ENHANCING FINANCIAL SUSTAINABILITY

OF THE PROTECTED AREAS SYSTEM IN GEORGIA

TECHNICAL ASSISTANCE GRANT AGREEMENT

Monitoring of Short-listed Species Indicators (East Caucasian Tur) in 2022 in Selected Protected Areas in Georgia

Final Report

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Contents

Acknowledgements

1   Introduction

This final report is the third deliverable under the Technical Assistance Grant agreement signed between CNF and NACRES on the 15th June, 2022. The report describes details of first fieldwork in Kazbegi national park and tur assessment results, literature review and east Caucasian tur conservation status in the central part of Greater Caucasus Ridge.

2   Background

As result of the **technical support to prioritize biodiversity monitoring indicators (species and habitats) for 10 Georgian PAs to support the development of standardized PA-specific Management Effectiveness Assessment plans** *(Biodiversity Monitoring Indicators)*, commissioned by CNF in May, 2020, an agreed short list of fauna indicators were elaborated through (i) an intensive and participatory process that involved all leading relevant experts and key stockholders and (ii) close cooperation with the main beneficiaries – Agency of Protected Areas (APA) and the Ministry of Environmental Protection and Agriculture (MEPA). Among other indicators, the monitoring surveys of the Eastern Caucasian tur (*Capra cylindricornis*) in Kazbegi NP was scheduled for 2022.

3   Goals and objectives

The main goal was to assess the Eastern Caucasian tur (*Capra cylindricornis*) population in Kazbegi NP.

The assessment relied on the counts and field observations involving park rangers and using scientifically robust field techniques that would allow the obtaining of accurate population numbers.

4   Study area

Study area represents parts (Eastern tur habitats) of Kazbegi national park and covers the northern slopes of the Greater Caucasus mountains and three main gorges Truso, with the Tergi (Terek) river, Sno valley with the Snostskali river and Khde gorge (Appendix #1). The national park is situated in Kazbegi municipality, Mtheta-Mtianeti region. Stepantsminda is the administrative center of the Kazbegi Municipality, with 1500 inhabitants (National Statistics Office of Georgia, 2022).

The total area of Kazbegi NP is 78 543,4 ha. 35% of the park is covered by forest and the rest is alpine meadows, morenes, snow-covered rocks and peaks. Highest point is Mount Kazbek (locally known as Mkinvartsveri, i.e. "ice-capped"), a dormant 5047-meter high volcano and the national park lowest point is at an altitude of 1,400 meters.

Kazbegi National Parks is home of rare and Caucasian endemic species of birds and mammals. East Caucasian tur (*Capra cylindricornis*) is one of them. Chamois (*Rupicapra rupicapra*) and roe deer (*Capreolus capreolus*) are inhabit the national park too. Once, red deer was recorded near Stepantsminda in 2017, but since then no evidence of existing of the species in Kazbegi (NACRES, 2021). Brown bear (*Ursus arctos*), wolf (*Canis lupus*) and lynx (*lynx lynx*) are key large predators in the national park. The Kazbegi region is the place where the "Big Five" Caucasian birds can be seen: Caucasian Snowcock, Caucasian Black Grouse, Great Rosefinch, Güldenstädt's Redstart, Caucasian Chiffchaff and therefore the area is very popular among birdwatchers.

Visitor statistic is very impressive. Kazbegi national park visited up to 200 000 visitors in 2019 (APA, 2021). Recent year visitor's number significantly decline due to well-known Covid -19 restrictions. Tourism in the regions seems to quickly recovering.

5   Methodology

As a first step, the methodology involves the collection and review of all available information on the Eastern tur population in Kazbegi national park including any previous assessments by external teams as well as counts conducted by the park itself.

We engaged with the park director and other key members of the management from the very beginning of the project to discuss and agree on the details of intended activities and methodology as well as on the involvement of the park rangers in field observations. This included a joint work on the range map of Eastern tur, identifying the best areas to observe the animals in Kazbegi national park and pinpointing preliminary observation points on the map. Finally, we jointly developed a preliminary field survey schedule.

We intended to conduct Eastern tur counts twice and it was largely based on the P. Weinberg's [i.e. Veynberg] approach to count mountain ungulates (Veynberg, P. 2012). The first counts took place during the post parturition period (June), by which time the females had given birth and were already able to move around more actively with their young and are, therefore, more visible. The second assessment was carried out during the rut in winter (November-December). This was possible because unlike other PAs within the Eastern tur range, Kazbegi national park is accessible all year round. During the mating period, the males mix with females and the animals tend to become more visible. The results of the two counts were analysed separately.

