



## Baseline Study of Three New Compensatory Sites

Samegrelo 2 (GE0000057), Racha-Lechkhumi (GE0000058), Svaneti-Racha (GE0000059)



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## Executive summary

Three Emerald sites of Georgia – Samegrelo 2 (GE0000057), Racha-Lechkhumi (GE0000058), Svaneti-Racha (GE0000059) were preliminarily selected as so called compensatory territories in order to mitigate the situation that resulted from the reorganisation of Svaneti 1 (GE0000012) candidate site. There was a significant reduction in the area as well as in the degree of coverage of certain Emerald species and habitats. This situation was noted in the last Biogeographical Seminar held in Tbilisi, Georgia in November 2017. The compensatory sites were identified and mapped on the basis of specially designed criteria but no comprehensive desktop analysis or field surveys were conducted. The Standing Committee of the Bern Convention advised Georgia to conduct a more detailed study of the compensatory sites. With the request of the Government of Georgia, Deutsche **Gesellschaft für Internationale Zusammenarbeit** (GIZ) provided The Centre for Biodiversity Conservation and Research (NACRES) with financial means to carry out baseline surveys of the three compensatory sites with the overall objective to support Georgia in fulfilling Bern Convention recommendations to designate three new compensatory sites.

Based on a comprehensive desktop study and rapid field surveys, the project found that Samegrelo 2 (GE0000057), Racha-Lechkhumi (GE0000058) and Svaneti-Racha (GE0000059) have remarkable diversity of Emerald network features. They are especially rich in grassland and forest habitat types, many of which were insufficiently covered by or were completely absent from the country's emerald network before.

Among Resolution #6 plants, there are three species in Samegrelo 2 (GE0000057); two species occur in Racha-Lechkhumi (GE0000058); and four species are found in Svaneti-Racha (GE0000059).

Mammals such as bear, wolf and lynx as well as river otter and many bat species are found in all three sites. Bears are particularly abundant. Due to their size and proximity to other Emerald sites, these sites can significantly contribute to the maintenance of the favourable conservation status of the key large mammal populations. While all the three sites are important for Resolution #6 bats, Samegrelo 2 (GE0000057) is particularly significant due to abundance of suitable shelter such as karst caves.

The three sites are rich in avifauna and are part of one of the most important IBAs (Important Bird Area) in the country. Each site has almost a quarter of all Resolution #6 birds found in Georgia.

While the surveys did not confirm the presence of priority beetles and dragonflies (*Rosalia alpina*, *Cerambyx cerdo*, *Coenagrion ornatum*, *Leucorrhinia pectoralis*, *Stephanopachys linearis*), many locations with suitable habitats were revealed. Based on this and existing information, their presence can not be ruled out. The butterflies *Lycaena dispar*, *Callimorpha quadripunctaria*, *Nymphalis vaualbum* should also be considered as present in the three sites.

The survey found that, in respect of Emerald features, Samegrelo 2 (GE0000057), Racha-Lechkhumi (GE0000058) and Svaneti-Racha (GE0000059) compensatory sites are adequate "compensation" for the unfavourable situation created as a result of the abovementioned reorganisation of Svaneti 1 (GE0000012). In addition, the sites have habitat types that have not previously been identified in Georgia.

Notably the official designation of Samegrelo 2 (GE0000057), Racha-Lechkhumi (GE0000058) and Svaneti-Racha (GE0000059) as Emerald sites will significantly increase the overall effectiveness and coherence of the entire Emerald network of Georgia.

## Introduction

This report presents the results of the baseline survey of three Emerald sites of Georgia including: Samegrelo 2 (GE0000057), Racha-Lechkhumi (GE0000058), Svaneti-Racha (GE0000059). Those sites were preliminarily selected as so called compensatory territories, the need of which arose after Svaneti candidate site was reorganised in 2016. The reorganisation resulted in a significant reduction of the area as well as the degree of coverage of certain Emerald species and habitats as noted in the last Biogeographical Seminar, which was held in Tbilisi, Georgia in November 2017.

The identification of the above compensatory sites aimed at the alleviation/mitigation of the abovementioned situation. Due to high urgency the compensatory sites were identified and mapped on the basis of the following: (i) the brown bear was considered as an “umbrella species”, (ii) existing knowledge of the diversity and availability of habitat types in the areas concerned and (iii) expert opinion. However, no comprehensive desktop analysis or field surveys were conducted. Consequently, the Standing Committee of the Bern Convention advised Georgia to conduct a more detailed study of the compensatory sites. With the request of the Government of Georgia Deutsche **Gesellschaft für Internationale Zusammenarbeit** (GIZ) provided the Centre for Biodiversity Conservation and Research (NACRES) a local subsidy grant on the 25<sup>th</sup> June 2018 to carry out baseline surveys of the three compensatory sites: Samegrelo 2 (GE0000057), Racha-Lechkhumi (GE0000058) and Svaneti-Racha (GE0000059).

The overall objective of the project was to support Georgia in fulfilling Bern Convention recommendations to designate three new compensatory sites, gather all scientific data and complete relevant Standard Data Forms (SDF) for those sites.

In accordance to the project Term of Reference (ToR) the implemented activities included:

- Collect and analyse existing data on Samegrelo 2 (GE0000057), Racha-Lechkhumi (GE0000058) and Svaneti-Rach (GE0000059)
- Perform field research in the target sites to gather data on the presence of the habitats and species from resolution #4 on listing endangered natural habitats requiring specific conservation measures and #6 on listing species requiring specific habitat conservation measures adopted by the Standing Committee of the Bern Convention.
- Produce distribution maps for selected species and habitats in GIS format compatible with the Bern Convention standards.
- Update SDFs for Samegrelo 2 (GE0000057), Racha-Lechkhumi (GE0000058) and Svaneti-Rach (GE0000059)
- Finalise the boundaries of Samegrelo 2 (GE0000057), Racha-Lechkhumi (GE0000058) and Svaneti-Racha (GE0000059) and create GIS maps.

This report includes the results of review and analysis of all information available on Samegrelo 2 (GE0000057), Racha-Lechkhumi (GE0000058) and Svaneti-Racha (GE0000059), as well as the results of the surveys. Based on these results, the conclusions of the presence of key species included in Resolution #6 of the Bern Convention and distribution maps of Resolution #4 habitat types for the three territories are presented. The *Standard Data Forms* (SDF) have also been updated for the three sites according to

the results of the survey. These and other SDFs will be uploaded to the server of the Emerald Network in due time. The survey did not reveal the need to make any significant adjustments to the boundaries of the three sites.

## 1 Approach and constraints

The overall approach was chosen considering the scope of the study area and the allocated time in order to ensure successful implementation of the objectives despite the limited time frame. In respect of field surveys and field data collection, the season was the main limitation since the period from the second half of summer to September is not suitable time for studying certain groups of fauna. In addition, it proved very difficult to mobilize necessary experts with such a short notice. Consequently the butterfly expert was able to go to the field only in August, which is not the best time to find butterflies. Moreover, this period was marked by heavy night-time rains that also affected the survey results. In the second half of the summer through September mammals also tend to be less active and their detection by common direct and indirect techniques is difficult.

We carried out a full-fledged desktop research in the beginning of the project to minimise the effect of the above-mentioned restrictions. It involved gathering and analysing all available materials and information on the study areas. All existing scientific literature and reports produced by NACRES, WWF and others were collected and analysed in detail. The main emphasis was made on the habitats and species of resolutions #4 and #6 respectively. A list of non-avian species that were expected to be present in the study areas was composed (see Annex # 1). A similar list for bird species was developed separately, since the Bern Convention and Biogeographical process consider them separately. Literature review revealed some significant information gaps for the flora and fauna as well as habitats of the study areas. In addition, the list of habitats and species of the respective resolutions likely found in the study areas were further verified and amended as needed. As result we had species whose presence had been already confirmed by credible scientific data and/or by recent field studies. We also identified those species whose presence was highly likely or, on the contrary, highly unlikely based on expert opinion. Some species were recorded in the region in the past, but have not been verified by more recent studies and their existence in Georgia is questionable as per expert opinion. Such species were deleted from the list of key species for further surveys.

Based on the above, it was possible to further prioritise the key species and habitats for field surveys so that the focus could be to verify the species that were likely to be present in the study areas and also to look for questionable species to the extent possible. The second main criterion in determining priorities for field surveys was the recommendations and results of the 2017 Biogeographical Seminar. Special attention was paid to those species and habitats whose status was assessed as "insufficient". We also considered as priority the species that are included in the list of species and habitats for national monitoring (see Appendix # 1) so that the project could contribute to Georgia's reporting to the Bern Convention.

Below, the survey methods are described in detail for each direction such as: identification and mapping of priority habitats, identification and preliminary assessment of key species. The latter covered the following groups of fauna: insects (beetles and butterflies), birds, and large and medium-sized mammals. It should be noted that there were credible data on bats and the project expert confirmed the presence



of all the preliminarily identified species in the study areas. Thus, there was no need of additional field surveys for bats.

## 2 Methods

### 2.1 Habitat identification and mapping

Habitat survey and mapping was based on (i) existing information and the results of past studies and (ii) the analysis of ortho-images and ground surveys. The analysis of ortho-images allowed us to identify key habitats and create their primary distribution maps. Subsequently special ground surveys were undertaken to verify habitats and determine their distribution within the study areas.

The analysis of existing literature and other information and primary analysis of ortho-images for habitats and plant species were carried out during June and August 2018. Relevant ground surveys were conducted in September of the same year.

### 2.2 Flora species survey

We composed the list of Resolution #6 plant species found in the study areas as per past surveys and existing information. This list was later verified by field surveys as far as limited time and seasonal constraints permitted.

