



Communication

# Real and Promoted Aesthetic Properties of Geosites: New Empirical Evidence from SW Russia

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Abstract: Aesthetic properties of natural heritage objects are determined by their physical properties. Online promotion of these objects to potential tourists requires adequate representation of these properties on web pages. The Shum waterfall is a small, but notable and tourism-important geosite of southwestern Russia. Its real aesthetic properties were examined in the field, and 20 web pages devoted to local tourism were examined to judge its promoted aesthetic properties. Eleven criteria of the common tourists' judgments of beauty were used for this purpose. A significant discrepancy between the real and promoted properties is found. Particularly, the web pages exaggerate the scale of the waterfall and do not mention crowds of tourists. This may cause disappointment of the latter. The findings of the present study allow for making several practical recommendations for more efficient promotion of the Shum waterfall, as well as providing general advice to the geotourism industry.

Keywords: geoheritage; heritage marketing; natural beauty; tourism; Western Caucasus



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## 1. Introduction

Aesthetic properties of natural heritage objects have two principal meanings. On the one hand, these contribute to the heritage value itself [1,2]. More beautiful lakes, mountains, or forests have more importance to society. On the other hand, these properties are essential for visitor attractiveness of objects [3–5] (i.e., these permit heritage exploitation). Natural beauty may have different meanings to people depending on individual, group, or society preferences [6–12]. However, the aesthetic properties are related to some physical characteristics of heritage objects and; therefore, these are objective properties. Moreover, the real, aesthetic-related characteristics can be used efficiently to promote a given natural heritage object for the purpose of tourism and other social activities [13,14].

Waterfalls, even small ones, are often considered as natural heritage (often geoheritage) objects [15–20], and their aesthetic, visual properties are of utmost importance to their valuation [21–25]. Height, width, discharge, sound, and color contrast are among the main physical characteristics of waterfalls that are considered as determinants of their beauty. However, these characteristics need to be reconsidered, as the criteria for the people's judgments of beauty are significantly more diverse, as explained in the synthetic work by Kirillova et al. [8], who distinguished up to ten dimensions of aesthetic judgments by multiple criteria. These issues seem to be especially urgent in regard to the recent growth of geotourism [26–37]; the relevant activities need highly-attractive geoheritage sites (geosites) and landscapes to achieve really sustainable development. When any natural heritage object is judged valuable to (geo) tourism, it is promoted via various channels, from which tourism-related online resources are the most important to the modern tourists. The object can be described and displayed differently on web pages (i.e., its real characteristics determining aesthetic properties may differ from its promoted characteristics). As a result

tourists either underestimate the attractiveness of this object to miss it on their route or, in contrast, overestimate it to become unsatisfied at the time of visit. Better to say, the possible discrepancy between the real and promoted aesthetic properties is a serious problem that needs to be addressed properly in the natural heritage (particularly, geoheritage) studies.

The main objective of the present study is to document the real and promoted characteristics determining the aesthetic properties of the Shum waterfall, which is important as both a natural heritage (also geosite) and tourist attraction of Mountainous Adygeya in southwestern Russia. This waterfall is located on the territory, which is, at the same time, an important geodiversity hotspot and famous tourist destination. The waterfall itself is neither too big, nor exceptionally peculiar. So, it can be used as a typical example of an "ordinary" waterfall that is of evident and significant, but not planetary-scale importance. Such waterfalls can be found in many places of the world, and their aesthetic properties are essential for sustaining tourism development on a local/regional level. Therefore, these objects need adequate attention. More generally, the present study aims at contributing to the major and very new topic of geoheritage marketing.

### 2. Materials and Methods

The Shum waterfall is located near the town of Kamennomostskiy in the mountainous part of Adygeya—a tourism-important destination in southwestern Russia (Figure 1). It is one of a series of waterfalls known generally as the Rufabgo waterfalls that occur on the Syryf River; the latter is a left tributary of the Belaya River. The Syryf River cuts a deep (>100 m) valley that is a branch of the Khadzhokh canyon system—a geosite of outstanding importance [38,39].



**Figure 1.** Geographical location of the study object: **(A)** Russia, **(B)** the Russian South, and **(C)** Mountainous Adygeya.