In the counts, we used *the double observer method*, which we successfully used in previous similar assessments elsewhere in the country for both Esatern tur and bezoar goats. While largely following *Guidelines of Ungulates Monitoring in Iran – Technical report (Egli L., 2017)* we also made use of our experience of applying this approach in the counts of Eastern tur and bezoar goats in Pshav-Khevsureti and Tusheti PAs in 2021.

We used field data sheet developed for previous studies (Appendix #2). The field team split into at least three groups that worked simultaneously and collected field data in a relatively short period of time. Special effort was made to ensure park rangers' participation in the data collection process.

Direct counts were conducted in sets, consisting of four independent observation sessions, that took place in the early morning, just after sunrise, or in late evening, two hours before sundown. Thus, during each observation set, each observer made four independent 15 minute-observations. The two observers discussed and compared their independent results after the completion of the observation set. Distance between observers and tur groups were measured with laser rangefinder (Leica 7x24 Rangemaster CRF 2800.COM). We used binoculars and spotting scopes to identify sex and age of individual animals within the observed groups. The location of tur groups was recorded and mapped.

The data was subsequently sorted and analyzed at NACRES office.

The average group size was calculated based on the field data sheets. The method relays on the estimation of the area over which the observation data could be extrapolated. A special matrix was created with the field data and analyzed using the free software *Dobserv*.

We used *Arc GIS* and based on the Digital Elevation Model (DEM) so called viewshed analysis was conducted to identify areas over which the recorded animals were actually counted. Viewshed analysis allowed to identify the areas that were visible from the observation points and hence, identified areas over which the observation data could be extrapolated. This exercise could yield tur density, which along with the total area of tur range, was used for the calculation of tur population size.

6   Preparatory phase

As a first step, a project team, consisting of NACRES as well as invited experts as described above, was formally established and had first working sessions.

NACRES team reviewed all existing information on Eastern tur distribution in the Kazbegi area, based on which a preliminary range map was created using the *East Caucasian tur abundance model* that was earlier developed by colleagues at Ilia state university (Gavashelishvili et al. 2018). The preliminary map was further refined on the basis of the personal knowledge of the team experts; the 2014 study by Ilia state University (Ilia State University, 2014) mainly focused on the northern parts of Kazbegi national park, close to the Russian border. Our team member Nika Kerdikoshvili has an extensive experience and knowledge of the area and he confirmed that Eastern tur are rarely seen on the southern slopes of Truso, or Snostskaly valleys (see chapter #6).

The team also made detailed plans for the field surveys. The understanding was that till the end of May the females with young would still be confined to very remote areas. So it was decided to begin field surveys in June.

The first visit of the team to Kazbegi national park took place in the beginning of June to meet the park director, the natural resource specialist and some of the rangers. Mr. Otar Tsamalaidze, the park director, showed very good knowledge of where the animals were to be found. He confirmed our opinion that tur were rarely observed on the southern parts of the Truso valley, adjacent to the administrative border of the Tskhinvali region, or in the southern part of the Snostskaly valley. The rangers who attended the meeting were involved in the discussion and expressed their willingness to join our team in the field. We jointly reviewed and worked on the maps and agreed on the preliminary observation points and a tentative fieldwork schedule.

7   Field observations

We began the summer observations on June 16, 2022. The field team consisted of NACRES field experts: Joni Kevlishvili, Zviad Khutsishvili, Ivane Skhirtladze, Teimuraz Popiashvili and an invited expert, Nika Kerdikoshvili. Later Dr. Tanya Rosen (CNF) also joined the team and together they

collected data from the preselected observation points. The team was based in an apartment in Gudauri from which day as well as overnight trips were made to the study area[1].

The study area was divided into three main sections: (1) Khde gorge, (2) the Stepantsminda area and (3) the Truso valley. We met the park director again, next day after arrival and made finial adjustment to the fieldwork schedule.

We carried out observations in the Stepantsminda area during first two days. We counted tur groups in Gveleti gorge and observed tur on Kuro ridge near Stepantsminda town. Then, we had overnight trips to Truso valley. Truso is a large valley with smaller branching gorges. According to the park director and senior ranger tur groups were often seen in the upstream parts of those gorges and they recommended to organize observation points there. Three rangers were available for data collection and therefore we were able to set up four observation groups. Three groups made overnight trips to the Truso gorges: Mna, Suatisi and Resi, while the fourth group went to Khurtisi Ghorghiana ridge.

Overnight trips were also made to Khde valley. This is very long valley and we decided to divide it in three sections. Three groups simultaneously worked in Khde velley in order to avoid double counts of tur groups. The fourth group carried out observations from around the Gergeti church area.

