



Monitoring of wild fauna at the Emerald network site  
SAMEGRELO GE0000021 Using Camera traps

Report

2020 Year

## Acknowledgments

We would like to thank all individuals who provided support and help at various stages of the project: Prof. Sandro Lovari, Prof. Luca Rossi, Mr. Gareth Goldthorpe, Mr. Giorgi Sulmanidze, Prof. Alexandre Gavashelishvili, Mr. Zura Javakhishvili. From Local Communities: Mrs. Manana Mebonia, Mr. Niko Lemonjava, Mr. Roman Tolordava, Mr. Demur and Lasha Kometiani, Mr. Vitaly Mikava, Mr. Irakli Badzaghua, Mr. Jiro Todua.

We are grateful to the Rufford Foundation for support and help, and to the Ideawild for technical support.



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### Citation:

Basilashvili, Kh., Lemonjava, G., Potskhishvili, M., & Kakhiani, D. (2020). Monitoring of wild fauna at the Emerald network site SAMEGRELO GE 0000021 Using Camera traps

Cover photo: Giorgi Lemonjava

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2020 Year

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### Brief description

With the help of the Rufford foundation, at the Egrisi ridge, Georgia, on the Emerald network site Samegrelo GE0000021, wildlife research was conducted through the camera trap installation and direct observation method. The aim of this project was to detect and monitor wild species of large and medium-sized mammals, especially alpine ungulates and to create the primary check-list of wild animals, inhabiting on the site.

Study detected occurrence of rare species and sub-species on the site, including Western Caucasian tur (*Capra caucasica*), Caucasian chamois (*Rupicapra rupicapra caucasica*), Brown bear (*Ursus arctos*), Wild cat (*Felis silvestris*) and others. Along with mammals, endemic rare bird species, Caucasian snowcock (*Tetraogallus caucasicus*) and Caucasian grouse (*Lyrurus mlkosiewiczzi*) populations were observed during the study.

This report was prepared for scientific circles and governmental bodies to provide primary data on poorly studied Egrisi ridge and promote planning of knowledge-based conservation activities at the site.

## Background and objectives

The main objectives of the study were to obtain primary data on occurrence of alpine ungulates, create an initial checklist of distributed large and medium sized wild mammals, monitor the features of the distribution of wild animals and share project results to the interested parties.

Due to the high conservation value of the area, in order to protect wild flora and fauna, in December 2019 this area was adopted as an Emerald network site, Samegrelo GE0000021 (Directorate of Democratic Participation, 2019).

From the wild species, native to the study area, our primary target species were: West Caucasian Tur and Caucasian chamois. West Caucasian tur (EN, IUCN) is a flagship species for Georgia. There was no evidence on occurrence of this species on the Egrisi ridge, other than outdated historical data (Dinnik, 1914). Noteworthy, the place is considered as a suitable habitat for this ungulate by habitat modeling. (Gavashelishvili, 2013). Size of tur population at national level is critically low and accounts only several hundred individuals (Gurielidze, 2013).

Area is suitable for Caucasian chamois, ungulate which showed rapid decline of local population from 1990th (Aulagnier, Giannatos, & Herrero, 2008), and for other wild animals, including: Eurasian lynx (*Lynx lynx*) CR - National red list, Brown bear (*Ursus arctos*) – EN national red list, Grey wolf (*Canis lupus*), endemic birds Caucasian snowcock (*Tetraogallus caucasicus*) and Caucasian grouse (*Lyrurus mlokosiewiczii*) etc.

Despite the high Conservation value of the area, currently Egrisi ridge is not legally protected and there are no ongoing conservation activities to protect local fauna. Lack of the baseline data on the distribution of wild species is one of the main problems, which makes challenging to plan appropriate protection measures. Therefore, studying wild species and their distribution on the site is important for planning further conservation actions on the site.

### Background

Our research area is about 200 km<sup>2</sup>. Site is isolated from Abkhazia with Jvari reservoir and Zugdidi-Mestia main road. From the south area is bordered with rural and resort settlements of Tsalendjikha and Chkhorotsku. North and west directions are less disturbed and are connected to wild habitats of Svaneti ridge and central part of the Egrisi ridge (Tekhuri gorge).

Biomes of the study area varies from mountain forests (800-1800 m-sea level) to sub-alpine forests, meadows and bushlands (1800-2500m) to alpine vegetation (2500-3200m) (Jordania & Arabuli, 2011). Research of floral diversity held in 2010-2013 described many rare relict and endemic species with local endemism level up to 40%. The main threats to local fauna are logging and overgrazing (Arabuli, 2017).



**PHOTOS 1; 2; 3; 4: MOUNTAIN FORESTS AT THE SURVEY AREA**

Data on distribution of wild fauna at egrisi ridge were mostly outdated or scattered: for example, the only data on Western tur distribution at Egrisi ridge is 100 years old (Dinnik, 1914). Newer report of flora indicates presence of brown bear, chamois and Caucasian grouse. (Arabuli, 2017).

In 2019, in parallel of our field expeditions, Ilia state university conducted baseline research of local fauna and detected presence signs of wild mammals, including brown bear, grey wolf, lynx, etc. (Ilia state university, 2019).