Geographically, the Shum waterfall is situated in the western domain of the Greater Caucasus mountain chain stretching as several sub-parallel ranges. Administratively, this is the Maykop District of the Republic of Adygeya, which is a region of the Russian Federation. Geologically, the Shum waterfall occurs in the northwestern part of the Cenozoic orogenic domain; the latter is dominated by the Lower–Middle Triassic limestones overlain unconformably by the Upper Jurassic limestones accumulated in ancient tropical seas [39]. The Shum waterfall has a height of up to 7 m, and significant water discharge makes noise, which explains the object name (the Russian word "shum" means "noise"). This waterfall represents a kind of stair in the lowest part of the canyon where the Syryf River cuts hard with folded Triassic rocks. The river valley widens immediately below the waterfall and looks like a deep cup. The geoheritage value of this object is linked to the Sum waterfall itself representing the geological and landform-creating power of running water (hydro

(geo) logical type of geoheritage), the Triassic rocks, the megaclast accumulations, and some other features [39].

The Rufabgo waterfalls are a very famous tourist attraction, with dozens and hundreds of visitors on a daily basis (on vacations and weekends, the number of visitors may exceed a thousand per day). The Shum waterfall is the most visited of all the Rufabgo waterfalls because of its exceptional accessibility and location very close to the entrance of this tourist attraction and the internal recreation zone. The metallic stairs lead to the above-mentioned "cup" that allows for the accommodation of dozens of tourists and offers a spectacular, panoramic view of the waterfall (Figure 2). This seems to be the "ideal" place for taking photos, which is the main activity of tourists (tourists can stay very close to the waterfall and even swim in the river beneath it). Some visitors prefer simply to relax, listening to the running water, but this opportunity is restricted to the early hours when the attraction is not crowded. Anyway, the natural beauty of the waterfall is its main tourism resource.

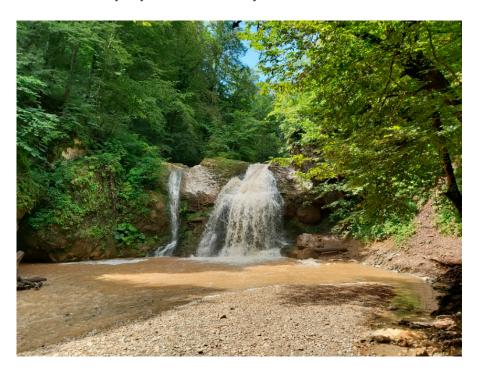


Figure 2. General view of the Shum waterfall.

Several years of field, multi-disciplinary investigations of the Rufabgo waterfalls and the entire Khadzhokh canyon system have allowed for documentation of the natural peculiarities of the Shum waterfall with precision. Many of these peculiarities are physical characteristics determining the aesthetic properties. These are real properties that can be examined with various criteria. In order to judge the promoted aesthetic properties, 20 web pages were selected (Table 1). The main condition for their selection was the presence of textual or graphic (photos) information about the Shum waterfall. These are among the most relevant online resources according to Google, thus they seem to be the main sources of information for potential visitors of the waterfall. In other words, these web pages promote this object. These are chiefly tourism-focused web-portals providing essential information to the visitors of Mountainous Adygeya, web pages of some tourism and hospitality firms, and travelogues. On these web pages, one can find some text notions describing the Shum waterfall or its photos (or both). The physical characteristics of this object are either described or displayed, which permits judgments of the promoted aesthetic properties.

