

## Article

# Environmental Sustainability and the Inclusion of Geomorphosites in Tourist Activity—Case Study: The Baiului Mountains, Romania

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**Abstract:** This paper presents the sustainability of the relief at geomorphosites in terms of tourist activity and how tourism can affect the relief by presenting the major sustainable tourism issues. For the study area, the Baiului Mountains from Romania were chosen. In addition, we present the method for assessing tourist and exploitation values of geomorphological sites in the tourist area of Romania. Jean-Pierre Pralong first used the method and it aims to qualify the potential in terms of scenic, scientific, cultural and economic values and the use of this potential in terms of degree and modality of exploitation. It was based on the study of 10 geomorphological sites in the area of the Baiului Mountains. We present each geomorphosite and its scale for every value. Finally, we develop an analysis of the potential and use of the studied geomorphosites and the relationship between the reliefs and tourism.



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**Keywords:** geomorphosite; geotourism; inventory; evaluation; tourism; Baiului Mountains; Carpathian Mts; Romania

## 1. Introduction

Natural reliefs can be a major element in the structure of the tourist potential of a territory, and can become tourist attractions due to the association of the attractive morphological elements and the motivation of people to consume the tourist product [1]. The potential for tourism is understood as a result of the space association between a tourism resource and the infrastructure [2]. The valued expression of tourism potential is a subjective assessment due to the impossibility of rigorous quantitative assessment of its components. The criteria for assessing the tourism potential of a site includes its unique character (regional, national, local), tourist valences, the way in which it satisfies and the time in which it meets the demand for tourism, and the favoritism, or the restriction, of promoting the tourist objective [3].

The reliefs and tourism have an interdependent relationship; thus, its characteristics (morphometric and morphographic) can increase its tourist attraction. On the other hand, it can also have a negative influence by destroying some elements of the attractiveness of the morphology as a result of uncontrolled planning or by triggering current geomorphologic processes when it is unchecked.

The study of geomorphosites is a new research direction that addresses the relationship between relief and tourism. However, some fundamental concepts and basic information must be provided. Geomorphosites are a type of geosite. Geosites may be considered as portions of the geosphere that present a particular importance for the comprehension of the Earth's evolution [4].

Geomorphosites are landforms that have acquired different values over time (scientific, scenic, cultural, artistic, historical, environmental, etc.). A geomorphologic site or geomorphologic point (site) may be defined as a portion of the Earth surface of particular importance in understanding Earth evolution, climate and life [5].

This concept was introduced in the literature in the early 1990s, so the terminology used for the relief forms a component of the natural heritage varied until the term ‘geomorphosite’ was introduced in 2001 by M. Panizza [6].

In terms of sustainability and tourism, the Baiului Mountains face several challenges that must be resolved:

- There is a need for organized tourism with homologated trails and specific tourist places to visit. If there are no homologate tourist trails, there is no security. The tourist can get lost easy, especially if it is foggy weather. Markers are very important in the nearby ridge, in the alpine meadows, but also in the forests so as to prevent accidents, encounters with wildlife and hazards.
- No landmarks, no organized tourism (no maps, no signs, no advertisements, no posters with representative flora and fauna).
- Many ravines caused by deforestation, pasturing and the destruction of the juniper bushes.
- Slope degradation.
- Deforestation, which causes landslides.
- Sheepfolds located near to the tourism trails. The dogs can be dangerous for tourists.
- The 4X4 cars—this type of sport is destroying the land and the soil by creating ditches where the water can create ravines.

The inventory and evaluation of the geomorphosites from this area are important to see the relationship between the relief and tourist activities. The study of geomorphosites is a study of the past and a question of the future in terms of development and sustainability.

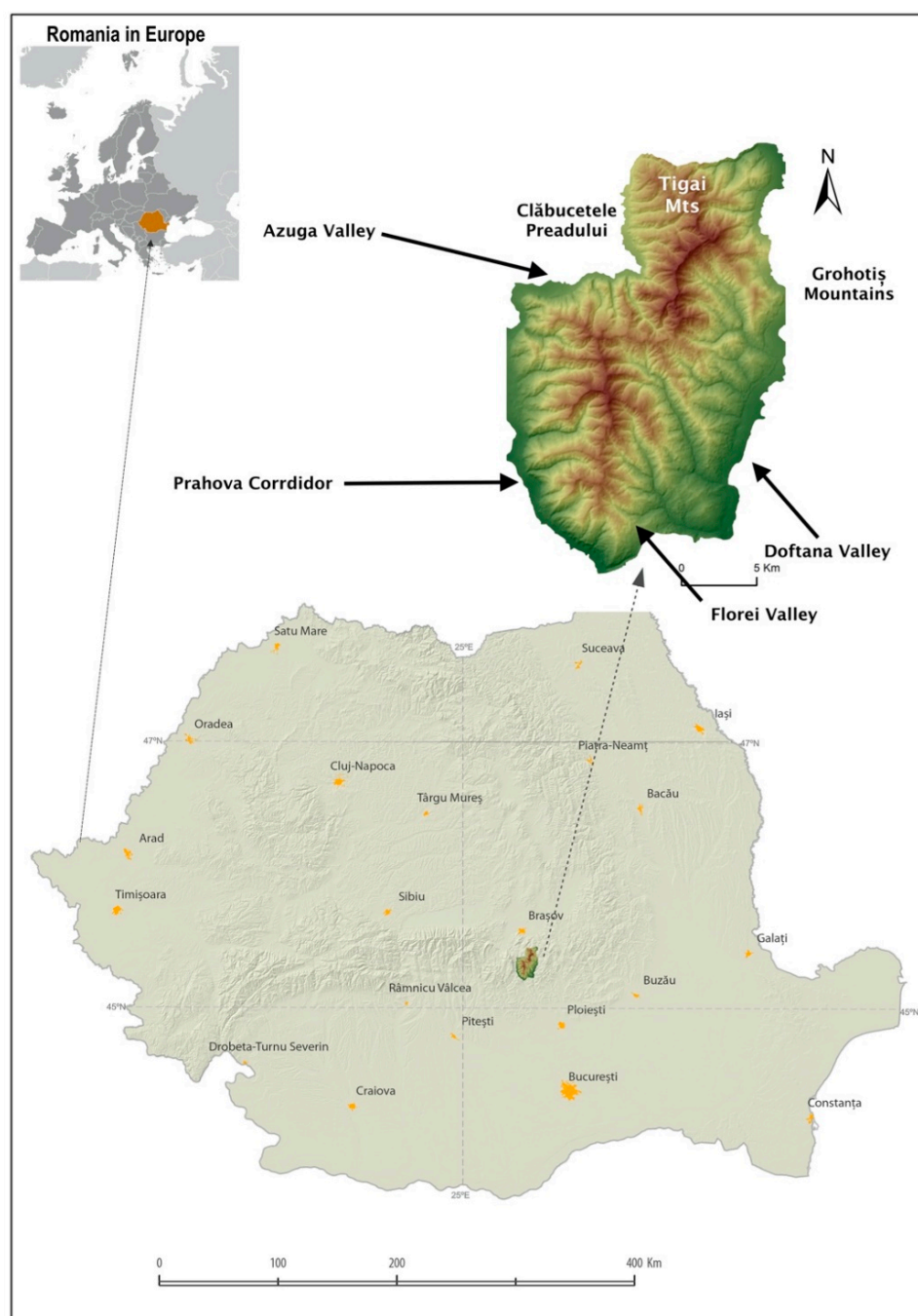
The purpose of this article is to identify the main geomorphosites in the Baiului Mountains, to inventory them and to establish the relationship between relief and tourism. The innovation of this paper is the research, the identification and the inventory of geomorphosites in the Baiului Mountains. Along with this, the tourist potential of these mountains can be demonstrated. With the help of the inventory, a classification was made of the impact they have on the relief through tourist activity and the degree of sustainability in the studied area. Due to their special geological composition, geographical position or paleogeographic evolution, they are elements of national or international interest from tourists.

