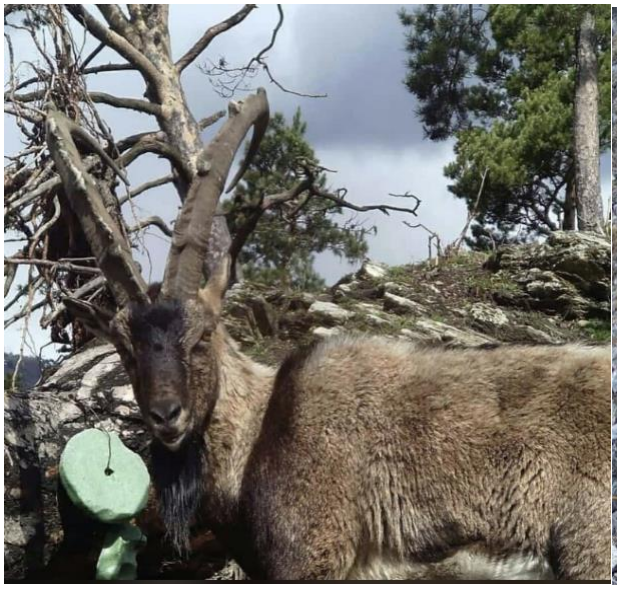
The results of the conservation programmes for the Caucasian tur (Rupicapra rupicapra caucasica Linnaeus, 1758) populations in the North Caucasus and the restoration of the Bezoar ibex (Capra aegagrus aegagrus Erxleben, 1777) populations in the North Caucasus.

Stages:

Capturing animals in mountainous terrain.

Temporary holding and transporting animals.



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INTRODUCTION

The mountain ungulates of the North Caucasus are valuable components of the animal world. Some of them, such as the chamois and the Bezoar ibex, are absent in several traditional habitats and are generally quite rare. Therefore, measures aimed at restoring their populations and habitats are necessary.

To date, the only reliable way to conserve and increase the numbers of rare and endangered wildlife species is to breed them in nurseries, i.e. in artificially created habitats, with the aim of later reintroducing them into historical habitats and replenishing natural populations.

At present, the Nalchik hunting farm in the Republic of Kabardino-Balkaria has 9 Caucasian ibex and 6 bezoar ibex in its nursery. The breeding stock consists of animals captured in the natural habitats of these species. The capturing, transporting and temporary holding were carried out with the participation of specialists from the FSBI "FSRC Hunt", the Nalchik Hunting Farm and the North Ossetian Hunting Farm. It is important to note the assistance provided by the Ministry of Natural Resources and Ecology of the Republic of Dagestan, the Ministry of Natural Resources and Ecology of the Republic of North Ossetia-Alania, as well as the locals in the organisation of all processes.

Capturing, transporting, and temporary holding of ungulates are essential and critical components prior to the breeding of animals in captivity or their release into the natural environment for reintroduction. At all stages, the necessary conditions and requirements must be in place to ensure the safety and health of the animals.

So far, a methodology for capturing many species of ungulates in the Russian Federation, including mountain ungulates, has not been developed. As a result, it has been challenging to predict how the proposed capture method will affect the condition of captured animals, including their temporary holding, transporting, and subsequent care.

The aim of the programs is to establish conditions within the territory of the Russian Federation to guarantee the preservation of populations of the Caucasian chamois and Bezoar ibex by replenishing natural populations with animals bred in artificially created habitats.

Completed tasks:

Developed a capture method.

Developed a method for transportation and temporary holding of animals.

At this stage, work is being done to refine these methods based on their analysis during the program implementation.

1. MATERIALS AND METHODS

The method of capturing, transporting and temporary holding was practiced at the capture sites and temporary housing of animals.

The animals were captured using modified traps manufactured by Bridger (Taiwan). The trap functions similar to a foothold trap, but instead of metal jaws closing upwards, a loop is thrown over the animal's foot and tightened with a spring. During trap installation, a perforator was used to create holes in the rocks, where a metal anchor bolt with a 12 by 70 mm ring was fixed to secure the trap's rope. The capture sites were pre-equipped with salt licks to attract the animals.