### 2.3 Large and medium-sized mammals survey

The total study area was rather large and it was impossible to cover all of it within the available short period of time. Therefore, it was necessary to select sample areas where it would be possible to conduct detailed field surveys and obtain reliable data. Based on existing scientific information, there was no doubt about the presence of key large and medium-sized mammals on the study areas. Accordingly, the main focus of the survey was on their exact distribution and population status to the extent possible within the scope of a rapid assessment.

We used camera trapping and tracking to assess the diversity and distribution of large mammals. These two methods complement each other and in a short period of time can yield fairly good results and help create an overall picture of the large mammal fauna of the area. As noted, the survey period was not very suitable for studying mammalian populations. In the summer, almost all animals tend to move less actively and are not usually aggregated in specific areas with physical and ecological characteristics. Therefore, it is difficult to detect them through their signs (such as foot prints, excrements, etc.) or by camera traps. Using expert judgment, we identified sections for sampling that would be representative of the entire study areas.

We used *Cuddeback Black Flash* camera traps. This model is distinguished by a long working period in the field and by overall reliability. The camera is equipped with infrared light and the whole device is therefore almost invisible at night. First, we identified trails that were apparently actively used by large mammals and the likelihood of photographing large mammals was higher. The camera traps were placed 1.5 km

apart from each other to distribute them as evenly as possible throughout the sample section. For installing camera traps, we looked for a site where animals would have little opportunity to avoid the device and would be more likely to enter the view of the sensor. The camera traps were camouflaged with branches and leaves to minimize the risk of their detection by humans (people often damage or even steal camera traps especially outside protected areas). Most camera traps were placed in the forested areas, the principle habitat of the key species (bear, wolf, lynx).

The tracking involved recording signs of key species on predefined transects. We looked for such signs as footprints, excrements, diggings, day beds, etc. The location of the identified marks was taken by GPS and later put on the map. The field team normally broke into two or three groups, each group covering 10 km per day on average.

Expert knowledge as well as a field guide were used for foot print identification. While walking along the transects the observers paid particular attention to places where animals were more likely to leave tracks such as river banks, wet areas around water holes, etc. In the case of river otter, we looked for its signs at river confluences and dams where these animals usually mark their individual territories by spraints.

While working in the field, we tried to evaluate the habitats of key species, the level of human disturbance and threats. The local population was the source of additional information and through interviewing them we often obtained information on distribution of some large mammals as well as on local threats. Local hunters were also a good source of information on the forest trails and roads.

### 2.3.1 Assessed areas and key species

In 2016, the WWF Caucasus Program Office commissioned a detailed zoological survey in the north and central part of Racha that focussed on main groups of fauna. Therefore, our surveys were concentrated on the south-western part of the Racha-Lechkhumi Range where no fauna study had been conducted. We carried out detailed surveys in the Ritseula gorge up to the river sources (Chutkharo pass). We also surveyed Samegrelo and Svaneti sections of the study area.

NACRES conducted large mammal surveys in Askhi masiff of Samegrelo in 2014. Therefore our field work was focussed more on the Lebarde gorge. We also covered Lower Svaneti section, namely the Zsekho gorge, including the Zeskho and Koruladadji tur (*Capra cylindricornis*) habitats

Key species of large and medium-sized mammals included: brown bear, wolf, lynx and river otter.

## 2.4 Bird survey

The ornithological assessment mainly relied on the existing information since reliable data were available for the study areas. Field survey was needed only to verify the existence of some species on *Samegrelo-2* site. The ornithological survey was conducted on the Egrisi Ridge and the River Tekhuri Gorge along pre-selected routes. Species identification relied on visual observation as well as identifying by sound (direct methods) as well as on nest identification and habitat analysis.



## 2.5 Insect surveys

We used direct observation method on transects to collect presence-absence data on diurnal butterflies as well as on moths that are also active by day. Habitats were evaluated for the presence of specific host plants of the larvae of the key species. Butterflies and moths were captured using nets and were placed in a transparent container for identification and photography, after which they were released back into the same habitats where they had been captured.

Observations were conducted in pre-selected representative gorges. In lower sections of the gorges we moved by car and observed butterflies and moths while they were flying or perching on trees; we also looked for host plants and stopped in certain areas for more detailed observation. In the upper areas of the gorges without road access, we walked on foot and continued detailed observations in specific areas such as forest openings and meadows.

We explored ponds, slow streams and river banks to detect the key dragonflies: *Leucorrhinia pectoralis*, *Lindenia tetraphyla*, *Stephanopachys linearis*. We tried to identify dragonflies while they were perching on plants or captured them if necessary.

The detection of the key beetles: *Rosalia alpina*, *Cerambyx cerdo*, *Coenagrion ornatum*, *Stephanopachys linearis* relied on direct observation as well as looking for shed skins of the insects and examining their host plants for the presence of any characteristic damage such as holes and pathways (e. g. oak trees were observed for *Cerambyx cerdo*). When necessary we removed damaged skin from the trees to find them. Photos were taken and GPS readings were collected. We explored broad leaf, coniferous as well as mixed forest areas, oak-beech and spruce-pine forests, as well as river banks and swampy areas.

Entomological surveys were carried out in the Ritseula and Lajanura gorges; gorges around villages Salkhino, Taleri and Kurzu (Martvili district), around village Taia (Chkhorotsku district), gorges at village Skuri (Tsalenjikha districts); upper sections of the river Jonouli around villages Chkumi and Kulbaki; areas around villages Choria, Gebi and Tevresho in Oni district.

## 3 A brief description of the study areas

The study areas are situated in the north-western part of Georgia mostly in Samegrelo-Zemo Svaneti and Ratcha-Lechkhumi-Kvemo Svaneti regions. Only a small section is in the Imereti region (see Appendix #2 for map).

### **Samegrelo 2 (GE0000057)**

The total area of “Samegrelo 2” site is 158,533 ha. The highest altitudinal point is at Uskuri peak (3,318 m a.s.l.) situated on the Uskuri ridge, while the lowest point is the valley of the river Abasha at 300 m a.s.l. The area includes southern aspect of the Egrisi ridge, upper reaches of the rivers Khobistskali and Tekhura and the Askhi massif. Main rivers are the Tekhura, Abasha, Toba, Khobi (Khobistskali) and Kasleti.

The site covers parts of the following municipalities of three regions: Mestia, Chkhorotsku, Martvili (Samegrelo - Zemo Svaneti); Lentekhi and Tsageri (Racha-Lechkhumi and Lower Svaneti); Khoni (Imereti).

#### ***Ratcha-Lechkhumi (GE0000058)***

The total area of Ratcha-Lechkhumi site is 79,928 ha. The highest point is at Samertskhle peak (3,562 m a.s.l.) located on the Lechkhumi ridge; the lowest point is in the Jughurisghele gorge at 740 m a.s.l. The region covers montane forest belt with broad-leaved and mixed forests along with sub-alpine and alpine zones.

The geology of the region is characterised with slate, sandstone and igneous rocks, calcareous massifs as well as with the abundance of karstic caves. The region is rich in mineral waters. River erosion with the corresponding debris flows and karstic processes have contributed to the formation of most of Racha-Lechkhumi topography. Main rivers are the Lajanura, Askis-tskali, Ritseula, Choluri (left tributary of river Tskhenistskali).

The site belongs to Lentekhi, Tsageri and Ambrolauri municipalities of Racha-Lechkhumi and Kvemo Svaneti region.

#### ***Svaneti-Racha (GE0000059)***

The total area of the site is 109.959 ha. Ailama (4547 m a.s.l.) is the highest peak (situated on the main Caucasus watershed) and the lowest altitude is at 1,340 m a.s.l. in the Notsarula gorge. It covers montane forests, subalpine and alpine zones. Main rivers are the Zeskho, Tskhenistskali, Rioni and Chveshura (left tributary of the Rioni).

The site belongs to Lentekhi, Ambrolauri and Oni municipalities of Racha-Lechkhumi and Kvemo Svaneti and partially Mestia (Samegrelo-Zemo Svaneti region).

## **4 Results**

### **4.1 General description of the study areas**

A large part of the Ratcha – Lechkhumi (GE0000058) site is included in the game reserve (hunting farm) that has rangers and a station on the main road of the valley. During the field work, groups of fishing enthusiasts were often encountered; gun shots were also heard several times. According to the locals, illegal hunting and fishing is common. Official logging areas are designated around the western tributaries of the Ritseula river where several felling operations are in place. Both fuelwood and timber are harvested. Excluding the logging areas, overall the gorge is well preserved and represents a good habitat for large mammals. This is supported by the survey results too (see below the survey results for large and medium-sized mammals). There was practically no livestock on the alpine and subalpine grasslands adjacent to the Chutkharo pass and many of the herders' huts looked completely abandoned. According to the locals, there were few cattle on the high altitude pastures this year (possibly in previous years too) and the majority of herders chose to occupy pastures that are accessible by road.

Lechkhumi area, specifically lower and middle parts of Lajanura gorge, is a popular recreation destination during the summer months. The abundance of mineral waters attracts both locals as well as visitors from Kutaisi (the nearest major city). Local villages are supplied with firewood from the gorge. Illegal hunting and fishing such as using electroshock are common practices according to the locals. Similar to the Ritseula gorge, livestock grazing is minimal on the alpine pastures. Only a single herder's hut was found and the majority of pastures looked abandoned. According to the local farmers, many completely abandoned livestock farming or decreased their livestock to such levels that they no longer need to go up to the alpine pastures.

Intensive logging was witnessed on the Samegrelo section of the study area in August. According to the locals, some parts of the forest are leased to forestry companies that extract firewood and timber. There is a quarry in the gorge. However locals were not aware what was exactly mined. Local villagers noted high poaching in the gorge.