This assessment method has been developed, tested and applied in the areas of the Carpathian Mountains, Bucegi Mountains [7], and Ceahlău National Park [8], in relation to the case studies of the Baiului Mountains. In this paper, the assessment of the tourist value and its components is presented and developed. Then, an assessment of the exploitation value allows the notion of use intensity to be determined. Finally, a comparison of the two first stages is carried out in order to analyse and discuss the potential and use of the studied geomorphological sites and its sustainability for tourist activity.

## 2. Materials and Methods

### 2.1. Study Area

The Baiu Mountains belong to the Curvature Carpathians. The northern boundary is given largely by the Azuga Valley, separating the Baiu Mountains from the Clăbucetelor Predealului peaks, then passing North of Mount Tigăi, at an average altitude of 1350 m. The Doftanei Valley separates the Baiu and Grohotiș Mountains, with the southern limit being given by Florei Valley, while in the west by the Prahova Corridor (Figure 1). The Baiului Mountains are in the vicinity of two arteries called the Prahova Valley and Doftana Valley. Despite the fact there is intense traffic, these valleys are like a quiet oasis where the travellers can enjoy the mountains’ beauty. A special feature of this area is the broad view from the peaks of the Baiului Mountains over the steep Eastern places of the Bucegi Mountains, and many other massifs from the Curvature Carpathians. Moreover, they boast a beautiful view of the Bucegi Mountains.



**Figure 1.** The geographical position of the Baiului Mountains.

The area is divided into three parts: to the north are the Neamțului Mountains (N–S), in the centre the Petru Orjogoaia Ridge (W–E) and to the south the Baiului Mountains (N–S). The highest altitudes are located in the Neamțului Mountains, Neamțului Peak (1923 m) and in the Baiului Mountains, Baiu Mare Peak (1895 m). The Petru Orjogoaia Ridge connects the Prahova Valley (West) and the Doftana Valley (East).

The Baiului Mountains are situated between two important cities of Romania: Bucharest (the capital) and Brașov. The city of Brașov located in the central part of the country, is part of the historical region of Transylvania. Brașov is surrounded by the Carpathian mountains and is also the birthplace of the first Romanian School.

## 2.2. Methodology

This paper involves the approach of interdisciplinary methods in the two branches of geography, namely: geomorphology and the geography of tourism. The role of the methodology is essential in understanding the specific nature of scientific knowledge, the principles, methods and means underlying the research and development of the scientific study [9]. The investigation process of geomorphosites includes inventory methods, assessment methods and mapping methods.

### 2.2.1. Method for the Inventory of Geomorphosites

The identification and inventory methods are the scientific methods by which those reliefs form with the potential to be identified and later became geomorphosites.

The process of inventory of the geomorphosites within the Baiului Mountains represents the start of the phase of scientific documentation. During this phase, geological [10] and geomorphological literature were studied [11,12], as well as cartographic materials [13] aimed at the morphology of the Baiului Mountains. The association of bibliographic study with the course of the field trips that targeted scientific research resulted in the knowledge, understanding and detailed mapping of all landforms and geomorphologic processes within the Baiului Mountains. Knowledge of the morphology of the area has thus allowed us to identify and select landforms with the attributes of a geomorphosite that are representative of those in their category and are of scientific and teaching importance, which is essential to be considered as a site for geotourism.

The identification and selection of geomorphologic sites within the area was based on their geomorphologic characteristics and not on other attributes (scenic, culture), the latter being only responsible for diversifying and increasing the value of the geomorphosite. From a morphological point of view, the geomorphosites that were identified and subsequently selected belong to the following relief forms: peaks, lacustrine depression, valleys, peatland depression, and rocks due to differential erosion (outcrops), etc.

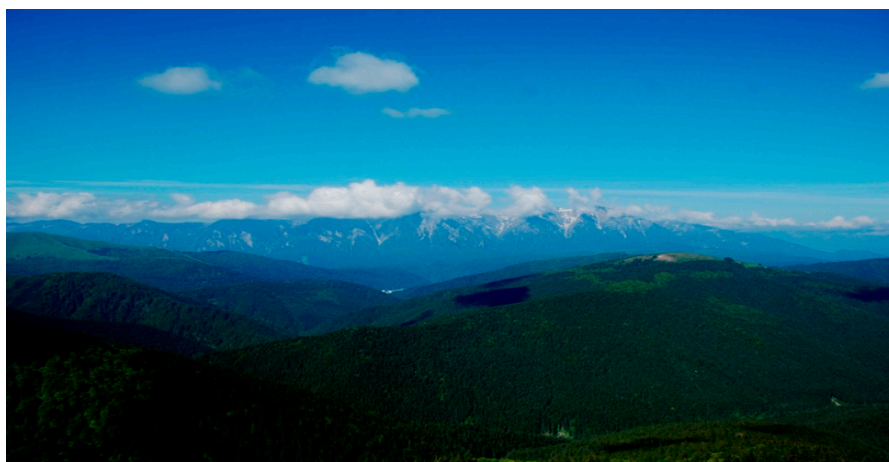
The peaks constitute relief forms from which a large number of examples have been identified, but only a few can be considered geomorphosites. The highest were chosen for their panoramic views and landscape value (Figure 2); for their scenic value because they consist of tougher rocks (sandstone and marls), and have rounded, woven, conic or truncated cone shapes and the appearance of insular mountains that dominate a higher level of erosion, which are separated by saddles.



**Figure 2.** Panoramic View from the Northern Side.

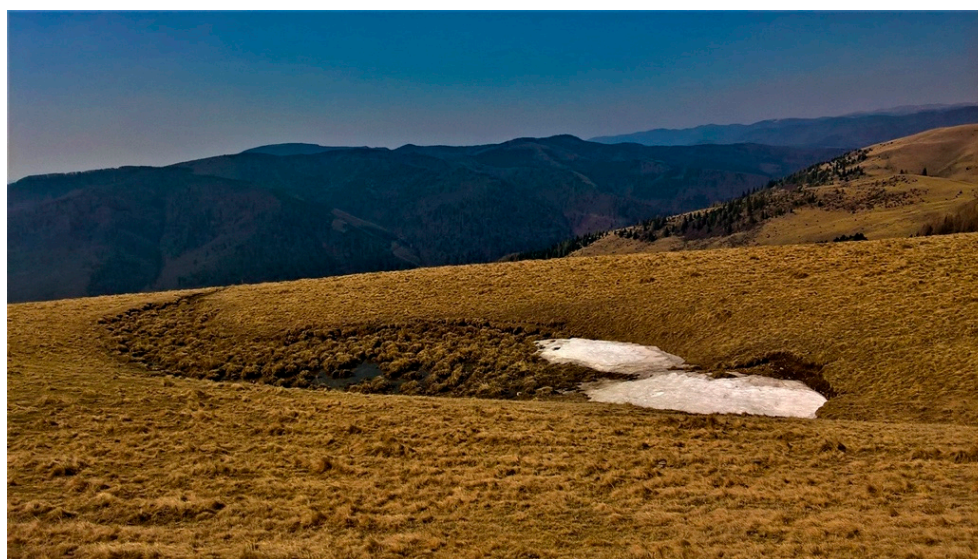
The panoramic view places are considered geomorphosites because of the panorama they offer to the tourist, and therefore for their scenic value. In the Baiului Mountains,

panoramic views are found on the highest peaks because they are located in view of the Prahovean slope of the Bucegi Mountains and the entire Prahova Valley (Figure 3).



**Figure 3.** Panoramic view—Bucegi Mountains.

The depressions of the anthropic/natural lakes and the peatlands. These are included among geomorphosites due to the process of lacustre cell genesis (Figure 4). Thus, it exemplifies the depression of Orjogoiaia Lake (nival), of the Roșu/Gavăn Lake (nival) and the peatland on Piciorul Boului (northern sector).



**Figure 4.** Depressions of the natural lakes.

The rocks—*witnesses of the differentiated erosion*. The only outcrop that falls under the category of geosites within the Baiului Mountains is located on the Urechea Mountain. This is the place where calcareous rocks appear at the surface of the earth's crust due to differential erosion and dissolution (Figure 5).



