

CONSIDERATIONS REGARDING THE NATURE RESERVES IN THE NATURAL DEPRESSION OF MARAMURES AND THEIR ENVIRONMENTAL IMPORTANCE

Ileana Vasilescu

Abstract: The environment is the world around us, including everything we see or feel, wherever we are. It is continuous in space and time – in space as a series of physical and social events, and in time as a continuation of these events that constantly cause changes.

The environmental approach of nature reserves is basically considered to imply four main stages: knowledge (the study of reserves as central elements of the environment), perception (through the entire complex of environmental relationships), attitude (with reference to the building-up of an intensely positive attitude towards the importance of nature reserves in preserving environmental balance in entertainment, knowledge and research), and behaviour (as definite response in which a body answers to an experience according to environmental stimuli). The nature reserves in the Maramures Natural Depression are strikingly rich and diverse, being of real scientific, landscape and touristic value; however, in relationship with the present potential, the number of protected natural areas and conservation sites is fairly small.

By virtue of this research which I conducted, i.e. through the administration of questionnaires (352 people interviewed) and, consequently, through the interpretation of the results and their analysis, several important issues have been outlined regarding the environmental value of nature reserves and the interest in their integration in the life of the local communities in Maramures.

Keywords: environment, nature reserves, perception, attitude, behaviour, integration

INTRODUCTION. ENVIRONMENT AND ENVIRONMENTAL GEOGRAPHY

Environmental geography, much like ecology, is a border science, consequently it provides us with the necessary knowledge on the relationships created in time among all the environmental components. Going beyond mere description, environmental geography studies geographic environment in all its complexity, bringing its primary contribution to the achievement of a particular goal, in a world which is continuously altered and shaped by a variety of ideas, needs and actions. To put it in a different way, environmental geography can be viewed as an educational science since it definitely raises people's awareness. Owing to its contribution, man becomes aware of his active participation in the processes that lead to Earth's manifestations and changes, of the fact that his decisions (as an individual, as a small community or at a worldwide level) will be responsible for an improved or, on the contrary, for a low-quality life. As an environmental science, geography is primarily an interdisciplinary science, the more so since it helps people acquire the ability to see things in a global way, respectively enabling them to analyse and take decisions concerning the environment.

The environment is defined as "a complex system of physical, chemical and biological elements, both natural and created, surrounding man/the community, an animal or vegetal species." (Le Petit Larousse Illustré, 2001) or the collection of natural (physical, chemical or biological) and cultural (sociological) that are liable to act upon or influence living creatures and human actions (Le Grand Robert de la Langue Française, Robert, Paris, 2001). Being differentiated from the concept of nature by the fact that it includes man and human activity, as well as man-nature interactions, the term environment comes from the verb *environner*, meaning to surround. In fact "environner" is derived from *environ*, which means surroundings and was borrowed from English (environment) in the 19th century.

The concept of environment has been approached in very many different ways, on different levels and by many different research domains, from nature's sciences or social sciences to economics, architecture and engineering or arts, information technologies, politics, etc. It comes as a natural consequence that the terms and notions of this domain of environmental studies have a multitude of definitions/meanings and fields of applicability. The original meaning of the concept was that of natural environment, the living environ-

ment of man, which ensures and determines his existence. Thus, in the Anglo-Saxon perception of the word, the meaning that prevails is that referring to man's surroundings, man viewed as a mastering creature of Terra. The notion has changed quite a lot in the past dozens of years to become similar to that of landscape, in the sense of natural landscape, which does not include the culturally –shaped environment. In order that we might prevent the frequent mistake of taking one for another, we should reinforce here the idea that "the landscape may be viewed as environment when any other component of the geographic reality, especially man, the human community is under study, in terms of its relationships with that particular landscape" (Mac, I., 2000)

In the French perception of the word (according to the Larousse Dictionary, 2001), the environment refers to that thing which surrounds, which is a neighbourhood, that is an ensemble of physical, chemical or biological, either natural or man-made elements, that are around the human being, another live creature or species. Strictly speaking, according to the above mentioned source, the environment is an ensemble of both objective and subjective elements that make up an individual's living surroundings/milieu, or with reference to arts, a work of art made up of elements placed in a space that can be covered.