Human disturbance on wildlife differs due to locations within the target area: at the eastern part of the area, two popular touristic tracks divide the ridge. Destination points for tourists are mountain lakes of the ridge. Several thousand tourists visit the lakes every year, mostly from July to August. Due to unregulated tourism, touristic alpine areas suffer from waste (mostly plastic) other types of disturbance associated with unregulated tourism may include disturbance via noise (fireworks) and hunting as well. In this part, sub-alpine zone (approximately 1800-2500 m) is actively used as pastures. Livestock consists mostly of cows and small numbers of domestic goats (*Capra hircus*). At the central and western parts of the site, there is a less disturbance from livestock (only one herd in west – none in the central) and almost no touristic pressure.



PHOTOS 5; 6; 7; 8: SUB-LPINE AND ALPINE LANDSCAPES AT THE SURVEY AREA

As locals suggest (Informal conversations), hunting is a common practice on the site. Main targets for hunters are bear and chamois. To calculate the annual damage to population via hunting, further study is needed.

There are two large infrastructural objects near to the site: One is Enguri hydro power dam and Jvari reservoir – which isolates Egrisi ridge from the west and new hydro power plant **Khobi 2** (much smaller) to the south – east, near Mukhuri village, still under construction (Ministry of Environment Protection and Agriculture of Georgia, 2018).

One of the most serious issues on the site is forest degradation due to uncontrolled logging. In many places erosion on abandoned logging roads and degraded forest cuts are clearly visible.



**PHOTO 9; 10: ABANDONED AND ERODED LOGGING TRACKS AND FOREST DEGRADATION FROM LOGGING: LEFT – MAGANA GORGE, RIGHT – BARDJASHI GORGE**

## Materials and methods

As the main goal of the project was detection of rear wild animal species, to increase the detection probability, opportunistic approach was used.

To cover significant part of the target species distribution, we selected and repeatedly monitored wildlife on three (eastern, central and western) directions. During the expeditions, in total 150 km was covered on foot or horseback. Camera traps were placed on all three directions, all along the ridge. Distance between two marginal camera trap stations (eastern and western) is more than 20 km-s. More camera traps were placed at alpine zone to increase probability of detection of alpine ungulates. Rest of the camera traps were placed at forest and sub-alpine zone, with lowest altitude monitored at 978 m to highest at 3018m from sea level. Camera traps were placed non-randomly: near to the animal presence signs, at the places recommended by locals and/or at suitable habitats of species of our interest. In total 28 camera traps were placed at the survey area in 2019. Data from 14 camera traps is presented in this report.

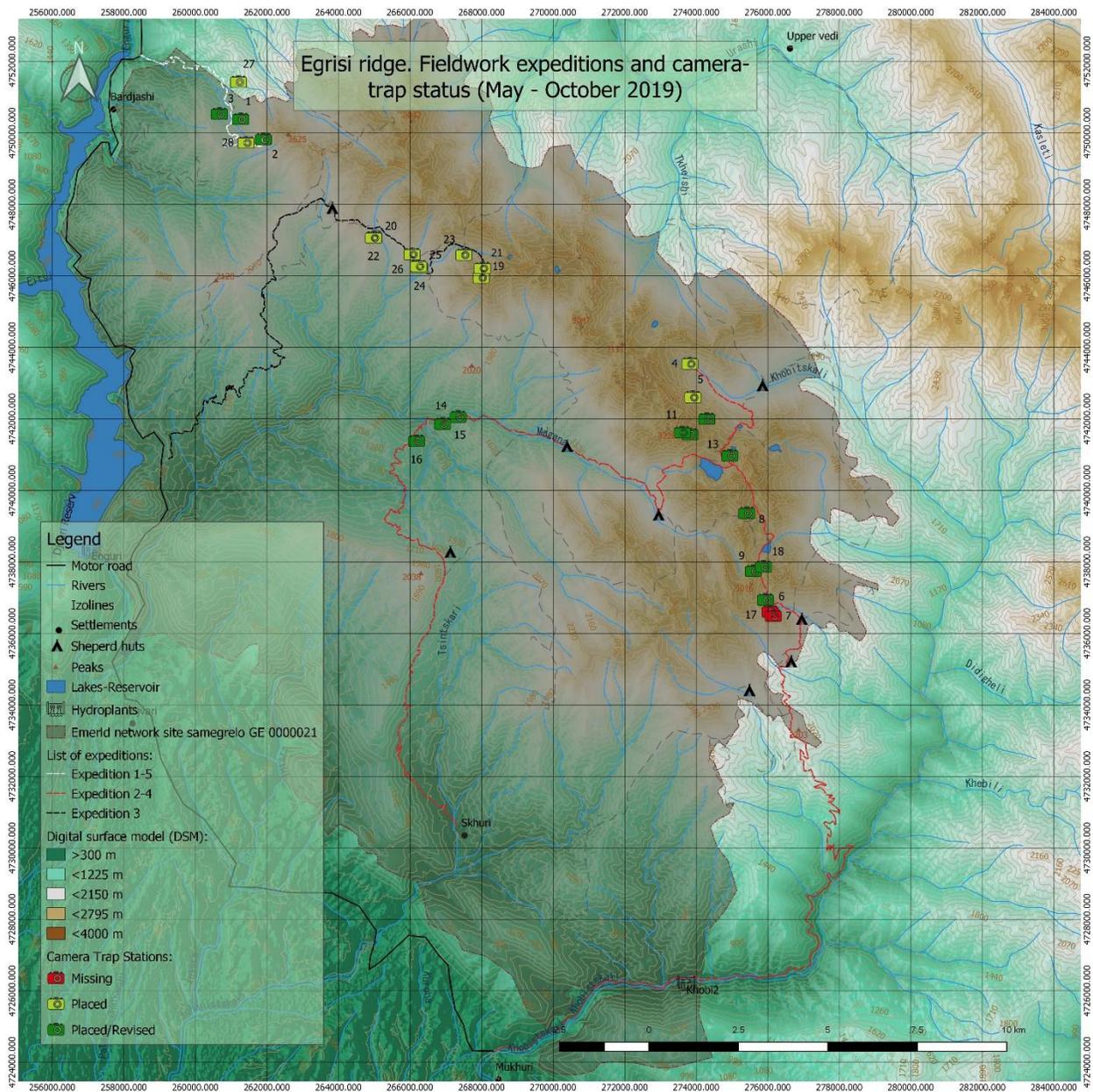
Camera trap placement points along with their status and ID code are illustrated on map 1, high definition copy of the map is presented in annex #5. Detailed characteristics of camera trap placement points are presented in annex #3.



