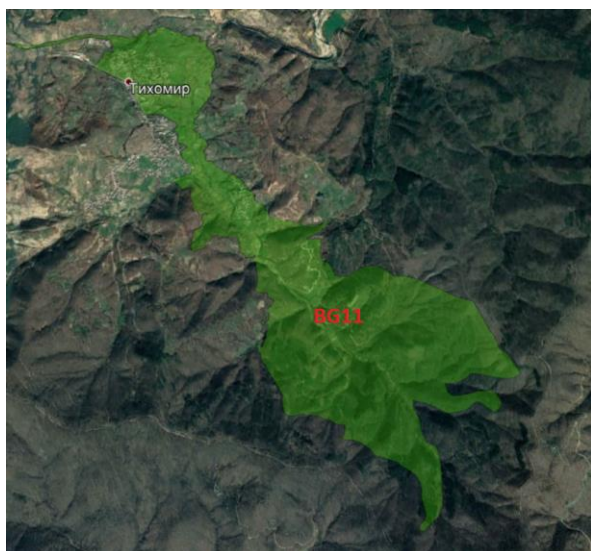
Bulgaria



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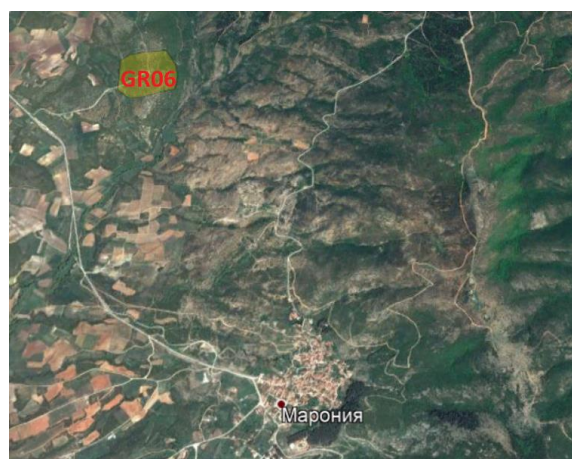
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Greece



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Part of the team of experts have participated in field studies, in accordance with the accepted Methodology and Work Plan. During the implementation of Activity 2, there was no need for KE "Environment", KE "Forestry" and proposed additional (non key) experts to perform field activities.

Field checks were made by KE "Team Leader", with the participation of KE "Habitats".

During the field studies, at least the following monitoring parameters were taken into account:

- species of bats;
- habitat characteristics and potential roosts;
- flight activity;

-
- assessment of existing threats;
 - extent of connectivity of habitats;
 - others.

Field studies included basically daily detour of habitats, night catches and species composition registration. One standard man-day is calculated over 5 hours of field work.

Field studies included, but were not limited to: Area of habitat; Structure; Function; Link to forests in old age; Degree of fragmentation; Presence of old trees; Quality of deadwood.

For the purpose of the field studies, the Contractor provided the team of experts with all the necessary equipment, incl. personal detectors, bat detectors, recorders, specialized software for reading sonograms, nets, alpine equipment, microphones, etc., in accordance with the approved Methodology for conducting field studies of bats and their habitats and all necessary permits for work both on the territory of the Bulgaria and Greece.

In order to ensure high quality of execution, the Contractor developed and implemented a System for control and validation of the data from the field studies. The system has been developed and implemented by Key Bats experts and key GIS and Database experts. All data from the field investigations under the project are subject to control and validation.

For the period of field studies, the Contractor shall prepare monthly reports on the fieldwork (in English). Field form, spatial data and photos were attached to the reports. To validate the fieldwork, irrefutable proofs of field visits were also presented for the relevant reporting day (GPS track/points).