## 4.2 Habitat identification and mapping

Habitat lists of the three study areas were prepared in the initial stage of the project based on earlier research and existing information:

### **Samegrelo 2**

- C3.55 Sparsely vegetated river gravel banks
- C3.62 Unvegetated river gravel banks
- D4.2 Basic mountain flushes and streamsides, with a rich arctic-montane flora
- E3.4 Moist or wet eutrophic and mesotrophic grassland
- E3.5 Moist or wet oligotrophic grassland
- G1.6 *Fagus* woodland
- G1.A1 *Quercus – Fraxinus – Carpinus betulus* woodland on eutrophic and mesotrophic soils
- G1.A4 Ravine and slope woodland

### **Ratcha - Lechkhumi**

- C3.55 Sparsely vegetated river gravel banks
- C3.62 Unvegetated river gravel banks
- E3.4 Moist or wet eutrophic and mesotrophic grassland
- G1.6 *Fagus* woodland
- G3.17 Balkano-Pontic *Abies* forests – G3.1H *Picea orientalis* forests

### **Svaneti - Ratcha**

- C3.55 Sparsely vegetated river gravel banks
- C3.62 Unvegetated river gravel banks
- D4.2 Basic mountain flushes and streamsides, with a rich arctic-montane flora
- E3.4 Moist or wet eutrophic and mesotrophic grassland
- E3.5 Moist or wet oligotrophic grassland
- G1.21 Riverine *Fraxinus - Alnus* woodland, wet at high but not at low waters

G1.6 *Fagus* woodland

G3.17 Balkano-Pontic *Abies* forests – G3.1H *Picea orientalis* forests

G1.A1 *Quercus* – *Fraxinus* – *Carpinus betulis* woodland on eutrophic and mesotrophic soils

G3.4E Ponto-Caucasian *Pinus sylvestris* forests

As a result of the project, these and other habitats were identified and mapped. The table (#1) below shows the final list of those habitats. Among the additionally identified habitats are “scree” (EUNIS Level 1 unit “H”). The study sites include four habitat types from this category: H2.3. *Temperate-montane acid siliceous scree*s; H2.4. *Temperate-montane calcareous and ultra-basic scree*s; H2.5. *Acid siliceous scree*s of warm exposures; H2.6. *Calcareous and ultra-basic scree*s of warm exposures. Unfortunately it was impossible to map these habitats separately for which field studies during the active vegetation period and/or detailed maps of soil types (not available at present) would be needed. Therefore, we combined them and created one distribution map for category “H”. Nevertheless, it has been confirmed, that each of the study sites includes at least one of the abovementioned “scree” habitat types, which emphasises the importance of these sites for the conservation of those habitats. The three Emerald sites are remarkably diverse in grassland habitats (EUNIS Level 1 unit “E”), which is also connected to the diverse edaphic conditions. Therefore, additional studies during the vegetation period are necessary for more accurate mapping of the grassland habitats, along with more detailed information on soils. See Appendix #3 for the Resolution #4 habitats identified on the study sites. The habitats are grouped according to broader categories on the maps. Notably there are overlaps between some habitat distributions (e. g. grasslands). This is explained by the fact that the distribution maps of a habitat depict the extent of occurrence of that habitat, rather than the specific area of occupancy. In fact, the actual area of occupancy of these habitats can be less than the extent of occurrence. This is in full accordance with the Bern Convention mapping standards and also reflected in the reporting formats.

Table #1. Identified and mapped habitat types.

Habitat type	Samegrelo 2 (GE0000057)	Ratcha- Lechkhumi (GE0000058)	Svaneti- Ratcha (GE0000059)
<b>C3. Littoral zone of inland surface waterbodies</b>			
C3.55 Sparsely vegetated river gravel banks		x	x
C3.62 Unvegetated river gravel banks			x
<b>D4. Base-rich ferns and calcareous spring mires</b>			
D4.2 Basic mountain flushes and streamsides, with a rich arctic montane flora	x		
<b>E. Grasslands and lands dominated by forbs, mosses or lichens</b>			
E1.2 Perennial calcareous grassland and basic steppes	x		x
E3.4 Moist or wet eutrophic and mesotrophic grassland	x	x	x
E3.5 Moist or wet oligotrophic grassland	x		
E4.3 Acid alpine and subalpine grassland	x	x	x
E4.4 Calcareous alpine and subalpine grassland	x		
E5.4 Moist or wet tall-herb and fern fringes and meadows	x	x	x
E5.5. Subalpine moist or wet tall-herb and fern stands	x	x	
<b>G. Woodland, forest and other wooded land</b>			

G1.12 Boreo-alpine riparian galleries	x		x
G1.22. Mixed oak - elm - ash woodland of great rivers	x		
G1.A1 <i>Quercus - Fraxinus - Carpinus betulus</i> woodland on eutrophic and mesotrophic soils	x		
G1.A4 Ravine and slope woodland	x		
G1.A7 Mixed deciduous woodland of the Black and Caspian Seas	x		
G1.6 <i>Fagus</i> woodland	x	x	x
G3.17 Balkano-Pontic <i>Abies</i> forests - G3.1H <i>Picea orientalis</i> forests	x	x	x
G3.4E Ponto-Caucasian <i>Pinus sylvestris</i> forests			x
G3.9 Coniferous woodland dominated by <i>Cupressaceae</i> or <i>Taxaceae</i>	x		x
<b>H. Inland unvegetated or sparsely vegetated habitats ("screes")</b>			
H2.3. Temperate-montane acid siliceous screes	x	x	x
H2.4. Temperate-montane calcareous and ultra-basic screes	x	x	x
H2.5. Acid siliceous screes of warm exposures	x	x	
H2.6. Calcareous and ultra-basic screes of warm exposures	x	x	x

All of the three study sites are remarkably diverse in habitat types included in Resolution #4 for both grassland and woodland level 1 units. "Samegrelo 2" and "Ratcha-Lechkhumi" are especially rich in *Fagus* woodlands (G1.6) respectively covering 44% and 45% of the total areas of the sites. It is also notable that *Sparsely vegetated river gravel banks* (C3.55) was previously underrepresented inside the Emerald Network of Georgia and *Unvegetated river gravel banks* (C3.62) was mapped for the first time. The same is true for "screes" (category H.).

The study sites are of high importance for other habitat types that were assigned the status of "insufficient" or were entirely absent from the network at the 2017 Biogeographical Seminar. These include:

**Grassland habitats:**

- E4.3. Acid alpine and subalpine grassland
- E4.4. Calcareous acid alpine and subalpine grassland
- E5.4 Moist or wet tall-herb and fern fringes and meadows
- E5.5 Subalpine moist or wet tall-herb and fern stands

**Woodlands:**

- G1.A1 *Quercus – Fraxinus – Carpinus betulus* woodland on eutrophic or mesotrophic soils
- G1.A4 Ravine and slope woodland
- G3.17 Balkano-Pontic *Abies* forests
- G3.1H *Picea orientalis* forests
- G3.4E Ponto-Caucasian *Pinus sylvestris* forests

## 5 Plants

We identified Resolution #6 plant species that were highly likely to be present in the three sites based on existing information and GIS analysis. These include:

**Samegrelo 2:** *Dicranum viride*, *Agrimonia pilosa*, *Vaccinium arctostaphylos*

**Racha - Lechkhumi:** *Agrimonia pilosa*, *Vaccinium arctostaphylos*.

**Svaneti - Racha:** *Dicranum viride*, *Agrimonia pilosa*, *Vaccinium arctostaphylos*

Flowering individuals of *Vaccinium arctostaphylos* were found in the Ritseula gorge during the field surveys. *Rhododendron luteum* was documented near Zeskho village, Svaneti-Racha site – this species was not included in the preliminary list. The other species from the preliminary list should also be considered as present on the study sites based on existing information and expert opinion, even though we were unable to confirm their presence, high likely due to short survey time and the period of year. Table #2, below, summarizes the results for Resolution #6 plant species by Emerald sites. The distribution maps are provided in Appendix #4.

**Table #2:** Resolution #6 plant species found on study areas.

Species code	Scientific name	Samegrelo 2	Racha-Lechkhumi	Svaneti-Racha
1381	<i>Dicranum viride</i>	x		x
1939	<i>Agrimonia pilosa</i>	x	x	x
2172	<i>Vaccinium arctostaphylos</i>	x	x	x
4093	<i>Rhododendron luteum</i>			x

### 5.1 Large and medium-sized mammals

The three Emerald sites are not dissimilar in respect of key large mammal communities including bear (*Ursus arctos*), wolf (*Canis lupus*) and lynx (*Lynx lynx*) according to preliminary assessment and existing information as well as based on local ecological conditions. Therefore, below, survey results are combined for all three sites.

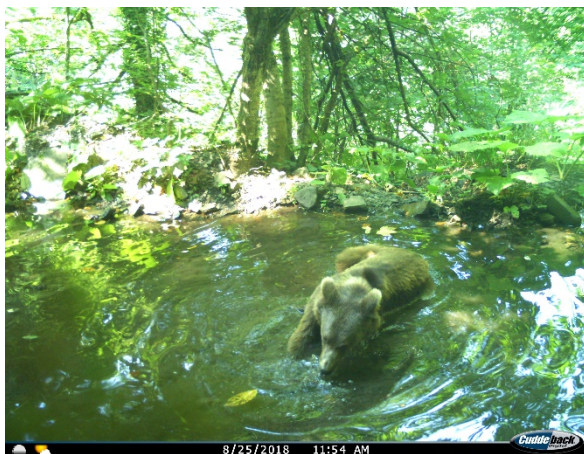
A total of 24 camera traps were placed in the Ritseula and Lajanura gorges (see Appendix #5 for map). One of them was lost (presumably stolen) and yet another did not function properly and failed to collect data. The remaining 22 camera traps collected data for a total of 639 camera trap/days and in total took 3,109 photos and 771 videos. Most of these were “false” images (2460 photos), which is an usual occurrence, while 453 photos depicted humans and livestock. Wild animals were taken in up to 200 photos (see Table #3), among which brown bears are most frequent – 107 photos and 94 videos. It is probably safe to assume that the brown bear is a very common animal in the study areas.

