



# The evolution of anthropic impact in Colibița basin, Bistrița-Năsăud county, Romania

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**Abstract.** The Colibița basin is located in the eastern part of Bistrița-Năsăud county, at the contact between the Bârgăului Mountains and the Călimani Mountains, on the upper course of the Bistrița-Ardeleană River. The Colibița basin has been one of the most important tourist attractions in Bistrița-Năsăud county since the last century, but in the last decades, a strong anthropogenic impact began to manifest on it, an impact that is increasingly pronounced even today. Anthropogenic action in the Colibița basin knows two distinct periods. The first period in which the human impact is felt in the environment of the Colibița basin, is the one corresponding to the end of the 19th century and the first six decades of the 20th century, which consisted in the replacement of natural biocenoses on large areas, degradation of the soil due to grazing, degradation of the relief, soil and subsoil due to mining operations and massive deforestation (which led to soil degradation due to erosion). The start of hydropower works in the Colibița basin meant the initiation of the strongest anthropogenic impact in its environment. Thus, in 1976, the climatic station was decommissioned and the construction of the reservoir on the course of Bistrița Ardeleane began. With this project, the environment of the Colibița basin underwent radical transformations. It is necessary that the local and county authorities reconsider their position towards this area and proceed to the concrete and correct application of measures specific to sustainable development and ecotourism practices. Also, an important role in this equation is played by the local population and the owners of tourist equipment, who must be aware of the need to preserve the tourist heritage here.

**Key Words:** anthropic pressure, artificial lake, biocenosis, natural environment, reservoir.

**Introduction.** The Colibița basin is located in the eastern part of Bistrița-Năsăud county, having a somewhat isolated position at the contact between the Bârgăului Mountains and the Călimani Mountains, on the upper course of the Bistrița-Ardeleană River (Figure 1). The Colibița basin also includes the village of the same name, which administratively belongs to the Bistrița-Bârgăului commune and is located at the eastern end of the reservoir, at the confluence of the Valea Măgurii stream with the Bistrița Ardeleană River. Colibița basin is located 35 km from the city of Bistrița and 12 km from the commune of which it is a part (Cocean 1993; Bâca 2009; Bâca & Șteff 2010).

**Aspects of the natural environment.** From the point of view of the relief, the Colibița basin is located at the contact between the Bârgăului Mountains and the Călimani Mountains (Figures 2-4). The area of the basin, identified with the upper basin of the Bistrița-Ardeleană River, is 103 km<sup>2</sup>, and its average altitude is 793 m. The basin is elongated in the ESE-WNW direction, it is 13 km long, with a maximum width of 2-3 km and the surface of 40 km<sup>2</sup>. Within this basin, two distinct sectors can be separated: eastern and western. The eastern sector is represented by the Mița compartment (with altitudes of 800-900 m), currently occupied by the village of Colibița, and the western sector is represented by the behavior of Colibița (with altitudes of 700-800 m) and occupied by the basin of the reservoir (Cocean 1993; Bâca 2009; Bâca & Șteff 2010).



Figure 1. The location of Colibița basin.

