

Golden Jackal in Georgia and Caucasus

(Preliminary Results)

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Heltai

MATE

MAGYAR AGRÁR- ÉS
ÉLETTUDOMÁNYI EGYETEM




Goals of the study

1. Monitoring predator species on country and county level
2. Assessing the feeding habits of the predator species and evaluating niche overlaps of the species
3. Estimating minimum population size
4. Understand the public attitude towards neighbouring wildlife especially in the case of conflict species

Why is this relevant

- Northward expansion of the golden jackal from its historic range
 - Legal restrictions of hunting + Climate Change
- Jackals are now appearing in the high elevations up to 2000m.
- Continued expression of worry by the residents
 - Densities of the livestock are comparably higher than of natural prey.
 - Vectors of diseases
- Lack of wildlife management law in Georgia
 - Complete distrust towards the management authority
 - High levels of poaching

Population genetic structure and dispersal patterns of grey wolf (*Canis lupus*) and golden jackal (*Canis aureus*) in Georgia, the Caucasus

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Keywords

Canis lupus; *Canis aureus*; expansion; microsatellites; mitochondrial control region; genetic diversity; climate change.

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Abstract

Grey wolf and golden jackal are both common in Georgia, although they have different habitat preferences. The wolf is more common in mountain areas of the country, and jackals are more common in the lowland part of Georgia, with its milder and warmer climate. In recent decades, the abundance of both species increased. Simultaneously, the jackals are increasingly often sighted at higher elevations than previously recorded, and simultaneously, there are increased sightings of the wolves in lowlands of western Georgia, including the areas close to the Black Sea Coast. The analysis of partial mitochondrial DNA sequences and 20 microsatellite markers suggest substantially higher genetic diversity of wolves than the jackals in Georgia, which could be related to the late expansion of jackals into the Caucasus region (not before the Bronze Age). Clustering using a Bayesian approach based on the microsatellite markers suggests that the vast majority of both jackals and wolves sampled in western Georgia descend from recent migrants from the east of the country. The expansion of the two species may be related to the conservation efforts in the latest decades or/and climate change that explains the appearance of jackals in the mountain regions of Georgia, as well as in northern Europe.

Methods and Goals



Agency of Wildlife

- Camera traps
- Public surveys
- Acoustic survey

Ilia State University

- Genetic Analyses
- Stomach/scat collection
- Track counts

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- Data Analyses
- Conclusions
- Recommendations

Final Product

- Understanding the trends
- Research mechanism in place
- Fundamental knowledge for national management plan