**Table #3.** Wild animals photographed by the camera traps



Species	No. of photos
Brown bear	107
Chamois	14
Roe deer	10
Wild cat	11
Small mammals, birds, unidentified animals.	54
<b>Total</b>	<b>196</b>

We recorded footprint of wolves and lynx in the Retseula gorge but these animals were not captured on the camera traps. This was not unexpected since wolves are very shy and try to avoid any new and unknown object such as a camera trap. (For example in one of the earlier NACRES studies in the Vashlovani National Park, wolves first appeared on our camera traps only in six months after installation). Thus it was expected that the 4-week period of camera trapping would not be sufficient to record wolves. Lynx on the other hand, naturally has a low density. In addition these animals tend to be least active in summer. Therefore the fact that no lynx was detected by the camera traps was also not unexpected (the best period for lynx survey is probably late autumn and winter). Nevertheless both lynx and wolves were detected in the study areas by tracking.



**Photos 1 and 2.** Brown bears taken by camera traps in the Ritseula and Lajanura gorges.

There were more photos of bears and roe deer in the Ritseula gorge (Racha province) as compared to the Lajanura gorge (Lechkhumi province). The situation was reversed for chamois. These results may indicate the actual densities in the study areas. However, this short survey does not allow drawing any reliable conclusions on the spatial structure or densities of the key species.

A total of 25 transects were made with an average length of 10 km for tracking key large mammals. All obtained results such as foot prints and direct observation points were mapped for the key as well as other important species such as chamois, roe deer and tur (see Appendix 35 for map).

Brown bear tracks and scats were encountered most frequently during the whole effort of tracking and some individuals were also directly observed. Lynx foot prints were recorded in the Ritseula gorge, which



reliably confirmed the presence of this animal despite the fact that local people believed there were no lynx in the gorge. Wolf tracks were also recorded multiple times.

Brown bear and wolf signs (as well as chamois) were recorded in the Samegrelo section of the study areas. However the frequency of encountering these signs was much lower than that in Racha-Lechkhumi.



**Photo #3.** Lynx foot print in the Ritseula gorge

Bear and wolf tracks were recorded in the Lower Svaneti section namely in the Zeskho gorge. We also attempted to gather data on the Eastern tur (*Capra cylindricornis*), which is not included in Resolution #6 but as an endemic to the Caucasus is an important species. We observed only two individuals in the Zeskho and Koruldashi tur sites (this may be explained by low numbers likely due to high poaching or/and by the season – tur are easier to observe in late autumn during which time they come down to lower altitudes).

Despite multiple attempts we were unable to record river otters. However, NACRES surveys conducted in Racha and Svaneti in 2102 showed that the species occurs throughout the region. At the same time, our field surveys indicated that the rivers and streams of the study areas are rich in otter food. Therefore river otters should be regarded as present in the study areas. However, more detailed studies at appropriate time (such as autumn and spring) are needed to assess their exact distribution and population status.

The updated list of mammals is shown in Appendix #6. This list includes species that are reliably confirmed as present in the study areas by earlier research or earlier or this surveys.

In addition to the key species, we recorded roe deer, chamois and wild cat foot prints. Roe deer tracks were very rare in both the Ritseula and Lajanura gorges while they seem to be abundant according to the local people as well as to our own camera trap data.

## 5.2 Birds

All three Emerald sites are situated in the same ecological region as far as birds are concerned. Nevertheless, there are some differences in bird diversity between Racha-Lechkhumi (GE0000058) and Svaneti-Racha (GE0000059) sites on the one hand, and Samegrelo 2 (GE0000057) on the other. Therefore we review the first two sites together and Samegrelo 2 separately.

*Racha-Lechkhumi* (GE0000058) and *Svaneti-Racha* (GE0000059)

A total of 139 bird species have been recorded on these sites belonging to 13 orders and 35 families. Among them 50 species are included in Resolution #6 (see Appendix #7)

*Samegrelo -2* (GE0000057)

Ornithological assessments conducted during 2000-2017 and additionally as a result of this survey there are 133 bird species from 13 orders and 35 families. Among them, 52 species are included in Resolution #6 (see Appendix #8).

## 5.3 Reptiles and amphibians

The endemic Caucasian viper (*Vipera kaznakovii*) was not recorded during our surveys. Nor was it found by the recent assessment in Racha that was commissioned by WWF for the purpose of establishing new protected area in the region. Nevertheless, this species must not be excluded from the list since a brief field survey is usually insufficient to record such low density snake. On the other hand reliable scientific data indicate the presence of this reptile both in Racha and Svaneti. Thus Caucasian viper (*Vipera kaznakovii*) should be regarded as present in all of the three Emerald sites.

Despite the fact that our surveys failed to record Southern crested newt (*Triturus karelinii*), its presence in Samegrelo 2 and Racha-Lechkhumi sites is practically out of the question based on reliable scientific data.

## 5.4 Molluscs

Some experts believe that among Resolution #6 molluscs *Vertigo moulinsiana* is found in the Black Sea biogeographical region of Georgia. This mollusc typically occurs in pit bogs, at rivers, channels and ponds in lowland limestone wetlands. According to <http://biodiversity-georgia.net/> is found in Georgia while the IUCN Red List does not include Georgia in the global range of this species. Samegrelo 2 is the only site among the study areas which could in theory have this species. However, neither this survey nor any earlier assessments has found this mollusc there. Thus its presence is highly questionable.

## 5.5 Insects

### Beetles

While searching for Alpine Longhorn Beetle (*Rosalia alpina*) we looked for its typical habitat, characterised with mature and climax beech stands with wind thrown or dying trees. Such habitats were found only in Racha-Lechkhumi and Lower Svaneti regions, namely, from village Ghebi to village Shiukatchala of Oni district as well as on the right slopes of the river Jonouli gorge around village Chkumisa and village Kulbaki of Tsageri district. Even though, its typical habitats were present, the insect itself was not found. However, according to reliable and relatively recent scientific information, this species is found in Upper and Lower Svaneti and Racha-Lechkhumi regions. Therefore, the presence of *Rosalia alpina* in Racha-Lechkhumi and Svaneti-Racha sites is highly likely.

Habitats of Great Capricorn Beetle (*Cerambyx cerdo*) were revealed in Samegrelo-Upper Svaneti as well as Racha-Lechkhumi Lower Svaneti regions. In the Samegrelo-Upper Svaneti region, in the vicinity of villages of Martvili, Chkhorotsku and Tsalenjikha districts, forest stands on the Emerald Sites and nearby territories are represented by mixed forest composed of chestnut, beech and hornbeam as well as Georgian oak (*Quercus iberica*). Two species of oak – Georgian oak (*Quercus iberica*) and Caucasian oak (*Q. macranthera*) were found in the Tsageri and Oni districts of Racha-Lechkhumi Lower Svaneti Region. During the survey we found damaged oak trees, but no *Cerambyx cerdo* or their signs were observed.

Typical habitats of *Stephanopachys linearis* were found only in Tsageri and Oni districts of Racha-Lechkhumi-Lower Svaneti region where mixed deciduous and coniferous stands occur. Such forests were found for example in the vicinity of villages Chkumisa and Kulbaki of Tsageri district. But neither damaged trees and nor the insect was observed. Another section of the typical *Stephanopachys linearis* habitat was found at village Ghebi and Tevresho in Oni district; damaged pine trees with secondary pests were observed. However no signs of *Stephanopachys linearis* were revealed.

### Dragonflies

Suitable habitats of *Coenagrion ornatum* such as river banks with inflowing small streams occur in the district of Tsageri and Oni in Racha-Lechkhumi Lower Svaneti region. We did observe the visually similar and related dragonfly *Platycnemis pennipess* in the river Jonouli gorge near villages Chkumisa and Kulbaki (Tsageri district). Suitable habitats were also found in Oni district, namely near villages Chiora, Ghebi and Tevresho. However, *Coenagrion ornatum* was not observed.

*Leucorrhinia pectoralis* is found in diverse habitats and potentially can occur throughout the study areas at sites where there are slow rivers sections, streams, ponds, etc. However, this species was not observed during our field surveys.

Suitable habitats of *Lindenia tetraphylla* was not revealed in the study area. Until recently this species was recorded only in Abkhazia and in recent years also in Krtsanisi Park in Tbilisi. The presence of this dragonfly in the study area is highly unlikely.



**Photos #4 and 5.** *Callimorpha quadripunctaria* in Lashichala and Ritseula

### **Butterflies and moths**

Out of the three key species of butterflies and moths, two were observed on the study area – the large copper (*Lycena dispar*) and Jersey tiger (*Callimorpha quadripunctaria*). The third key species Compton tortoiseshell (*Nymphalis vaualbum*) was not revealed.

Jersey tiger (*Callimorpha quadripunctaria*) was found in all three sites (Photos # 4 and 5). The large copper (*Lycena dispar*) was observed at Lashichala in the Lajanura gorge (Racha-Lechkumi). According to the literature, this species occurs throughout Georgia. Therefore, it is safe to consider it present on all three sites. Compton tortoiseshell (*Nymphalis vaualbum*) was not observed. This species is rare, but is also found throughout the country. Therefore it should not be excluded from the list of species of the study areas.

Appendix #6 presents key insects whose presence is practically confirmed on all of the three Emerald Sites based on the surveys carried out within this project and / or on existing scientific or expert information.

## **6 Conclusions**

Samegrelo 2 (GE0000057), Racha-Lechkumi (GE0000058) and Svaneti-Racha (GE0000059) have remarkable diversity of Emerald network features. They are especially rich in grassland and forest habitat types, many of which were insufficiently covered by or were completely absent from the country's emerald network before.