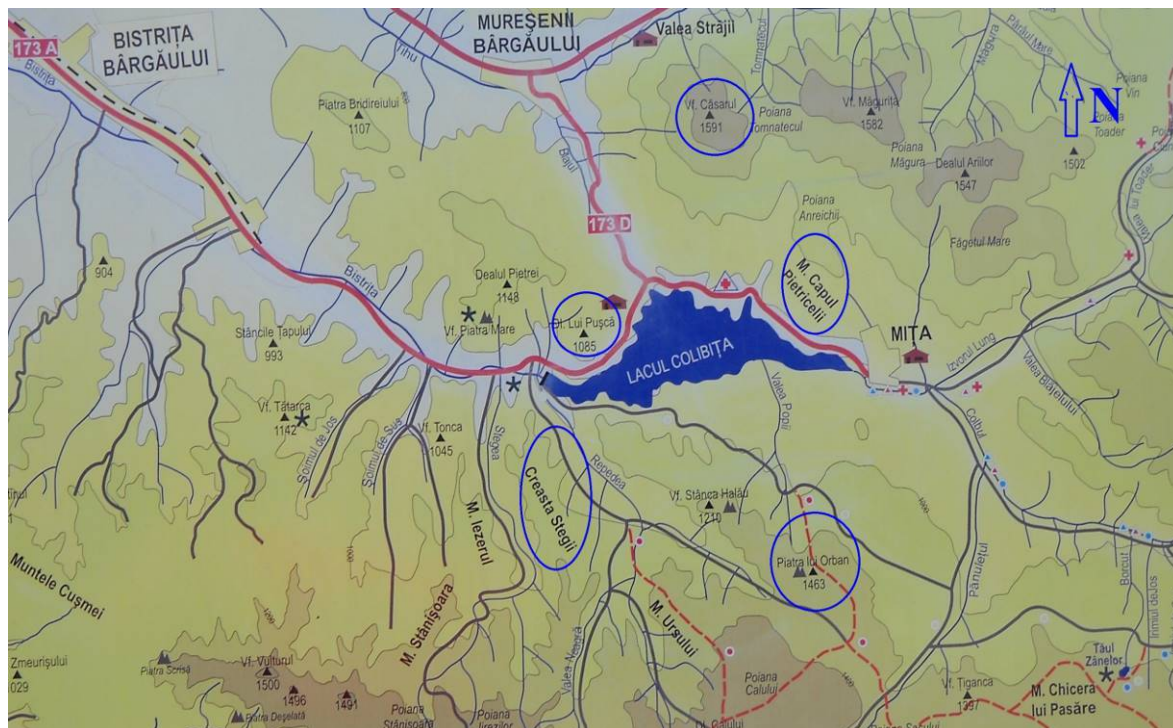


Figure 2. The Colibița basin and the surrounding mountain peaks (Source: fragment from the tourist map of the Colibița depression, Salvamont Bistrița-Nășăud).



Figure 3. Colibița basin seen from Dealul lui Pușcă.

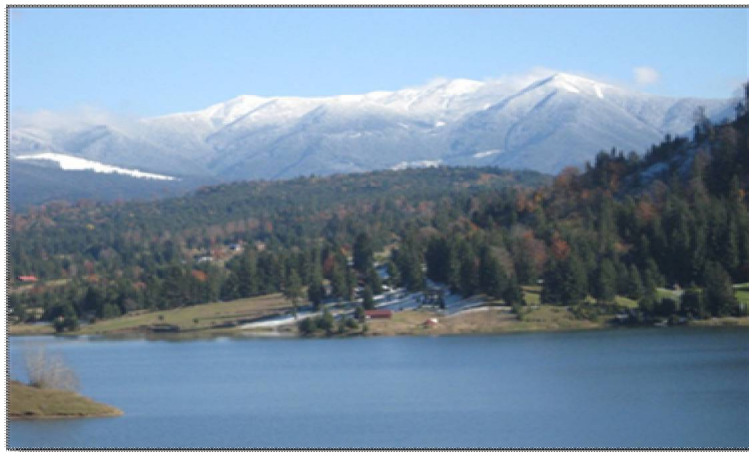


Figure 4. Călimani Mountains seen from the Colibița basin.

The climate of the basin is temperate mountain, determined by its location at the foot of the Călimani mountains, the average annual temperature is 6°C in the Colibița basin and decreases on the adjacent mountain slopes to 2°C, the average annual precipitation is between 850 mm year<sup>-1</sup> in the heart of the depression, and on the surrounding slopes it increases exceeding 1000 mm year<sup>-1</sup>. Regarding the wind regime, winds from the eastern sector predominate, but mountain breezes and lake breezes are also present (cold wind that blows in summer from the surface of the colder lake, towards the warmer surrounding land) (Cocean 1993; Bâca 2009; Bâca & Șteff 2010).

The waters that drain the Colibița basin belong to the upper hydrographic basin of Bistrița-Ardeleană River. This river is formed from the Izvorul Lung and Colbu streams, with their sources in the Călimani Mountains that meet in the place called Gura Izvoarelor (Figure 5). Bistrița-Ardeleană or Transilvană flows into the Șieu River, near the town of Sărățel, having a length of 65.4 m and being considered the most important tributary of the collecting river (Chintăuan 1998).