**Figure 5.** Rock—evidence of the differentiated erosion.

The anthropogenic small depressions formed by the explosions (the Baiului Mountains were a battlefield) fall under the category of geomorphosites formed in the category of anthropogenic topography. One is located on the Flora Mountain on the forest floor.

From the above-mentioned relief forms, a total of 10 geomorphosites, representative of genesis and value types, were identified within the Baiului Mountains, which were subsequently subject to the inventory and evaluation process.

The inventory stage of the geomorphosites in the Baiului Mountains consisted of collecting the necessary information for the evaluation of geomorphosites for the purpose of their exploitation through tourism [14]. For each of the 10 identified geomorphosites, an inventory sheet (based on information from the documentation stage) was drawn up containing general information, location information and some criteria specific to the evaluation process. Subsequently, the validation and completion of the records with observations from the field was carried out (Table 1).

**Table 1.** Inventory Sheet of Geomorphosites. Source [15].

<i>Inventory Sheet of Geomorphosites</i>	
<b>Name—The Depression of Orjogoia Nival Lake</b>	
<b>Altitude—1483 m</b>	
<b>Morphological Unit—Petru Orjogoia Ridge</b>	
<b>Tourist Value Assessment</b>	
Scientific value (VsciG)	The paleogeographic interest of the site as a witness for the reconstruction of the morphodynamic development of the lake depression—1 p
	The tank of the lake is representative of the evolution of the lake. The characteristics of the site are educational in studying geomorphology—1 p
	The score is evaluated by the size of the area of geomorphosite divided by the whole area occupied by all identical geomorphosites in the studied territory—1 p
	As it is unique, it scored its highest score on the uniqueness chapter (related to the Baiului M. area)—1 p
	Despite the fact that the geomorphosite is on the Petru-Orjogoia Ridge, which is intensively circulated, it keeps well, with very few signs of degradation (tourists can get on the banks and degrade them)—0.75
	The diversity of flora and fauna is reduced in the area. The most common one is <i>Deschampsia caespitosa</i> (tufted hairgrass), grows in high humidity areas, and is a thick bush, having 60–120 cm height; it does not live in the dry season, and it is well-suited to grazing—0.25 p

Table 1. Cont.

<b>Inventory Sheet of Geomorphosites</b> <b>Name—The Depression of Orjogoaia Nival Lake</b> <b>Altitude—1483 m</b> <b>Morphological Unit—Petru Orjogoaia Ridge</b>	
Scenic value (VsceG)	<p>It is taken into consideration the number of panoramic view places accessible on a trail/road. Each one of them needs to have a specific angle of observation and it has to be located less than 1 km away from the geomorphosite (Orjogoaia Peak)—0.25 p</p> <p>Average distance to the panoramic view places (more than 500 m)—1 p</p> <p>Size: The entire ground of the geomorphosite is taken into consideration. The score obtained for the size criteria (ha) is defined based on all the other similar geomorphosites within the studied area (out of all the existent nival depressions, namely the ones on the Șteiasa Ridge, on Sorica Ridge, on Baiu Mare Ridge), Orjogoaia Lake Depression is the largest—1 p</p> <p>Orjogoaia Lake Depression received a score of 0.75 because the lake depression on the Sorica is situated at 1560 m altitude, and the one on the Șteiasa at 1520 m.</p> <p>Color contrast of the geomorphosite with its surroundings: A particular colour includes all numerous shadows; dark, black, gray or light gray are considered to be identical colours. The lake has a dark blue colour, and the surroundings are from yellow to light green—1 p.</p>
Cultural value (VcultG)	<p>The symbolic relevance of geomorphosite is very low—0.25 p</p> <p>Orjogoaia Depression/Lake is not included in the category of iconographic representations such as drawings, paintings, photographs—0 p</p> <p>Historical, architectural and archaeological vestiges or buildings are missing—0 p</p> <p>The religious or metaphysical relevance of the site as well as folk traditions/beliefs they don't take place in this area—0 p</p> <p>There is no artistic or cultural event related to the geomorphosite or has ever been—0 p</p>
Economic value (VecoG)	<p>The Orjogoaia Lake/depression is less than one km from the access road (trail). Access can be provided with 4×4 vehicles, bicycles, motorcycles—0.25 p</p> <p>There are no natural risks. No avalanches, falling stones, torches, etc. are formed—1 p</p> <p>Every year, the number of tourists transiting the area is between 10.000 and 100.000—0.25 p</p> <p>Orjogoaia Depression Lake is not protected from a geomorphosite point of view—1 p</p> <p>In terms of tourism importance, it is known nationally—0.75</p>
Exploitation value assessment	
Degree of exploitation (DeG)	<p>The depression of the Orjogoaia Lake is accessible and is located on the Petru-Orjogoaia Interfluvium, so that the area in the vicinity is used for tourism purposes—0.5 p</p> <p>Transport infrastructure, accommodation, restaurant, souvenirs/tourist guides within the geomorphosite area is missing (paths not included)—0 p</p> <p>The geomorphosite is visited year-round—1 p</p> <p>The depression of the Orjogoaia lake can be used for tourism and visited in a day's time—1 p</p>

### 2.2.2. Geomorphosites Classification

GPS points (during field campaigns) were collected for the exact location of geomorphosites and their subsequent mapping (Figure 6). The inventory stage was completed by the creation of a database for each geomorphosite subject to the inventory process (Table 2).

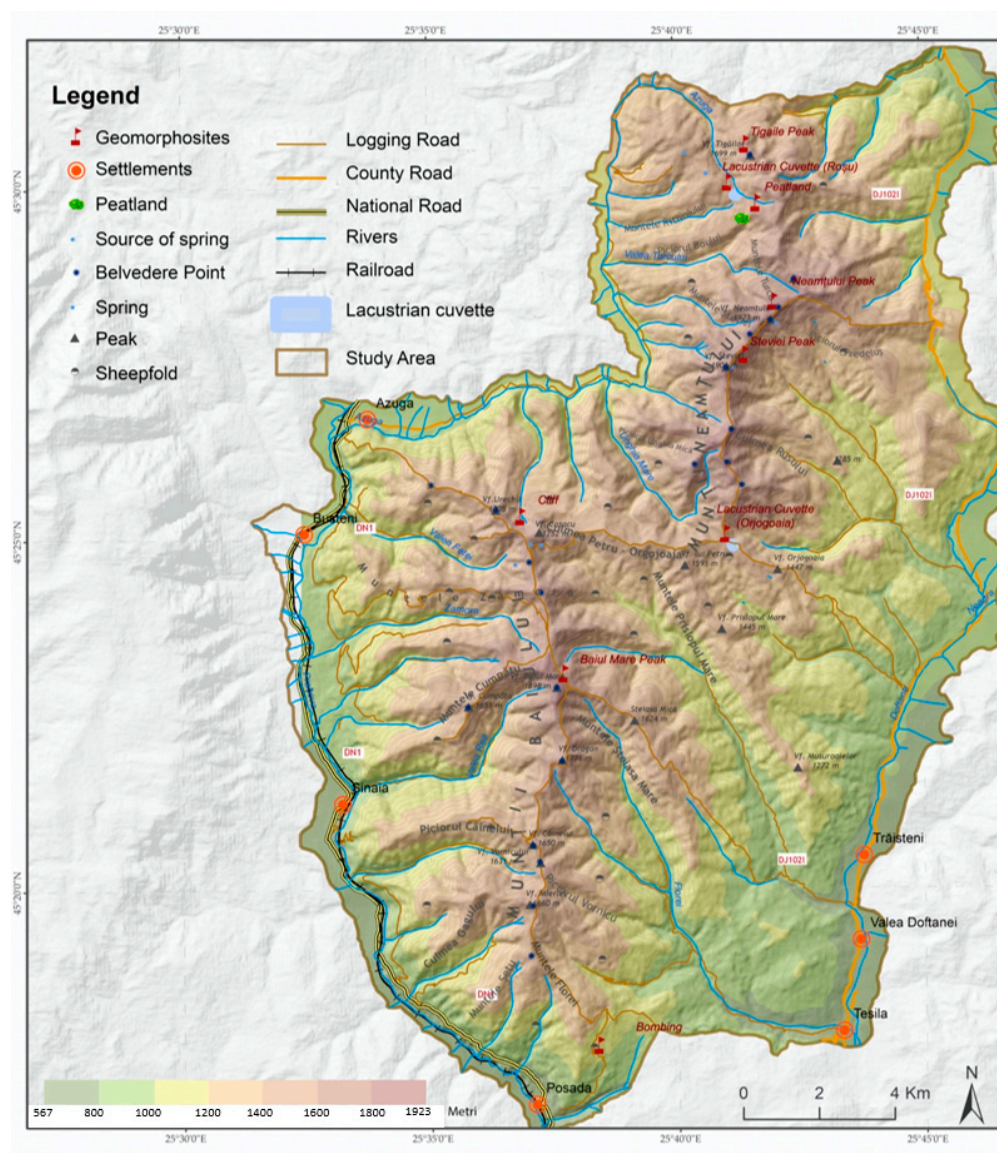


Figure 6. Geomorphosites Distribution.