In areas with stable cellular coverage, camera traps with MMS messaging capability were installed to alert about animal captures in the traps. Where such installation was not possible, round-the-clock monitoring was conducted using binoculars and thermal imagers.

The captured animals were immobilized using an injector and sedative drugs. To prevent any movement and reduce additional stress, their limbs were bound with tape, and a special bandage was applied to the head (see Figure 1).

Fig. 1. Applying a bandage to the head of the captured chamois.

Then the animals were carefully transferred with their heads raised to the UAZ vehicle for transport to the holding facility. At the holding facility, a veterinarian examined the animals and took blood samples to test for infections such as brucellosis and leptospirosis. After the animals were given an antidote, they were placed in special cages for temporary holding. The holding period (quarantine) lasted for 30 days from the day of capture. After the quarantine period and a negative result for brucellosis and leptospirosis, the animal was issued a veterinary certificate (form 1) allowing it to be transported to the nursery of the Nalchik Hunting Farm. The animal was transported by road.

2. RESULTS

The rehabilitation of captured animals began from the moment of their capture and continued throughout the holding process. The conditions of holding and, accordingly, the structural features and placement of the holding cages should serve one purpose - to ensure a minimal level of disturbance for the animals.

To provide quarantine and facilitate the animals' adaptation to the artificial habitat, as well as their transportation, a mobile cage was designed and manufactured (see Figure 2). The cage's design scheme is presented in Appendix 1.

Fig. 2. Mobile cages

The cage is made of 9mm thick OSB board, coated with waterproof paint on the outside. The cage frame is made of pine boards. The roof is covered with corrugated metal sheets measuring 2 by 2 meters. There are two inward-opening doors in the cage, diagonally positioned from each other. At the bottom of the cage walls, there are four openings with doors, also diagonally placed like the doors. These openings are for feeding and watering the animals. In the middle of the cage, there is a partition dividing it into two compartments.

The partition is necessary to minimize disturbance to the animal. By moving from one compartment to another, the animal is isolated from direct visual contact with humans. To reduce the negative effects of distress, it is necessary to install the cages away from residential and industrial premises, livestock yards, roads, etc. Cages should also not be placed in areas where dogs are kept or may be present.

During the holding period, animals are fed twice a day - early in the morning (before dawn) and late in the evening (after sunset). According to our observations, this feeding schedule is the most optimal, as feeding animals during dark hours does not result in pronounced stress symptoms.

At this period, while animals are still adapting, they are fed with natural fodder. Hay is used for feeding, and it is provided abundantly (see Figure 3). Hay collected from mountain slopes in the animals' habitat is preferred over hay collected from foothills or plains. Additionally, two troughs with oats were placed, but the animals did not consume them. Two water troughs were installed in the cage, alongside which salt licks were placed.

Typically, animals started eating hay approximately 2-3 days after capture and began drinking water after about a day.

Fig. 3. Hay - the most optimal feed during temporary holding.

The animal feed specialist during the holding period should adhere to the main rule: the time spent near the animal during feeding should be minimal. Through video recording, it was established that prolonged presence of a person near the cage causes significant stress for the animal, which can lead to its death. Monitoring of the animals should be carried out using video cameras.

During the operation of this cage, a significant drawback was identified. The cage had a large weight and size which made it difficult to load and unload using machinery with a manipulator, especially in mountainous terrain. After loading the cages with bezoar ibex and transporting them for 17 hours to the nursery site, the animals showed clear signs of stress (see Figure 4). In particular, one 1.5-year-old male captured ibex was restless, constantly pacing and, as a result, showed minimal weight gain during the year spent in the nursery.

Fig. 4. Female bezoar ibex.

In this context, a new mobile cage has been developed (see Figure 5).

Fig. 5. Mobile cage for temporary holding and transporting of animals.