From the confluence of the two springs, to the entrance to the gorge (that is, to the reservoir), the river is called Colibița, and then, downstream from the lake, to Prundu Bârgăului, where it meets the Bârgău stream, the river is called Bistricioara by the local people. This river is supplied with water in the proportion of 70-80% from rains, the rest from snow and underground water. The multiannual average flow of the river at Colibița is only 2.09 m<sup>3</sup> s<sup>-1</sup>.

The most important aquatic unit of Colibița, in terms of size and impact on the environment, is the reservoir formed by the cantonment of the waters of the Bistrița-Ardeleană River and its tributaries within the Colibița basin, between the Bistrița-Bârgăului and Mița localities. The formation of this lake changed forever the appearance and the economic function of the area, and the impact on the environment and tourist activities is very pronounced (Șteff 1986).

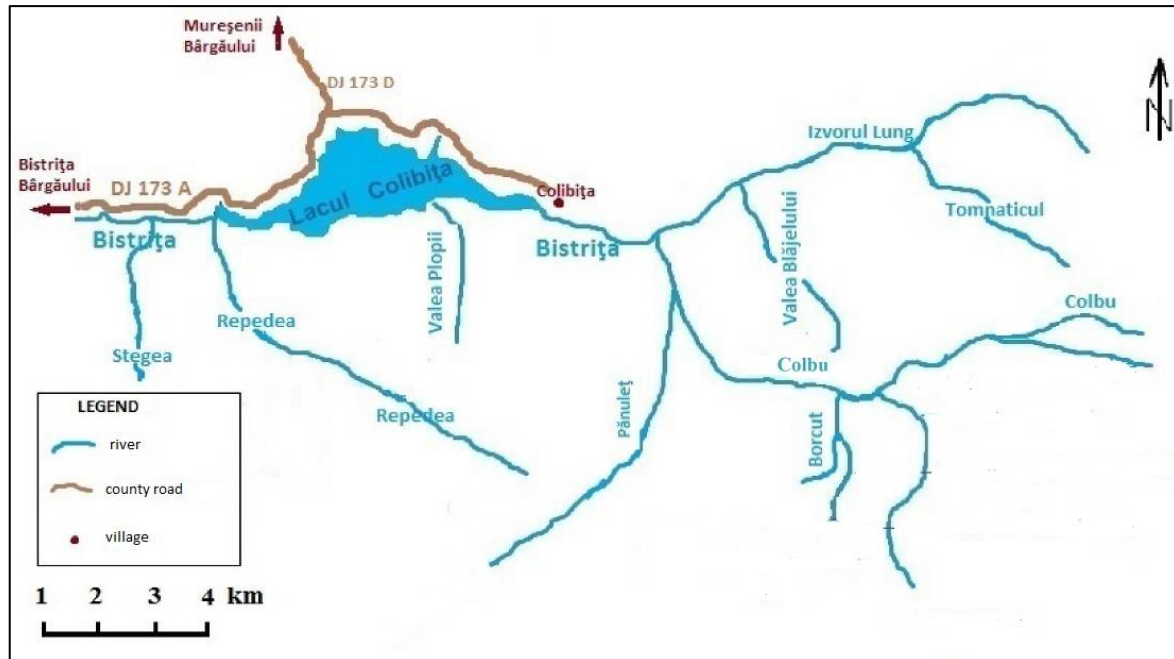


Figure 5. The hydrography of Colibița basin.

The natural vegetation of the Colibița basin consists of mixed forests (beech and spruce) and coniferous forests, predominantly spruce, which are located on the mountain slopes, at over 1000 meters altitude. The subalpine floor is also present on the top of the mountain peaks around the basin. In many places, however, these plant formations have been deforested, their place being occupied by hayfields and pastures. Along the rivers there are present meadows, forests of soft essences, consisting of white anin, willow, hazel, dogwood and rosehip.

Associated with the layers of vegetation, the fauna includes various species, such as: deer, roe deer, brown bear, marten, mountain grouse, wild boar, and wild ducks (which live on the lake in the warm season). The cold waters of the rivers are populated by fish species like brown trout (*Salmo trutta fario*), grayling (*Thymallus thymallus*), common chub (*Squalius cephalus*), common minnow (*Phoxinus phoxinus*), and in the waters of the lake other fish species like grayling, silver carp (*Carassius gibelio*), zander (*Stizostedion lucioperca*) and brown trout could be found.