Table 2. Classification of Geomorphosites from the Baiului Mountains.

Geomorphosite Name	Origin	Type	Code
a. Nival lacustrine depression—Orjogoia	Nival/Periglaciär	Areal	PHNIV01
b. Peatland depression Piciorul Boului	Periglaciär	Areal	PHPER02
c. Cliff—Culmea Cazacu	Differential erosion	Punctual	PHED03
d. Pits/itches resulting from bombing (Muntele Florei)	Anthropogenic	Areal	PHANT04
e. Petru-Orjogoia Ridge	Morphological	Linear	PHM05
f. Nival lacustrine depression—Roşu	Nival	Areal	PHNIV06
g. Baiu Mare Peak	Morphological	Punctual	PHM07
h. Neamţu Peak	Morphological	Punctual	PHM08
i. Tigăile Peak	Morphological	Punctual	PHM09
j. Ştevia Peak	Morphological	Punctual	PHM10

After identifying the 10 most important geomorphosites, an analysis of the major typologies that can be found in the Baiului Mountains was carried out. Their classification was based on their genesis, the dynamics of the generating processes and geomorpho-

logic complexity. Depending on their genesis in the Baiului Mountains, the following geomorphosites are representative.

Passive geomorphosites are the “archives” of the paleomedians in which they appeared and the respective forms of relief have developed and allowed the establishment of the evolution and age of the relief [16]. One example of this is the small depressions of nivation (their depression) with a temporary or permanent lake such as the Orjogoia Lake (a) (Figure 7) and Roșu Lake (f).



**Figure 7.** Nival lacustrine depression—Orjogoia.

From a genetic point of view, natural geomorphosites can be distinguished (the majority) or have an anthropogenic origin (ditches resulting from bombing. These pits were formed during the First World War (d)—Florei Mountains).

There are a number of geomorphologic sites of environmental value due to the presence of botanical elements of interest. Within this category, there are the depressions of swamps and peatlands that hold different relics or endemic species (Peatland Depression on Piciorul Boului) (b) (Figure 8).



**Figure 8.** Peatland depression Piciorul Boului.

Depending on morphological complexity [17], there are distinguished simple, complex and system geomorphosites within the Baiului Mountains. Simple geomorphosites are single forms generated by a dominated geomorphologic process (peaks that stand out either by altitude or as panoramic view places or by morphology, such as Baiu Mare Peak (g) (1895 m), Ștevia Peak (j) (1907 m), Neamțu Peak (h) (1923 m) and Țigăile Peak (i) (1698 m)). The tops and depressions of the lakes are to be entered in this category. Complex geomorphosites are the association of morphological elements with different geneses within themselves. An example of this is the top of the rock on the Urechea Interfluvium that appeared through differential erosion caused by the action of several external agents (c) (Figure 9).



**Figure 9.** Cliff—Cazacu Ridge differential erosion.

System geomorphosites are those geomorphosites that encompass smaller ones, with a functional relationship between them. For example, the Petru–Orjogoaia Ridge (e) and Baiu peak have other peaks within them, which in turn constitute self-standing geomorphosites with scientific and teaching valences.

### 2.2.3. The Assessment of Geomorphosites

The geomorphosites identified during the previous phase were submitted to the evaluation process, applying the proposed assessment method, and described in detail in the chapter on the methodological framework, namely the method proposed by J.P. Pralong [18].

This assessment is divided in two parts:

a. Tourist value assessment. This includes four values: scenic, scientific, cultural and economic. Precise criteria and specific scales of scoring have been defined for each constituent of the tourist value, notably inspired by V. Grandgirard [19] and G. Quaranta [20] for the scenic analysis; P. Cortaza and C. Gusti [21] for the scientific analysis; D. Rojsek [22] and V. Rivas et al. (1995) for the cultural/historical analysis, and by V. Rivas et al. [23] and M. Panizza [24] for the economic/social analysis. In this sense, the tourist value is considered as the mean of these four values and is expressed by:

$$V_{tour} = (V_{sce} + V_{sci} + V_{cult} + V_{eco})/4,$$

where

$V_{tour}$  = tourist value

$V_{sce}$  = scenic value

$V_{sci}$  = scientific value

$V_{cult}$  = cultural/historical value

$V_{eco}$  = economic/social value

The tourist value is calculated as the average of the other values, because there is no objective reason to think that a specific value is less important than the other one.

As defined by M. Panizza (1998), the scenic value depends on the spectacular and intrinsic aspect of the geomorphological site. The scientific value is based on natural rarity, didactic exemplarity, palaeogeographical importance, and ecological value of the geomorphological site, while the economic value is based on the usable and workable characteristics of a geomorphological site. In this sense, different objective criteria with a specific scale of scoring may be used to assess these values:

$$\begin{aligned} V_{sce} &= (Sce1 + Sce2 + Sce3 + Sce4 + Sce5)/5 \\ V_{sci} &= (Sci1 + Sci2 + Sci3 + Sci4 + Sci5 + Sci6)/6 \\ V_{cult} &= (Cult1 + Cult2 + Cult3 + Cult4 + Cult5)/5 \\ V_{eco} &= (Eco1 + Eco2 + Eco3 + Eco4 + Eco5)/5 \end{aligned}$$

Each value is divided into five or six criteria, with each criterion having values between 0 and 1 (0, 0.25, 0.5, 0.75, 1). Depending on the complexity of the geomorphosite, its composition (geological, geomorphological), geographical position, economic importance, the number of annual visitors was given a certain score.

#### b. Exploitation value assessment

The exploitation value assessment includes two components (degree of exploitation and modality of exploitation). In the same way as the tourist value, the criteria and scales of scoring were defined by each constituent value of the exploitation assessment. In this sense:

$$V_{expl} = (V_{deg}; V_{mod})$$

where

$V_{deg}$  is degree of exploitation

$V_{mod}$  is modality of exploitation

The relationship between these two values may define three degree of exploitation (low, intermediate, high) in terms of intensity. The degree of exploitation considers the spatial and temporal use of a geomorphological site and the modality takes into account the use of four constituent values of the tourist value of a geomorphological site. No weighting is introduced here because there is no objective reason to discriminate specific criteria. In this sense, different objective criteria with a specific scale of scoring may be used to assess these values:

$$\begin{aligned} V_{deg} &= (Deg1 + Deg2 + Deg3 + Deg4)/4 \\ V_{mod} &= (Mod1 + Mod2 + Mod3 + Mod4)/4 \end{aligned}$$

Each value is divided into four citations, with each criterion having values between 0 and 1 (0, 0.25, 0.5, 0.75, 1). Depending on the degree of exploitation, the mode of exploitation, the occupied surface, the existing infrastructure, the seasonal activity, etc., it was given a certain score.