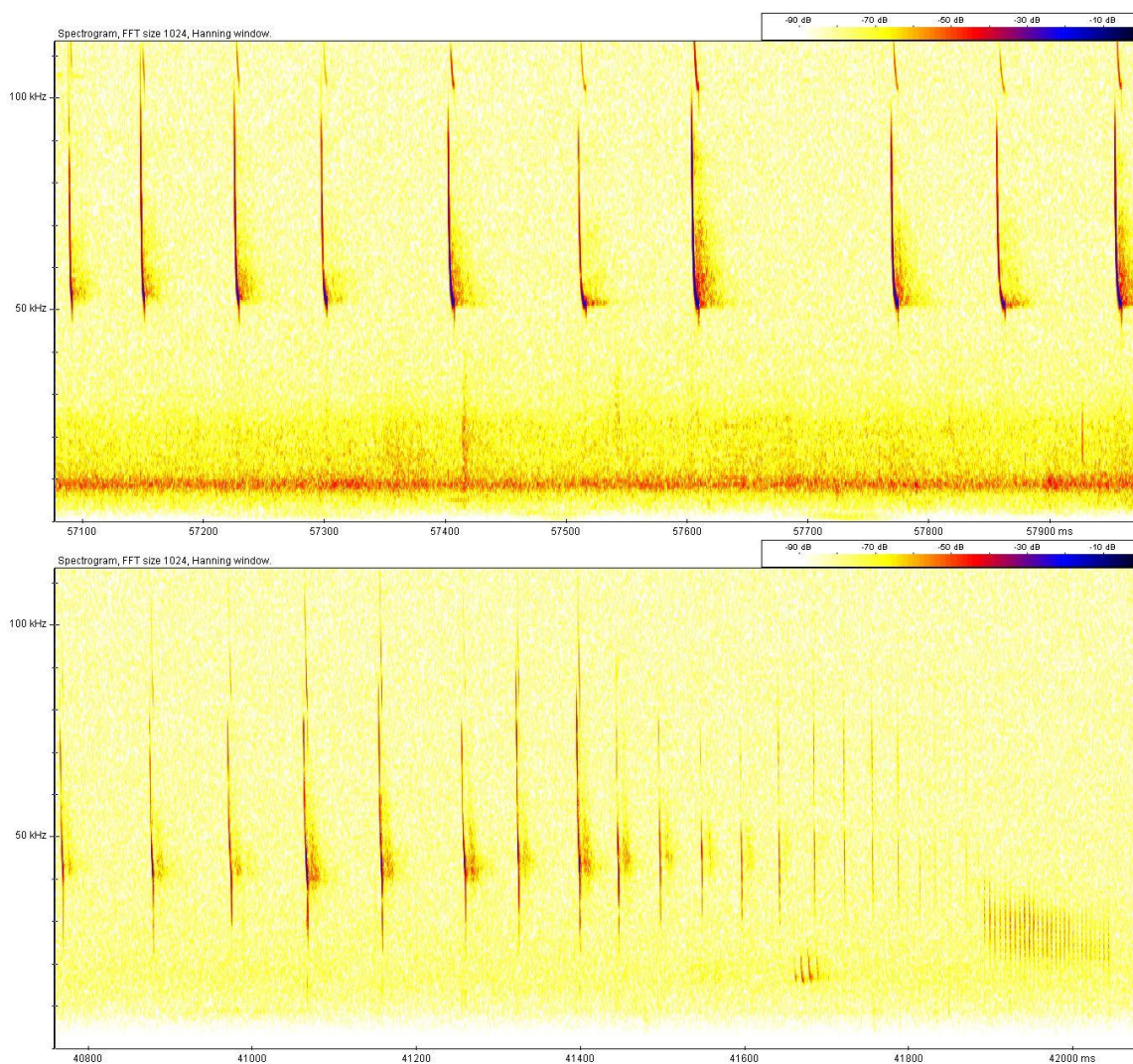
Selected photos from the field studies conducted during implementation of Activity 2