**Table 1.** Web pages considered in the present study.

ID	Туре	URL (Accessed on 23 August 2020)
1	Information for tourists	https://kukarta.ru/vodopady-rufabgo/
2	Travelogue	https://tonkosti.ru/otzyv/%D0%92%D0%BE%D0%B4%D0 %BE%D0%BF%D0%B0%D0%B4%D1%8B_%D0%A0%D1%83%D1 %84%D0%B0%D0%B1%D0%B3%D0%BE_%D0%BC%D0%B5%D1 %81%D1%82%D0%BE_%D0%BA%D0%BE%D1%82%D0%BE%D1 %80%D0%BE%D0%B5_%D1%81%D1%82%D0%BE%D0%B8%D1 %82_%E2%80%94_%D0%BE_%D0%B2%D0%BE%D0%B4%D0 %BE%D0%BF%D0%B0%D0%B4%D0%B0%D1%85_%D0%A0%D1 %83%D1%84%D0%B0%D0%B1%D0%B3%D0%BE-116571239
3	Information for tourists	https://lagonaki.ru/dostoprimechatelnosti/vodopady-rufabgo/
4	Information for tourists	https://otdih.nakubani.ru/vodopadyi-rufabgo/
5	Information for tourists	https://www.idemvpohod.com/tourism/ dostoprimechatelnosty/409-rufabgo
6	Information for tourists	https://www.tourister.ru/world/europe/russia/city/kamennomostskii-1/waterfall/25126
7	Information for tourists	https://www.kp.ru/russia/adygeya/mesta/vodopady-rufabgo/
8	Information for tourists	https://titam.ru/mesta/vodopady/vodopady-rufabgo/
9	Travelogue	https://turisticum.ru/rufabgo/
10	Tourism firm	https: //vetert.ru/rossiya/adygeya/sights/234-vodopady-rufabgo.php
11	Information for tourists	https://nashaplaneta.net/europe/russia/adygea- dostoprimechatelnosti-vodopady-rufabgo
12	Hospitality firm	https://dah-sl.ru/sights/list/4/
13	Information for tourists	https://yugarf.ru/vodopady-rufabgo/
14	Travelogue	https://shagau.ru/2016/05/25/vodopady-rufabgo-prakticheskaya-informaciya-i-foto
15	Tourism firm	http://armola.ru/gory/6/vodopady-rufabgo.html
16	Hospitality firm	https://gornaya-derevnya.ru/rest/attractions/place/vodopady- rufabgo/
17	Travelogue	https://vasilev-life.ru/vodopady-rufabgo-adygeya
18	Tourism firm	https://club-voshod.com/info/pohodnoe_info/ dostoprimechatelnosti/adygeya/vodopady_rufabgo/
19	Tourism firm	http://best-tour-club.ru/%D0%B2%D0%BE%D0%B4%D0%BE%D0%BF%D0%B0%D0%B4%D1%8B-%D1%80%D1%83%D1%84%D0%B0%D0%B1%D0%B3%D0%BE/
20	Information for tourists	http://xn80abfwhudq2a2f.xnp1ai/%D0%92%D0%BE%D0 %B4%D0%BE%D0%BF%D0%B0%D0%B4%D1%8B/%D0%A0%D1 %83%D1%84%D0%B0%D0%B1%D0%B3%D0%BE

Of the biggest importance is to find those physical properties of the Shum waterfall that are linked to its aesthetic perception by tourists. It is reasonable to hypothesize that tourists judge waterfalls similarly to how they judge all other tourist attractions. This is especially so because they spend no more than 20–30 min (usually, much less) to look at the Shum waterfall and to take its photo, and their entire excursion route includes typically

visiting several natural and cultural attractions of this part of Mountainous Adygeya. In this case, it is sensible to refer to the general criteria for the judgments of the beauty of tourism attractions that were acknowledged by Kirillova et al. [8]. These criteria are preferred to many other proposed schemes of the aesthetic assessment of geosites because of two reasons. First, these seem to be really universal criteria specified on the basis of tourist studies, including tourist perceptions and emotions. To many (if not the most) tourists, a waterfall is just one of many natural and cultural attractions, thus it is judged within a very common frame, not in regard to its professional understanding. Second, this system of criteria is really comprehensive and does not (over-)emphasize on color, size, or any other distinctive patterns of attractions. Definitely, some of these criteria cannot be applied to the given waterfall and; therefore, the most suitable of them (a total of 11) were employed for the purposes of the present study (Table 2).

**Table 2.** Criteria for aesthetic judgments of the Shum waterfall.

Criterion [8]	Meaning	Abbreviation	Scoring
Relative size	Size of object relatively to landscape context	SR	1–5, 5–outstandingly big size
Shape complexity	Object configuration	SC	1–5, 5–irregular configuration
Openness	Spatial exposure of object	OP	1–5, 5–maximal openness
Intensity of color	Colorful or dull	СО	1–5, 5–striking colors
Volume of sound	Quiet or loud	SV	1–5 <i>,</i> 5–very loud
Source of sound	Artificial or natural	SO	1–5, 5–very natural
Diversity	Differences of object and surrounding environment	DI	1–5, 5–many distinct features
Cleanness	Presence of human and natural waste	CL	1–5, 5–absence of waste
Crowdedness	Abundance of visitors	CR	1–5, 5–crowds of visitors
Human touch	Presence of man-made constructions and modifications	НТ	1–5, 5–significant human disturbance
Uniqueness	Local availability of similar objects	UN	1–5, 5–the only object of this kind