PHOTOS 11; 12; 13: PHOTOS FROM EXPEDITION. ALPINE ZONE, JUNE 2019.

Field work was held from May 2019 to October 2019 via placement and monitoring of camera traps, along with direct observation and signs of wild animals. During the study, evidence of wild species presence and distribution at elevations from 800 to 3000 meters was collected.

Direct observation took place in parallel of camera trap placement, on three different directions, five times: **first and fifth expeditions** (white dotted line on map) western part of the area, watershed of Djvari reservoir, **second and forth expeditions** – the eastern part of the site (Red dotted line) gorges of river Khobistskhali and Magana –which mostly repeats the popular touristic track. **Third expedition** (black dotted line) goes along the left side of river Magana watershed and covers the central part of the site. Direct observation was conducted at every expedition: we collected and documented direct photographic evidence of animal species and signs of animal presence on the site (excrements, tracks, etc.). Field workers noted GPS coordinates, habitat specifications, date, time of event and photos of animal or animal signs.



**MAP 1: SCHEMATIC OF EXPEDITIONS AND CAMERA TRAP STATIONS**

### Camera trap placement technique and settings

Camera trap model, **Browning Command Ops Pro** was used for the study. To place camera traps in the forested areas, we used suitable mounts from HME brand. We had to invent new technique for camera trap placement at alpine zone, especially for steep places with no tree cover and shallow soil. We used low priced selfie stick parts and wooden poles. For fastening on rocky terrain, we used cordless drills and concrete anchors.



*Photo 14; 15: Self-made camera trap mount (left) and HME Camera trap mount (right)*



**PHOTO 16; 7: CAMERA TRAPS IN WORKING CONDITIONS, ON HAND-MADE (LEFT) AND HME (RIGHT) MOUNTS.**

This technique of mounting appeared to be effective on alpine zone and gave us opportunity to place camera traps on any physically accessible spot in rocky terrain. To reduce harmful effect of direct rain and snow we covered the camera traps with its own plastic packaging.

All the parameters of used hardware and settings presented in annex#4.

Database of the camera trapping survey was created using the wildlife monitoring software CTAP - camera trap analysis package (Amin, Davey, & Wachter, 2017).

## Results

Camera-traps were deployed for 1200 trapping days. According to the retrieved field data, active monitoring with operational camera traps lasted for 600 days. From 28 deployed camera traps 16 were revised, two of them are stolen; data from 14 camera traps were analyzed and presented in this report. Part of other camera traps were inaccessible due to season-specific difficulties (fast growing vegetation in summer and/or bad weather), some were intentionally placed in august, and will be removed in spring-summer 2020. Despite extreme weather conditions on the site, none of revised camera traps were damaged or malfunctioned. Three of camera traps after month of monitoring, changed angle of observation due to heat-cold-wind exposure. All of them were repositioned and fastened.

### List of wild species detected using camera traps

Camera traps detected occurrence of target species, West Caucasian tur and Caucasian chamois on the site. Total eight species of wild mammals, including brown bear, wild cat and two species of endemic birds: Caucasian snowcock and Caucasian grouse. During may-august 2019, 153 photos of 69 independent wildlife events (excluding rodents and small birds) have been taken with camera traps. (Photo-shoots of animals of same species, taken in larger time lapse than 1 hour were defined as independent event). Some photos of wild animals, taken by camera traps are presented below, in **table #2**. Camera trap No 17 recorded grazing domestic goats (*Capra hircus*). List of detected animal species is presented in the table #1.