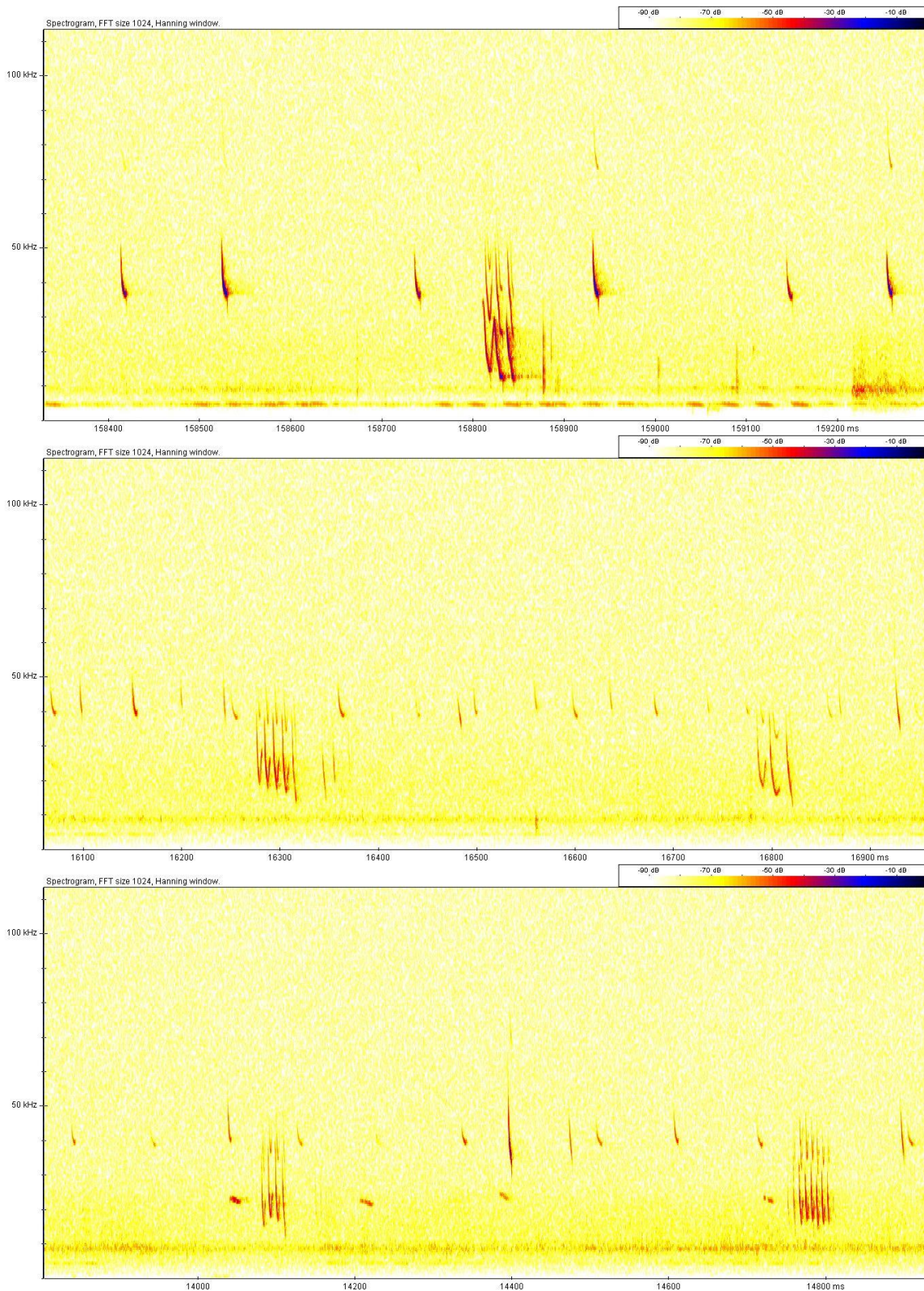




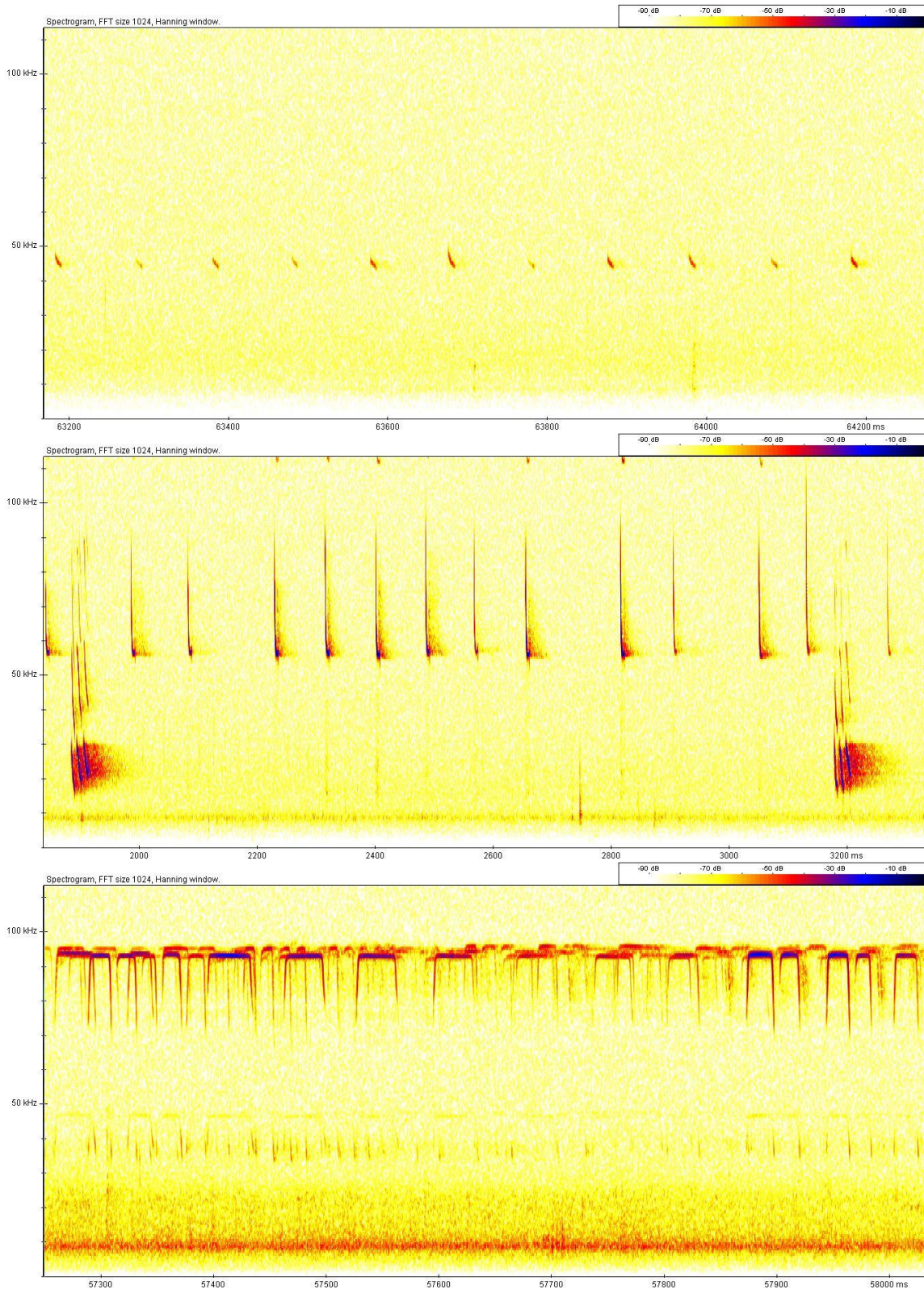
Sonograms of echolocation and social sounds of bat species recorded during the field work