Study Area I – Tbilisi National Park

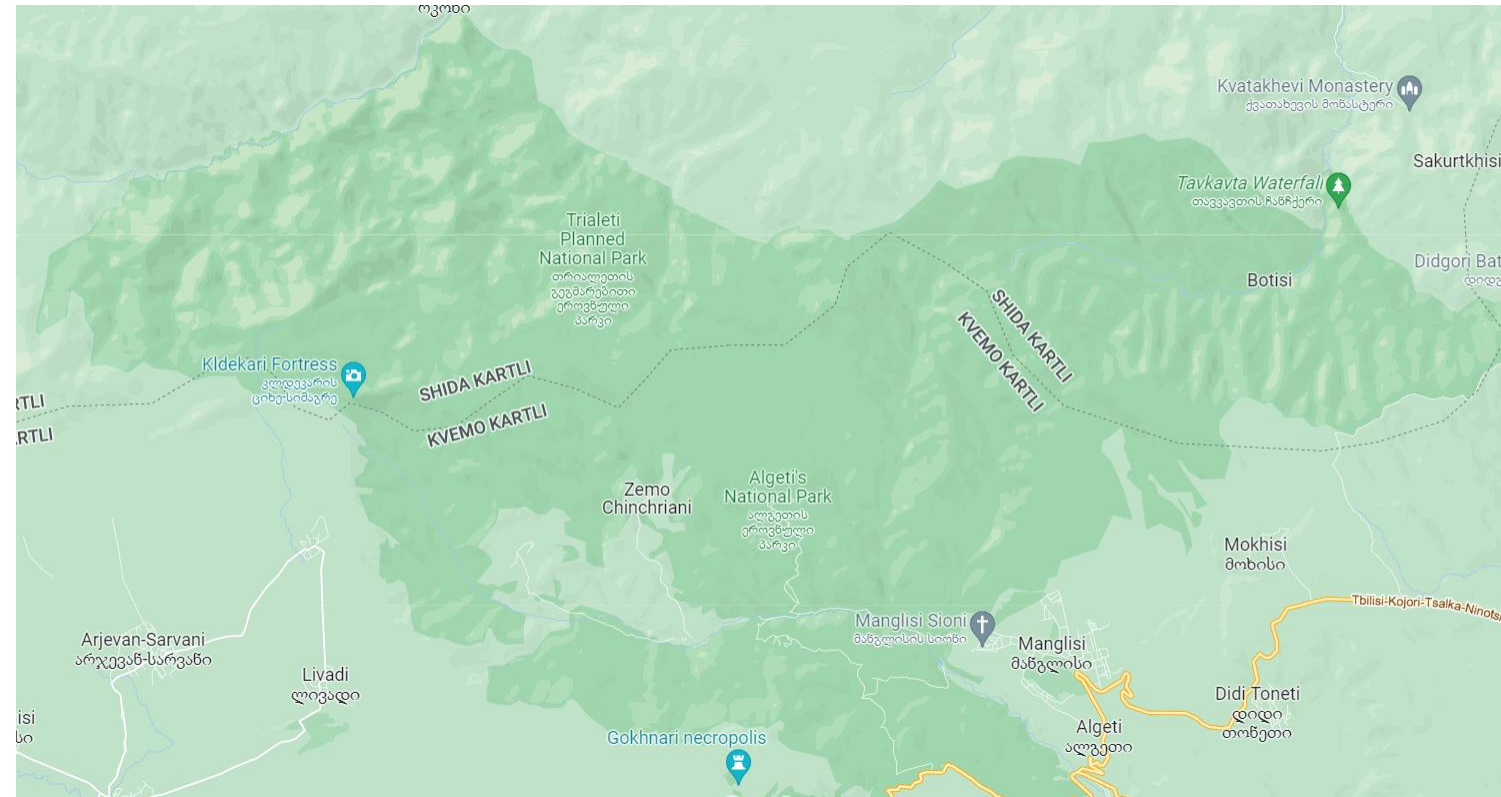
- The area of the park is **243 square kilometres**
- The highest point of the park is 1,385 metres.
- The area of the park is mainly covered by trees and shrub of oak, hornbeam, and beech.
- The protected mammals in the park include red deer, lynx, Eurasian brown bear, red fox, and jackal.

