

THE ANTHROPIC IMPACT IN THE NORTH-WESTERN SIDE OF LEAOTA MOUNTAINS

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Abstract

Leaota Mountains are located between Bucegi Mountains and the Pietra Craiului Massive, being separated from the last ones through the Bran-Rucar-Dragoslavele Corridor. Their human intervention degree is much lower than in the case of the neighboring Massive, Bucegi, also due to the fact that they are less known by tourists and by the lower degree deforestation which had been made here. Though the tourism has reduced, being limited only to the Cheii Valley and rarely, during summer, to the Ghimbav Valley, can have a negative impact on the environment through the waste left at the camping places or edge of the road or in the waters. It is mandatory, for the area's sustainable development, the urgent limitation of the negative human intervention.

Keywords: negative human intervention impact, overgrazing, deforestation, tourism, Leaota

1. INTRODUCTION

With a relatively low surface, of 336 sqkm (Murătoreanu, 2009), although displaying a wide variety of geographical views and a relatively easy accessibility, these mountains are less known than their more famous neighbors. With wide habitat diversity, with a fauna that includes nearly all the large mammal species specific to the mountain area, Leaota Mountains represent an area with a wide biodiversity, which is also confirmed by our research which has led to the identification of 248 new species for this mountain. Though, from the perspective of the tourism, this area is less known, there are anthropic activities which put pressure on the environment, leading until the endangerment of some species and the degradation of the living environments, of their fragmentation and to the general degradation of the environment. The studies we have carried out regard the north-western part of Leaota Mountains, especially the Cheii, Rudărița, Ghimbav, Popii Valleys, Berbece's Brook, Bădeni Valley and their surrounding areas too (Fig. 1. a, b, c).

2. MATERIALS AND METHODS

Our studies were based on observations made in the field during more years. Thus, for the Ghimbav Valley, the first observations started in April 2005 and, in this area, our field visits were the most numerous, at least three times a year. Starting with July 2014 until July 2016, we made at least two visits every month, including winter, which has been also available for the Popii Valley, as well as

for Cheii, Rudărița Valley, Berbece's Brook. In Bădeni Valley, until Leaota Peak, we have made 4 visits in the summer and fall of 2005. We carried out GPS positioning, we have taken photos, we have used different maps in order to clear the different aspects noticed in the field.