The mobile cage consists of two interconnected transportation crates, in which the animals were delivered to the nursery. Each transportation crate has an entry door (see Figure 6) and a side shutter (see Figure 7). The shutter on one crate is mirrored relative to the shutter on the other crate. A detailed crate scheme is presented in Appendix 2.

Fig. 6. Transport crate (view from the door side).

Fig. 7. Transport crate (view from the open shutter side).

The walls of the transport crate are made of 8 mm plywood, while the roof and floor are made of 16 mm laminated plywood. The frame is constructed from 40 x 40 mm pine timber. The door is equipped with a padlock latch.

For the temporary holding of animals, it is necessary to connect the transport crates together using hooks (see Figures 8 and 9) and slide out the shutters.

Fig. 8. Connection point of transport crates from the door side (indicated by arrow).

Fig. 9. Connection point of transport crates from the open dampers side (indicated by the arrow).

After the temporary holding period, animals were transferred to a transport crate (see Figure 10), which was then loaded into a covered UAZ Cargo vehicle (see Figure 11) for transportation to the breeding site. Loading did not require a crane; it was carried out by just two people.

Fig.10. Transfer of animals from the cage to the transport crate.

Fig. 11. Loading of the transport crate with the animal.

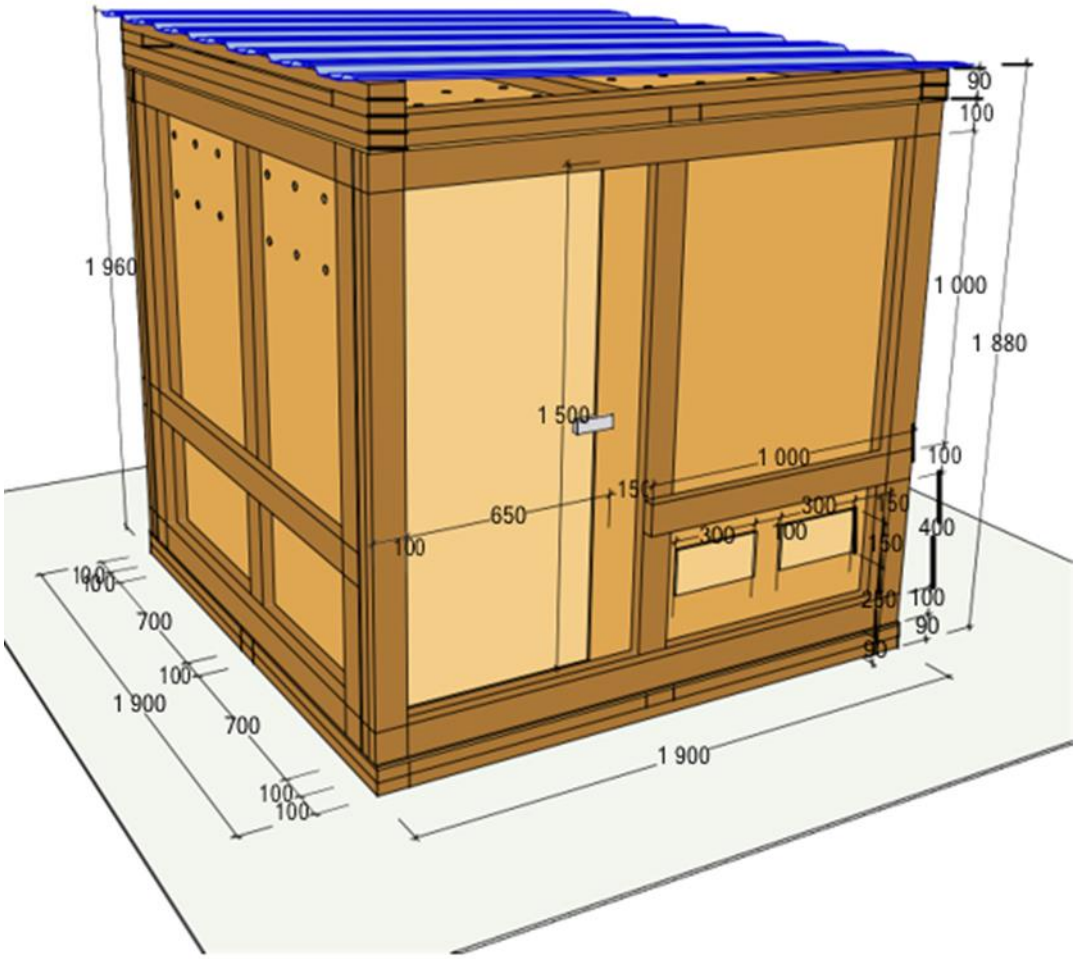
CONCLUSION

The main objective of capturing, holding and transporting ungulates is to create conditions that minimise or eliminate the influence of a wide range of stressors. Adherence to these conditions makes it possible to obtain healthy and unstressed animals.

The results obtained from the application of the method of capturing, holding and transporting animals can be considered satisfactory.

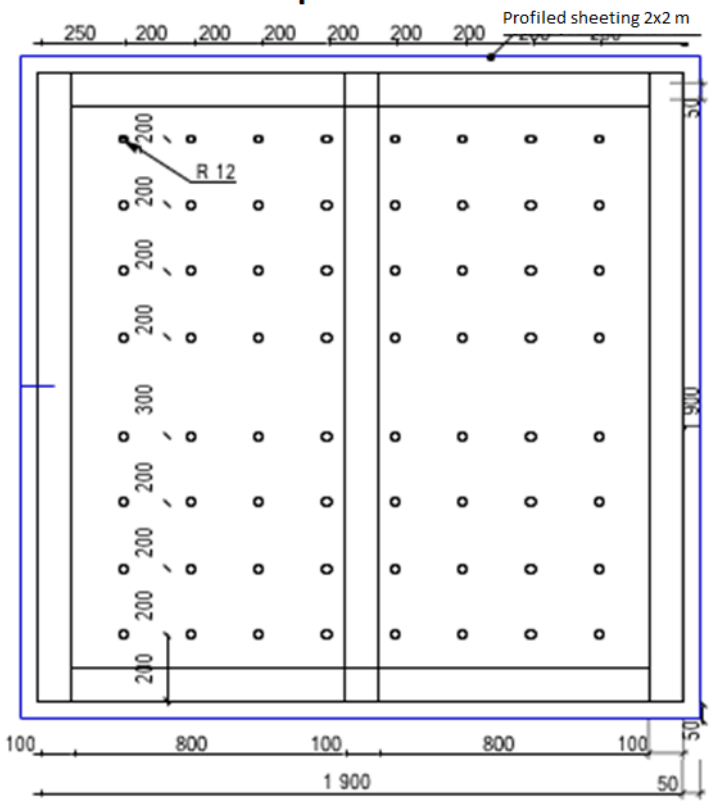
Appendix 1:

Scheme of the mobile cage (3D Illustration)