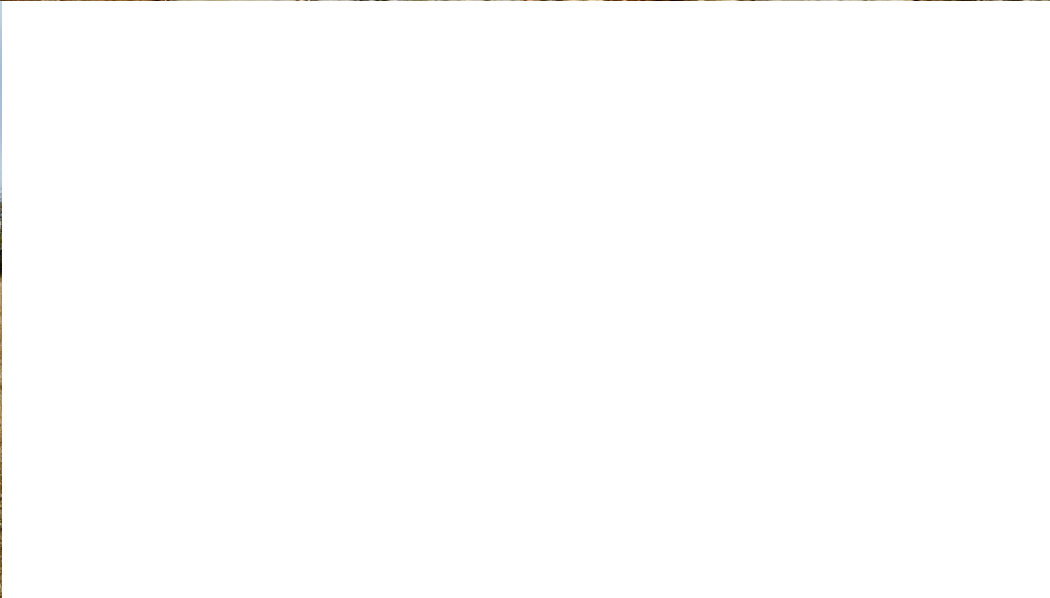




Study Area II – Algeti National Park

- Located 60 km southwest of the nation's capital, Tbilisi. **68.22 Square Kilometers.**
- The Algeti National Park stretches along the upper Algeti valley at the woody southern slopes of the eastern Trialeti Range, with the highest point being Mount Kldekari at 2,000 m above sea level.
- Large mammals can be found in the national park: brown bear and wolf, rarely - lynx, forest mares, squirrels, wild boars, hares, foxes, wild boars.





Data Collection: Citizen Science

Questionary Survey

We wanted to know:

1. Carnivore species that are most problematic
2. The type of damage
3. When does the damage happen
4. How they deal with the problem
5. Opinion of the current management system



1. Most frequently sighted carnivore species in the wild
2. Attack by carnivores on domestic livestock
3. Attack by carnivores on Humans
4. Most frequent season for carnivore attacks
5. Most problematic carnivore species
6. Carnivore species that causes personal damage
7. Reaction towards the carnivore disturbance
8. Type of damage done by carnivore species
9. Best prevention method (opinion of the respondents)
10. Over the past one year sighted wild carnivore species

Data Collection: Field Work

Acoustic Survey

- Together with the Agency of Wildlife
- The survey is done twice a year (before and after the breeding season) results of which are later compared

Indirect Signs

- Smaller Study areas will be selected in each county and divided into transects.
- Scats, Tracks, hair etc.

Camera traps & Fur traps

- Camera traps will be mounted at several locations within the study site. This gives us an opportunity to prove or disprove the presence of a studied species. To ensure that the individual is captured by the camera, an appropriate bait will be placed in front of the camera.
- We will also establish hair traps on a number of locations within the study sites in order to complement the camera traps. The traps will be treated with a special solution that is attractive to furbearers, as a result they will rub against the trap, leaving behind strands of hair.