In the Colibița basin spodosols (podzols and acid mountain browns) predominate, to which are added alluvial soils and lithosols.

**The evolution and development of Colibița village.** The toponym of Colibița comes from the Latin term "colebs" which means "hut", as a result it seems that the village of Colibița was born from a temporary settlement, formed by the summer huts of the locals from Bistrița-Bârgăului who were grazing the animal herds on the site of the current lake. This is supported by the lawyer Corneliu Mureșan, who in the work "Monograph of the Colibița climatic resort" notes that: "The first settlement in the form of a hut was made by a citizen from Bistrița-Bârgăului, who came in the summer with cattle and sheep to graze them; from this hut it derives the name Colibița, a suggestive and gentle name" (Naum & Moldovan 1987).

The temporary settlement of Colibița was born in the second half of the 18th century, being formed from the huts of the locals from Bistrița-Bârgăului and populated



in the summer, when they moved to the mountains with their herds of animals. The first permanent homes in Colibița appeared at the beginning of the 19th century, then gradually their number increased. In 1881, the construction of the first church in Colibița began by priest Vasile Pavel from Bistrița-Bârgăului, considered one of the founders of the village.

Towards the end of the 19th century, the climacteric resort of Colibița began to develop, about which the same lawyer Corneliu Mureșan notes that: "The therapeutic properties of the locality were discovered by chance. In 1883, a citizen from Bistrița named Levi sent his daughter, who was sick with tuberculosis, to Colibița for rest and recovery. After three months, the girl recovered. The case caused a great sensation in the medical circles of Bistrița".

After a few years, a 10-room sanatorium was built in Colibița, and at the beginning of the 20th century, two other buildings were erected where lung patients and poor children were treated. In 1926, the buildings with a therapeutic purpose from Colibița were bought by the "Caritatea" Society from Cluj-Napoca, which treated students suffering from tuberculosis here until around the Second World War.

In 1928 the school in Colibița was born, in 1929 the first private boarding house was opened, and in 1930 the first villas under "Dealul lui Pușcă" were built, the owners being wealthy people from Bistrița city. After the Second World War, the resort served as a camp for students, until the construction of the reservoir began, and the village and the resort were decommissioned.

**The population and the economy.** The demographic dynamics of the population of the village of Colibița shows a decrease over the entire period analyzed (1970-2021), a fact that contradicts the general trend of the population in our country for the period 1970-1990, respectively in that period, in most localities of the country there was a specific increase in the population, as a result of the law prohibiting abortions and the lack of contraceptives on the market. But in the village of Colibița, the population decreased between 1970 and 1990 due to the works on the reservoir, which led to the decommissioning of the old village and its relocation to the hamlet of Mița. With the displacement, some of the inhabitants migrated to other localities, most of them to Bistrița-Bârgăului and to the city of Bistrița. After 1990, the population decline continued, characteristic of the entire country, due to the very low natural increase and the migration of the young population from mountain villages to urban or other rural locations with a better location potential (CL Bistrița-Bârgăului 2008).

The economy of the Colibița basin is based on tourism (accommodation and tourist services), industry (forestry, hydropower) and subsistence agriculture. If in the years preceding the construction of the reservoir, the share of the population working in agriculture predominated, nowadays, the greater share corresponds to workers in tourism.

The Colibița basin has been one of the most important tourist attractions in Bistrița-Năsăud county since the last century, but in the last decades, a strong anthropogenic impact began to manifest on it, an impact that is increasingly pronounced even today. The purpose of the present study is to illustrate the anthropogenic impact in the Colibița basin and the identification of measures to improve the environment quality.