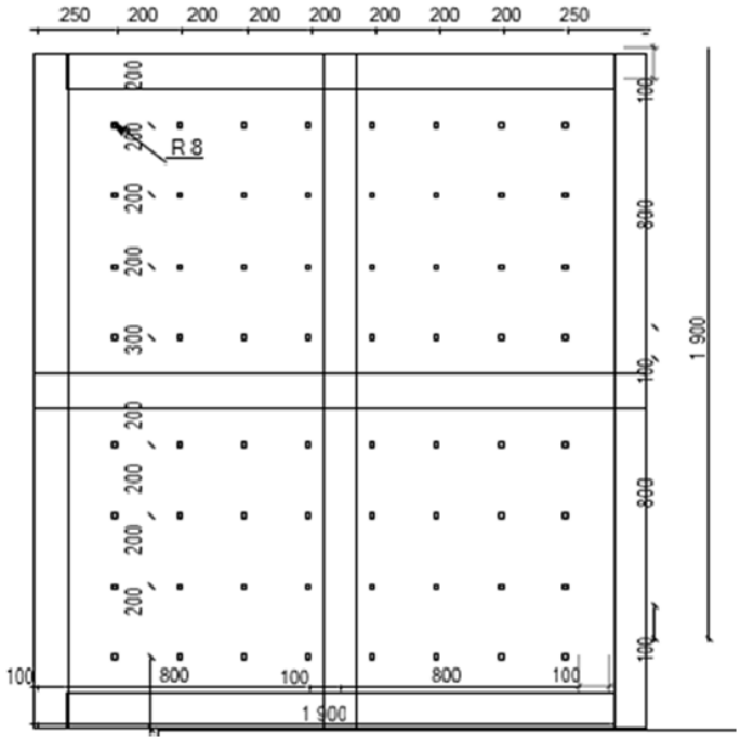


Top and bottom covers of the cage

Top cover

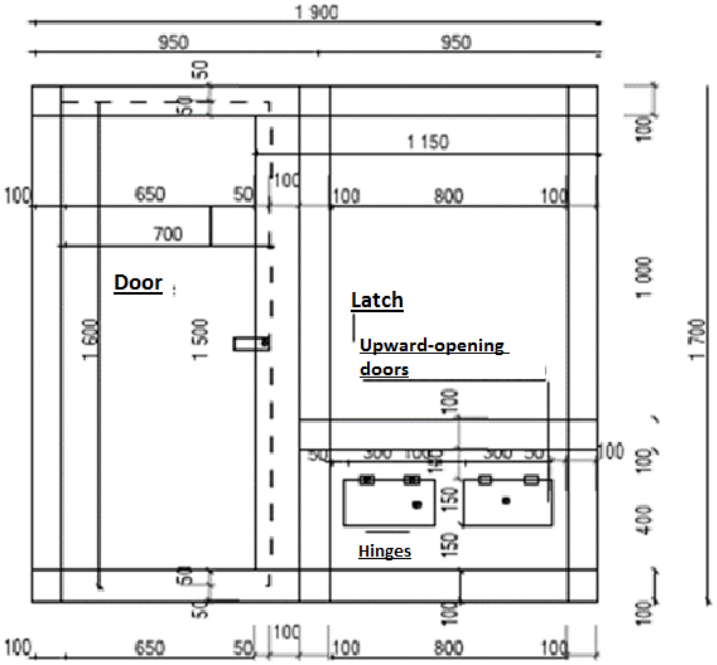


Bottom cover

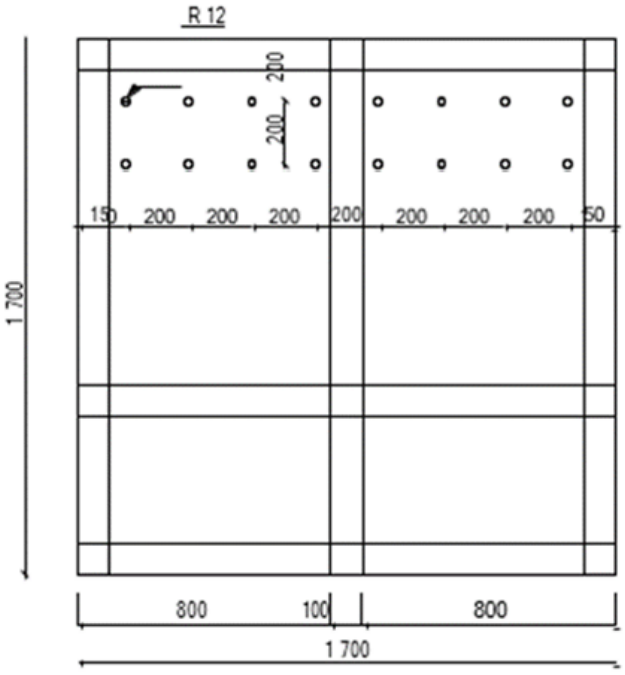


Side covers of the cage