When the real aesthetic properties are evaluated, the presence or the absence of physical characteristics relevant to the criteria is established. This is a fully objective procedure that excludes any doubtful interpretations. In the case of presence, the property can be measured semi-quantitatively on the basis of the 5-degree scoring scale proposed for each criterion (Table 2). The same approach is used when the promoted properties are evaluated. This procedure aims to be objective with strong arguments for each score, but, nonetheless, it cannot avoid a certain degree of subjectivity of the authors' judgments (anyway, errors in individual assessments of the site and its online representations can be neither big, nor numerous). This study aims at providing the simple assessment framework for an "ordinary" natural object to be reproduced by the other specialists in the other

cases, which means the methodology should be simple and dependent on the individual, not collective judgments. To address the noted challenge, the possible influence of the factor of subjectivity is taken into account when subsequent interpretations are made. For instance, a difference between the scores can be judged significant, when one score is 1 and the other is 4; when the scores differ by only one point (e.g., 2 and 3), this difference is not interpreted as serious. Moreover, it should be stated that such a scoring is typical to the modern geoheritage and geotourism research, which still depends strongly on the individual assessment efforts. In this study, the property check and scoring were undertaken separately for text notions and photos. Mixing these is theoretically possible, but such a solution is unnecessary to avoid subjective judgments of which property is better described and which is better displayed.

Then, the average scores are calculated for each criterion. This is done to the promoted aesthetic properties, separately for text notions and photos. These average scores are compared to the scores of the real aesthetic properties in order to make judgments of their similarities and differences. When the latter are established, one can judge of a discrepancy between the real and promoted aesthetic properties, which is the basis for subsequent thoughts about tourist satisfaction and web-page improvements.

It is important to note that the people may have very different preferences in regard to these criteria [8], and they may prefer some characteristics more than the others. This means that, for instance, low diversity of a given tourist attraction may be judged negatively by some visitors, whereas the others may judge of it neutrally or positively. In regard to this, aesthetic properties (physical characteristics of objects) should be distinguished from aesthetic attractiveness (appearance of physical characteristics matching or not tourists' aesthetic preferences). The present study deals with the only aesthetic properties.

### 3. Results

The real aesthetic properties of the Shum waterfall (Figure 2) were established according to the proposed criteria (Table 2). They are summarized in Table 3, with some details and arguments provided below.

**Table 3.** A summary of the real aesthetic properties of the Shum waterfall.

	Criteria for Aesthetic Judgments										
	SR	SC	OP	СО	SV	so	DI	CL	CR	НТ	UN
Scores of real properties	2	5	1	3	3	3–5	1	4	2–4	3	2

The relative size of the object is small (SR = 2). At least, the waterfall with the height of up to 7 m appears to be small relatively to the canyon depth of ~50 m. On the other hand, this waterfall is bigger than any other water feature of this locality. The shape of the waterfall and the surrounding features is very irregular (SC = 5). The geosite is very closed, as it resembles a deep cup with a limited space inside (OP = 1). The intensity of colour is moderate (CO = 3). This is partly because a significant part of the geosite remains always in shadow. The volume of sound is also moderate (SV = 3). The sound is more or less strong for only visitors staying directly in front of it, but it is not heard well outside the "cup" and even in its distant parts. This is especially so when the water discharge is small due to the deficit of rainwater. The source of sound can differ strongly (SO = 3-5). It is fully natural when there are no visitors in the "cup", but the voices of tourists who often crowd this geosite make the sound partly artificial. The diversity of the object is low (DI = 1), as the waterfall is the only notable feature. Professional, well-trained geoscientists can find some other interesting features, but such visitors are exceptionally rare. The cleanness of the Shum waterfall is significant (CL = 4). The site is well-kept by the local tourism organization responsible for the entire attraction management. However, heavy rains make water of the Syryf River almost brown due to clay particles, and this water looks "dirty". The same effect is produced by woody debris and fallen trees. The Shum

waterfall is often crowded by tourists who bother one another due to the limited space, and sometimes they need to stay in a queue to take good photos near the waterfall. But there are only a few visitors on some days, thus CR = 2-4. The human touch is moderate (HT = 3). First, long metallic stairs lead to the "cup". Second, some plots are "trampled" by tourists. Finally, the uniqueness of the object is relatively low (UN = 2). The Shum waterfall is one of many (more than 10) waterfalls on the Syryf River, from which five are visited actively by tourists. However, it differs from the other waterfalls by its parameters (especially width and discharge).