The importance of these sites is emphasized by the presence of such forest habitat types as: G1.6 *Fagus* woodland, G1.A1 *Quercus - Fraxinus - Carpinus betulus* woodland on eutrophic and mesotrophic soils, G1.A4 Ravine and slope woodland, G3.17 Balkano-Pontic *Abies* forests - G3.1H *Picea orientalis* forests, G3.4E Ponto-Caucasian *Pinus sylvestris* forests.



The same is true for Grassland habitats including: E4.3 Acid alpine and subalpine grassland, E4.4 Calcareous alpine and subalpine grassland, E5.4 Moist or wet tall-herb and fern fringes and meadows, E5.5. Subalpine moist or wet tall-herb and fern stands. Other noteworthy habitats are C3.55 *Sparsely vegetated river gravel banks* and C3.62 *Unvegetated river gravel banks*.

Among Resolution #6 plants, there are three species – *Dicranum viride*, *Agrimonia pilosa* and *Vaccinium arctostaphylos* – in Samegrelo 2 (GE0000057); two species, *Agrimonia pilosa* and *Vaccinium arctostaphylos* occur in Racha-Lechkhumi (GE0000058); and four species – *Dicranum viride*, *Agrimonia pilosa*, *Vaccinium arctostaphylos* and *Rhododendron luteum* – are found in Svaneti-Racha (GE0000059).

Among the three study areas (study Emerald sites), three key large mammals – bear, wolf and lynx – were recorded in Racha-Lechkhumi (GE0000058); wolf and bear were recorded in the other two sites, Samegrelo-2 (GE0000057) and Svaneti-Racha (GE0000059). Based on earlier studies, river otters are present in all three sites. According to expert opinion, the lynx is also present in Samegrelo 2 (GE0000057) and Svaneti-Racha (GE0000059) despite that we were unable to record this animal.

According to reliable literature and recent assessments all three sites have the following bat species: *Rhinolophus hipposideros*, *Barbastella barbastellus*, *Myotis blythii*. Based on the opinion of the project expert *Rhinolophus ferrumequinum*, *Rhinolophus euryale* and *Myotis emarginatus* are also found throughout the three sites likely with varying densities since Samegrelo-2 is especially rich in bat species.

While all the key large mammals (brown bear, wolf and lynx) are found throughout the study areas, bears are apparently particularly abundant. The size and proximity of these sites to other Emerald sites suggest that these three compensatory sites can significantly contribute to the maintenance of the favourable conservation status of the key large mammal populations. Considering their richness in water courses and suitable food base, they are also very significant for river otters. While all the three sites are important for Resolution #6 bats, Samegrelo 2 (GE0000057) is particularly significant due to abundance of suitable shelter such as karst caves.

The three Emerald sites are rich in avifauna and the whole region is considered as one of the most important IBAs (Important Bird Area) in the country. Noteworthy birds include forest species including such groups as owls, woodpeckers, warblers, tits, etc. The region is a very important shelter and resting site for migrating raptors and passerines during the autumn migration. Among Resolution #6 birds, Racha-Lechkhumi (GE0000058) and Svaneti-Racha (GE0000059) has at least 50 species and Samegrelo 2 (GE0000057) has at least 52. In either case, the number is almost a quarter of all Resolution #6 birds found in Georgia (208 spp.).

Among the key reptiles and amphibians *Vipera kaznakovii* is found in all the three sites and *Triturus karelinii* occurs in Svaneti-Racha (GE0000059) and Samegrelo-2 (GE0000057).

The presence of *Vertigo moulinsiana* in Samegrelo 2 (GE0000057) is probable but can not be considered confirmed.

The brief surveys conducted by this project failed to record any of the key species of beetles and dragonflies, nor any signs of the presence of the beetles such as species-specific holes and pathways in

trees. However, we did confirm the presence of the suitable habitat for some of the species. Hence, their presence can not be ruled out. Such species include: *Rosalia alpina*, *Cerambyx cerdo*, *Coenagrion ornatum* and *Leucorrhinia pectoralis*. The same is true for *Stephanopachys linearis*, despite the fact that this species has never been recorded in Georgia. On the other hand, *Lindenia tetraphylla* is highly unlikely to be found in the three sites.

All three key butterflies – *Lycaena dispar*, *Callimorpha quadripunctaria*, *Nymphalis vaualbum* – should be considered as present throughout the study areas i.e. Samegrelo 2 (GE0000057), Racha-Lechkhumi (GE0000058) and Svaneti-Racha (GE0000059).

As a general conclusion it should be noted that the survey found that, in respect of Emerald features, Samegrelo 2 (GE0000057), Racha-Lechkhumi (GE0000058) and Svaneti-Racha (GE0000059) compensatory sites are adequate “compensation” for the unfavourable situation that was created as a result of the reorganisation of Svaneti candidate site (Svaneti 1 GE0000012) both in respect of area and Resolution #4 habitats and Resolution #6 species. In addition, the survey found that the sites have such habitat types that had not previously been identified in Georgia. It is also important to note that the official designation of Samegrelo 2 (GE0000057), Racha-Lechkhumi (GE0000058) and Svaneti-Racha (GE0000059) as Emerald sites will significantly increase the overall effectiveness and coherence of the entire Emerald network of Georgia.

## APPENDICES

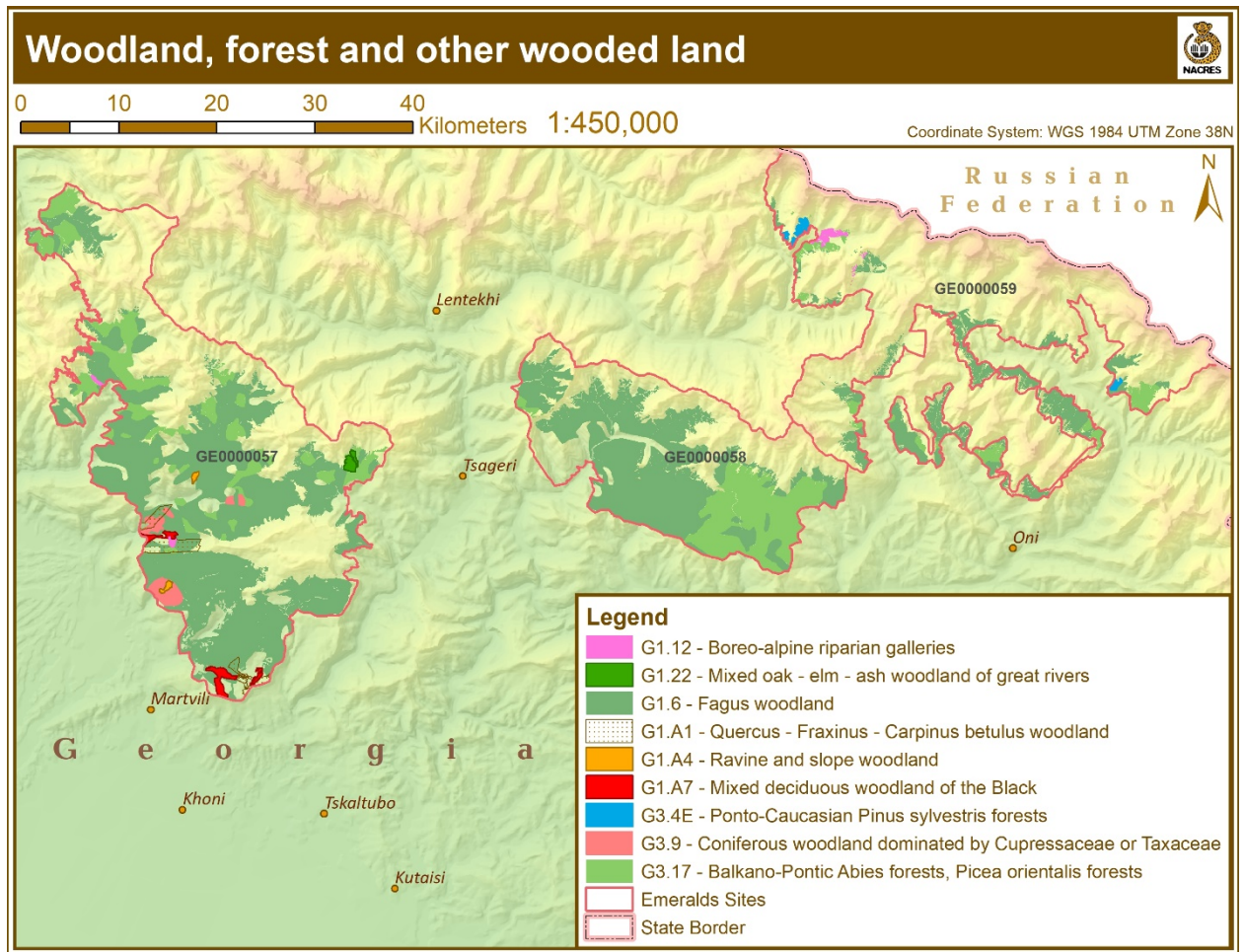


## Appendix #1: Preliminary list of key species found in the study areas.

CODE	Species name	Selected for monitoring	Discussed in 2017 Biogeographical Seminar in Tbilisi
<b>Mammals</b>			
1303	<i>Rhinolophus hipposideros</i>	-	x
1304	<i>Rhinolophus ferrumequinum</i>	-	x
1305	<i>Rhinolophus euryale</i>	-	x
1306	<i>Rhinolophus blasii</i>	-	x
1307	<i>Myotis blythii</i>	-	x
1308	<i>Barbastella barbastellus</i>	x	x
1321	<i>Myotis emarginatus</i>	-	x
1352	<i>Canis lupus</i>	x	-
1354	<i>Ursus arctos</i>	x	x
1355	<i>Lutra lutra</i>	x	x
1361	<i>Lynx lynx</i>	-	x
<b>Reptiles and Amphibians</b>			
1171	<i>Triturus karelinii</i>	-	-
2008	<i>Vipera kaznakovii</i>	-	-
<b>Molusks</b>			
1016	<i>Vertigo moulinsiana</i>	-	x
1014	<i>Vertigo angustior</i>	x	x
<b>Insects</b>			
1042	<i>Leucorrhinia pectoralis</i>	x	
1043	<i>Lindenia tetraphylla</i>	-	
1060	<i>Lycaena dispar</i>	x	x
1078	<i>Callimorpha quadripunctaria</i>	-	
1083	<i>Lucanus cervus</i>	x	x
1087	<i>Rosalia alpina</i>	-	x
1088	<i>Cerambyx cerdo</i>	-	-
1926	<i>Stephanopachys linearis</i>	-	-
1930	<i>Agriades glandon aquilo</i>	-	-
1932	<i>Erebia medusa polaris</i>	-	-
1933	<i>Hesperia comma catena</i>	-	-
4039	<i>Nymphalis vaualbum</i>	-	x
4045	<i>Coenagrion ornatum</i>	-	x
<b>Plants</b>			
1381	<i>Dicranum viride</i>	-	-
1939	<i>Agrimonia pilosa</i>	x	x
2172	<i>Vaccinium arctostaphylos</i>	-	-



Appendix #3: Distribution maps of Resolution #4 habitat types.