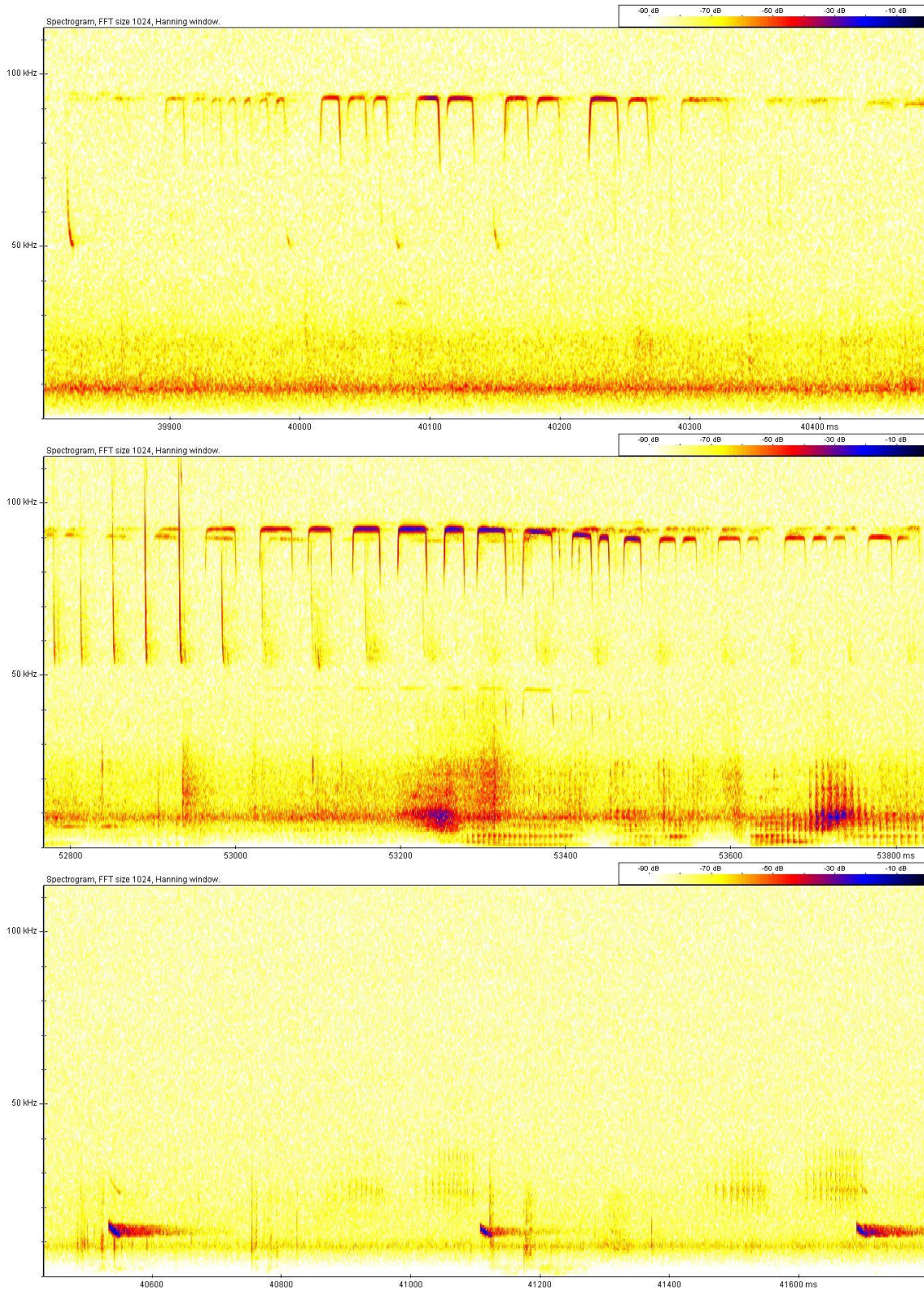
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2. Results of the field studies conducted in the implementation of Activity 2: Upgrading of the available information for bat fauna in the project area

The concrete result of Activity 2 is: Upgraded available information on bat species in the project area.

The specific products of Activity 2 are:

1. Methodology for conducting field studies of bats and their habitats (*accepted by the Assignor*);
2. Work plan (*accepted by the Assignor*);
3. Report, with attached database containing the results of the conducted field studies (in English) (*this report - to be approved by the Assignor*).

In **Tables 1** and **2** a recapitulation is presented for the implementation of the Work Plan adopted by the Assignor.

Table № 1 Implementation of the Work plan on the territory of Bulgaria

Polygon code according to the accepted Project area	Area (ha)	Routes (Settlement/Area)	Predicted man-days	Predicted target objects of observation *	Terrain visits (dates)	Stages of life cycle	Implementation *
BG01	6906,32	Banichan, Gospodintsi, Ribново, Manuil's cave, others.	12	cave/roost, rock clusters, karst, old-age forest, wetlands, water bodies, other. * the target objects are presented in general since the observation polygons are extensive and imply more than two habitats (target observation sites).	October 2018/November 2018, February 2019, April 2019.	Spring migration, autumn migration, breeding season, wintering.	The foreseen minimum number of man days on terrain is met in the indicated periods and polygons
BG02	6670,05	Teplen, Slashten, Beslen, Mesta, others.	10		October 2018/November 2018, February 2019, April 2019.		
BG03	3632,27	Tatul, Rodopi, others.	8		October 2018/November 2018, April 2019.		
BG04	2093,84	Dolno Kapinovo, Rodopi, others.	6		October 2018/November 2018.		
BG05	1475,82	Dolna Kula, Rodopi, others.	4		October 2018/November 2018.		
BG06	937,50	Mogiljane, Rodopi, others.	4		October 2018/November 2018.		