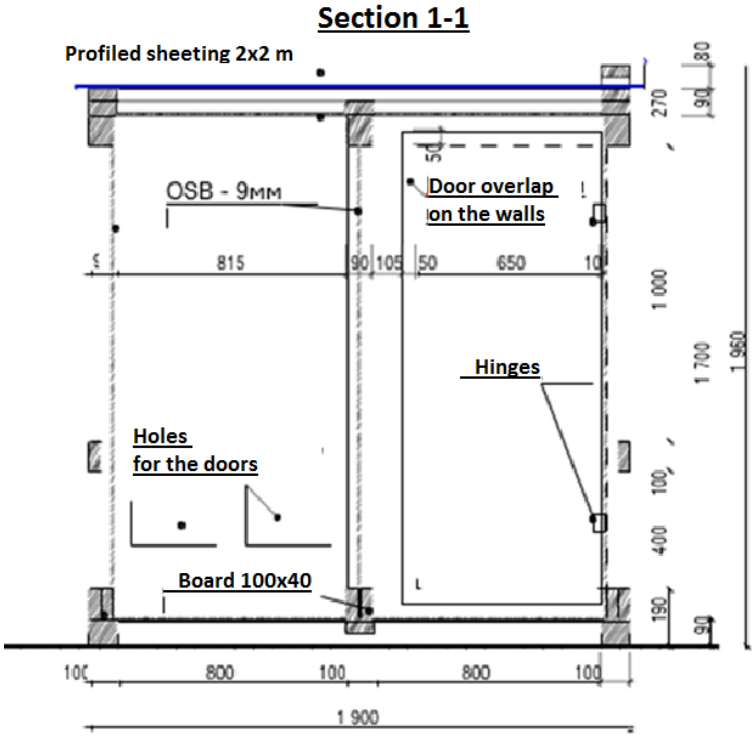
Side cover with door

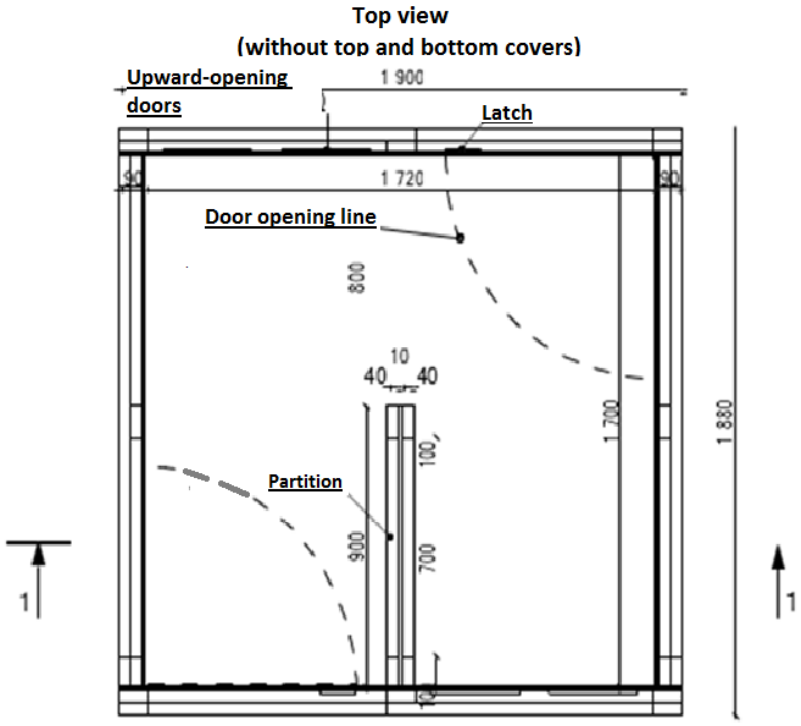


Solid side cover



Cage scheme (longitudinal section and top view without covers)





Appendix 2

Scheme of animal transportation crate