Photos 1 and 2. *Data collection and mapping the observed Eastern tur groups*

The park is on the borer with Russia and some parts of the study area were only accessible by special pass issued by the Border Police. Each NACRES field team member had those permits organized in advance. However, our invited field expert Nika Kerdikoshvili did not have a pass and we hoped it could be organized on the ground, because it usually takes only one day. However, despite the park's active involvement, it took us five days to obtain a pass for Nika. This demonstrated that it is important to ensure preorganized border police pass for each team member working in the Kazbegi NP.

8   Results

8.1   The size and sex/age composition of observed tur groups

We carried out 18 observation sets from 16 observation points (Appendix #3) because we had to repeat counts from two points since it was impossible to successfully complete observation due to

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[1] Staying at a rental apartment provided more flexibility as opposed to hotel in Stepantsminda because overnight trips were envisaged.

weather conditions. Two observation sessions resulted in zero counts. The locations of the recorded tur groups were placed on the map (Appendix #3).

We observed a total of 35 independent groups. The average group size was 19.2 individuals. **The largest group consisted of 200 adult males and the second largest group – 111 females with kids – were <u>recorded in Kopi, Chkheri ridge, Stepantsminda area</u>** (Photo #1).

Photo #3 *All male tur herd of about 200 individuals, Kopi, Stepantsminda area.*

We observed the following group categories by compositions: small female groups (six observations), females with kids (eight observations), all male groups (13 observations), and mixed male and female group (six observations). In two group, the sex/age composition was not assessed due to long observation distance (>2000 m.). We observed more males than females. The sex ratio in the observation data was very close to 1.5 : 1.

8.2 The range of East Caucasian tur in KNP

After the fieldwork, we finalized the preliminary East Caucasian tur range map for Kazbegi NP. We found that tur individuals were never observed higher than 3,500 m. above sea level. Hence, we corrected the previous range, in which the upper border followed the 3,700 m. elevation mark. We also had to correct the lower border of the range according to out observation data. The total area of the updated Eastern tur range in KNP and surrounding areas was estimated at ***277,89 km²*** (Appendix #4).

8.3   Population number

We directly observed at least 958 individuals during the summer counts. As per selected methodology, we developed a matrix in Notepad as ASCII extension file and ran it through the Dobserv software. The result was 85.37. We multiplied this number by the average group size – 19.2 individuals, hence the total number of tur for the surveyed areas is 1,639. The total surveyed area was calculated as about 106 km2 through the viewshed analysis (Appendix #5). Hence, the estimated tur density for Khevsureti was *15,5 individuals per km²*. Using the above mentioned tur density (15,5 individual per km2) and the total area of the range (278 km2), we calculated the total Kazbegi population as *4,309 individuals*.

9   Discussion
9.1   Group size

The largest groups of 200 for all-male herds and 111 individuals for females with kids observed in during this assessment are also the largest tur herds ever seen by the NACRES team who has been assessing tur populations throughout the country since 1990s. Radde (1899) recorded tur herds of 200 individuals near Shahdagh mountain in Azerbaijan by the end of 19th century. Near Devdoraki glacier (currently within KNP), Dinnik (1914) reported only small groups of only 20 individuals, while mentioning that large herds were found in Dagestan. Janashvili A. (1950) reported that according to local hunters, herds consisting of 100-200 individuals were found in Kazbegi, but he thought that such large groups were very rare. Chlaidze Z. (1967) reported mixed tur group of 39 individuals in Kazbegi. The largest group he reported included 150 individuals consisted of females and kids in Kvareli mountains, Kakheti region (Chlaidze Z., 1967). Thus, recording an all-male herd of 200 and a female herd of 111 individuals in 2022 is very remarkable.

9.2   Population number

Since break of Soviet Union, tur population assessment in Kazbegi municipality has been first conducted in 2006 (NACRES 2006). The count method was based on the direct observation. According to the census, tur population number was about 3000 individuals. We also reported high level of poaching in Kazbegi region during the study – at least 400 individual poached annually in Kazbegi municipality and predicted decline in population (NACRES 2006).

Next Tur population assessment in Kazbegi municipality was carried out by Ilia state university in 2012. They counted 1164 individuals (95% CI 776 – 1156) based on aerial counts (Ilia state university report, 2012). They used helicopters to carry out aerial transects in Kazbegi study area. According to report, they managed to cover all three gorges in Kazbegi municipality. Ilia state university repeated the aerial count next year and got almost the same result - 1134 individuals (95% CI 521 – 2469) (Ilia state university report, 2013). They repeated the count in 2014 and assessed 802 individuals (Ilia state university report, 2014). Last count's confidence interval is unknown and therefore we could assume that during the three year monitoring period tur population was stabile in Kazbegi.

We heard from locals that high rank officials often hunted from helicopters in Kazbegi in 1990s and beginning of 2000s. Hence, turs have very negatively react on the helicopter noise and run away even

before the helicopter become visible. We also often observe such behavior in turs and bezoar goats in various areas. Therefore, we think that the behavioral aspect could effect on aerial counts results and potentially underestimate tur population in Kazbegi.