### 3. Results

#### 3.1. Geomorphosites Tourist Value Assessment

Each selected geomorphosite has undergone the evaluation process, which will quantify the scientific ( $V_{sG}$ ), scenic ( $V_{sceG}$ ), cultural ( $V_{cG}$ ) and economic ( $V_{eG}$ ) values. The quantification process was achieved by giving numerical values in the range 0–1, to each criterion included in the five values that make up the assessment process. By averaging the values given to geomorphosites within each criterion, a score of each component step (value) of the method was obtained. The sum of the results of the five steps (values) allowed the tourist value of the geomorphosite under assessment ( $V_{tG}$ ) to be expressed. The average of these values is summarized in Table 3. The obtained values range from 0.65

(Petru-Orjogoaia peak) to 0.32 (Red Lake depression). The highest value of the geomorphosite scored because of its accessibility (it can easily be reached by cable transport from Azuga resort), the large number of tourists passing through the area, but also because of its surface area.

**Table 3.** Geomorphosites tourist value assessment.

No. crt	Geomorphosite Name	Scientific Value	Scenic Value	Cultural Value	Economic Value	Total Value
1	Nival lacustrine depression—Orjogoaia	0.83	0.7	0.05	0.7	0.57
2	Peatland depression Piciorul Boului	0.83	0.4	0.05	0.55	0.46
3	Cliff—Cazacu Ridge Differential Erosion	0.66	0.55	0.15	0.6	0.49
4	Petru-Orjogoaia Ridge	0.58	0.7	0.50	0.8	0.65
5	Baiu Mare Peak	0.42	0.65	0.10	0.7	0.47
6	Neamtu Peak	0.58	0.7	0.10	0.8	0.55
7	Tigăile Peak	0.42	0.7	0.10	0.6	0.45
8	Ștevia Peak	0.42	0.5	0.10	0.7	0.43
9	Nival lacustrine depression—Roșu	0.38	0.35	0.05	0.5	0.32
10	Pits/ditches resulting from bombing (Florei Mountain)	0.54	0.25	0.05	0.7	0.39

### 3.1.1. Geomorphosites Scientific Value Assessment

The ecological value was also included in the evaluation of the scientific value (Table 4). The evaluation accounted for paleogeographical interest depends on the palaeogeographical interest of the site as testimony for reconstructing the morphodynamic of a territory. The Nival lacustrine depression—Orjogoaia, Peatland depression, Cliff Ridge and the ditches resulting from bombing received maximum scores because they are proof of the evolution of the territory. Such things can provide didactic and exemplary characteristics of the site for laymen in geomorphology.

**Table 4.** Geomorphosites scientific value assessment.

Nr. crt	Geomorphosite Name	Scientific Value						Total
		VsG1	VsG2	VsG3	VsG4	VsG5	VsG6	
1	Nival lacustrine depression—Orjogoaia	1	1	1	1	0.75	0.25	0.83
2	Peatland depression Piciorul Boului	1	1	0.5	0.75	0.75	1	0.83
3	Cliff—Cazacu Ridge Differential Erosion	1	1	0.25	1	0.5	0.25	0.66
4	Petru-Orjogoaia Ridge	0.5	0.5	0.5	1	0.25	0.75	0.58
5	Baiu Mare Peak	0.5	0.5	0.25	0	0.5	0.75	0.42
6	Neamtu Peak	0.5	0.5	0.25	1	0.5	0.75	0.58
7	Tigăile Peak	0.5	0.5	0.5	0	0.25	0.75	0.42
8	Ștevia Peak	0.5	0.5	0.25	0	0.25	0.75	0.42
9	Nival lacustrine depression—Roșu	0.5	0.25	0.25	0.5	0.25	0.5	0.38
10	Pits/ditches resulting from bombing (Florei Mountain)	1	0.75	0.25	0.5	0.25	0.5	0.54

The site legibility is due to its own quality and general configuration. Again, the first three geomorphosites received maximum scores because of their importance in the geomorphological study of a territory, and uniqueness where the score is assessed by the number of identical sites of the study territory. A rare site may be an example of a different morphoclimatic environment from the present. The nival lacustrine depression—Orjogoaia is unique in terms of position, square, importance for tourism, the peaks resemble each other and the cliff is the only one that is brought to the surface by erosion. Its integrity depends on the existence of natural hazards, natural evolution and on human factors, including infrastructure, crowds, vandalism, factors that affect the site and its degree of preservation. The score of 0.75 means that the site had minor deterioration and 0.25 indicates a strong deterioration and ecological interest depends on the interest, diversity and natural dynamic of fauna and flora of the site. A score of 1.0 means that it is very

high, and a score of 0.25 is low. No geomorphosite received a score of 0—nil. This value is between 0.83 (the depression of the peatland on Piciorul Boului) and 0.38 (the depression of the Roşu Lake).

### 3.1.2. Geomorphosite Scenic Value Assessment

For the calculation of the scenic value, the number of panoramic point of view was taken into account (consider the number of viewpoints accessible by a pedestrian pathway). Each must present a particular angle of view and be situated less than 1 km from the site. The score of 1.0 represents more than 6, the score of 0.75—4, 5 or 6, the score of 0.5—2 or 3 and 0.25 single; the average distance from those places (corresponds to the sum of the shortest distances between each viewpoint and the site divided by the number of viewpoints taken into account by the number of viewpoints. A score of 1—more than 500 m, score 0.75—between 200 and 500 m, score 0.5—between 50 and 200m, score 0.25—less than 50 m); surface—sq km (the whole surface of the site is considered).

For each kind of site, a quantitative scale of area scoring is defined in relation to all of the identical sites of the study territory. A score of 1—very large, score 0.75—large, score 0.5—moderate, 0.25 small; elevation (the whole elevation of the site is considered. The highest score was given to Neamtu peak because it has the highest point and colour contrast (the colour contrast between the site and its direct environment). A particular colour includes all its numerous shades, dark grey and light grey are considered as identical colours. A score of 1—opposite colours, score 0.5—different colours and 0—identical colours. There is no 0.75 or 0.25 scores). The data obtained for this value range from 0.7 (Petru-Orjogoia peak, Neamtu peak, Țigăile peak) to 0.25 (ditches/proving depression) (Table 5). These geomorphosites received low scores due to the lack of visibility and panoramic viewing points, unlike the main peaks that have a high scenic value because they offer a wide panoramic view of the Prahova Valley and the spectacular steep of the Bucegi Mountains.

**Table 5.** Geomorphosites scenic and Economic value assessment.

No. crt	Geomorphosite Name	Scenic Value					Total
		Vsce1	Vsce2	Vsce3	Vsce4	Vsce5	
1	Nival lacustrine depression—Orjogoia	0.5	1	0.5	0.5	1	0.7
2	Peatland depression Piciorul Boului	0.25	0.25	0.75	0.75	0	0.4
3	Cliff—Cazacu Ridge Differential Erosion	0.5	1	0.25	0.5	0.5	0.55
4	Petru-Orjogoia Ridge	1	0.5	1	0.5	0.5	0.7
5	Baiu Mare Peak	0.75	1	0.25	0.75	0.5	0.65
6	Neamtu Peak	1	0.75	0.25	1	0.5	0.7
7	Țigăile Peak	1	1	0.5	0.5	0.5	0.7
8	Ștevia Peak	1	0.75	0.25	0.5	0	0.5
9	Nival lacustrine depression—Roşu	0.25	0.25	0.25	0.5	0.5	0.35
10	Pits/ditches resulting from bombing (Florei Mountain)	0.25	0.5	0.25	0.25	0	0.25

No. crt	Geomorphosite Name	Economic Value					Total
		E1	E2	E3	E4	E5	
1	Nival lacustrine depression—Orjogoia	0.25	1	0.25	1	0.75	0.65
2	Peatland depression Piciorul Boului	0.25	0.75	0.25	1	0.5	0.55
3	Cliff—Cazacu Ridge Differential Erosion	0.25	1	0.5	1	0.25	0.6
4	Petru-Orjogoia Ridge	0.5	1	0.75	1	0.75	0.8
5	Baiu Mare Peak	0	1	0.75	1	0.75	0.7
6	Neamtu Peak	0.25	1	0.75	1	0.75	0.8
7	Țigăile Peak	0.25	1	0.25	1	0.5	0.6
8	Ștevia Peak	0.25	1	0.75	1	0.5	0.7
9	Nival lacustrine depression—Roşu	0	1	0.25	1	0.25	0.5
10	Pits/ditches resulting from bombing (Florei Mountain)	0.25	1	0.5	1	0.75	0.7

### 3.1.3. Geomorphosite Cultural Value Assessment

The cultural value is calculated on the basis of symbolic importance and cultural heritage (depends on the symbolic relevance and heritage weight of the site for a community. This is defined by the cultural and historical customs without taking into account physical vestiges or buildings. A score 0.75—strongly linked, 0.25—weakly linked, 0—without link), iconographic representations (all historical pictures of the site are counted, quality of pictures may be taken into account for a higher score. A score of 0.25—weak relevance, score 0—no relevance, historical and archaeological relevance (is defined by the presence and relevance of historical, architectural or archaeological vestiges or buildings on the site). A score of 0.75—high relevance, 0.5—medium relevance, 0.25—weak relevance, 0—no relevance), religious relevance is defined by the religious or metaphysical relevance related to the site. This criterion includes popular beliefs.