For contemporary science, the environment (having as an accepted synonym that of surrounding landscape) comprises two elements: the surrounding one (nature itself) and the surrounded one (generally man or the community/society). As the meaning of the concept of environment has broadened, no matter what component of the geographic layer is "removed" from its context and placed at the centre, that component can be approached and studied in terms of its relationships with the other components. Consequently, all components can acquire the central position, from physical components (rivers, mountains, sea) or anthropical ones (man, settlement, bridge or water embankment) to biotic components (plants, animals, vegetal or animal communities). The passage from anthropocentrism to a broader, deeper understanding of the environment, known as entocentrism, has been achieved through a constant enlargement of our views regarding the natural environment.

Most researchers consider the concept of environment synonymous with that of surrounding background. However, geography makes the distinction between surrounding background/environment, using as reference points only man and society as central elements, and that of environment, having a broader meaning as well as a character of multipolarity, since it refers to the condition of any geographic component as a central element when viewed in re-

lationship with the other components.

To conclude, the environment is not a mere assemblage of components, but the outcome of multiple combinations of components, expressed either as a certain amount of resources or as a general quality of the environment. The general quality of the environment is the one that sustains the existence and the welfare of a central element (biotic or not) which has acquired a central position due to a process of placement, a reason for which this particular element is under study or for which is focused on. This paper highlights the fact that, among a wide variety of actions and means, nature reserves play a role of major importance in the preservation of the environmental balance

2. NATURE RESERVES IN THE DEPRESSION OF MARAMURES AND THEIR ENVIRONMENTAL IMPORTANCE.

2.1. Materials and methods

The study we made in the Natural Depression of Maramures had the following major aims:

- to get to understand the setting up of the nature reserves;
- to do a territorial assessment (geographically speaking) and a placement on the map of the nature reserves (the GIS map) within the geographic region in question;
- to evaluate the size and the environmental importance of the nature reserves;
- to state a few conclusions on the ways of integrating nature reserves in the local communities' lives.

The research methods which enabled my understanding of the territory under study, especially from the point of view of the way they came about were:

The investigation of this topic by means of: an indirect study of the territory in question as described in the special literature, and the direct research in the field;

The Territorial Survey, which covers a major part of my research, has been developed along several stages with the definite purpose in mind that, in this way, the method will be applied more thoroughly and will avoid the attempts of a mere theoretical "reconstruction" of present day facts that, at least in certain aspects (for instance, in that of the attitude and conduct of the authorities and population towards such natural assets), is unable to support the preservation of nature and local identity.

The first stage was that of talking to the experts

(appendix 1) in the different fields that had or still have intentions, actions or responsibilities connected with the study of the region of the Depression of Maramures as far as its natural patrimony is concerned. The second stage was to conceive the questionnaires by establishing a system of standards of attitude (for example the satisfaction of living in a certain geographic location, satisfaction regarding the land and the resulting social appreciation, the importance of the natural patrimony as a feature of identity, the awareness of the existence of the values of these natural patrimony and the importance of this natural patrimony as a symbolic image when compared to others, the connection between patrimony and local development (see tourism). The third stage was that of creating the questionnaires, preceded by the development of a strategy of applying them, which relied on the observation of the basic statistic function of thirty people (over 18 in age), starting from the lists of citizens used during elections by local authorities.

The questionnaires were applied in nineteen localities: HARNICESTI, SIEU, STRAMTURA, GLOD, TISA, SAPANTA, DESESTI, BREB, COSTIUI, BUDESTI, SARBI, GIULESTI, BARSANA, ONCESTI, MOISEI, VISEUL DE JOS, POEIENILE IZEI, BOTIZA și OCNA SUGATAG.

While doing the territorial survey, I talked to the local people and took a large number of photographs, which helped me draw the conclusions of the study, write out the working hypotheses regarding the local people's conduct and attitude towards the natural patrimony and last but not least, helped me understand the roots and the construction of the present day system of values, which also revealed the discrepancy between tradition and modernism, between value and "so-called value" or pseudo-value, between genuine cultural identity and "reconstructed identity".