Our estimate of 4,309 tur individuals are quite impressive result and clearly indicates that the population increased since last assessments. Despite the fact that tur habitat are in a vicinity of human settlements tur density in the study areas are highest comparing to other famous tur areas in Khevsureti and Tusheti. Tur habitat accessibility in Kazbegi is higher comparing to other areas too and therefore poaching should be much easier in the protected area. However, we see that tur population thrived over last decades.

Kazbegi national park expanded only recently, from 8,686.6 ha it become 78,204 hectares in 2019. In fact the protected area grew 9 times and it became a new protected area that covers large territories and almost all tur habitat. We know that it takes time to increase effectiveness of a new protected area. In addition, it needs high resources to function effectively and detect each violation within the protected areas. Hence, tur population were under protection only three years and although it should positively effect on the status of the population, but we believe it should not played a significant role in increasing tur population in Kazbegi.

We looked to tourism general statistics in Georgian protected areas and found that number of visitors had grew up since 2011 and continued growing until year 2020 (figure #1). Kazbegi area was one of the visited protected area and therefore we thought that the trend is true for the protected area too. Hence, we speculate that local population involvement in touristic business probably reduced hunting pressure on tur population in Kazbegi. Touristic season in Kazbegi is year round and therefore locals are busy with their business during
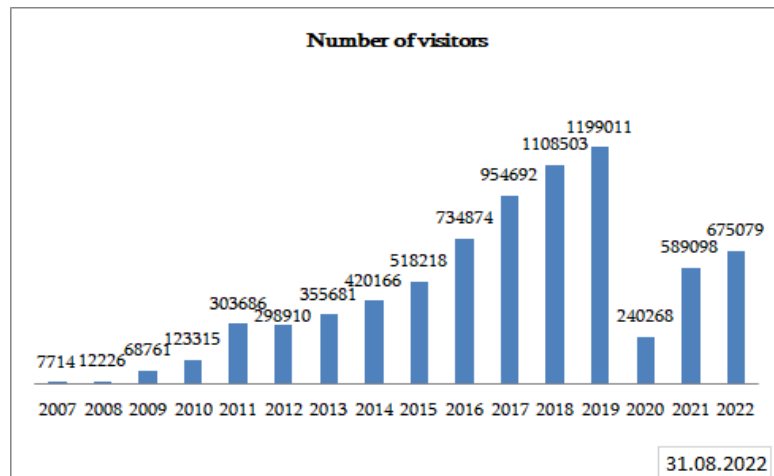

Table #1 Visitor statistics by years in all protected areas according to Agency of Protected Area

whole year. Hence, less time can be spent on hunting. We observed different situation in Khevsureti and Tusheti. Touristic season in these areas area very seasonal and locals are busy only summer season and in winter they have enough time for hunting.

Many Georgians migrate to the abroad and especially from rural areas. Hence, we speculate that emigration of young people could reduce hunting in Kazbegi. According to the National statistics Office Georgia emigration is increasing in Georgia (figure #2) and the vast majority of emigrants are between the age of 15 and 65 (www.geostat.ge). Year 2020 was an exception due to Covid-19 restriction all over the world. We do not have emigration statistic for Kazbegi municipality but believe that the trend should be the same.
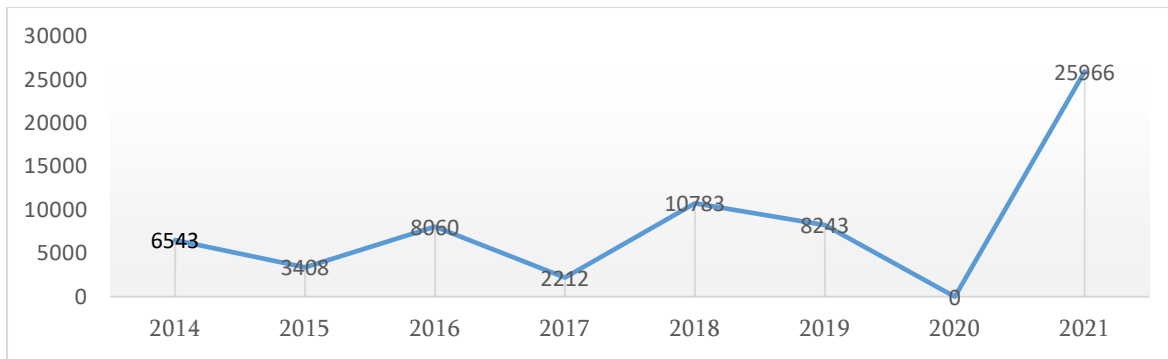
Hence, we think that combination of all three factors: enlarging protected areas, increasing touristic business and high emigration played positive role for tur population in Kazbegi national park and let the tur population to grow.