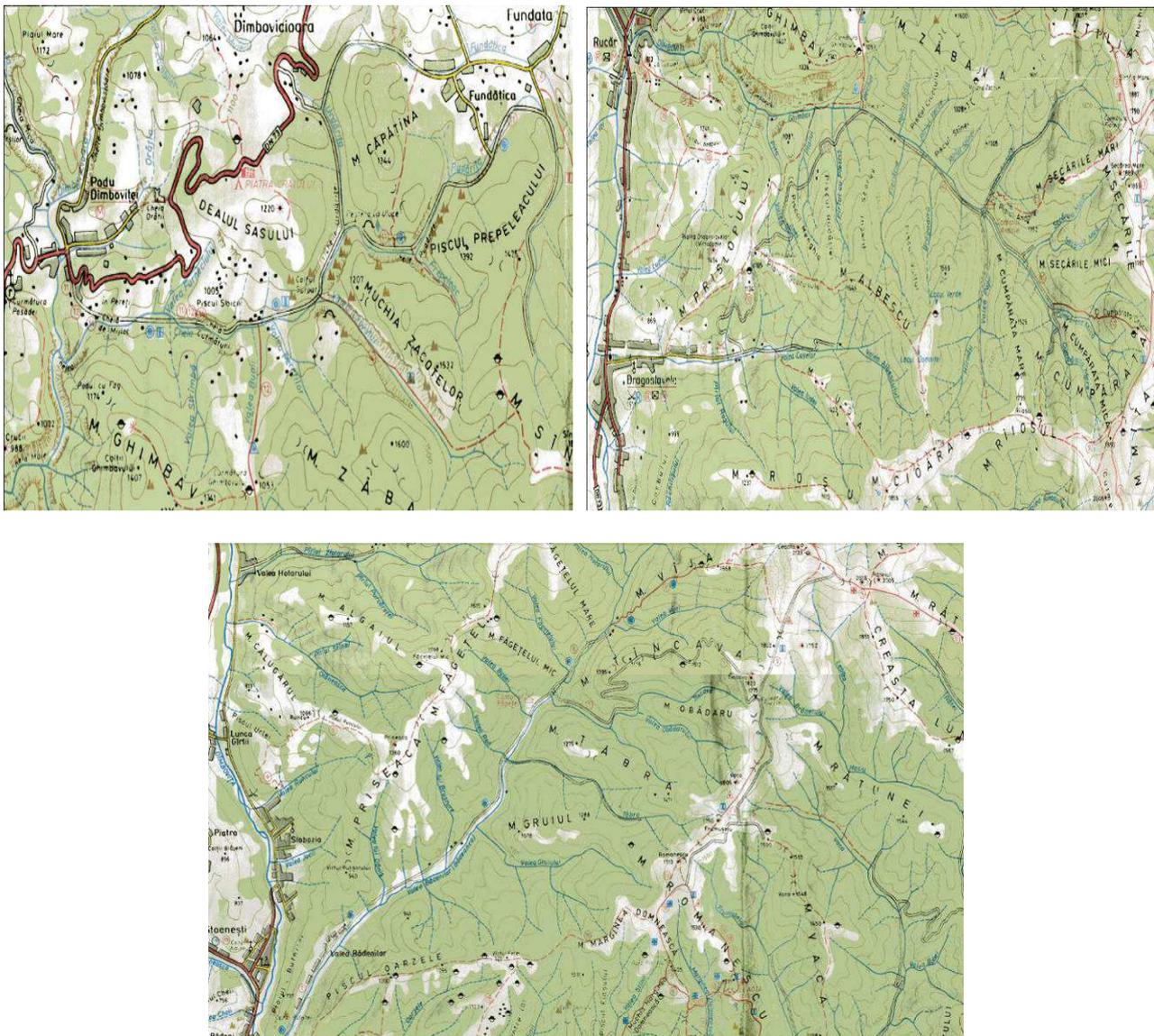


Figure 1. a. Cheia and Rudărița Valley; b. Basin of Ghimbav River; c. Basin of Bădeneanca River (Valea Bădenilor)

3. RESULTS AND DISCUSSIONS

Subsequently to the successive observations in the field, we could make various comparisons between different situations at a certain moment and their evolution in time. We will describe the type of human intervention in the previously mentioned areas.

- The Cheii Valley, from the Dâmbovița Bridge until nearly 300 meters from the Colțu Surpat area (the meeting point of Cheii Valley with Crovului Valley), represents the highest human-impacted area of the enumerated areas. Practically, on a side and another of the back forest road, linking the Dâmbovița Bridge to Fundățița, people have built guest houses, with very little space

between the proprietaries. During summer, and during the remaining time of the year during weekends and holidays, there is a large tourist flow in the area, tourists which travel almost exclusively by car, despite of the bad road. Although, most of them do not move more than several hundred meters, towards and through Rudărița Keys, going for short walks, so we can say that the tourism impact only limits to the areas around the guest houses, where the fires is set and there is loud music etc. we haven't noticed other tourism activities, such as ATV tracks, which could influence the environment. The guest houses locations have trash bins and, at least theoretically, septic tanks. We have though also noticed wasteon this track, both on the road and in the river, especially plastic bottles, which, we are sure, belong to tourists. Also, two companies of wood exploitation (Fig. 2) and handling are located, with frame saws, with fields where planks are deposited, and also sawdust from the wood manufacturing. We haven't though met sawdust thrown in the water. These locations where the wood is handled are located at approximately 1km downstream of the Colțu Surpat, one on the right side and the other on the left side of the forest road. In this area also, at the meeting point with the Crovului Valley, on the left side of the forest road, there is a field which is used as grazing ground, belonging to the inhabitants in the neighboring area.



Figure 2. Wood processing, northwestern Leaota (Foto Dorobăț L.)

- Rudărița Valley area is wilder than the previously described one, though it is crossed by the mentioned forest road, Podu Dâmboviței-Fundățița, used by higher ground clearance cars. Often right bank of the river was strengthened with gabions (Fig. 3. a, b, d). There are no buildings in the area, as the high angle slopes and the narrow valley do not allow it. Rudărița Keys are the most spectacular, including the Uluce Cave, but the tourists' number is not that high, of tens, hardly passing over 100, during weekends with good weather. In the area located at the meeting point of Rudărița Valley with Prepeleac Valley, on the right side of the forest road towards Podu Dâmboviței, we have noticed that in 2015 and 2016 rock, limestone exploitations, resulting a mobile limestone scree outcrops, with a certain human origin (Fig. 3. c). Also, from the mentioned meeting point, at several hundred meters upstream we have noticed the same thing. The extracted rock is used, among others, for the pavement of the roads in the area. We must also remember that, though we haven't met forest exploitations on these valleys, Rudărița and Cheia, the road is though crossed by trucks charged with trees originating in the Fundățița and Prepeleac areas, at higher altitudes. We must notice that, during summer and autumn, the repetitive berry collecting activities

(especially mushrooms) on the southern slopes of Sasului Hill, Căpățâna Mountain or the northern slopes of Curmatura Zacotei, Pisu Prepeleacului, Zăbava and Ghimbav Mountains. The fact that this area has faced less human intervention is also confirmed by the existence of bears in areas where we have made research in the mesovoid shallow substratum (scree), such as the southern slope of Căpățâna Mountain, where an ecologic stationary was placed. We have not met animal herds, high slopes in the area, in most of the cases with scree, which did not allow this activity.