## **The progress of anthropic impact in Colibița basin**

**The anthropic impact in Colibița basin before the establishment of the reservoir on Bistrița-Ardeleană Rver.** Anthropogenic action in the Colibița basin, prior to the construction of the reservoir, knows two distinct periods. Thus, based on the bibliography and the information from the field, we appreciate that until the end of the 19th century, the anthropic impact in the basin was minor, in the conditions where the population was small and the tourism resources of Colibița were not well known, and means of transport neither well developed nor available, as at present. In these conditions, the changes in the environment were determined, most likely, by small plant crops, small cuttings of trees and the raising of animals which, however, were not in a position to bring a major

impact in the environment of the Colibița basin. Thus, until around the 1900s, the natural environment of the basin was predominantly natural (Figures 6 and 7).



Figure 6. The former Colibița village (source: bistrițeanul.ro).



Figure 7. Bistrița-Ardeleană River before the construction of the dam/reservoir (source: bistrițeanul.ro).

The first period in which the human impact was felt in the environment of the Colibița basin was the one corresponding to the end of the 19th century and the first six decades of the 20th century, which consisted in the replacement of natural biocenoses on large areas, degradation of the soil due to grazing, degradation of the relief, soil and subsoil due to mining operations and massive deforestation (which led to soil degradation due to erosion).

Also during this period tourism begins at Colibița, which becomes a resort and operates as a cottage (June-September), the inadequate facilities not being able to optimize tourism, although the natural tourist potential was great. The Colibița tourist resort operated intermittently until 1976, when it was decommissioned.

The biggest changes during this period were brought about by the massive deforestation on the mountain massifs around the basin, which determined the appearance of forest landscapes, with forest cabins, access roads, log loading ramps, logs and specific equipment (tractors, trailers, etc.), traces of this landscape, still visible today (ruined cottages, foundations, roads). Moreover, for the transport of the logs, forest roads were laid out, which caused the erosion of the slopes (collapses, surprises, etc.) (Șteff 1986).

The prospecting and mining explorations in the upper basin of the Colb (mouth of the Aurar stream), carried out between 1949 and 1953, led to the appearance of a huge tailings dump, parallel to the Colb valley. The materials of this dump are washed away today by the rains, and the flows end up in the waters of Colbului, and from here in the waters of Bistrița-Ardeleană River, thus contaminating them with oxides and heavy metals. The same phenomenon also happens because of the waters that drain the gallery.

**Anthropogenic impact during the construction years of the reservoir.** The start of hydropower works in the Colibița basin meant the initiation of the strongest anthropogenic impact in its environment. Thus, in 1976, the climatic station was decommissioned and the construction of the reservoir on the course of Bistrița-Ardeleană River began. Along with this project, the environment of the Colibița basin underwent radical transformations, determined by the displacement of the village of Colibița in the Mița basin, the appearance of the Pietriceaua quarry (which provided the andesitic rocks for the construction of the dam) (Figure 8), the clearing of some areas of land, the development of the access road on the northern slope of the basin, the building of the dam and the appearance of the reservoir (Figure 9).



Figure 8. Pietriceaua stone pit (source: mesagerul.ro).



Figure 9. Colibița dam/reservoir (source: mesagerul.ro).

Given the structural and functional transformations mentioned above, at this stage the organized tourism phenomenon ceased, but the interest in the attractive resources of Colibița was maintained, thus taking the form of practicing tourism based on movement and contemplation of the landscape (weekend tourism), trail tourism, climbing tourism, adventure tourism, etc.

The Colibița reservoir was intended to satisfy drinking and industrial water consumption, electricity production, irrigation and flood mitigation. The Colibița dam is located downstream from the Colibița village, where the valley narrows forming a gorge area, located in volcanogenic-sedimentary formations and covered with a deluvial blanket of 3-4 m. The development of the Colibița was imposed as a necessity in the context of the social-economic evolution of Bistrița municipality. The high number of inhabitants and the considerable development of the municipality's industry in a fairly short time demanded increased amounts of water.

The design of the reservoir, starting in December 1982, has certain repercussions on the climate, hydrological and hydrogeological processes, vegetation and fauna, geomorphological processes and tourist activities.

The arrangement of the access roads made the slopes in the area of Mr. Puscă-Capul Dealului, through the appearance of steeps and slopes that continuously evolve through fragmentation, collapse and surging. In addition, the surface of the roads in this sector undergoes processes of subsidence and fragmentation, a fact that constitutes a technological risk worthy of consideration.