Male tur move a lot and they can move to Russia and later came back to Georgia. Male tur groups can be huge in Kazbegi and therefore such movement might effect on a population census. We do not have precise data on tur movement in Kazbegi national park, especially distance, regularity and seasonality. We cannot easily transfer Lagodekhi telemetry data to the situation in Kazbegi. Based on the telemetry we know that adult males move relatively long distances. For example, large male tur (we named it Tariel) spent summer on northern slopes of the Greater Caucasus Range in Russia and came back in December back to Lagodekhi, Georgia. Distance between the two peripheral points were 17 km straight distance. Kazbegi tur population is already located on northern slopes and we do not know if the groups perform large movement. It would be important to know and adjust census strategies accordingly.

9.3   Threats affecting tur populations

We have little knowledge about poaching level in Kazbegi national park. We know that the poachers sometimes hunt tur in Kazbegi region, but apparently, the pressure is not high to affect tur population. However, we think that further improvement of anti-poaching capacity of Kazbegi National Park would be beneficial for tur population as well as other large ungulates. Especially having huge territories under protection need more skilled personal and equipment.

Sheep grazed alarmingly close to tur groups in Kazbegi (photo #5). It seems that turs are habituated to the sheep folks that probably mean that the shepherd do not poach on tur in the study area. On the other hand, it means that disease can be easily transmitted from domestic animals to wild ungulates. Hence, *various diseases might threaten tur population in Kazbegi national park*. Alarming reports of tur dying in significant numbers in Dagestan have been reported in winter 2022. The cause has not been established yet, but could be warning signal to conservationist to closely monitor tur population in the protected area.

Photo #5 *sheep and tur groups graze together. Photo © Tatjana Rosen*

10 The Easter Caucasian tur population of Georgian central Great Caucasus

The earliest data on tur number in Georgia provided by Chlaidze Z. (1967) and according to him, tur population in Georgia was up to 4000 individuals in early 1960s. Later, in 1980s tur population reached 8,500 individuals (Arabuli Al. 2002). Tur population in Georgia was supposed to be about 2800 individuals in 1990s (Georgian Biodiversity Country study report 1996). The tur population declined due to unprecedented high poaching level fueled by economic collapse and political instability in Georgia (Badridze et al. 2000, Arabuli Al. 2002).

NACRES assessed up to 5000 individual in Georgia 10 years later (NACRES 2006). The assessment was carried out in Kazbegi, Khevsureti, Tusheti and Lagodekhi and was mainly based on direct observation. Later, many publications referred to the study (Mallon D et al. 2007, Kopaliani N and Gurielidze Z., 2009).

Ilia state university series of census in 2012 -2014 showed that tur population is about 3000 individuals (Kopaliani N., Gurielidze Z. 2021) and that result was included in IUCN red list report (Lortkipanidze, Weinberg 2020).

According to recent surveys, we have up to 2,000 individuals in Tusheti and Khevsureti (NACRES report 2022). Based on the current assessment we have 4309 individuals in Kazbegi national park. Tur habitat in all there protected areas are interconnected and creating one population that can be referred to as Georgian central Great Caucasus population. Hence, we have about 6,000 tur in the central Greater Caucasus population. We assessed 500 individuals in Lagodekhi in 2019 (NACRES report, 2019) hence **we have 6,500 tur individuals throughout the country**. Next year assessment in Lagodekhi protected areas would probably correct the assessment and we will be able to confidently discuss status of eastern Caucasus tur population in Georgia.

11 Recommendations

- Tur monitoring in Kazbegi should be repeated in 2025. First survey should be carried out in June and the second in December.
- Increase the general anti-poaching capacity of Kazbegi NP and intensify law enforcement measures through recruiting skilled personal and providing equipment.
- Monitor tur for any sign of disease and any reports from local people or visitors about seeing a tur or other ungulate carcass should be immediately dealt with in order to detect the spread of the disease that caused mass dying in Dagestan.
- We recommended carrying out tur telemetry in Kazbegi national park to improve understanding of tur movement in northern part of the Caucasus ridge and incorporate the data in population census.