Figure 3. a, b, d. Gabions, Rudărița Valley; c. Anthropic scree on Rudărița Valley (Foto Dorobăț L.)

- The Ghimbav Valley is the most accessible area of the ones we have mentioned before. From Dragoslavele, the paved road goes towards the Ghimbav Valley passing through the village, parallel with the Dâmbovița affluent, Caselor Valley. The exit of the village is also the place where the pavement and the road end (continuing with a forest road), unpaved, going until the highest

point, Şaua Prislopului. During the first two kilometers, we notice small grazing places which are connected through small animal paths (especially cows). Then, on one side and the other, the forest road is limited by forest. In Şaua Prislopului, a very large opening is covered by herbs, where we met both cow herds and sheep herds. In the area next to the road, a cement platform is built, for the access of helicopters. Between 2012 and 2014, a path was enlarged to a stiff road, for off road cars and tractors which connected the highest point of the Dragoslavele – Andolia forest road and two sheep folds, located on the eastern slope of the Prislop Mountain. In 2015, it was blocked by rocks, thus closing the link to the main forest road. On the level curve, from the Şaua Prislop towards N-NW, there is a road which leads to a military unit close to a sheep stable. From this point, there is a new path towards Albescu Mountain. In the beginning, during the first two kilometers (Plaiul Scoruşului), the path partially follows the course of a torrent and, being enlarged, is sometimes used by offroad cars which are used by hunters. The erosion phenomena are frequently present, leading to gapping due to car usage and, afterwards, to the development of torrential organisms. We have noticed in a very frequent manner, the erosion phenomena, which make the parent rock outcrop. At a certain time, the path goes from the so called road used by hunters, leading to hunting places on the northern slope of Albescu Mountain. The pathway leads to the sheep stable on the Albescu Mountain. It was rebuilt from zero on another route in 2013-2014 (one floor). We have noticed the old sheep stable in the area, where a nitrophile vegetation has developed, which is specific to these types of soil filled with house animals feces. Moreover, we have noticed another sheep stable (Fig. 4 a, b), locate at approximately 0.7 – 0.8 km from the Şaua Prislop area, as well as other two sheep stables located further, near the Domniţei and the Verde Lakes. Unfortunately, we have noticed the same modification phenomenon of the natural vegetation, which has been replaced by nitrophites (especially the *Urtica* genre (Neblea and Chirîţoiu, 2003). Problems have also been signaled by Alexiu (2011) and Murătoareanu (2009) and our observations come to confirm them. Coming back to Şaua Prislop, from here, the forest road was modernized with European funds until the forest hut Andolia (Fig. 5), where the Andoliei Valley meets the Cumpărata and Popii Valleys.

The modernization of the road was ended in 2013 and consisted of its enlargement, an asphalt layer, the consolidation of the slopes, partial deforestation of the trees next to the roads, the consolidation of the Ghimbav shores through cementing, but especially through the construction of gabions; the forest road goes parallel with Ghimbav, from the “La Fierărie” point until Andolia forest hut (Fig. 5). In spite of the fact that, by modernizing this road, the access to the area is easier, the tourism is nearly lacking, excepting the summer season, when tourists set their tents, coming by car. The Ghimbav Valley being large, there are conditions for the development of glades, especially on the left side of the river. Only from the “La Fierărie” point, until the entrance of Ghimbav in the keys with the same name, camping is also possible on the right side of the river. Unfortunately, traces of this low tourism activity are found wherever, fireplaces, and also all kind of garbage. They are more numerous in the glade around the “La Fierărie” point.



Figure 4. Sheepfolds, northwestern Leota (Foto Dorobăț L.)



Figure 5. Andolia forest hut area (Foto Dorobăț L.)

Another activity with human impact is the wood processing. The forest areas belong to the Dragosloveni Moșneni Community. The more intense wood processing first started in 2008, through the initial extraction of wood from the “La Fierărie” area, the glade having a secondary vegetation nowadays. Older and more intense exploitations, continuous ones, have been noticed during the years in the Basin of Andolia Valley, and, starting from 2016, in the superior Basin of Popii Valley. Though, we have not noticed “in ras” forest exploitations. Along the Ghimbav Valley, sheep stables are set, some of them function on an annual basis, others on temporary basis. Such a sheep stable with a temporary feature is the one, located near the forest road, at the meeting point of Berbece’s brook with Ghimbav, which has periodically functioned in 2015 and 2016. Upstream of “La Fierărie”, on the left side, 200 m from the Keys entrance, some huts have been built, in front of the Colții Ghimbavului. The huts had only an internal circuit, so the human impact of this periodical activity was low. From 2009, the huts were destroyed. In 2015 and 2016 we have noticed partial reconditioning try-outs, as well as the setting of a sheep stable, right in the court of the huts.