Data Collection: Lab Work

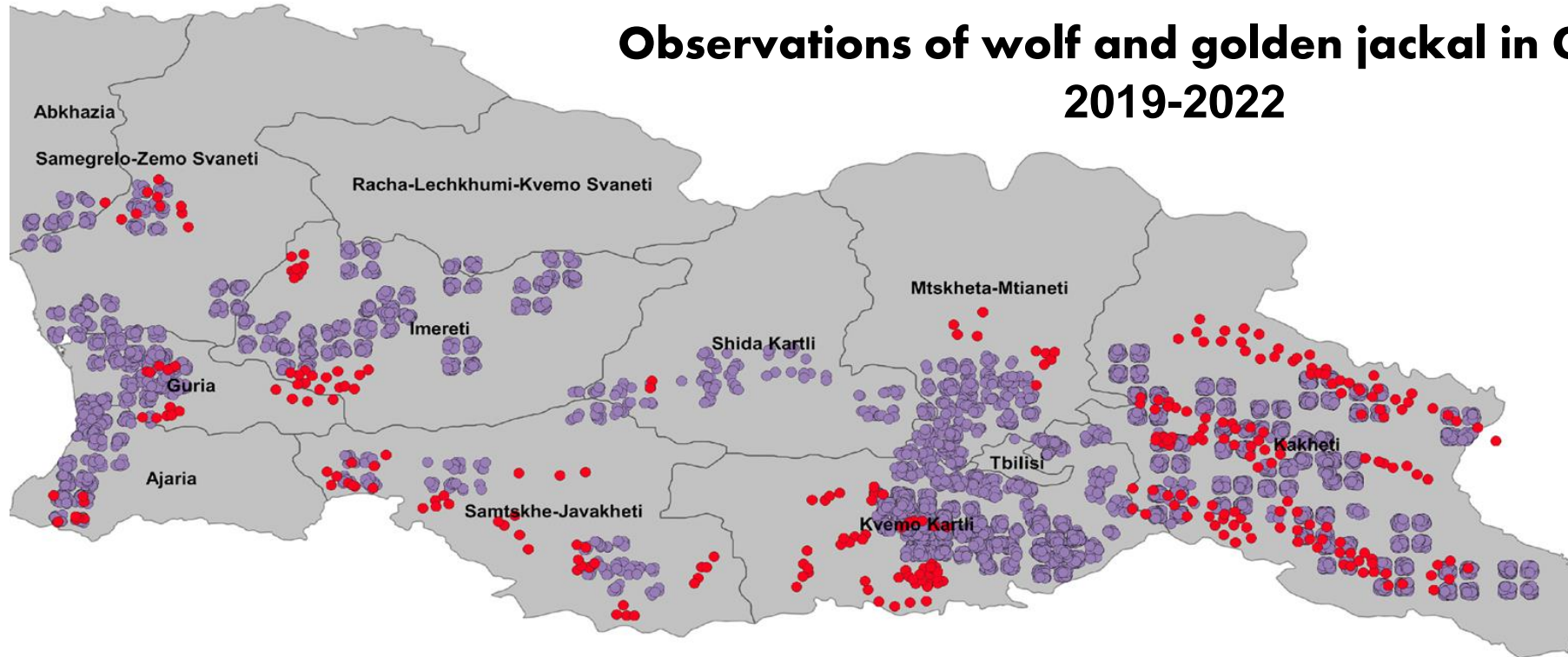
Faeces and stomach content analyses

- Stomach samples will be asked from local hunters, and if possible collected from roadkill individuals.
- Scats will be collected on the field of the two study sites by establishing transect lines and walking along the direction in order to detect the samples.
- Acquired samples will be analysed in two ways – macroscopically and microscopically.
 - The content that is found within the faeces & stomachs will be washed, dried and categorized into categories (remains of different taxa).
 - After which the frequency of occurrence and biomass will be calculated based on measured weight.
 - The same scats & stomachs will be analysed using DNA barcoding method which will allow to identify consumed matter with high precision. Here, the DNA will be extracted from the samples, amplified using PCR and sequenced. The sequenced DNA will be compared to the reference DNA from a catalogue.