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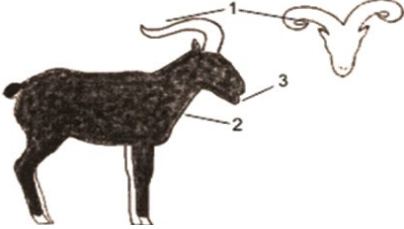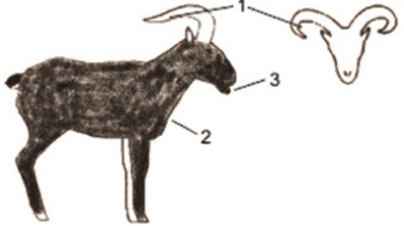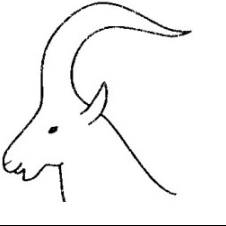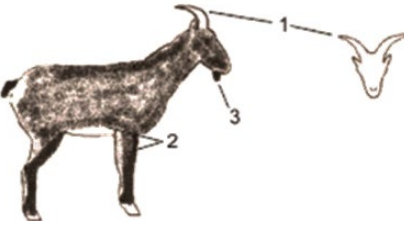
APPENDICES

Appendix #1 Study area
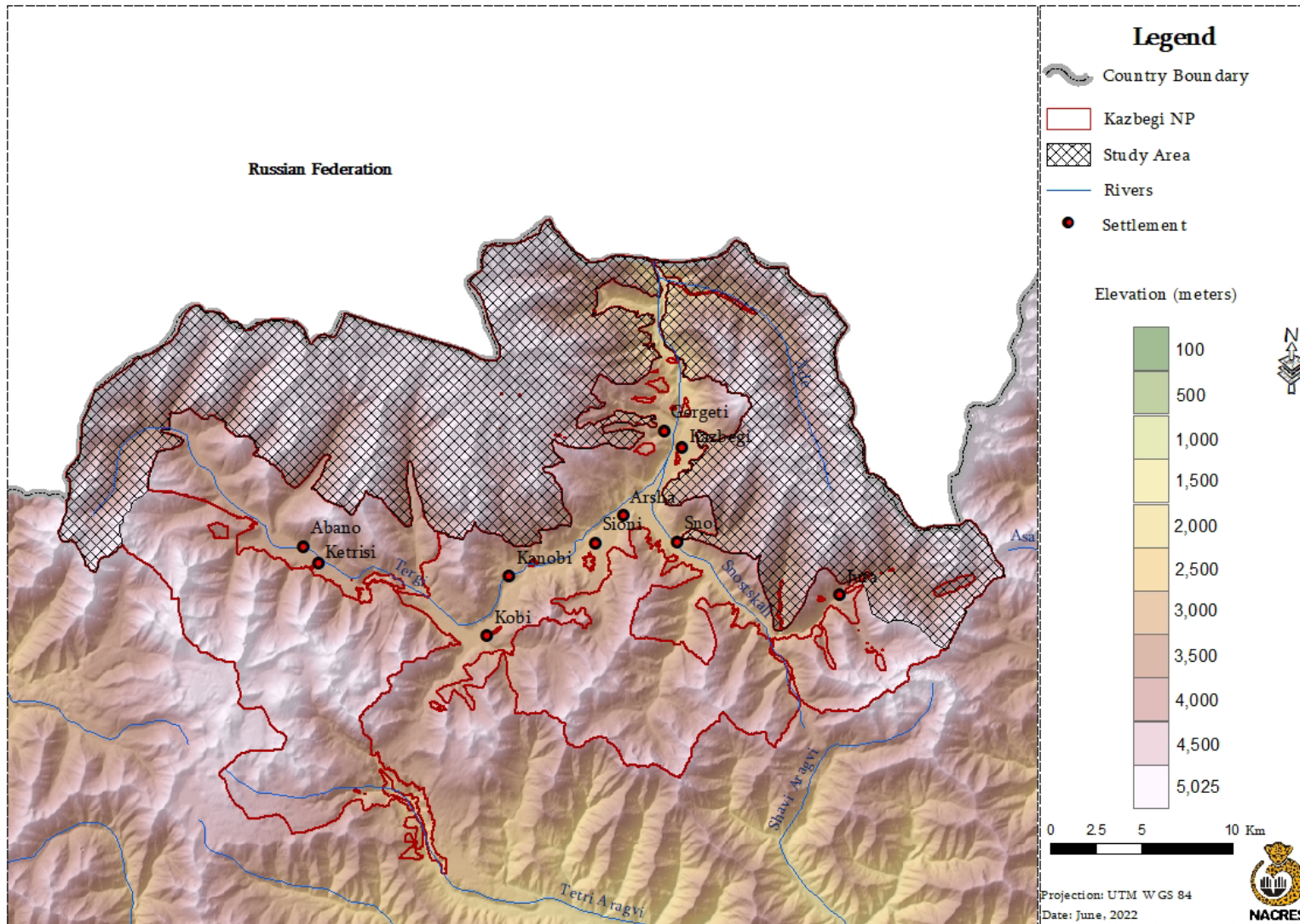
Appendix #2 East Caucasian tur observation form – Double observer point count