The Baiului Mountains are very wild and the presence of any religious or popular beliefs do not exist. Art and cultural events concerning the site are considered. An event may take place on the site itself. A no longer existing event can still give an average score. 1—at least once a year and 0—never. The only geomorphosite that was scored is Petru—Orjogoaia Ridge because of the presence of sheepfolds and ecotourism with cultural events. The values obtained are, in some cases, very low or zero due to the lack of iconographic representations or elements of history, archeology or symbolism (Table 6).

**Table 6.** Geomorphosites cultural value assessment.

No. crt	Geomorphosite Name	Cultural Value					Total
		VcG1	VcG2	VcG3	VcG4	VcG5	
1	Nival lacustrine depression—Orjogoaia	0.25	0	0	0	0	0.05
2	Peatland depression Piciorul Boului	0	0	0.25	0	0	0.05
3	Cliff—Cazacu Ridge Differential Erosion	0	0	0.75	0	0	0.15
4	Petru—Orjogoaia Ridge	0.75	0.25	0.5	0	1	0.50
5	Baiu Mare Peak	0.25	0.25	0	0	0	0.10
6	Neamtu Peak	0.25	0.25	0	0	0	0.10
7	Țigăile Peak	0.25	0.25	0	0	0	0.10
8	Ștevia Peak	0.25	0.25	0	0	0	0.10
9	Nival lacustrine depression—Roșu	0	0.25	0	0	0	0.05
10	Pits/ditches resulting from bombing (Florei Mountain)	0	0	0.25	0	0	0.05

### 3.1.4. Geomorphosites Economic Value Assessment

If quantitative information is not available (number of visitors, receipts for cableway installations/accommodation/mountain-specific placement), then the economic value will be assessed in a qualitative manner (Table 7). In order to assess economically, the following issues were addressed: accessibility depends on the distance of the site from means of transportation and their relevance. In case of accessibility by cable car or train, the scale must be adapted. A score of 1—by a road of national importance, 0.75—by a road of regional importance, 0.5—by a local road, 0.25—less than 1 km of track, 0—more than 1 km of track. The majority of geomorphosites are located far away from the closest road.

Natural risks dependent on the risk level of the site and its management policy—consciousness level, protection infrastructure—anthropogenic risks are not directly considered by this criterion. A score of 1—no risk, 0.75—controlled/residual. The peatland is very isolated and there are no marked trails, no attractions and no level of protection.

The annual number of visitors in the region (the theoretical visitor potential of the site) is taken into account by the annual number of visitors of the biggest resort in the region. A score of 0.75—between 0.5 and 1 million, 0.5—between 0.1 and 0.5 million, 0.25—between 10 and 100.000, official level of protection (considers the official level of protection. For this criterion, the economic disadvantage for the site exploitation in terms of attraction of visitors from various origins. All of the geomorphosites were scored with maximum of 1—no protection. There are no sustainability or protection policies), attraction (the absence

of protection may be a tourist and economic disadvantage for site exploitation in terms of attraction of visitors from various origins). A score of 0.75—national, 0.5—regional, 0.25—local. The Petru–Orjogoaia peak and Neamțu peak received a score of 0.8 points. The first because it encompasses a larger number of geomorphosites (it is a geomorphosite complex) and the second is the highest and most famous peak in the Baiului Mountains. The lowest value is the Roșu Lake with a score of 0.5 due to the relatively few attractions and lack of interest from tourists toward this geomorphosite.

**Table 7.** Geomorphosites economic value assessment.

No. crt	Geomorphosite Name	Economic Value					Total
		E1	E2	E3	E4	E5	
1	Nival lacustrine depression—Orjogoaia	0.25	1	0.25	1	0.75	0.65
2	Peatland depression Piciorul Boului	0.25	0.75	0.25	1	0.5	0.55
3	Cliff—Cazacu Ridge Differential Erosion	0.25	1	0.5	1	0.25	0.6
4	Petru–Orjogoaia Ridge	0.5	1	0.75	1	0.75	0.8
5	Baiu Mare Peak	0	1	0.75	1	0.75	0.7
6	Neamțu Peak	0.25	1	0.75	1	0.75	0.8
7	Țigăile Peak	0.25	1	0.25	1	0.5	0.6
8	Ștevia Peak	0.25	1	0.75	1	0.5	0.7
9	Nival lacustrine depression—Roșu	0	1	0.25	1	0.25	0.5
10	Pits/ditches resulting from bombing (Florei Mountain)	0.25	1	0.5	1	0.75	0.7

### 3.2. Geomorphosites Exploitation Value Assessment

The exploitation value assessment is calculated by the two values: degree of exploitation and modality of exploitation.

#### 3.2.1. Degree of Exploitation Value Assessment

The degree of exploitation takes into account the spatial and temporal use of a geomorphologic site, while the modality takes into account the use of the four values constituting the tourist value of a geomorphologic site (Table 8).

**Table 8.** Geomorphosites degree of exploitation value assessment.

No. crt	Geomorphosite Name	Degree of Exploitation				Total
		Deg1	Deg2	Deg3	Deg4	
1	Nival lacustrine depression—Orjogoaia	0.5	0	1	1	0.63
2	Peatland depression Piciorul Boului	0.5	0	1	1	0.63
3	Cliff—Cazacu Ridge Differential Erosion	0.25	0.5	1	1	0.69
4	Petru–Orjogoaia Ridge	1	1	1	1	1
5	Baiu Mare Peak	0.25	0.25	1	1	0.63
6	Neamțu Peak	0.25	0.25	1	1	0.63
7	Țigăile Peak	0.25	0.25	1	1	0.63
8	Ștevia Peak	0.25	0.25	1	1	0.63
9	Nival lacustrine depression—Roșu	0	0	1	1	0.5
10	Pits/ditches resulting from bombing (Florei Mountain)	0.25	0.5	1	1	0.69

The used surface in sq km depends on the surface used for tourist and economic exploitation of the site. The surface may be totally, partially or not at all situated on the site. A score of 1—more than 10, 0.5—between 1 and 5, 0.25—less than 1, number of infrastructure (infrastructure of conveyance, information, accommodation, visits and souvenirs situated on the used surface are taken into account. Pedestrian paths are not considered. A score of 1—more than 10, 0.5—between 2 and 5, 0.25—1 and 0—nil or ex situ, seasonal occupancy—day depends on the number of days or seasons of use of the site surface per year. A score of 1—from 271 to 360. The Baiului Mountains are suitable

for visiting all 10 geomorphosites in all seasons), daily occupancy—hour (depends on the number of daily hours of use of the site surface. A score of 1—more than 9 h).

### 3.2.2. Modality of Exploitation Value Assessment

The evaluation of tourist exploitation takes into account the use of scenic and cultural features together with scientific and cultural interests to define the possibility and the way each geomorphosite is exploited (Table 9).