Preliminary Results

Based on direct observations

Observations of wolf and golden jackal in Georgia 2019-2022

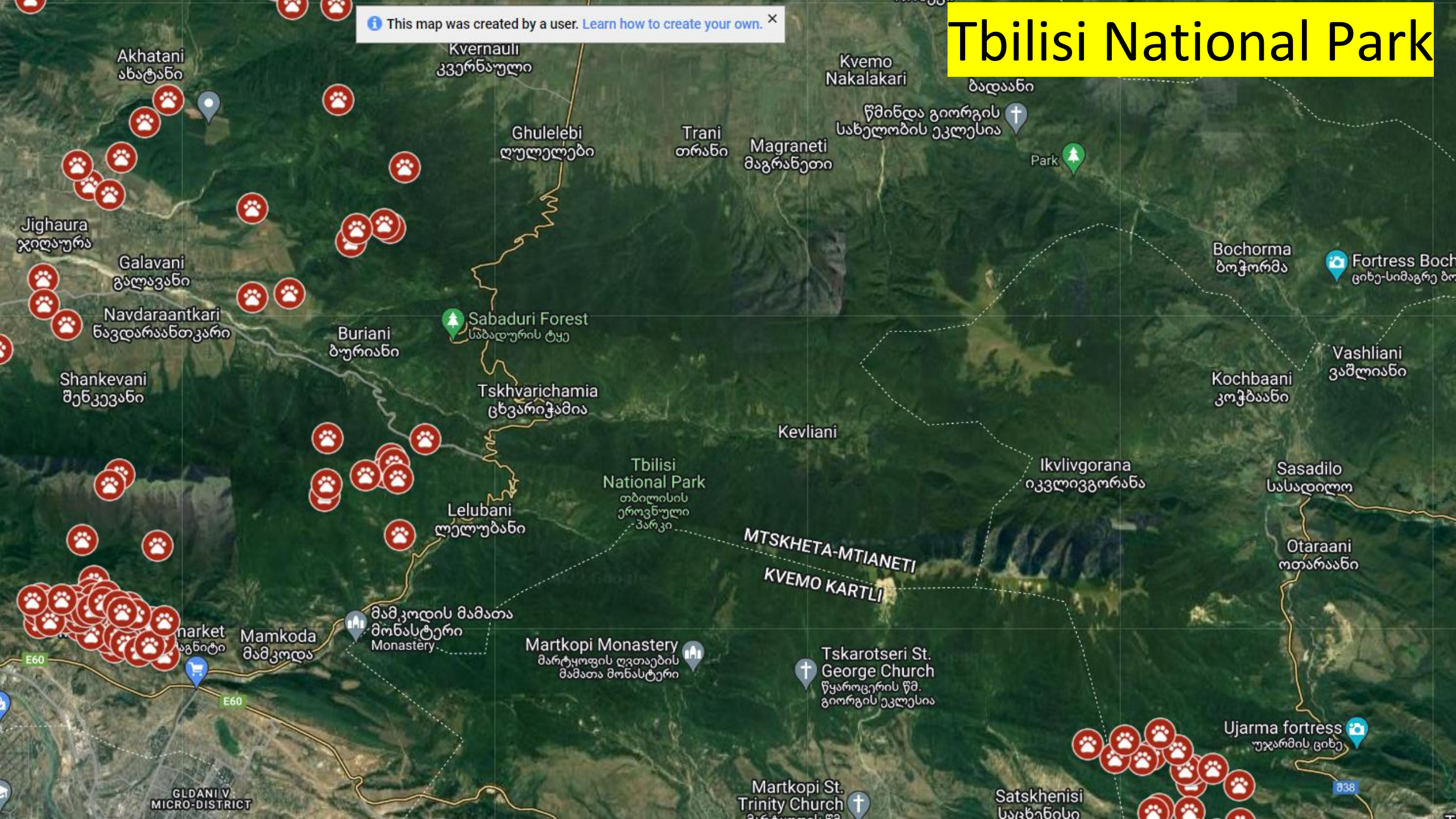


0 25 50 km

- Direct Observation (Wolf)
- Direct Observation (Golden Jackal)