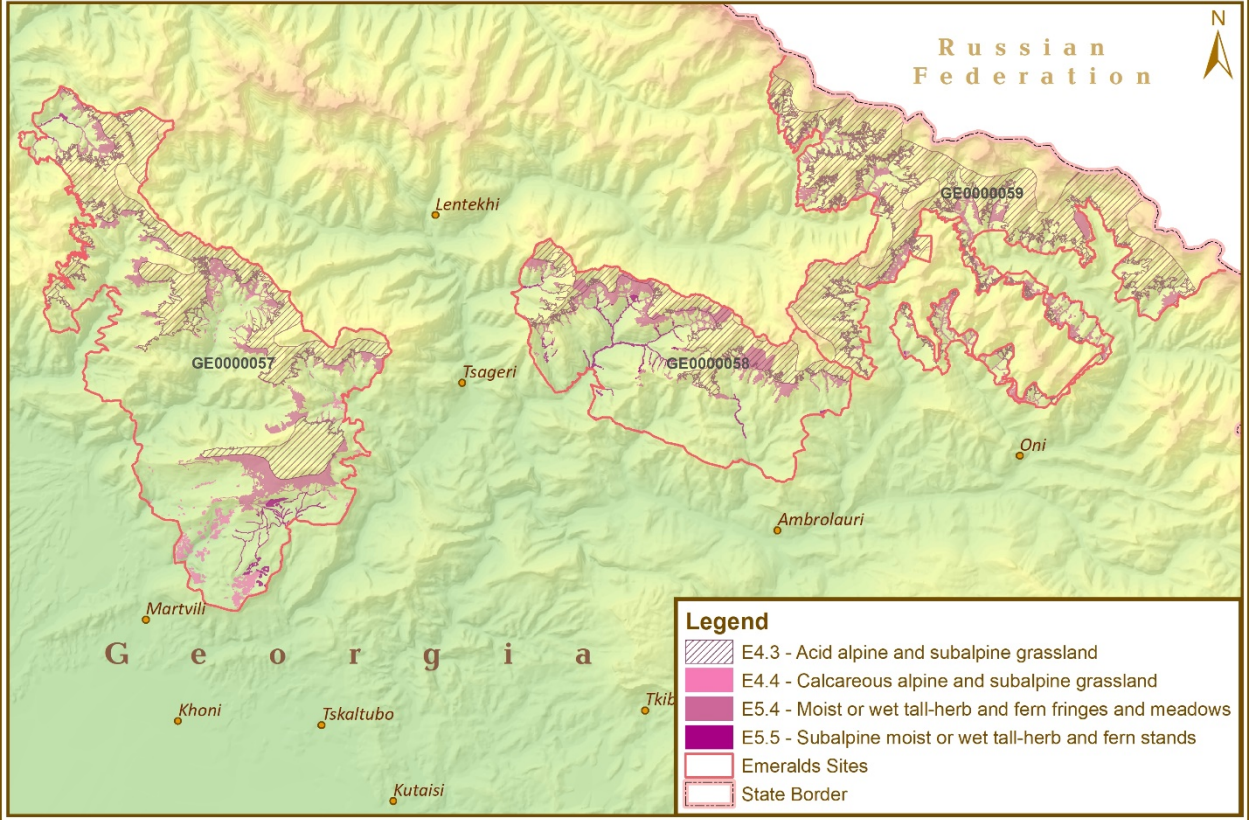


# Grasslands II



0 10 20 30 40 Kilometers 1:450,000

Coordinate System: WGS 1984 UTM Zone 38N



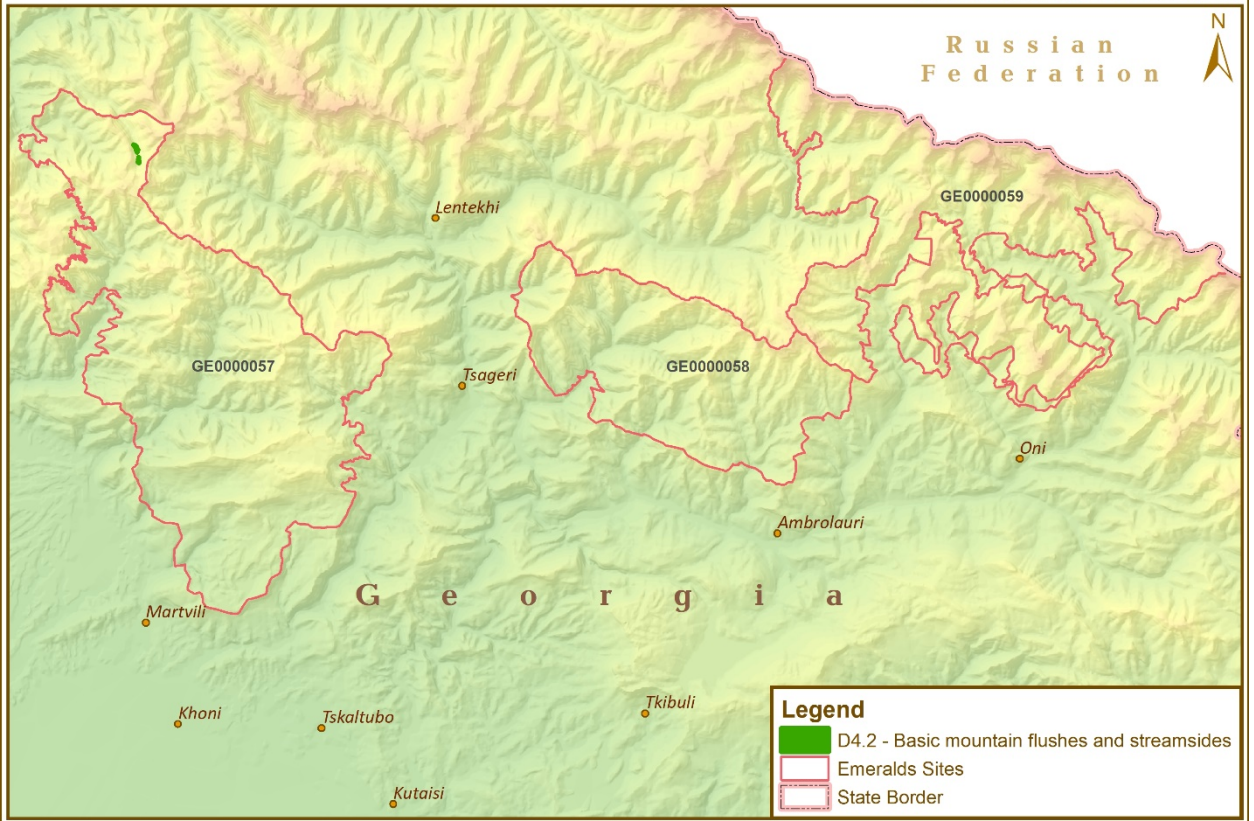


# Raised Bogs



0 10 20 30 40 Kilometers 1:450,000

Coordinate System: WGS 1984 UTM Zone 38N



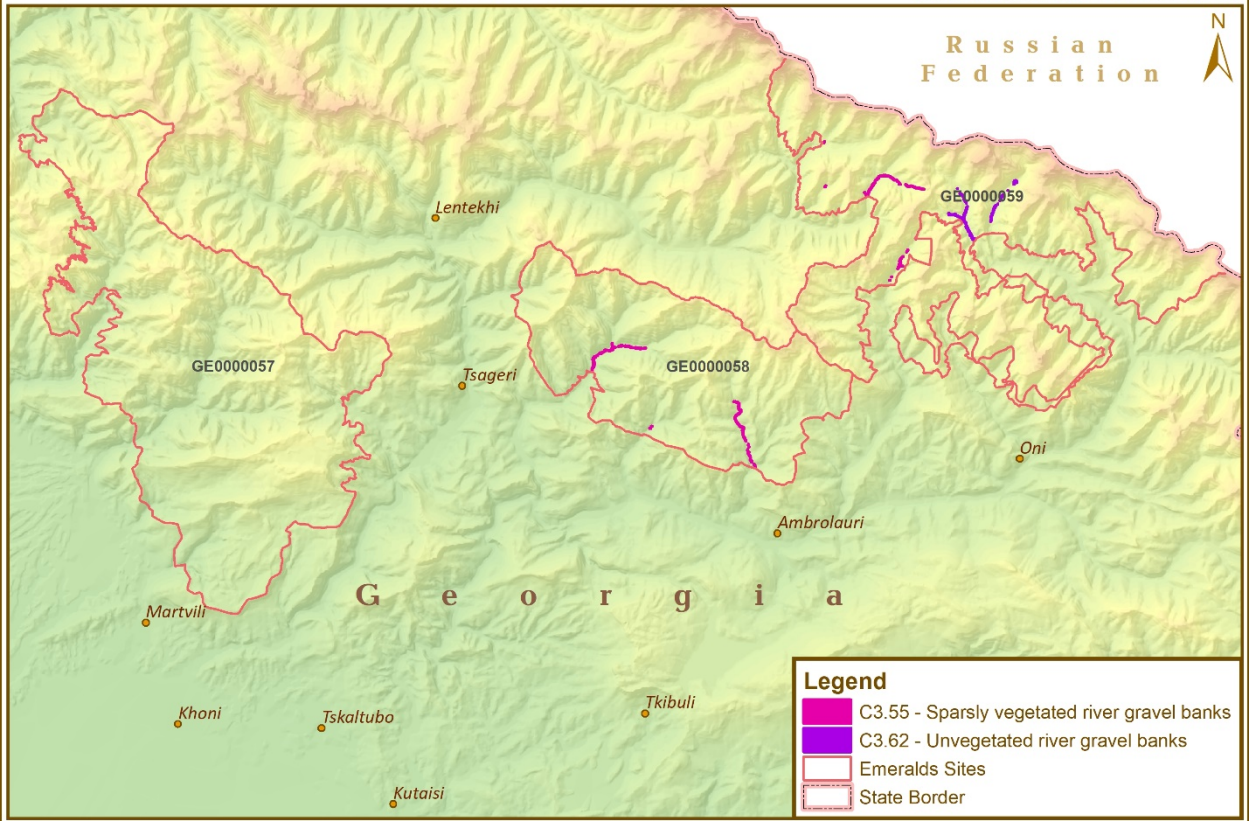