Order	Family or Subfamily	Scientific Name	IUCN Status	Bern Convention	Habitat	No. of Images	No. of Events	No. of Stations Detected in
<b>Mammalia</b>								
Carnivora	Canidae	<i>Vulpes vulpes</i>	LC		Mixed	8	5	2
Carnivora	Felidae	<i>Felis silvestris</i>	LC	Appendix II	Mixed	2	1	1
Carnivora	Mustelidae	<i>Martes Genus</i>	LC	Appendix III	Woodland	30	18	3
Carnivora	Mustelidae	<i>Mustela erminea</i>	LC	Appendix III	Mixed	5	4	2
Carnivora	Ursidae	<i>Ursus arctos</i>	LC	Appendix II	Mixed	16	6	4
Cetartiodactyla	Bovidae-Caprinae	<i>Capra caucasica</i>	EN		Montane	2	1	1
Cetartiodactyla	Bovidae-Caprinae	<i>Rupicapra rupicapra</i>	LC	Appendix III	Montane	3	2	2
Cetartiodactyla	Cervidae-Capreolinae	<i>Capreolus capreolus</i>	LC		Woodland	10	2	2
<b>Aves</b>								
Galliformes	Phasianidae	<i>Lyrurus mlokosiewiczi</i>	NT		Montane	9	5	1
Galliformes	Phasianidae	<i>Tetraogallus caucasicus</i>	LC		Montane	73	25	6

TABLE 1: LIST OF THE SPECIES, DETECTED BY CAMERA TRAPS. TABLE DOWNLOADED AND ADAPTED FROM CTAP SOFTWARE (AMIN, DAVEY, & WACHER, 2017)



*Capra caucasica*



*Ursus arctos*



*Rupicapra rupicapra*



*Tetraogallus caucasicus*



*Capreolus capreolus*



*Vulpes vulpes*



*Lyrurus mlokosiewiczi*



*Mustela erminea*



*Marten sp.*



*Felis silvestris*

TABLE 2: INDIVIDUALS OF ANIMAL SPECIES, DETECTED BY CAMERA TRAPS DURING THE STUDY

## Results of direct observation

Direct observations enriched the data collected with camera traps. In the central part of the area (**expedition #3**) camera traps were placed in august and will be revised for summers 2020, accordingly only direct observation data is available from this particular site.



*Rupicapra rupicapra*



*Tetraogallus caucasicus*



*Carpodacus rubicilla*



*Carpodacus erythrinus*

**TABLE 3: WILD ANIMALS, DIRECTLY PHOTO-DOCUMENTED DURING THE STUDY**

With the direct observation, following species were detected:

- *Capra caucasica* - pellets;
- *Rupicapra rupicapra caucasica* - pellets, tracks, directly observed and photo documented group of five individuals;
- *Ursus arctos* - excrements and tracks;
- *Lyrurus mlokosiewiczy* – excrements;
- *Tetraogallus caucasicus* - excrements, photo documented direct observations;
- *Carpodacus rubicilla* and *Carpodacus erythrinus* - photo from direct observations.

Many excrements allegedly of Canidae – were photo documented, but to avoid misidentification due to visual similarity between different species (jackal, fox, wolf, dog) we restrained to identify them. Interestingly, red fox (*Vulpes vulpes*) was the only Canidae, detected via camera traps on the area.



*Lyrurus mlokosiewiczii*



*Tetraogallus caucasicus*



*Rupicapra rupicapra*



*Rupicapra rupicapra*



*Ursus arctos*



*Ursus arctos*

TABLE 4: SIGNS OF ANIMAL PRESENCE FROM THE DIRECT OBSERVATION DURING THE STUDY

## Species distribution and human disturbance on the survey area

Distribution of recorded wild species by height during the observation period is shown in the table # 5 below.