Tbilisi National Park

This map was created by a user. [Learn how to create your own.](#) ✕



Akhatani
ახატანი

Kvernauli
კვერნაული

Kvemo
Nakalakari

ბადაანი

Jighaura
ჯიღაურა

Ghulelebi
ლულელები

Trani
თრანი

Magraneti
მაგრანეთი

წმინდა გიორგის
სახელობის ეკლესია

Park

Galavani
გალავანი

Bochorma
ბოჭორმა

Fortress Boch
ციხე-სიმაგრე ბო

Navdaraantkari
ნავდარაანთკარი

Buriani
ბურიანი

Sabaduri Forest
საბადურის ტყე

Vashliani
ვაშლიანი

Shankevani
შენკევანი

Tskhvarichamia
ცხვარიჭამია

Kochbaani
კოჭბაანი

Kevliani

Tbilisi
National Park
თბილისის
ეროვნული
პარკი

Ikvlivgorana
იკვლივგორანა

Sasadilo
სასადილო

Lelubani
ლელუბანი

MTSKHETA-MTIANETI
KVEMO KARTLI

Otaraani
ოთარაანი

market
აგნითი

Mamkoda
მამკოდა

მამკოდის მამათა
მონასტერი
Monastery

Martkopi Monastery
მარტყოფის ღვთაების
მამათა მონასტერი

Tskarotseri St.
George Church
წყაროცერის წმ.
გიორგის ეკლესია

Sjarma fortress
უჯარმის ციხე

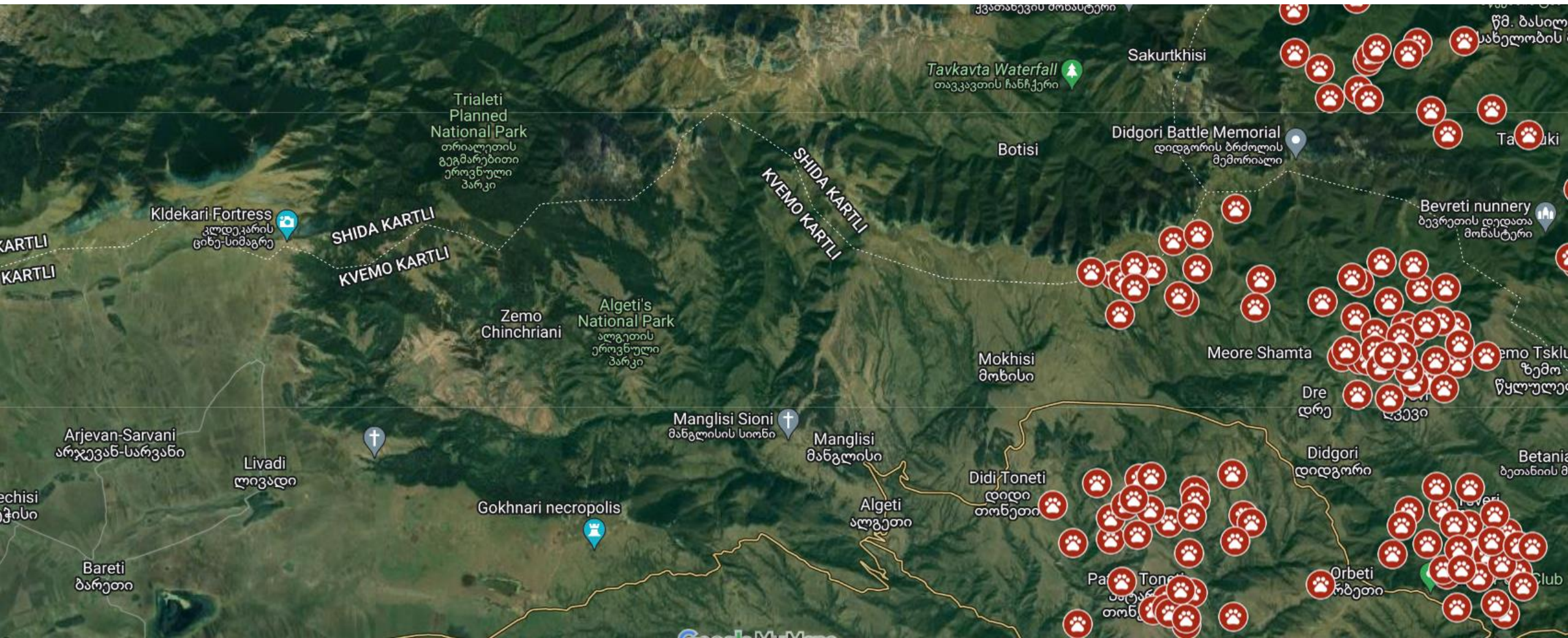
GLDANI V
MICRO-DISTRICT

Martkopi St.
Trinity Church

Satskhenisi
საჯენისი

38

Algeti National Park



Preliminary Results

Based on the acoustic survey

Spring 2021

County	Minimum population	Size of the Area (ha)
Adjara	383.45	291 900
Imereti	283.4	187 340
Kakheti	1,956.2	1 131 000
Lower Qartli	925	628 000
Racha	69	289 300
Samtskhe Javakheti	229.8	641 300
Samegrelo	1,907.3	998 300
Total	4,357.65	

1. Calculating the density with respect to the total territory of the county.
2. Calculating the jackal population growth
 1. Low reproductive rate (35% active females)
 2. High reproductive rate (65% active females)
 3. Assuming each female has 5 pups
3. Calculating the mean population growth

Rural
residents

11 Counties

2 000
Surveys

937
Responses

47% response
rate

Preliminary Results

Based on the Public Survey

➤ **Carnivore species that are most problematic**

90.2% Jackal; 74% wolf

➤ **The type of damage**

Domestic birds and livestock

➤ **When does the damage happen**

Autumn (78.2%) and winter (83.5%) seem to be the most critical seasons for disturbance, with summer being less intense (32.2%)

➤ **How they deal with the problem**

41% has no reaction; 35% dealt with the problem themselves; 12% filed a complaint