# River Banks



0 10 20 30 40 Kilometers 1:450,000

Coordinate System: WGS 1984 UTM Zone 38N



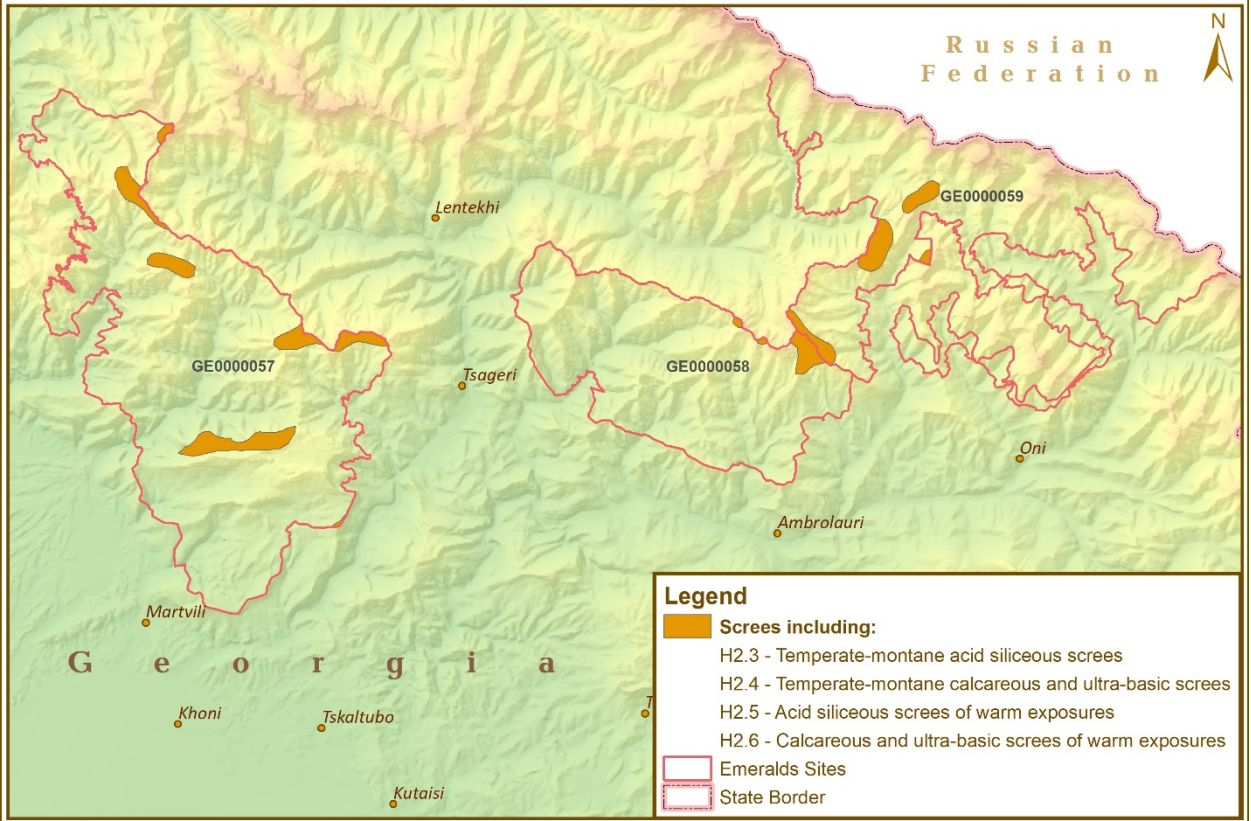


# Screes



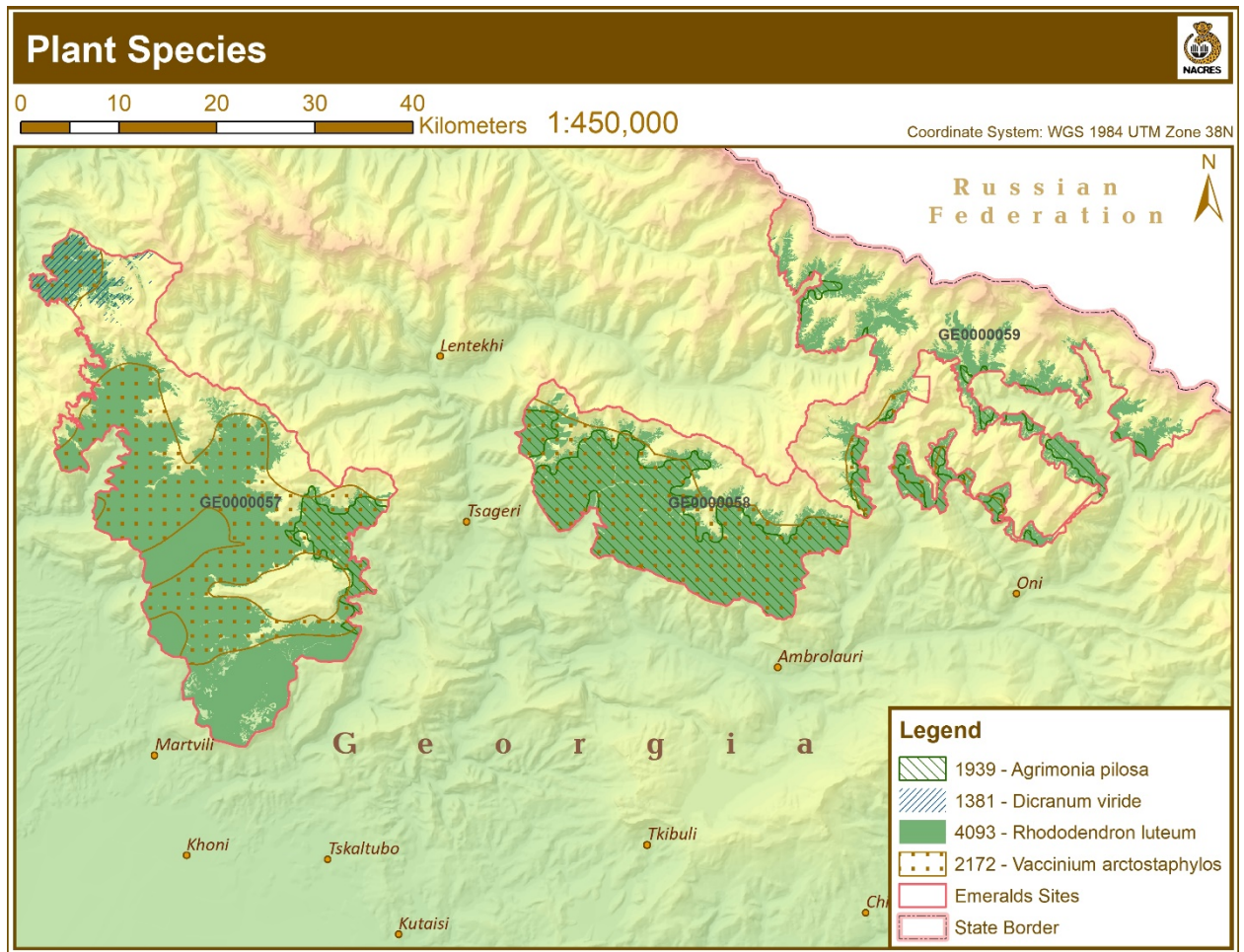
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Coordinate System: WGS 1984 UTM Zone 38N