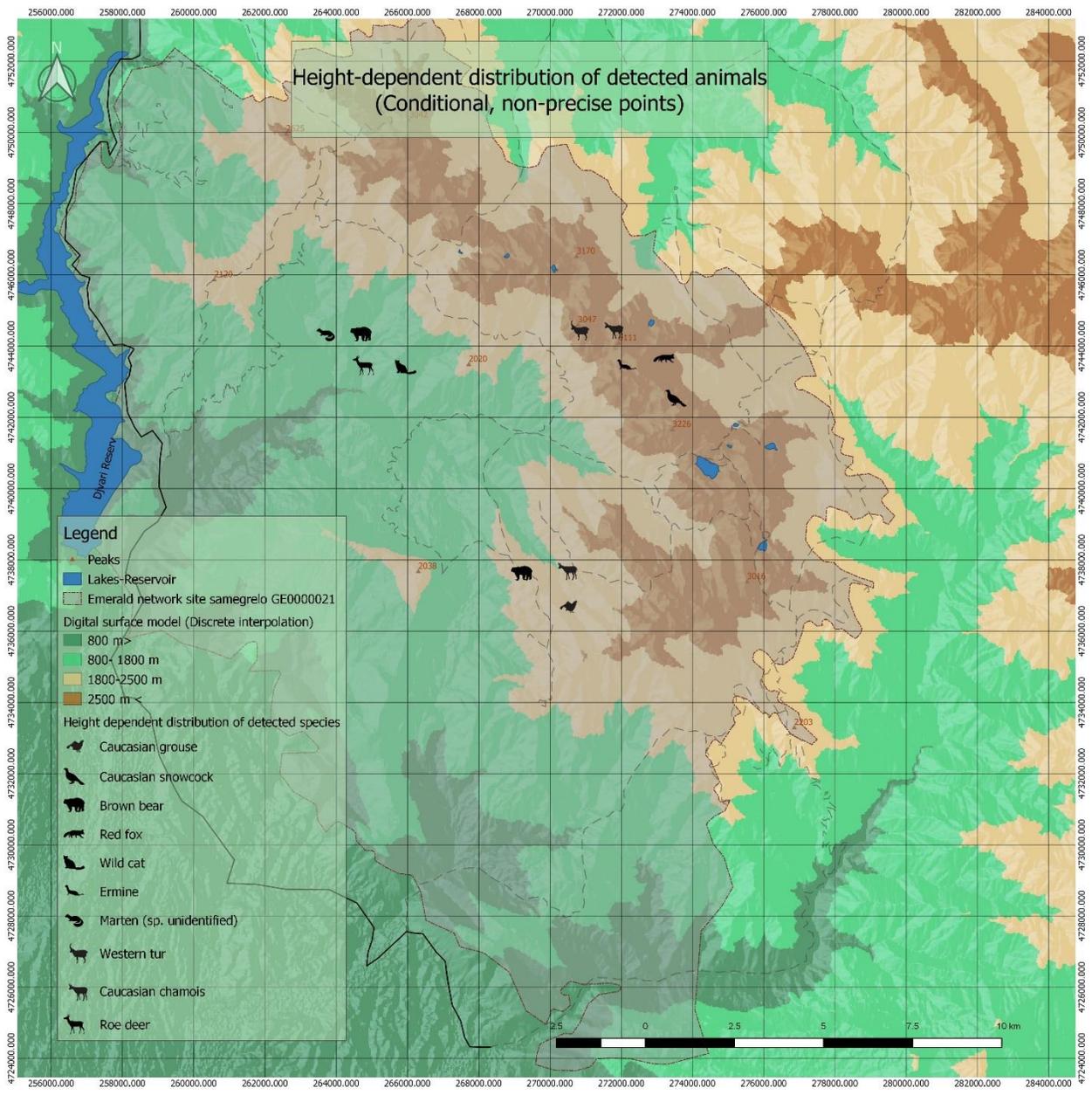
Habitat	Species	Way of detection		
		Animal (direct photo)	Track/sign	Camera trap photo
800-1800 m sea lvl				
broadleaf/mixed forest	<i>Ursus arctos</i>			
	<i>Marten.sp</i>			
	<i>Capreolus capreolus</i>			
	<i>Felis silvestris</i>			
1800 -2500 sea lvl				
Sub-alpine forest , rhododendron bushland, alpine meadows, alpine wetlands, cliffs/rocks	<i>Ursus arctos</i>			
	<i>Mustela erminea</i>			
	<i>Vulpes vulpes</i>			
	<i>Rupicapra rupicapra</i>			
	<i>Lyrurus mlokosewicy</i>			
2500 < sea lvl				
alpine meadows, cliffs/rocks, permanent snow fragments	<i>Capra caucasica</i>			
	<i>Rupicapra rupicapra</i>			
	<i>Vulpes vulpes</i>			
	<i>Tetraogallus caucasicus</i>			

TABLE 5: DISTRIBUTION OF DETECTED SPECIES ACCORDING TO HEIGHT FROM SEA LEVEL, SHOWING THE WAYS OF DETECTION

We assume that habitat use of large mammals on the survey area, on alpine and sub-alpine zone differs between western and central (non-touristic, with less livestock pressure) and eastern (with touristic destinations and more livestock pressure) areas. For example: neither of camera traps in alpine zone of eastern part, nor direct observations detected brown bear, when on the central-western parts bear was detected up to 2500 meters.

Chamois group and numerous tracks and chamois pellets were detected on the eastern part only before touristic season and before livestock entered the area (in June) but during July-august, only one camera trap detected one individual of chamois.

As we have no comparable data of simultaneously working camera traps from different parts (e.g. touristic and non-touristic), this assumptions need further testing. Direct impact of tourism and livestock presence on the area must be a subject of future monitoring.



**MAP 2 DISTRIBUTION OF DETECTED SPECIES ACCORDING TO HEIGHT FROM SEA LEVEL, AT SPRING-AUTUMN 2019 (WITH CONDITIONAL INACCURATE POINTS).**

### Undetected species of interest

We did not detect two species of major predators on the region: grey wolf and Eurasian lynx, while another survey on the site (Ilia state university, 2019) detected signs of their presence. Non-detection might be a result of false absence (due to low species-specific detection probability), avoidance of camera traps or other factors or absence from our monitoring points.

Interestingly, our camera trap placed with the similar manner as at the survey area (video mode) at village Jagira (about 20 km south from Egrisi ridge) detected a small group (3 individuals) of wolves in December 2019.



**PHOTO 18: WOLF (*CANIS LUPUS*) ABOUT 20 KM AWAY FROM SURVEY AREA. AGRICULTURAL LANDS, NEAR VILLAGE JAGIRA**

## Conclusion and recommendations

Occurrence of West Caucasian tur and the presence of Caucasian chamois on the emerald network site SAMEGRELO GE0000021 is confirmed as the result of the study.