The drinking water supply system, as well as the waste water discharge system from the hydrographic basin of Bistrița-Ardeleană River are managed by SC "Aquabis SA" Bistrița-Năsăud, the Autonomous County Water Authority "Aquabis" as well is an important company county under the authority of the Bistrița-Năsăud County Council.

In conclusion, following the construction of the dam, the geographical environment of the Colibița basin changed radically, both as a landscape (previously, of the Bistrița Valley, currently, of the reservoir) and from a functional point of view (in the past, within the basin agriculture predominated, followed by forestry and tourism, currently, tourism predominates, an economic activity that will develop even stronger in the coming years, in this mountain basin).

**Systematization of the Colibița locality.** Through the creation of the Colibița reservoir, the former Colibița locality was decommissioned (Figure 10), the population being relocated to a new village (Figure 11). From the total population existing on 01.11.1975, about 80%, i.e. around 400 people, opted to stay in the village; most of those who left chose as their new residence the village of Bistrița-Bârgăului, the center of the commune to which the village of Colibița belongs, 7 km downstream from the dam, 16 families chose the commune of Livezile, 30 km from the town of Bistrița.

The new village, Colibița, is located on the territory that geomorphologically belongs to the Colibița basin, flanked to the north by the Bârgăului Mountains, and on the southeast side by the Călimani Mountains. The village of Colibița was designed and built on land located at the extremity (at the "tail") of the reservoir, on the sunny southern slope at the foot of Mount Căsarul, in the meadow of the Colibița Valley. The village initially had an area of 9.5 ha and was sized for a population of 500 inhabitants, according to the options of the residents of the locality. A reserve area was delimited for the development of the locality for a period of perspective, located to the east of the village perimeter, with an area of about 1.80 ha and corresponding to an increase of 200 people.

For the resort, which is separated from the settlement, a site was chosen on the shore of the reservoir, near the dam, at the foot of Mount Căsarul, at an altitude of 820-850 m. In this category are grouped the relatively gentle slope surfaces but with a microrelief rugged, with a lithological substrate sensitive to overwetting processes that generate intense slope processes in the form of active landslides.

At the time of sketching, the Colibița resort, prior to 1989, was considered to present development conditions especially as a climatic resort and the main base for tourism and sports with a maximum capacity of 3500 seats. In order to develop balneo-



climate and tourist activities, it was foreseen that the resort would be developed in two stages, with appropriate technical and development equipment, as well as service facilities necessary for the capacity and function of the resort. The two stages of development of the Colibița resort were expected to be:

- stage I (1980-1990): construction of a motel with 200 seats;
- stage II (1990-2000): hotel with 300 seats, hotel with 150 seats, another hotel with 150 seats, buffet, bar, club, pier for 15 boats, ski lifts and chair lifts, volleyball and tennis courts.

Of course, the Revolution of 1989 thwarted these stages of construction of the resort and even if some constructions were started, they were later abandoned (such as the hotel building that was going to rise on the shore of the lake).

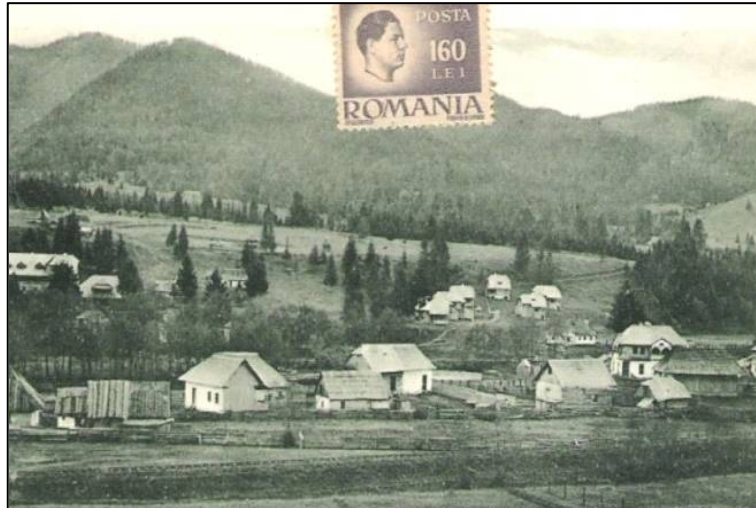


Figure 10. The former Colibița village (source: bistriteanul.ro).