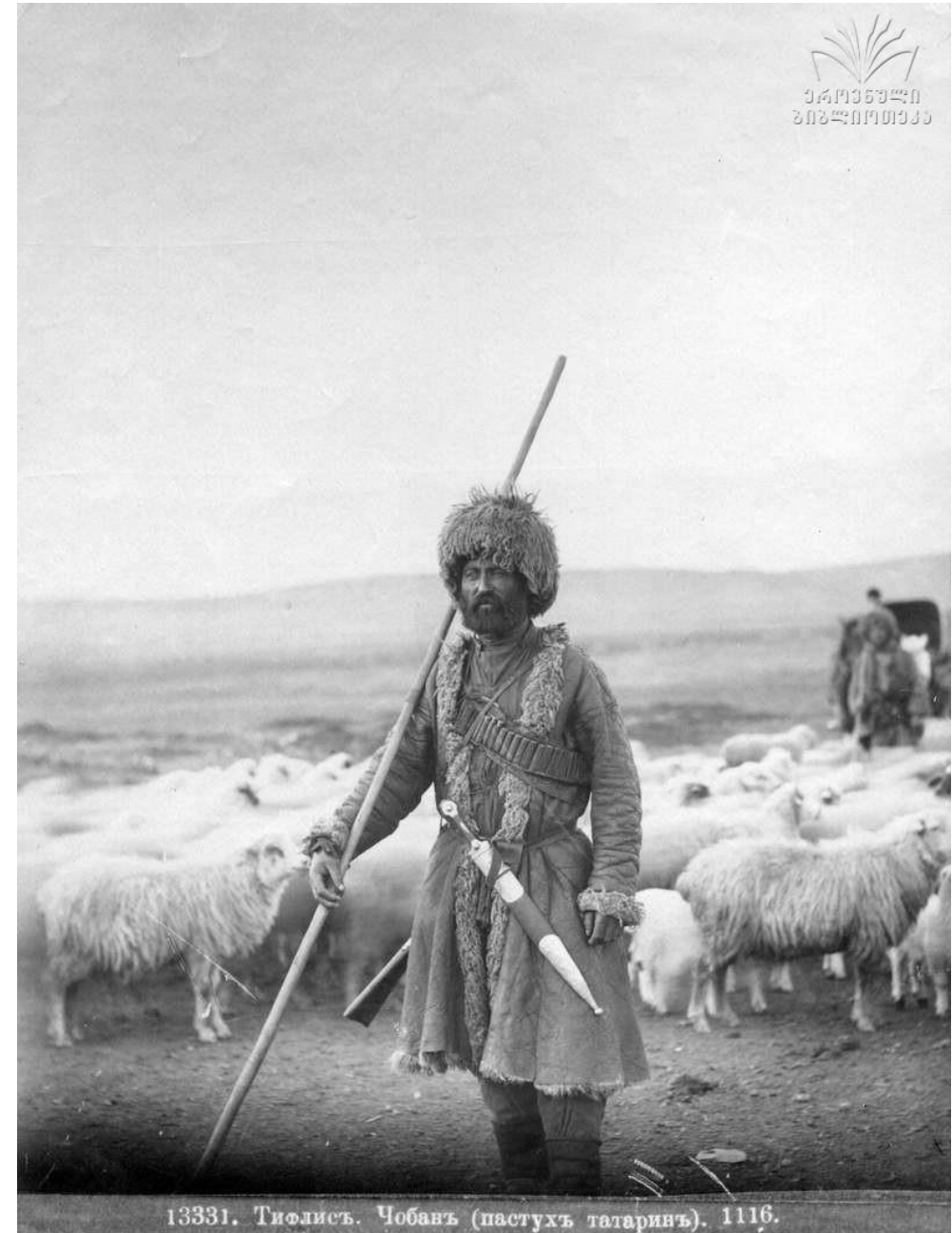
➤ **Opinion of the current management system**

0.6% electric fences; 15.9% dogs; 91% hunting

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Loss of Traditional Knowledge

- There is a poor understanding of jackal and wolf behaviour and poor livestock management.
- Big difference between the villagers who kept an unbroken tradition of livestock husbandry and those who switched to livestock husbandry recently.
- Who kept to traditional livestock husbandry did not report any increased damage from carnivores, used shepherd dogs to protect their cattle, and installed bulls in the herds.
- Traditional farmers used to keep their herds on the pastures for months, led by bulls. In the evenings, farmers took only the milch cows back home accompanied by shepherd dogs, and this movement of cows from pasture to villages occurred without any attacks.



In a nutshell, What are we dealing with



Highly concerned rural population



No clear wildlife and livestock management strategy and ineffective implementation.



High number of predator species close to the populated areas, Low numbers of wild prey



Poor understanding of livestock management and wildlife behaviour



Thank you for your attention