A primary checklist of large and medium-sized mammals distributed on the site was prepared. Data of presence and distribution of endemic birds - Caucasian snowcock and Caucasian grouse was collected.

Data collected during the study allows us to speculate that different forms of human activities affect the wild fauna, including – uncontrolled mass tourism, non-sustainable forestry and illegal hunting. These activities and their direct impact on the wild populations must be a subject of future monitoring.

**Consequently, it is important to:**

- Study and monitor local populations of *Capra caucasica* and *rupicapra rupicapra* on different habitats of the area, to define hotspots for local populations.
- Define and monitor wild corridors and links to neighbor wild areas in Svaneti and Samegrelo for future protection of migration corridors of the species, especially for Caucasian tur (Tekhuri Gorge, Khobistskhali Gorge)
- Define critically important wild areas for other medium and large-sized mammals and local endemic birds (Caucasian snowcock, Caucasian grouse) to promote planning of future conservation measures.
- Evaluate direct impact of anthropogenic pressure (tourism, logging, overgrazing, poaching and infrastructural projects) to wild fauna on the site, for planning appropriate mitigation steps.

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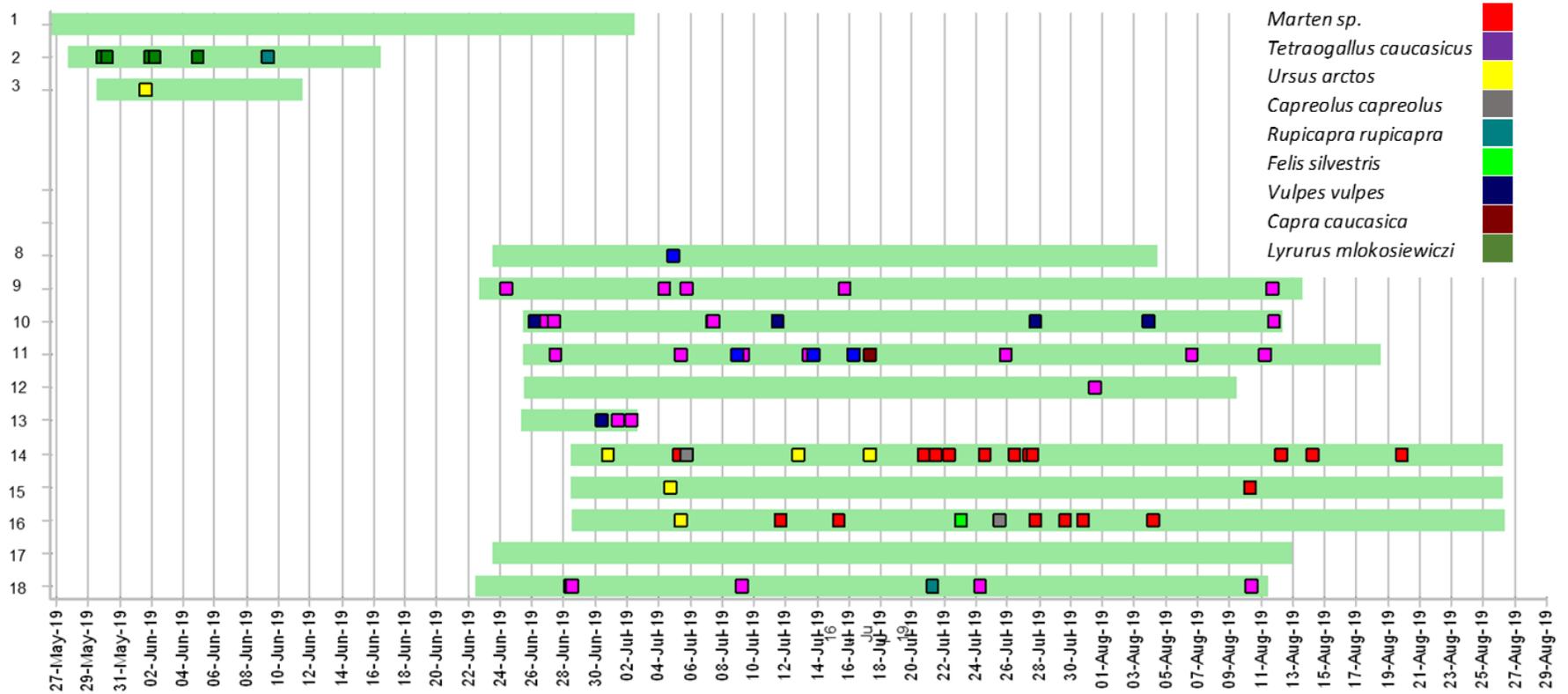
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# Annexes

Annex1 Camera-trap working durations and species detection history. Adapted from software CTAP.