Figure 11. The present Colibița village (source: Florin Rusu, Salvamont).

***The evolution of anthropogenic impact after the completion of the reservoir.***

After the completion of the Colibița reservoir, the main anthropogenic impact was generated by the infrastructure and tourist traffic, which has been increasing in recent years.

Until the start of hydropower works, in 1976, the changes induced in the landscape by tourist activities were reduced, because the general interest was to preserve the integrity of this area and the balance between man and nature. After this

date, the environment of Colibița basin will begin to feel, more and more strongly, numerous changes generated by tourism (Naum & Moldovan 1987).

As the reservoir was sketched in 1982 and then with the increase of the surface of the reservoir, in 1984, tourist interest in Colibița was relaunched and, in fact, the stage of mass tourism began. In the following years, the meadows around the waterhole were invaded by thousands of tourists, some of them undisciplined, who leave behind, next to the blue lake, numerous wastes, which hate the wonderful landscape of the depression (Moldovan 1984).

Gradually, the lake became the polarizing element, which concentrates most of the tourist flows and which determines the appearance of specific forms of tourism, such as: green grass tourism, swimming, air and sun baths, water sports, fishing, etc.

At the beginning of the 1990s, as the construction sites were reduced and the dam was completed, the process of building the private tourist infrastructure began at Colibița. It is the moment when, in our opinion, the decline of this area begins, as a recreation area and as an oasis of peace within the county. On the two shores of the lake, under the summit of Orban's Pietra, under Mr. Villas, cabins, holiday homes and guesthouses have appeared in Puscă and under Mount Căsarul, which were gradually suffocating the area. Thus, the lake determined the establishment of the current tourist settlement, on its northern shore, which reconstructs the climactic resort of the past. The accumulation of villas and cabins towards the water's edge has, on the one hand, unpleasant aesthetic effects, and on the other hand, restricts the access of tourists to the lake. According to the regulation, the protection zone is located on the shores of the lake, delimited by the design of the dam height around the lake at the normal retention level, within which access is free, and the realization of any constructions (fences, pontoons, annexes) is prohibited. As such, it is imperative that the Bistrita Water Management System, which manages the lake, solve this problem, and the water's shine can be admired by all tourists (SGA Bistrița - AH Colibița 1996; CNAR 1999).

But the special problem of these cottages and private holiday homes is represented by the lack of sewage, they dump the waste directly into the lake water (<http://radiocluj.ro/2014/08/20/lacul-colibita-averea-unor-inconstienti>).

According to the data provided by the Town Hall of Bistrița Bârgăului commune, under whose jurisdiction the area is located, there are currently approximately 311 tourist buildings in Colibița, and their number is increasing. The fences, erected to delimit the properties, increasingly reduced access to the surface of the lake, small landings appeared at the edge of the aquatic unit, and road traffic intensified, especially on weekends and in the warm season.

The landscape is crowded, and the impact on the environment is obvious: the consumption of space, noise, waste, the degradation of meadows, the triggering of erosion, air and water pollution, unsightly constructions, stressing wild animals, etc. All this will inevitably lead to the tourism devaluation of the area.

At this moment, the Bistrița-Năsăud County Council and the Bistrița-Bârgăului Municipality are raising the issue of relaunching the Colibița climate resort, a fact that involves a series of specific steps, related to ensuring the material base and infrastructure elements, so that this resort becomes functional.

The households in the village of Colibița and the tourist constructions that have appeared affect the quality of the air and water through the phenomenon of household pollution (heating of homes, food preparation, discharge of waste water). The appearance of the anthropic dam lake changed the potential ratio between the attractive elements of Colibița. If until then the clean air, the peace and the landscape were in the first place, now the lake surface is in the foreground. The lake polarizes most tourist activities and has generated new forms of relaxation and leisure, such as: sunbathing, swimming, picnics, boating and fishing. These are, in fact, more sedentary tourist activities (which induce the underestimation of the rest of the aesthetic potential of the area), than dynamic ones (which contribute to maintaining health and getting to know the beauties of the Colibița basin).