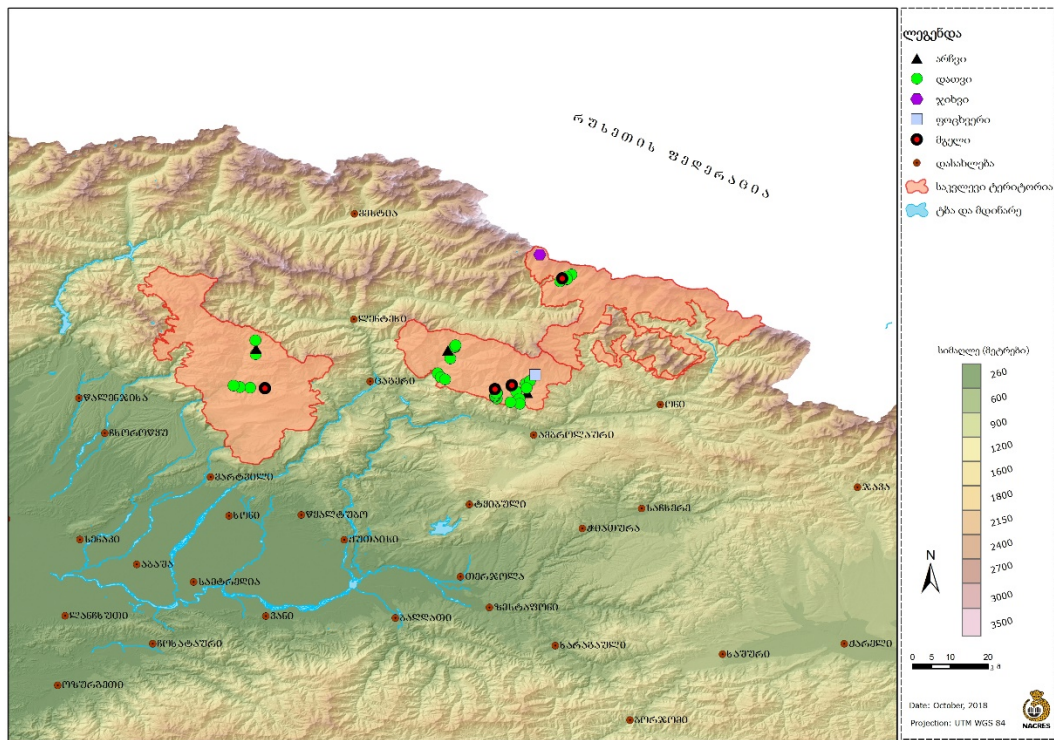
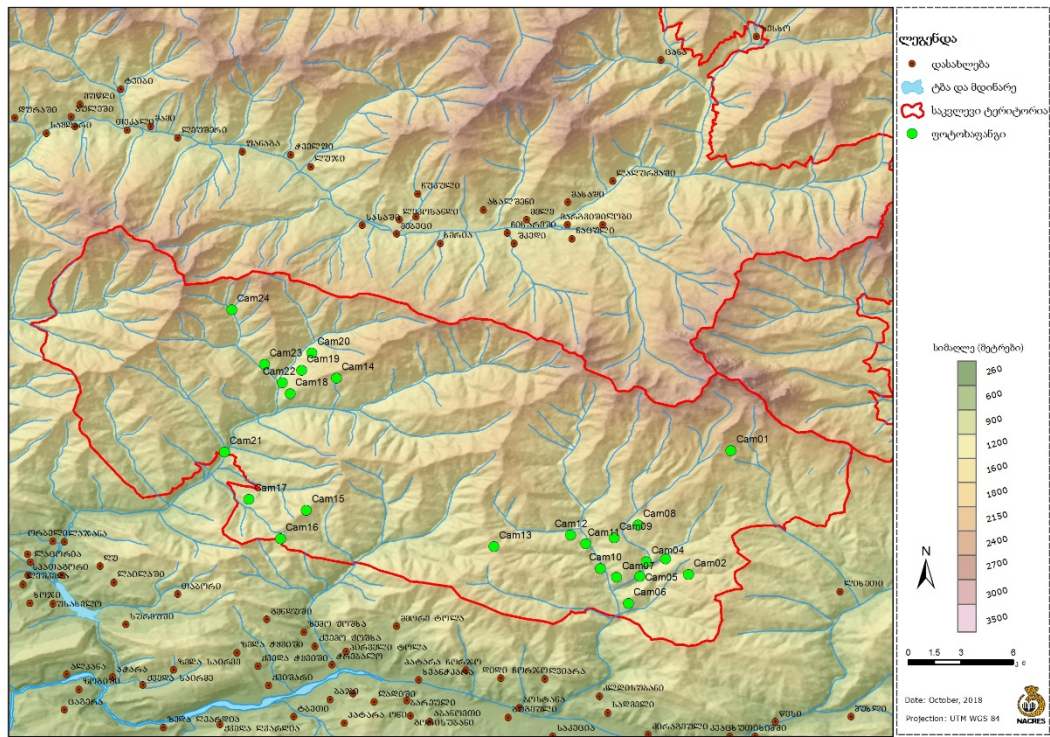


## Appendix #4: Distribution maps of Resolution #6 plants





Appendix #5: Map of camera trap sites and recorded signs of key mammal species



**Appendix #6:** Non-avian species whose presence has been confirmed or are highly likely to be found on study areas.

CODE	Species name	Samegrelo 2 GE0000057	Racha- Lechkhumi GE0000058	Svaneti- Racha GE0000059
	<b>Mammals</b>			
1303	Rhinolophus hipposideros	x	x	x
1304	Rhinolophus ferrumequinum	x	x	x
1305	Rhinolophus euryale	x	x	x
1306	Rhinolophus blasii	x	x	x
1307	Myotis blythii	x	x	x
1308	Barbastella barbastellus	x	x	x
1321	Myotis emarginatus	x	x	x
1352	Canis lupus	x	x	x
1354	Ursus arctos	x	x	x
1355	Lutra lutra	x	x	x
1361	Lynx lynx	x	x	x
	<b>Reptiles and Apmphibians</b>			
1171	Triturus karelinii	x	x	
2008	Vipera kaznakovii	x	x	x
	<b>Insects</b>			
1042	Leucorrhinia pectoralis	x	x	x
1060	Lycaena dispar	x	x	x
1078	Callimorpha quadripunctaria	x	x	x
1087	Rosalia alpina		x	x
1088	Cerambyx cerdo	x	x	x
1926	Stephanopachys linearis		x	x
4039	Nymphalis vaualbum	x	x	x
4045	Coenagrion ornatum		x	x

**Appendix #7: Resolution #6 birds found in Racha-Lechkhumi (GE0000058) and Svaneti-Racha (GE0000059)**

<b>#</b>	<b>Code</b>	<b>Species name</b>
1.	A402	Accipiter brevipes
2.	A085	Accipiter gentilis
3.	A324	Aegithalos caudatus
4.	A223	Aegolius funereus
5.	A079	Aegyptius monachus
6.	A091	Aquila chrysaetos
7.	A404	Aquila heliaca
8.	A509	Aquila nipalensis
9.	A222	Asio flammeus
10.	A215	Bubo bubo
11.	A087	Buteo buteo
12.	A224	Caprimulgus europaeus
13.	A363	Carduelis chloris
14.	A334	Certhia familiaris
15.	A080	Circaetus gallicus
16.	A081	Circus aeruginosus
17.	A082	Circus cyaneus
18.	A083	Circus macrourus
19.	A084	Circus pygargus
20.	A208	Columba palumbus
21.	A231	Coracias garrulus
22.	A350	Corvus corax
23.	A349	Corvus corone
24.	A113	Coturnix coturnix
25.	A122	Crex crex
26.	A212	Cuculus canorus
27.	A236	Dryocopus martius
28.	A379	Emberiza hortulana
29.	A098	Falco columbarius
30.	A103	Falco peregrinus
31.	A096	Falco tinnunculus
32.	A097	Falco vespertinus
33.	A321	Ficedula albicollis
34.	A320	Ficedula parva
35.	A442	Ficedula semitorquata
36.	A076	Gypaetus barbatus
37.	A078	Gyps fulvus
38.	A092	Hieraaetus pennatus
39.	A338	Lanius collurio
40.	A246	Lullula arborea
41.	A272	Luscinia svecica
42.	A230	Merops apiaster

43.	A073	Milvus migrans
44.	A077	Neophron percnopterus
45.	A328	Parus ater
46.	A346	Pyrrhocorax pyrrhocorax
47.	A307	Sylvia nisoria
48.	A283	Turdus merula
49.	A285	Turdus philomelos
50.	A287	Turdus viscivorus

## Appendix #8: Resolution #6 birds found in Samegrelo 2 (GE0000057)

#	Code	Species name
1.	A402	Accipiter brevipes
2.	A085	Accipiter gentilis
3.	A324	Aegithalos caudatus
4.	A223	Aegolius funereus
5.	A079	Aegyptius monachus
6.	A091	Aquila chrysaetos
7.	A404	Aquila heliaca
8.	A509	Aquila nipalensis
9.	A222	Asio flammeus
10.	A215	Bubo bubo
11.	A087	Buteo buteo
12.	A224	Caprimulgus europaeus
13.	A364	Carduelis carduelis
14.	A363	Carduelis chloris
15.	A334	Certhia familiaris
16.	A080	Circaetus gallicus
17.	A081	Circus aeruginosus
18.	A082	Circus cyaneus
19.	A083	Circus macrourus
20.	A084	Circus pygargus
21.	A208	Columba palumbus
22.	A231	Coracias garrulus
23.	A350	Corvus corax
24.	A349	Corvus corone
25.	A113	Coturnix coturnix
26.	A122	Crex crex
27.	A212	Cuculus canorus
28.	A236	Dryocopus martius
29.	A098	Falco columbarius
30.	A103	Falco peregrinus
31.	A096	Falco tinnunculus
32.	A097	Falco vespertinus
33.	A321	Ficedula albicollis
34.	A320	Ficedula parva
35.	A442	Ficedula semitorquata
36.	A076	Gypaetus barbatus
37.	A078	Gyps fulvus
38.	A092	Hieraaetus pennatus
39.	A338	Lanius collurio
40.	A246	Lullula arborea
41.	A272	Luscinia svecica
42.	A230	Merops apiaster
43.	A073	Milvus migrans

44.	A077	Neophron percnopterus
45.	A328	Parus ater
46.	A072	Pernis apivorus
47.	A266	Prunella modularis
48.	A346	Pyrrhonorax pyrrhonorax
49.	A307	Sylvia nisoria
50.	A283	Turdus merula
51.	A285	Turdus philomelos
52.	A287	Turdus viscivorus



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