ANNEX 1 CAMERA-TRAP WORKING DURATIONS AND SPECIES DETECTION HISTORY. ADAPTED FROM SOFTWARE CTAP

Annex2 Animal detection events per camera-traps

camera trap station		Number of detection events per camera trap													Height_Sea_LVL
Camera St#	Camera ID	Western_Tur	Caucasian_Camois	Brown_Bear	Wild Cat	Red_Fox	Marten_SP	Roe_Deer	Ermine	Snowcock	Black Grouse	Greu_Wolf	Wild Boar	Lynx	Height_Sea_LVL
1	0210614703184p	0	0	0	0	0	0	0	0	0	0	0	0	0	1682
2	0210636703184p	0	1	0	0	0	0	0	0	0	5	0	0	0	2234
3	0210786303184p	0	0	1	0	0	0	0	0	0	0	0	0	0	1501
4	0210615703184P	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2382
5	0210789103184P	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2584
6	0210641603184P	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2555
7	0510109506184P	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2544
8	0311475804184P	0	0	0	0	0	0	0	1	0	0	0	0	0	2880
9	0210639003184P	0	0	0	0	0	0	0	0	5	0	0	0	0	2732
10	0210774303184P	0	0	0	0	4	0	0	0	5	0	0	0	0	2979
11	0210621603184P	1	0	0	0	0	0	0	3	7	0	0	0	0	3018
12	0210774503184P	0	0	0	0	0	0	0	0	1	0	0	0	0	2773
13	0210612603184P	0	0	0	0	1	0	0	0	2	0	0	0	0	2756
14	0210639103184P	0	0	3	0	0	11	1	0	0	0	0	0	0	1047
15	0311455104184P	0	0	1	0	0	1	0	0	0	0	0	0	0	978
16	0210630903184P	0	0	1	1	0	6	1	0	0	0	0	0	0	1183
17	0210143903184P	0	0	0	0	0	0	0	0	0	0	0	0	0	2417
18	0210612403184P	0	1	0	0	0	0	0	0	5	0	0	0	0	2693
19	0510150106184P	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2752
20	0210618303184P	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2112
21	0210400703184P	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2604
22	0210644703184P	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2111
23	0210144003184P	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2433
24	0210618503184P	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1925
25	0210794603184P	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1958
26	0210422703184P	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2054
27		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1658
28	0210617103184P	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2000

ANNEX 2 ANIMAL DETECTION EVENTS PER CAMERA-TRAP

Annex3 Camera-trap placement specifications

Camera No	Setup Date	Service Da	Habitat	Terrain	Aspect	Alt. (m)	Slope	C/T direction	Height from ground to sensor cm
3	28-May-19	15-Oct-19	Mixed forest/Bushland	Steep	NW	1501	40	S	60
27	26-May-19	N/A	Mixed forest/Bushland	steep	W	1658	40	N	45
1	26-May-19	15-Oct-19	Mixed forest/Bushland	Steep	W	1682		N	30
28	22-Oct-19	N/A	Coniferous forest	steep	W	2000	10	N	100
2	27-May-19	16-Oct-19	Alpine meadow/Rocky/Bushland	Steep	SW	2234	30	N	59
22	15-Aug-19	N/A	Mixed Forest/Rocky/Bushland	Steep	NE	2111	30	N	46
20	15-Aug-19	N/A	Broadleaf forest	Steep	NE	2112	30	NE	(less than 50 cm)
26	18-Aug-19	N/A	Alpine meadow/rocky	Steep	TW	2054	30	NE	130
16	28-Jun-19	26-Aug-19	Broadleaf Forest/bushland	Steep	NW	1183	20	SW	75
24	17-Aug-19	N/A	Broadleaf Forest/ Bushland	Steep	TE	1925	30	E	140
25	17-Aug-19	N/A	Broadleaf Forest/Bushland	Steep	E	1958	25	NE	78
15	28-Jun-19	26-Aug-19	Mixed forest/Bushland	Steep	S	978	5	SW	50
14	28-Jun-19	26-Aug-19	Mixed forest/Bushland	Steep	S	1047	5	SE	50
23	16-Aug-19	N/A	Alpine Wetland/Lake	Flat	FLAT	2433	0	N	57
19	16-Aug-19	N/A	Alpine meadow/Rocky	Steep	N	2752	40	N	(less than 50 cm)
21	16-Aug-19	N/A	Rocky	Steep	NW	2604	30	SE	57
11	25-Jun-19	25-Aug-19	Alpine meadow/Rocky	Steep	SE	3018	10	N	45
10	25-Jun-19	25-Aug-19	Alpine meadow/Rocky	Steep	S	2979	30	N	50
4	26-Jun-19	N/A	Alpine meadow/Rocky	Steep	S	2382	20	N	40
5	26-Jun-19	N/A	Alpine meadow/Rocky	Steep	SE	2584	35	N	30
12	25-Jun-19	25-Aug-19	Alpine meadow/Rocky	Steep	E	2773	40	N	27
13	25-Jun-19	26-Aug-19	Alpine meadow/Rocky	Steep	W	2756	30	W	35
8	23-Jun-19	24-Aug-19	Alpine meadow/Rocky	Undulating	N	2880	10	N	100
9	22-Jun-19	24-Aug-19	Rocky	Steep	N	2732	45	N	45
18	22-Jun-19	24-Aug-19	Alpine meadow/Rocky	Steep	W	2693	30	N	37
17	23-Jun-19	24-Aug-19	Rocky	Steep	NW	2417	15	N	70
6	22-Jun-19	24-Aug-19	Alpine meadow/Rocky/Bushland	Steep	N	2555	30	N	45
7	22-Jun-19	24-Aug-19	Alpine meadow/Rocky/Bushland	Steep	S	2544	30	N	42