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Polygon code according to the accepted Project area	Area (ha)	Routes (Settlement/Area)	Predicted man-days	Predicted target objects of observation *	Terrain visits (dates)	Stages of life cycle	Implementation *
BG07	821,30	Ptichar, along the river. Vurbitsa, others.	4		October 2018/November 2018.		
BG08	783,62	Kremen, Rodopi, others.	6		October 2018/November 2018, February 2019.		
BG09	586,47	Samovila, Rodopi, others.	2		October 2018/November 2018.		
BG10	440,41	Musomishta, Mesta, others.	2		October 2018/November 2018.		
BG11	312,54	Tihomir, Rodopi, others.	2		October 2018/November 2018.		
Общо	24660,2	-	60		-		

* **Note:** Additional terrain/man-days were also carried out in some of the mentioned polygons by expert assessment (Annexes 1, 2 and 3).

Table № 2 Implementation of the Work plan on the territory of Greece

Polygon code according to the accepted Project area	Area (ha)	Routes (Settlement/Area)	Predicted man-days	Predicted target objects of observation *	Terrain visits (dates)	Stages of life cycle	Implementation *
GR01	2728,93	Porto Lagos, Fanari and wetlands, others.	8	cave/roost, rock clusters, karst, old-age forest, wetlands, water bodies, other. * the target objects are presented in general since the observation polygons are extensive and imply more than two habitats (target observation sites).	October 2018/November 2018, April 2019.	Spring migration, autumn migration, breeding season, wintering.	The foreseen minimum number of man days on terrain is met in the indicated periods and polygons
GR02	2454,66	Volacas (Falakro), others.	10		October 2018/November 2018, April 2019.		
GR03	2375,52	Kato Nevrokopi, others.	10		October 2018/November 2018, April 2019.		
GR04	2014,76	Pagoneri, Delta, others.	10		October 2018/November 2018, April 2019.		
GR05	819,00	Maronia, coast,	8		October 2018/November		

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Polygon code according to the accepted Project area	Area (ha)	Routes (Settlement/Area)	Predicted man-days	Predicted target objects of observation *	Terrain visits (dates)	Stages of life cycle	Implementation *
		olive groves, others.			2018, April 2019.		
GR06	22,24	Cave Maronia, others.	4		October 2018, April 2019.		
Общо	10415,1	-	50	-	-	-	-

* **Note:** Additional terrain/man-days were also carried out in some of the mentioned polygons by expert assessment (Annexes 1, 2 and 3).

Recapitulation for both countries according to Work Plan:

- A minimum of 110 man days, of which at least 60 man-days in the territory of Bulgaria and 50 in the territory of Greece are fulfilled.
- A minimum of 55 terrain (field) days are fulfilled.
- Additional man days/field days were completed for part of the polygons, according to expert judgment.
- A territory of at least 35075,28 ha is covered.
- The field studies were carried out equally on the project territory within the boundaries of Bulgaria and Greece.

Evidences are provided in **Annexes 1, 2 and 3** to this Report.

The fieldwork covered areas in the broad altitude range - from the sea level (wetlands and rocky habitats of the Aegean coast, up to 2100 m in the alpine karst of Mount Falakro. Both natural underground roosts (karst and volcanic caves, rock clusters) and artificial roosts (mining galleries, bridge constructions, military bunkers and abandoned buildings) have been investigated. The object of the work was a variety of habitats of the bats in order to establish the species composition of the community as well as the existing impact factors defining the conservation status of the species.

The analysis shows that 27 species of bats were found in the surveyed polygons (project area), or almost 70% of the species known so far for southern Bulgaria and the part of Greece studied under the project.