The text and the photos of the Shum waterfall in the analyzed online resources differ, thus the promoted aesthetic properties of this object also differ (in some cases, either text or photos are absent; Tables 4 and 5). As for the text notions, these often stress the relatively big size of the waterfall, its strong and natural sound, and the presence of the metallic stairs (Table 4). As the other Rufabgo waterfalls are always mentioned, it is possible to judge that the low uniqueness is always addressed. One web page also criticizes the waterfall for the "dirty" water, although this is explained by the only natural and short-term increase in concentration of clay particles. Some physical characteristics of the geosite determining the aesthetic properties are not mentioned at all. The photos are more informative (Table 5). Particularly, these reflect chiefly low-to-moderate intensity of colour and absent-to-low crowdedness and human touch.

Table 4. Aesthetic properties of the Shum waterfall promoted online and reflected in text.

				Crit	eria for	Aestheti	c Judgm	ents			
ID	SR	SC	OP	СО	SV	so	DI	CL	CR	HT	UN
1	4	-	-	-	-	-	-	1	-	3	1
2	-	-	-	-	-	-	-	-	-	-	1
3	-	-	-	-	-	-	-	-	-	-	1
4	-	-	-	-	5	5	-	-	-	3	1
5	5	-	-	-	5	5	-	-	-	3	1
6	4	-	-	-	4	5	-	-	-	-	1
7	-	-	-	-	-	-	-	-	-	-	1
8	-	-	-	-	5	5	-	-	-	3	1
9	-	-	-	-	-	-	-	-	-	-	1
10	-	-	-	-	-	-	-	-	-	-	1
11	-	-	-	-	-	-	-	-	-	-	1
12	-	-	-	-	5	5	-	-	-	-	1
13	4	-	3	-	-	-	-	-	-	3	1
14	4	-	-	-	5	5	-	-	-	3	1
15	-	-	-	-	-	-	-	-	-	-	1
16	-	-	-	-	5	5	-	-	-	3	1
17	-	-	5	-	-	-	-	-	-	-	1
18	4	-	-	-	5	5	-	-	-	3	1
19	-	-	-	-	-	-	-	-	-	-	1
20	-	-	-	-	3	5	-	-	3	3	1

**Table 5.** Aesthetic properties of the Shum waterfall promoted online and reflected on photos.

	Criteria for Aesthetic Judgments										
ID	SR	SC	OP	СО	SV	so	DI	CL	CR	HT	UN
1	4	5	3	2	-	-	1	4	2	1	1
2	5	5	1	2	-	-	1	5	1	1	-
3	3	5	1	2	-	-	1	5	3	2	1
4	2	5	3	2	-	-	1	4	1	1	1
5	3	5	3	4	-	-	1	5	1	1	1
6	-	-	-	-	-	-	-	-	-	-	-
7	3	5	3	3	-	-	1	5	1	1	-
8	3	5	1	2	-	-	1	5	1	2	1
9	1	5	1	2	-	-	1	4	2	1	1
10	5	5	3	2	-	-	1	5	1	1	1
11	4	5	3	3	-	-	1	5	1	1	1
12	-	-	-	-	-	-	-	-	-	-	-
13	3	5	2	3	-	-	1	5	1	1	1
14	2	5	2	2	-	-	1	4	1	1	1
15	2	5	1	2	-	-	1	4	2	2	1
16	-	-	-	-	-	-	-	-	-	-	-
17	3	5	3	3	-	-	1	5	1	1	1
18	5	5	3	2	-	-	1	5	1	1	1
19	3	5	3	3	-	-	1	5	1	1	1
20	4	5	2	2	-	-	1	5	1	1	1

### 4. Discussion

The real and promoted aesthetic properties of the Shum waterfall differ (Table 6). Particularly, the waterfall is characterized online as a much bigger object than it is in fact. The sound is suggested to be stronger and more natural than one can experience. The limited openness is also unclear. Therefore, the online promotion employs the principle of exaggeration. On the one hand, this may be really helpful to attract a bigger number of visitors. On the other hand, many tourists may be dissatisfied realizing the lesser scale of the waterfall than promised. This is especially the case of experienced travelers who have had a chance to see some waterfalls in the other regions (fortunately, waterfalls are few in the Russian South, from which the majority of the visitors come). There is yet another issue for tourist disappointment. The waterfall descriptions and especially its photos promise a piece of "wild" nature. In fact, one may easily face crowds of visitors.