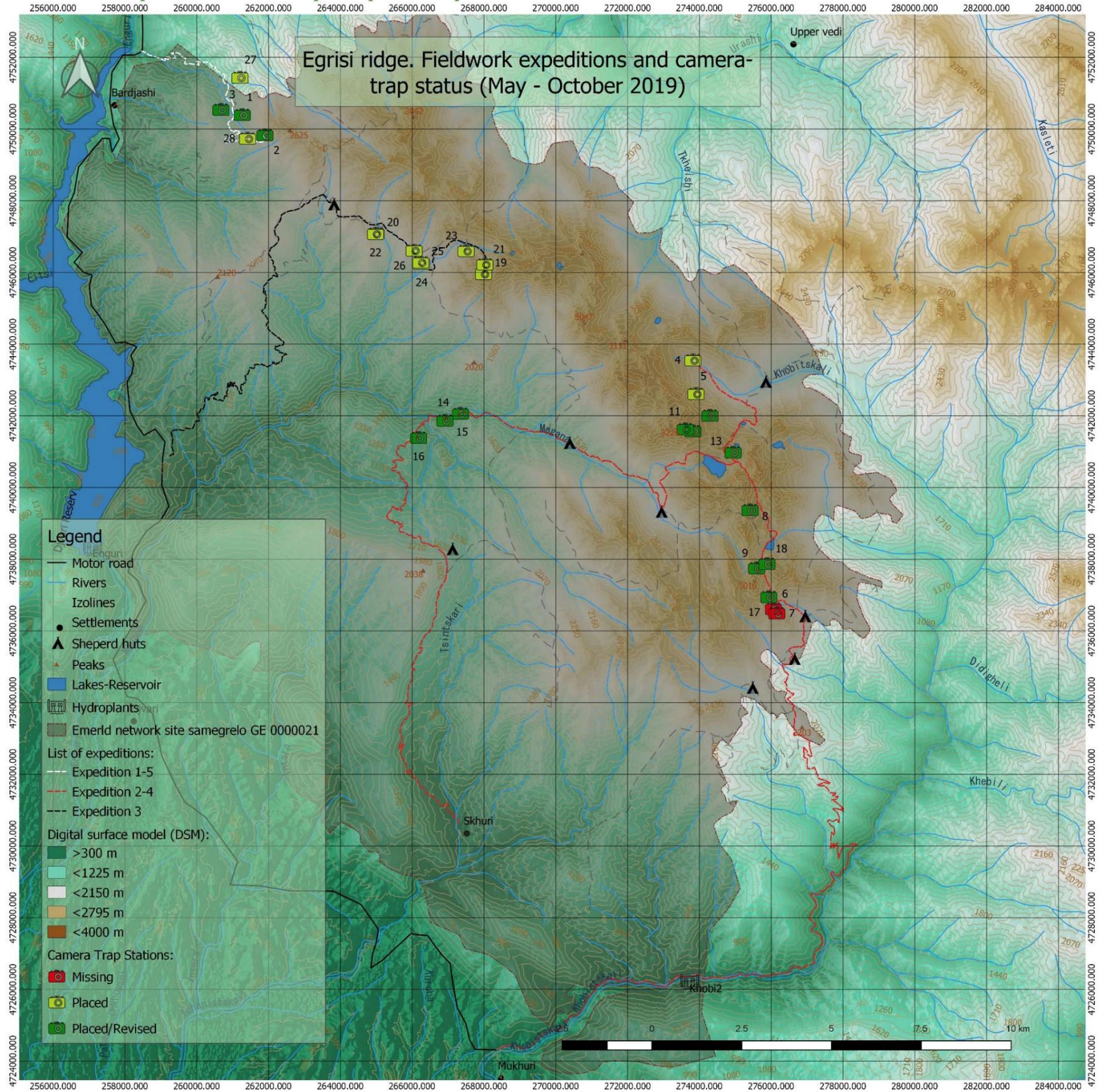
ANNEX 3 CAMERA-TRAP PLACEMENT SPECIFICATIONS

Annex 4 Hardware specifications and camera-trap settings

გამოყენებული ტექნიკის სპეციფიკაცია	
Camera-trap model	Browning Command ops pro BTC – 4p
Power source	1) AA Energizer 1.5v alkaline batterie; 2) AA lithium 1.5V batterie
Camera mount	1)Hme camera trap holder; 2) ხელნაკეთი სამაგრი
Memory card	SanDisk <b>16 Gb</b> Ultra SDHC(CLASS 10)
ფოტო-ხაფანგის პარამეტრები	
Photo quality (mp)	14
Pictures per trigger	2
time (sec) between shots per trigger	2
Timing between triggers (sec)	30
Sensor speed (sec)	0.5
Angle of seensor (degrees)	55
Average trigger distance (m)	21

ANNEX 4 HARDWARE SPECIFICATIONS AND CAMERA-TRAP SETTINGS

Annex 5 Base map, status of camera-traps and placement points



ANNEX 5 BASE MAP, FIELD EXPEDITIONS, SCHEMATIC AND STATUS OF PLACED CAMERA-TRAPS

Projection: WGS 84 UTM zone 38N Authority ID: EPSG 32638

Scale: 1:100 000