The following bat species have been identified:

1. *Barbastella barbastellus*
2. *Hypsugo savii*
3. *Eptesicus serotinus*
4. *Myotis aurascens*
5. *Myotis bechsteinii*
6. *Myotis blythii*
7. *Miniopterus schreibersii*
8. *Myotis capaccinii*

9. *Myotis daubentonii*
10. *Myotis emarginatus*
11. *Myotis myotis*
12. *Myotis nattereri*
13. *Nyctalus lasiopterus*
14. *Nyctalus leisleri*
15. *Nyctalus noctula*
16. *Pipistrellus nathusii*
17. *Pipistrellus kuhlii*
18. *Pipistrellus pipistrellus*
19. *Pipistrellus pygmaeus*
20. *Plecotus austriacus*
21. *Rhinolophus blasii*
22. *Rhinolophus euryale*
23. *Rhinolophus ferrumequinum*
24. *Rhinolophus hipposideros*
25. *Rhinolophus mehelyi*
26. *Tadarida teniotis*
27. *Vespertilio murinus*

The characteristic composition of bats' communities inhabiting important cave roosts, both on the territory of Bulgaria and on the territory of Greece, is revealed. Three types of medium-sized bats dominate here – *Rhinolophus euryale*, *Rh. blasii* and *Rh. mehelyi*, as well as the *Rh. ferrumequinum* and *Miniopterus schreibersii*), whose number exceeds 1200 individuals in April 2019.

The mountain complex of species is enriched with the presence of the only representative of a family Molossidae – *Tadarida teniotis*. Particularly important is the role of the wetlands in the Porto Lagos region, which provide food to numerous migratory populations during the autumn of *Pipistrellus nathusii*, *Pipistrellus pipistrellus* and *Vespertilio murinus*.

Among the dominant species in dry rocky habitats we have to point out *Hypsugo savii* and species of the genus *Pipistrellus*.

A Database containing the results of the field surveys is presented in **Annex 1**. The GIS database created in the framework of Action 1 has been upgraded and complemented in the implementation of Action 2 with validated, structured and systematized spatial data and information gathered during the fieldwork carried out in the course of the implementation of Action 2 of the project. These data will be the basis of optimization and refinement of the created preliminary/deductive models for the bat fauna within the scope of the project area, generated on the basis of the preliminary identified and systematized for the purpose spatial data and recommendations by the project experts. They should also support the implementation of the follow-up Activity 3: Identification of potential threats and factors affecting the bats populations in the project area. The database format is ESRI File Geodatabase (*.gdb) and the data in it is in a coordinate system WGS84 UTM 35N, which correspond to the requirements of the Assignor and the Technical Proposal of the Contractor.

In **Annex 2** there are presented photos of conducted field studies, attached to the respective field forms and polygons.

In **Annex 3** all documents and reports developed under Activity 2, as well as all primary documents and information are presented (*incl. Methodology for conducting field studies of bats and their habitats developed for all 25 species of bats and their habitats potentially found within the scope of the survey; List of potential threats to bat species and threat assessment methodology. Criteria developed for classification and assessment of potential threats and factors affecting bat populations in the project territory; Work plan, formed working team of experts and training organized and conducted by the Contractor; Monthly report № 1 for the completed fieldwork, with attached protocols, spatial data and photos; Monthly report № 2 for the completed fieldwork, with attached protocols, spatial data and photos; Progress report № 1; Monthly report № 3 for the completed fieldwork, with attached protocols, spatial data and photos and Monthly report № 4 for the completed fieldwork, with attached protocols, spatial data and photos*).

Activity 2 „Upgrading of the available information for bat fauna in the project area“, subactivity „ Carry out field studies and gather the necessary information“, is implemented on time, in full compliance with Assignor requirements and the Contractor Technical Proposal.