**Table 9.** Geomorphosites modality of exploitation value assessment.

No. crt	Geomorphosite Name	Modality of Exploitation				
		Mod1	Mod2	Mod3	Mod4	Total
1	Nival lacustrine depression—Orjogoaia	0.25	0.5	0.25	0.5	0.38
2	Peatland depression Piciorul Boului	0	0	0	0.25	0.06
3	Cliff—Cazacu Ridge Differential Erosion	0.5	0.5	0.5	1	0.63
4	Petru-Orjogoaia Ridge	0.75	0.75	0.5	1	0.75
5	Baiu Mare Peak	0.75	0.75	0.75	1	0.81
6	Neamțu Peak	0.75	0.75	0.75	1	0.81
7	Țigăile Peak	0.25	0.25	0.25	1	0.44
8	Ștevia Peak	0.25	0.25	0.25	1	0.44
9	Nival lacustrine depression—Roșu	0	0	0	0.25	0.06
10	Pits/ditches resulting from bombing (Florei Mountain)	0	0	0	0.75	0.19

The use of scenic value depends on the use of the scenic features of the site assessed by its advertising optimization via different types of support—brochures, billboards, web, sites, media, etc.—and products. A score of 0.75—some means of support and one product. The product is considered the maps where the peaks are relevant. A score of 0.5—one support and some products, 0.25—one support and one product. The product may be a map (there are very little), but not all of the maps show the cliff, peatland or the pits.

The scientific value depends on the use of the scientific interests on the site assessed by its didactic optimization via different means of support (exhibition, guided tour, educational signs and products). A score of 0.75—several means of support and one product, 0.5—one support and several products, 0.25—one support and one product. The peaks, Petru-Orjogoaia Ridge are included in guided tours. Use of cultural value (depends on the use of the cultural interest of the site assessed by its didactic optimization via different means of support—exhibition, guided tour, educational signs- and products. A score of 1—several means of support and products, 0.75—several means of support and one product, 0.5—one support and several products, 0.25—one support and one product. The ditch was scored high because the history maps show the cultural value and its importance. The use of the economic value—persons, i.e., depends on the use of the economic potential of the site assessed by its number of visitors per year. The score does not express the profit earning of the site. A score of 1—more than 100,000, 0.5—between 5 and 20,000, 0.25—less than 5000). The nival lacustrine depression—Rosu and the Peatland are less known or not at all.

According to the results presented in the Appendix Table A1, the geomorphosite with the highest value is the peak Petru—Orjogoaia (20.5) due to the economic value that encompasses its accessibility and annual number of visitors. On the opposite side, there is the Roșu Lake depression (9), which, although it meets scientific values, expresses shortcomings in terms of attributes essential for immediate geotouristic exploitation. Its placing last was determined by the low tourist value (0.32), which is caused by the difficulty of access to the site (the location on the northern part of the Neamțu Peak, where access is on foot by going through a mountain trail sector), and the lack of a minimum infrastructure for tourists.

The application of the methodology in a unified and structured way through well-established assessment steps (values) provides the possibility of a value hierarchy of geomorphosites according to the main stages of the assessment. This allows for comparative study according to the main types of geomorphosite values, resulting in a classification of these values by value type.

**Geomorphosites with scientific value.** The scientific dominating geomorphosites are predominantly located in the northern part of the Neamțu and Petru—Orjogoia peak (depression of Orjogoia Lake—0.83; depression of Peatland on Piciorul Boului—0.83; the erosion testimony on Cazacu Peak—0.66; Petru—Orjogoia peak—0.58 and Neamțu peak—0.98 p). The attribute of geomorphosites with high scientific value is due to morphological particularities (rarity, representativeness, variety of forms) and the paleogeographic interest of the site as testimony for the reconstruction of the morphological evolution of the territory.

Geomorphosites with scenic value are represented, in particular, by geomorphosites found at high heights. The highest scenic value recorded the Neamțu peak (1923 m), the Țigăile peak (1699 m), and the Baiu Mare peak (1895 m) as a result of the association within it of a complex of elements with attractive scenic qualities such as: significant panoramic view places on the geomorphologic elements in their vicinity. Other geomorphosites with attractive scenic values are the Petru—Orjogoia Climax, Ștevia Peak, and the Depression of Petru—Orjogoia Lake, etc.

**Geomorphosites with cultural value.** This category is represented by the Petru—Orjogoia Peak (0.5) due to events taking place near this site, such as those in Azuga (SKIMO Vertical Race), events organized from time to time at “Popasul Uriasilor” or even the cultural events organized in Sinaia.

Geomorphosites with economic value are represented by the geomorphosites located in the Petru—Orjogoia Peak, the highest peaks, the witnesses of differentiated erosion, and the novelty is the microdepressions created by the bombings during the wars. They have touristic value due to their high accessibility, their positioning in the immediate vicinity of accommodation and food facilities or in the proximity of the main access routes.

The main problems concerning the degree of protection of geomorphosites relate to the lack of specific protective measures, both legal and physical. The assessed sites are not located in a full protection zone and therefore do not benefit from a real level of protection.

There are no general information boards within the mountain area, which include general geographical elements of the entire mountain; therefore, the geomorphosites are not being properly exploited. No geotouristic information is presented.

Management measures should take into account both the protection and promotion of geomorphosites. They must acquire a special protection status and the most vulnerable (microdepressions, erosion witnesses) should be given specific work to combat and limit the impact of natural or human-made processes that may affect them (barriers, fences to limit access, vertices' support and erosion reduction, limiting the access of animals that degrade land by grazing).

For better promotion, it is necessary to place information panels on the ground exclusively for the geomorphosites, to design trails and to produce geotouristic maps, and to organize guided visits by specialists. This helps to create awareness among tourists in terms of the complexity and value of the geomorphologic landscape and the need to protect it.

Regarding the degree of exploitation, the geomorphosites most affected are also the most visited or accessible to tourists throughout the year regardless of the season or time of day. These include: The Petru—Orjogoia peak (1), the witness of differential erosion on Urechea Interfluve (0.69), but also the microdepression on the Piciorul Florei (0.69).

The modality of exploitation depends on the use of the scenic, scientific, and cultural characteristics of the site to optimize advertising or teaching by different media or products. It also depends on the use of the economic potential of the site realized by the number of visitors per year. The latter was the most important reading for scoring and differentiating

the sites. The highest scores were obtained by the highest peaks in the Baiului Mountains, namely the Baiu Mare peak (1895 m) and the Neamțu peak (1923 m) with 0.81, but also the Petru—Orjogoaia peak with 0.75.

#### 4. Discussion

In order to fully validate this method, the criteria the values granted should be tested in different physical-geographical units (mountains, hills, plains, shore) and tourist units (mass tourism, individual tourism etc.) to be able to adapt the scale for the evaluation. This approach may be subsequently used for defining the geomorphosites capacity to cope with the tourist function, as well as their evolution depending on the exploitation.

Comparing this method with the same method used to evaluate the geomorphosites from Bucegi plateau, which is located near Baiului Mountains, it can be observed that the highest value (0.65) is found in extended areas like Caraiman Plateau (Bucegi Mountains) and Petru—Orjogoaia Ridge. Both geomorphosites have a morphological complexity or different types of geotourist products. Moreover, the routes to these geomorphosites are very accessible and there is cable transport.

The lowest value is almost the same for two sites. The score for the Baiului Mountains is 0.32 and the Bucegi Mountains is 0.38. This occurred because these geomorphosites require longer routes and have accessibility issues.

The global score obtained by Omu Peak (Bucegi Mountains) is 0.48 and the global score obtained by the Baiu Mare Peak (Baiu Mountains) is 0.47. This is because of its annual numbers of tourists and its accessible routes (also for children).

Regarding the cliffs from both studies, the Franz Joseph Cliff (Bucegi Mountains) has a global score of 0.46 and the Cazacu Cliff (Baiului Mountains) 0.49.

In terms of the problems that arise from the tourist activity and their effects on geomorphosites, the land itself, pathways and tourism sustainability are worthy of discussion.

If there are no official tourist trails, there is no security. Tourists can easily become lost, especially during foggy weather. Markers are very important in the nearby ridge, in the alpine meadows, but also in forests so as to prevent accidents, encounters with wildlife and hazards.