Also, in 2012, the building of a hermitage (Maria Hermitage) began on the right side of the forest road, and in the future the building of a Monastery (Fig. 6)



Figure 6. Maria Hermitage; Colții Ghimbavului in the background (Foto Dorobăț L.)

An access road was built at approximately 300 meters, as well as a wider place for the parking lot, with a surface of approximately 2000 sqm. Though, the tourist number that reached this point is large, nearly 150-200 at the Hermitage day, with no other tourists in the other periods. Parts of the southern slope of Ghimbav are disposed for military and civilian training (alpinism).

In 2014, October, the arrangement of the Berbece's Brook Valley for the transportation of the wood through skidding. The shores were enlarged, the brook's bed was practically transformed in a road for the dragging of the exploited trees in the superior basin of the brook. The bed was modified and it was contaminated with wood waste (Fig. 7.a, b). The activity continued until the autumn of 2015.



Figure 7. a. Wood waste and shores enlarged on Berbece's Brook Valley; b. Wood waste on Berbece's Brook Valley (Foto Dorobăț L.)

In 2015, we have noticed, on the forest road going in a parallel direction with the Popii Valley, cars that transported exploited wood on the superior course of this river. The forest road displays unstable areas, where human-originating scree emerged (schist scree), as a result of the slopes' misbalances (Fig. 8).



Figure 8. Anthropogenic scree, Popii Valey forest road (Foto Dorobăț L.)

At nearly 1.2 km upstream from the meeting point of Popii Valley with Ghimbav, felling areas for wood exploitations functioned in 2015. Though, we haven't met "in ras" exploitations.

In the Andolia Valley area, located upstream of the meeting point with Ghimbav, a barrier was installed in order to stop the access of foreigners. There are feeding points for bears in the area, and hunting is practiced, which we have also noticed on the western slope of Căpățâna Mountain, on Urdariței Valley. Though, as a sign of highly reduced human impact, we mention the existence of a wild boars herd that we have noticed on several occasions on the Ghimbav Valley.

- In the lower basin of Bădeni Valley, human pressure is made by uncontrolled deforestation, by building houses in forbidden places and by depositing the garbage on the shores or by directly throwing it in the river. In 2015, a site for the rock exploitation was created, at nearly 3 km upstream of Bădeni village.

The forest road that leads to the proximity of Leaota Peak, which is very hard to use, displays areas with landslips generated by the surge misbalance, leading to human-origin scree with low surfaces (Fig. 9. a, b)



Figure 9. a., b. Anthropogenic scree on the right side of the forest road to Leaota Peak (Foto Dorobăț L.)

In the alpine blank, we notice overgrazing phenomena, through the high number of sheep stables, thus affecting the original vegetation. Alexiu (2011) shows that in many alpine sectors, the unhandled grazing and deforestation led to the lowering of the forests' limit significantly below the natural climatic limit, which we also confirm. Neblea (2007, 2008) and Murătoreanu (2009) mention the many junipers have been destroyed by shepherds, such as the Vaca, Tâncava, Cumpărata, Cioara, Albescu Mountains etc. We confirm these facts, identifying two more examples of juniper deforestation in the Secăriile and Vaja Mountains.

4. CONCLUSIONS

The main human pressure faced by the Leaota Massive, not only in the north-western area, is generated by over-grazing, by the large number of sheep stables and the extinction of the juniper floor, which has been deforested by shepherds.

Another activity that generates significant human pressure is represented by deforestation, but we can mention that they seem to be controlled, not noticing in ras deforestation on the north-western slope. This is possible due to a community feeling that is specific to the area, which implies a higher responsibility.

The tourism is less developed in the area and the impact of this activity on the environment is still low, but we notice the spreading of garbage in the rivers' beds.

Hunting or mushroom or other berries gathering are limited, their impact on the environment being quite reduced. The fact that we have met bear tracks quite frequently in the area, and also of wild boars or other wild life tracks indicates the fact that Leaota Mountains still shelter a reach fauna of large mammals. Our research in the area has also led to the identification of 248 species that we first described in these mountains. All these things confirm the need of limiting, as much as possible, of the human impact and of the habitats' conservation, and also of the plant and fauna elements.

5. ACKNOWLEDGEMENTS

This paper of Magdalin Leonard Dorobăț was supported by the strategic grant POSDRU/159/1.5/S/138963 - PERFORM, co-financed by the European Social Fund – Investing in People, within the Sectorial Operational Programme Human Resources Development 2007-2013.

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