**Table 6.** Promoted versus real aesthetic properties of the Shum waterfall.

Type of Properties	Criteria for Aesthetic Judgments											
Type of Froperius	SR	SC	OP	CO	SV	so	DI	CL	CR	HT	UN	
Promoted (text, average on the basis of Table 4)	4	-	4 *	-	5	5	-	1*	3 *	3	1	
Promoted (photos, average on the basis of Table 5)	4	5	2	2	-	-	1	5	1	1	1	
Real (on the basis of Table 3)	2	5	1	3	3	3–5	1	4	2–4	3	2	

Note: \* on the basis of 1–2 cases only.

The noted discrepancy between the real and promoted aesthetic properties has evident practical implications in regard to the potential importance of the Shum waterfall to local tourist development. First, the text notions of this object should become more informative (i.e., more physical characteristics determining aesthetic properties need to be mentioned). Second, the revealed exaggeration of the waterfall scale needs significant

reduction. Third, the uniqueness of this waterfall should be better explained, and the unprofessional conclusions (like notions of "dirty" water) need to be avoided totally.

The present study of the "ordinary" waterfall reveals how the real and promoted aesthetic properties linked to the common tourists' judgments of beauty [8] can differ, which appears a challenge for tourism. In geotourism, which is fully based on geoheritage and unique geological landscapes, this challenge becomes even more serious because aesthetic motivation means too much to geotourists [40]. The sources of this challenge (particularly, exaggeration and aesthetically-incorrect emphasis) are linked to low professionalism of the creators of tourism-related web pages. First, they may not be well aware of the essence of geoheritage objects, thus they do not know precisely about the true physical properties of natural heritage (and geoheritage) objects. Second, they may not be well-trained in regard to tourists' aesthetic preferences. Additionally, some web pages "forget" to inform that some of the waterfalls do not have water throughout the entire year. Many tourists often visit the place of the waterfall only to find out that it is dry or has very little water, unlike in the photos. This is not the case of the Shum waterfall, which is fed by the Syryf River flowing from the Lagonaki Highlands, which is one of the wettest places of Russia. However, this problem may exist in many other waterfall-boasting tourist destinations of the world.

### 5. Conclusions

Conclusively, the example of the Shum waterfall demonstrates the importance of attention to the real and promoted aesthetic properties in geoheritage studies. The discrepancy between these properties is a serious challenge to geotourism that requires certain improvement in professional skills of those who are responsible for geoheritage marketing. The methodological and practical importance of the outcomes of this study stresses the necessity of specific, aesthetics-related investigations in the fields of geoconservation and geotourism.

The main limitation of this study is the somewhat subjective character of scoring. This is generally unavoidable because it would be hard to involve a representative team of experts for assessment of one, not-so-big natural object. Such a somewhat subjective scoring is typical in the modern geoheritage and geotourism research. Nonetheless, further investigations may allow specifying detailed recommendations and even universal reasons for scoring each particular criterion of aesthetic judgments. This ambitious task will require cooperation of experts with a different experience, not only geologists, geomorphologists, and geographers, but also tourismologists and psychologists.

The outcomes of the present study allow for making two recommendations. First, the geosites should be assessed by professionals who are able to detect and correctly interpret their physical characteristics. Having only geoscience education is not enough for these professionals—they need some knowledge of modern tourism and, particularly, they need to understand the meaning of aesthetics. Of course, it is impossible to recruit such professionals to deal with all small geosites, but the geoheritage research community can develop simple criteria for geosite assessment including those linked to the aesthetic properties. Second, the natural heritage objects (and geosites) need professional promotion. Special programs launched and funded by the government (national, regional, or local) and aimed at tourism development on naturally-rich territories like Mountainous Adygeya should prescribe activities linked to professional interpretation and promotion of the particular natural attractions.

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