Date	Weather	Place	Point #	First Observers
1st. Observation start time	2nd. Observation start time	3rd Observation start time	4th Observation start time	Second Observer
1st. Observation end time	2nd. Observation end time	3rd Observation end time	4th Observation end time	Observation distance (mean)
Point coordinates (WGS84)		X		Y

Group #	Exact time of animal detection	Altitudinal zone F: forest A: subalpine-alpine	Surface type S: scree C: cliffs SM: smooth	Distance (Distance between observer and observed tur group)	Exposure (In degrees) and observation distance (meters)	Adult Male (6 year and older)	Male 5-6 year old	2-3 year old male	1 year old male	Adult female	1 year female	Yearling	unknown	Total

According to Weinberg P. 2012	According to Magomedov R. et. al. 2001	Description
		Adult male 1. Horn tips curved up 2. Dark coloration 3. Solid beard pointed forward
		Young male (4-5 years) 1. Horn tips curved in 2. Dark coloration 3. Solid beard pointed forward
		Young male (2-3 years) 1. Horns thick at base, widely diverging, tips curved back 2. Animal coloration dark but belly and back sides of the legs light-colored 3. Beard wispy and hanging down
		Yearling male 1. Horns thick at base, sharply bent, widely diverging, tips curved back 2. No bread
		Adult female 1. Horns thin, a bit longer than ears 2. Animal coloration greyish-brown 2. No beard
		Yearling females 1. Horns usually shorter than ears
		Juvenile