Motorized tourist traffic reaches alarming levels, especially on weekends, which compromises the need for peace and air quality. In addition, in recent years artistic

events have been organized in Colibița (Colibița Bike Fest, Colibița Rock), attended by hundreds of people, the crowding, the noise, the traffic of vehicles and the waste left behind being proportional to the influx of tourists.

In addition to tourism, the quality of the basin's environment is also affected by forest exploitation. It is true that, after 1990, the effervescence of forest exploitation decreased a lot, but the interest in wood is still preserved. Today, deforestation is carried out in the areas of Dălbidan, Dascălu, Terha, Tirimii, Colbu, Țiganca and Sub Deal, a fact that negatively influences the aesthetic side of the landscape in those places (logs, ditches, stumps, bare slopes, etc.).

For the transportation of the logs, forest roads were set up over time, which gave free rein to erosion. Under the action of rainwater, their surface has suffered in many places processes of ravenation, silting and surging, which make access difficult. The activity of transporting wood stresses wild animals through the noise produced, causes air pollution and often makes moving on foot or by means of transport inconvenient.

The local processing of wood, by means of circular saws and sawmills, determines the outline, from place to place, of piles of sawdust (on Colbu, at the mouth of Izvorului Lung, etc.). This fact has, on one hand, a negative aesthetic impact, and on the other hand it pollutes the water mass, because wood releases phenol through decomposition.

From the forests around Colibița, 60,000 m<sup>3</sup> of wood are exploited annually, which is processed at the factories in Bistrița-Bârgăului, Prundu Bârgăului, Mureșenii Bârgăului and Susenii Bârgăului.

**Conclusions and recommendations.** The tourist environment in Colibița basin is characterized by significant geographical dimensions, which give it an important attractive potential. Because of this, Colibița represents a regional tourist pole, which concentrates tourist flows from the city of Bistrița and from the neighboring towns, from the neighboring counties (Suceava, Mureș) and even from more remote areas of the country.

The main conclusions that emerge from the present study are:

- within the anthropogenic impact manifested in the Colibița basin, 3 stages can be distinguished, all of them closely related to the construction of the dam: the stage before the construction of the dam, the stage of the construction of the dam and the stage after the construction of the dam and the appearance of the reservoir;

- the greatest impact on the environment in the Colibița basin was recorded during the construction of the Colibița dam and this impact was manifested by: the displacement of the old Colibița village in the Mița hamlet, the cutting of the Pietriceaua Hill by the appearance of the quarry here, the construction of the dam, the formation of the reservoir, the construction the contour road of the lake and the outline of the Colibița resort;

- after the appearance of the reservoir, the anthropic impact is determined by the appearance of mass tourism, which manifests itself through the tourist infrastructure and tourist circulation.

For this reason, it is necessary that the local and county authorities reconsider their position towards this area and proceed to the concrete and correct application of measures specific to sustainable development and ecotourism practices. Also, an important role in this equation is played by the local population and the owners of tourist equipment, who must be aware of the need to preserve the tourist heritage here. The touristic evolution of the Colibița basin is inevitable, but it must take place in a controlled manner, according to well-established coordinates. In this direction, we propose the following actions:

- creation of a protection zone around the lake, an area in which to set up camping and picnic spots, equipped with containers for the selective collection of waste;

- the creation of a system of sewerage and evacuation of waste water, in parallel with the tightening of legislation and the increase of civic discipline;

- the declaration of Colibița as a tourist resort, in parallel with the geomorpho-structural zoning of the basin space.

All these tourist developments, proposed by us within the Colibița basin, would ensure environmental protection, the practice of sustainable tourism and the proper functioning of the future tourist resort.

It is obvious that the anthropogenic impact within the Colibița basin is high, currently tourist activities have the biggest contribution to the manifestation of changes in the environment of this basin. As a result, a series of measures are needed to improve the quality of the environment, otherwise, from the region admired today, Colibița could become a region suffocated by tourist buildings, by visitors, but especially by their negative manifestations in the environment.

The new strategies according to which the leisure activities at Colibița must be carried out belong to sustainable development and ecological tourism and fall within the rules and principles of capitalizing on attractive resources and protecting nature.

**Conflict of interest.** The authors declare that there is no conflict of interest.

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