A lack of landmarks, and thousands of paths are factors to consider. The Baiu Mountains, bordered by Prahova and Doftana Valley, are considered easily accessible. Despite this, very few pathways are managed. One of the problems facing the Baiu Mountains in terms of hiking and tourism development is the lack of markings. One cannot talk of an organized tour without clear route markers with which the tourists can orient themselves. Unfortunately, while going through these routes, there are frequent encounters with fog on the main summit and the lack of marking poles made from metal, thus hindering the study because it was difficult finding the way back. By Government Decision no. 77 of 23 January 2003 Section 1 (Planning, approval and maintenance of mountain routes), Annex 3 mentions, “in the alpine meadows and large clearings, sign marks will be done on poles made of metal pipes; posts will be painted first with primer protection, then painted white and black, striped alternative 30 centimetres wide, they will be provided at the lower area with claws for fixing cement foundations and then into the earth and at the top with a paddle for sign marks; in areas particularly circulated and exposed to the fog phenomenon, markers which will indicate the nearest alpine shelter or cabin will be matched by an acoustic or visual warning system, operated electrically or mechanically. In the case of cabins, their functioning will be the manager of the hut’s responsibility” [25].

There is also the issue of a lack of not only landmarks, but organized tourism (no maps, no signs, no advertisements, no posters with representative flora and fauna). In the absence of any well-established marks, tourists often create their own trails and routes, thus slowly but surely destroying the environment and the landscape. Considering that these mountains present an “open lesson” for geography and biology, informative panels should be placed explaining the natural elements found in the area. The Baiu Mountains contain significant plant and animal diversity due to their deployment in the Curvature

Carpathians, geographical location and orographic extent from 800 m to 1923 m. The Baiu Mountains are not deprived of any ecological reserves in this sense. They are present in the upper basin of Rele Valley, on the southern slope of Mount Cumpatu, where the daffodils flower (*Narcissus L. angustifolius*). In the Cumpătu district of Sinaia, on the 1.4 ha another reserve can be seen. In addition to the alder (*Alnus incana*), which is the defining element, other specimens include several trees and shrubs, including beech, hornbeam, maple, spruce, fir, red osier (*Salix purpurea*), larch, *Pirus pyraister*, *Malus sylvestris*, hazel, hawthorn, and rose hips, etc.

## 5. Conclusions

Addressing a particular category of forms with tourist attractiveness—geomorphosites—led us to pay particular attention to the methodological spectrum used in their study (inventory, assessment, mapping). Thus, a step-by-step structure of the actions in the process of mapping relief forms with the potential to become geomorphosites was sought.

The process of the geomorphosites' inventory was based on the scientific documentation phase. During this phase, geological and geomorphological literature were studied, as well as cartographic materials, aimed at the morphology of the Baiului Mountains. The method developed by Pralong has been an appropriate way to assess geomorphosites as it focuses mainly on the determination of their tourist value and their level of use. The method is structured in two stages: the first follows the assessment of the "tourist value" of geomorphosites, using four main criteria (scientific, scenic, cultural and economic); and the second stage aims to establish their "degree of tourist use". The assessment process shall follow the steps and criteria set out in the methodological chapter. Addressing a new direction in terms of research into the relationship between relief and tourism (geomorphosites) required a good knowledge of the morphological specificities of the Baiului Mountains.

The main problems encountered during the study were the lack of information and previous research on this subject—none of which directly addressed the Baiului Mountains. This was research conducted in the field, collecting data and information. The other problems were the lack of markings, as there were days when the fog was so dense that the danger of becoming lost was imminent, and its obvious effects on accessibility. The Prahova Valley (west) is very accessible, but the Doftana Valley (east) is very wild with poor roads. The integrity of these geomorphosites is an opportunity to develop the infrastructure and the organized tourism. It is a possibility to harm the environment, but if the population became aware of the existence of these geomorphosites (with information signage and marked trails), there could be sustainable tourism in the area.

Although close to the touristic Valley of Prahova, the value of the Baiului Mountains is gained by its unique grassland landscape and soft-trail tourism. Because there are no landmarks or established trails, there are many paths made by tourists. The deforestation causes many geomorphological processes that affect the soil, the land and the tourism.

The climb is not a difficult one as the mountains are accessible to the less-trained travellers, i.e., the longer routes with long walks on plain roads, parks and forests. Taking into account that the visitor facilities in the Baiului Mountains are lacking, these massifs are a true attraction for adventurous travellers who like challenges and can also direct themselves without many physical markers.

The impacts on the natural environment result from activities aimed at the exploitation of geomorphological and other resources. However, the geomorphological environment also produces impacts on the human environment through processes that can be hazardous. That is, the geomorphological environment, as well as human beings and structures, can play both an active and a passive role with respect to impacts, depending on the circumstances [26].

Even if the negative effects of poorly managed tourism are not seen immediately, in terms of sustainability, geomorphosites will suffer from gradual degradation or even their eventual disappearance.

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## Appendix A

**Table A1.** The final results of the geomorphosites for all values.

Geomorphosite Name	Touristic Value (Vtour)																Exploitation Value Assessment												Total	
	Scenic Value (Vsce)					Scientific Value (Vsci)						Cultural Value (Vcult)					Economic Value					Degree of Exploitation (Vexpl)				Modality of Exploitation (Vmod)				
	Sce1	Sce2	Sce3	Sce4	Sce5	Sci1	Sci2	Sci3	Sci4	Sci5	Sci6	Cult1	Cult2	Cult3	Cult4	Cult5	Eco1	Eco2	Eco3	Eco4	Eco5	Expl1	Expl2	Expl3	Expl4	Mod1	Mod2	Mod3		Mod4
Nival Lacustrian Cuvette—Orjogoiaia	0.5	1	0.5	0.5	1	1	1	1	1	0.75	0.25	0.25	0	0	0	0	0.25	1	0.25	1	0.75	0.5	0	1	1	0.25	0.5	0.25	0.5	16
Peatland cuvette Piciorul Boului	0.25	0.25	0.75	0.75	0	1	1	0.5	0.75	0.75	1	0	0	0.25	0	0	0.25	0.75	0.25	1	0.5	0.5	0	1	1	0	0	0	0.25	12.75
Cliff Culmea Cazacu	0.5	1	0.25	0.5	0.5	1	1	0.25	1	0.5	0.25	0	0	0.75	0	0	0.25	1	0.5	1	0.25	0.25	0.5	1	1	0.5	0.5	0.5	1	15.75
Pits resulting from bombing (Muntele Florei)	0.25	0.5	0.25	0.25	0	1	0.75	0.25	0.5	0.25	0.5	0	0	0.25	0	0	0.25	1	0.5	1	0.75	0.25	0.5	1	1	0	0	0	0.75	11.75
Petru-Orjogoiaia Ridge	1	0.5	1	0.5	0.5	0.5	0.5	0.5	1	0.25	0.75	0.75	0.25	0.5	0	1	0.5	1	0.75	1	0.75	1	1	1	1	0.75	0.75	0.5	1	20.5
Nival lacustrian cuvette—Roșu	0.25	0.25	0.25	0.5	0.5	0.5	0.25	0.25	0.5	0.25	0.5	0	0.25	0	0	0	0	1	0.25	1	0.25	0	0	1	1	0	0	0	0.25	9
Baiu Mare Peak	0.75	1	0.25	0.75	0.5	0.5	0.5	0.25	0	0.5	0.75	0	0.25	0	0	0	0	1	0.75	1	0.75	0.25	0.25	1	1	0.75	0.75	0.75	1	15.25
Neamțu Peak	1	0.75	0.25	1	0.5	0.5	0.5	0.25	0	0.5	0.75	0.25	0.25	0	0	0	0.25	1	0.75	1	0.75	0.25	0.25	1	1	0.75	0.75	0.75	1	16.25
Țigăile Peak	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0	0.25	0.75	0.25	0.25	0	0	0	0.25	1	0.25	1	0.5	0.25	0.25	1	1	0.25	0.25	0.25	1	13.75
Ștevia Peak	1	0.75	0.25	0.5	0	0.5	0.5	0.25	0	0.25	0.75	0.25	0.25	0	0	0	0.25	1	0.75	1	0.5	0.25	0.25	1	1	0.25	0.25	0.25	1	13

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