Appendix #3 Observation points and East Caucasian tur group locations, Kazbegi NP
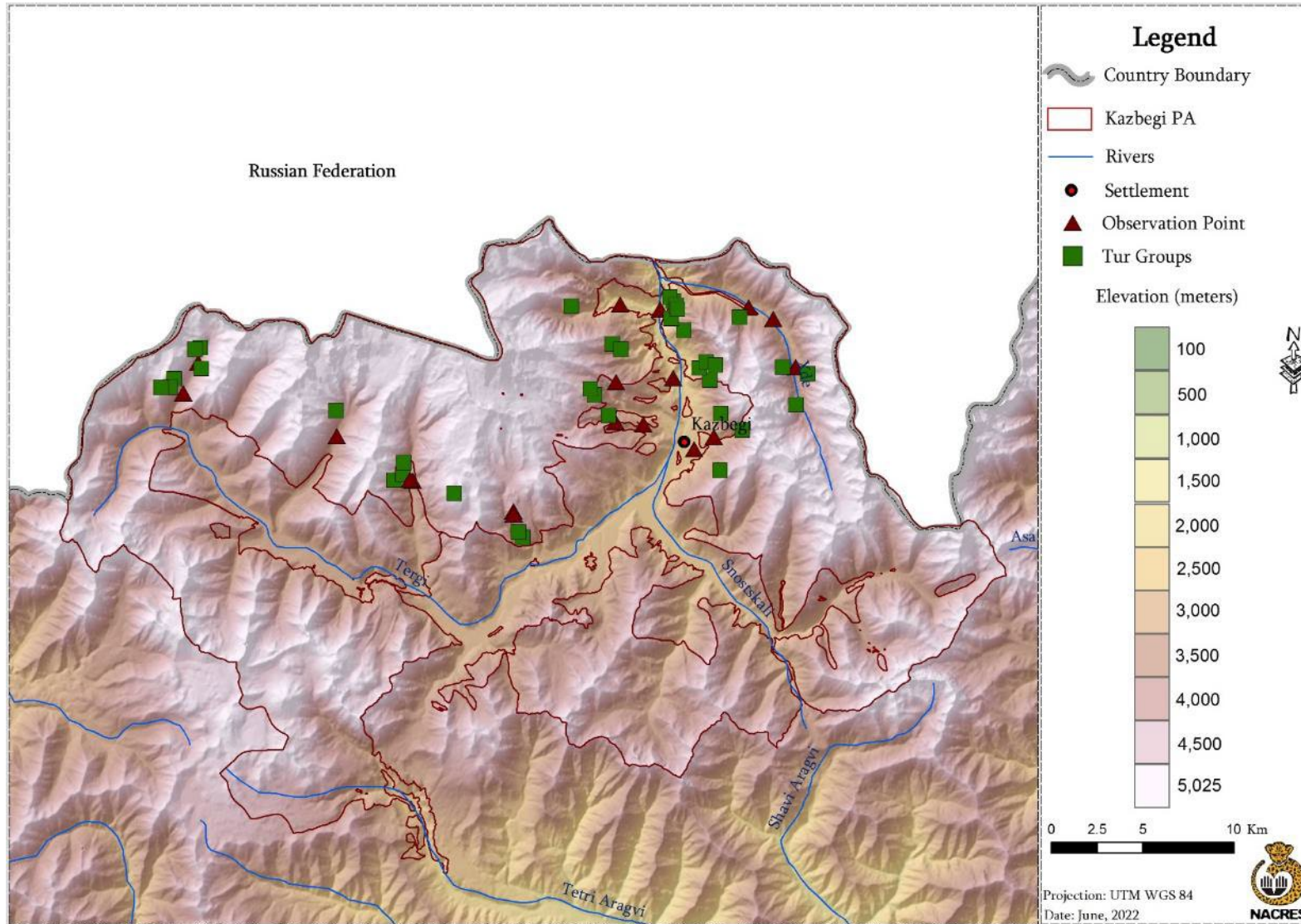
Appendix #4 Updated range map East Caucasian tur, Kazbegi NP
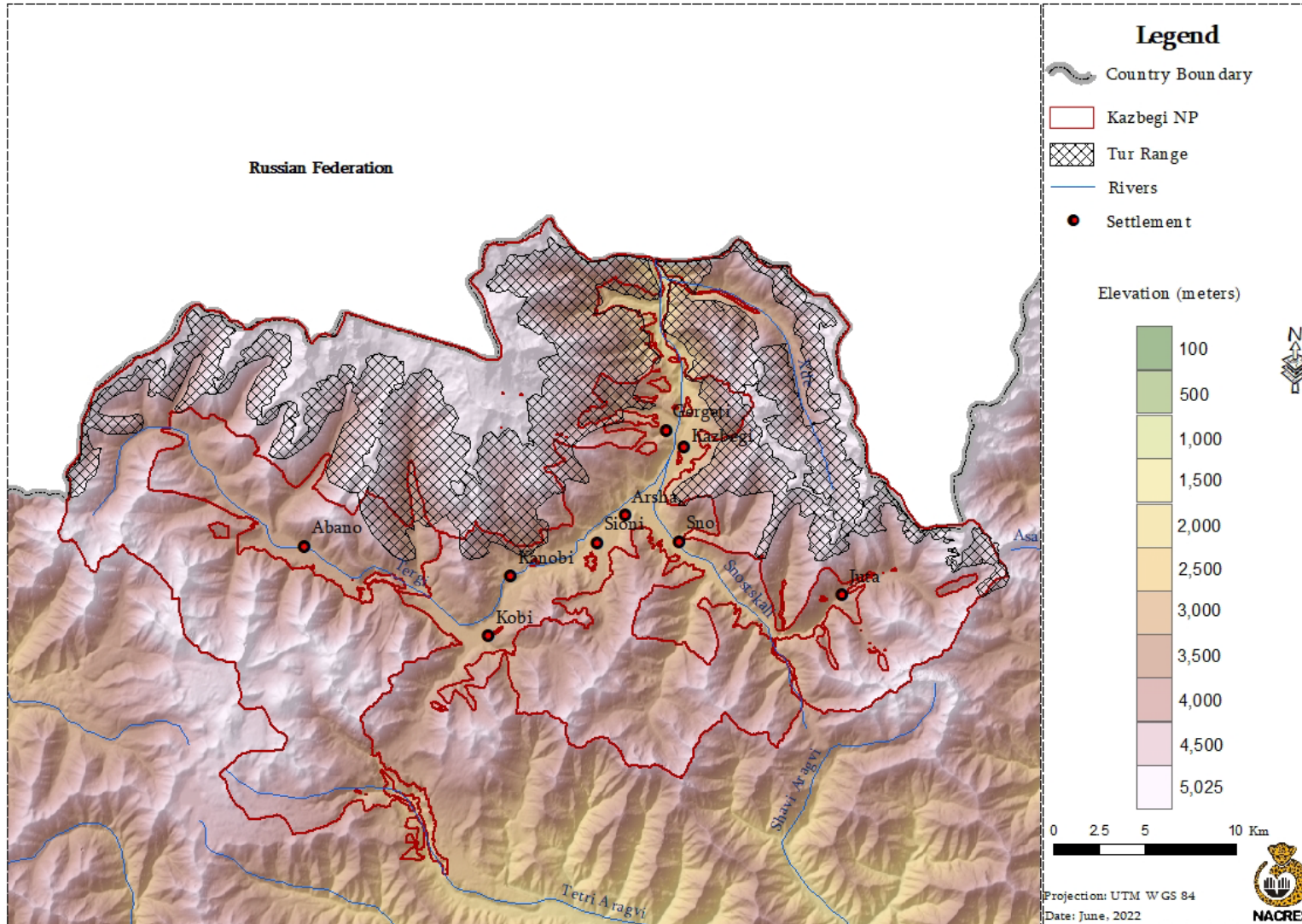
Appendix #5 Observed areas in Kazbegi NP