3. Conclusions

On the basis of the results obtained from the field investigations carried out under the project in the framework of Activity 2, the following general conclusions can be drawn:

- ✓ The chosen territorial scope of work (spatial boundaries) is divided into separate polygons. The polygons in which a field study was conducted in the Republic of Bulgaria and the Republic of Greece are 17 and have a total area of 35075.28 ha - respectively 11 polygons with a total area of 24660.15 ha in the Republic of Bulgaria and 6 polygons with a total area of 10415.13 ha in R. Greece
- ✓ The field studies carried out during the project (Activity 2) were carried out in accordance with the Work plan and Methodology accepted by the Assignor for carrying out field studies of bats and their habitats.
- ✓ A minimum of 110 man-days, of which at least 60 man-days on terrain on the territory of the Republic of Bulgaria and 50 on the territory of the Republic of Greece, for the relevant polygons, in the period specified in the Work plan, are fulfilled.
- ✓ A minimum of 55 terrain days for the relevant polygons is reached, as specified in the Work Plan.
- ✓ Additional man-days/terrain days are completed for part of the polygons, according to expert assessment.
- ✓ The results of the field studies (including spatial data) are validated, structured and systematized in a GIS database.
- ✓ Field work covered areas in a wide altitude range.
- ✓ Both natural underground roosts and artificial roosts have been investigated.

- ✓ Various habitats of bats were the subject of work.
- ✓ the analysis shows that 27 species of bats were found in the surveyed polygons (project area), or almost 70% of the species known to date in southern Bulgaria and the part of Greece studied under the project.
- ✓ The following bat species have been identified: *Barbastella barbastellus*; *Hypsugo savii*; *Eptesicus serotinus*; *Myotis aurascens*; *Myotis bechsteinii*; *Myotis blythii*; *Miniopterus schreibersii*; *Myotis capaccinii*; *Myotis daubentoniid*; *Myotis emarginatus*; *Myotis myotis*; *Myotis nattereri*; *Nyctalus lasiopterus*; *Nyctalus leisleri*; *Nyctalus noctule*; *Pipistrellus nathusii*; *Pipistrellus kuhlii*; *Pipistrellus pipistrellus*; *Pipistrellus pygmaeus*; *Plecotus austriacus*; *Rhinolophus blasii*; *Rhinolophus Euryale*; *Rhinolophus ferrumequinum*; *Rhinolophus hipposideros*; *Rhinolophus mehelyi*; *Tadarida teniotis* u *Vespertilio murinus*.
- ✓ The characteristic composition of bats' communities inhabiting important cave shelters, both on the territory of Bulgaria and on the territory of Greece, is revealed. Three types of medium-sized bats dominate here – *Rhinolophus euryale*, *Rh. blasii* and *Rh. mehelyi*, as well as the *Rh. ferrumequinum* and *Miniopterus schreibersii*), whose number exceeds 1200 individuals in April 2019.
- ✓ The mountain complex of species is enriched with the presence of the only representative of a family Molossidae – *Tadarida teniotis*.
- ✓ Particularly important is the role of the wetlands in the Porto Lagos region, which provide food to numerous migratory populations during the autumn of *Pipistrellus nathusii*, *Pipistrellus pipistrellus* and *Vespertilio murinus*.
- ✓ Among the dominant species in dry rocky habitats we have to point out *Hypsugo savii* and species of the genus *Pipistrellus*.

Annexes to the Report:

Annex №	Annex Name	Form
1	Database	Electronic form – 1 CD
2	Photos from the project conducted fieldwork	Electronic form – 1 DVD
3	Documents and reports developed under Action 2 as well as all primary documents and information	Electronic form – 2 DVDs (part 1 from point 1 to point 5 incl. and part 2 from point 6 to point 8 incl.)
1.	Methodology for conducting field studies of bats and their habitats developed for all 25 species of bats and their habitats potentially found within the scope of the survey	
2.	List of potential threats to bat species and threat assessment methodology. Criteria developed for classification and assessment of potential threats and factors affecting bat populations in the project territory	
3.	Work plan, formed working team of experts and training organized and conducted by the Contractor	
4.	Monthly report № 1 for the completed fieldwork, with attached protocols, spatial data and photos	
5.	Monthly report № 2 for the completed fieldwork, with attached protocols, spatial data and photos	
6.	Progress report № 1	
7.	Monthly report № 3 for the completed fieldwork, with attached protocols, spatial data and photos	
8.	Monthly report № 4 for the completed fieldwork, with attached protocols, spatial data and photos	