The criteria which I used as reference points in order to make the correlations were: age, ethnic community, dynamics of migration and the degree of instruction/education. The fourth stage consisted in the setting up of a data basis in the SPSS programme (analytical predictive technologies) which allowed me to make the necessary analytical and predictive correlations in the weeks to come. Analyzing these correlations and making a comparison of data enabled me to draw the conclusions and, in the end, establish the possible patterns of attitude and behaviour/conduct which, unfortunately, are representative for this region that has changed dramatically and sadly without any external correcting intervention, under the pressure of a consumist drive and craze of houses following "the Western European fashion" of some of the local people (who feel more like saying "stanza di

steduta" instead of "casa ceia mare" or "camera de zi") under the passive eye of the local authorities who, either lack the necessary legal framework to do something or simply ignore enforcing the existing laws. And all this to the grief of those who care about such things.

And, in the end, who cares that the imminent future is going to take place tomorrow or in the near future?

Who cares that the new territorial reality (social and cultural) requires taking urgent steps, mostly legislative ones, which should put an end to the chaotic sprawling of the neo-architecture that has nothing to do with the former local identity or the physical components of the geographic environment which has generated important assets of patrimony previously, for the very reason that man worked in symbiosis with the environment.

Who cares that it was long ago that the new attitudes and conducts regarding the patrimony started replacing the genuine ones, that new patterns are about to emerge?

The above questions are only part of those that come to my mind now, yet I hope this study will break new roads not merely into raising new questions but also generating ideas and actions that might find a middle way between tradition and modernism (following the example of other peoples who managed to do so), to prevent people from "adapting the laws to the so-called local characteristics so as to bring about alterations to the environment in accordance with their own taste and will, without a shred of harmony, beauty or common sense.

Among the other methods that helped me do a thorough research so that I might go deeper into the particular characteristics of the territory were:

- Comparative analysis;
- The method of multiple means;
- Spatial Analysis/Analysis of the space

2.2. Results and Discussion regarding the environmental significance of the nature reserves in the Depression of Maramures

Nature reserves are territories that are protected by law, in which alterations are not allowed because they are places where plants, animals or other elements of the natural environment (ores, water, fossils, etc) of important scientific value can be found. As a general rule, such territories should enable the authorities to have clear prospects of a sustainable development of the region, to provide the population with opportunities of local development and the future generations the chance of taking advantage of the local biodiversity.

Cod	Name	Location	Surface area (ha)	Type	Custodian/Administrator	Environmental particularities
2568	Morărenilor Lake	Breb-Ocna Șugatag	20	mixed	Ecological Society of Maramureș	-rare species, relics (example <i>Ligularia Sibirica</i>); -representative elements of flora and fauna -goal :conservation of biological diversity
2570	Poiana Brazilor Swamp	Giulești	3	mixed	The Department for Management of Forests, Baia Mare	- presence of mountain pines (<i>Pinus Mugo</i>) at the lowest altitude of vegetation (970.m) in the Carpathian Mountains; - the age of the thick layer of peat - scientific interest and unicity
2573	Ronișoara Woods	Rona de Sus	62	forest	The Department for Management of Forests, Baia Mare	-biological value, sessile species, important for seeds; -fauna elements: deer, stag, boar, eagle; -landscape, scientific and ecologic value
2574	Crăiasa Woods	Ocna Șugatag	44,4	arboretum and wildlife	Baia Mare	-tree species (150-200 ani): sessile (<i>Q. Pedunculat</i>), larch, hombeam (<i>Carpinus Betulus</i>), oak (<i>Quercus Robur</i>); -undergrowth of a wide variety hazel tree, hawthorn, dogwood, etc.); - numerous bird species (scientific research)
2576	Coștiui Woods	Coștiui	0,72	forest	Baia Mare	- trees with ages between 125 and 150 years -including the salted lakes in Coștiui, the scientific value can be completed with the touristic, spa and landscape ones
2580	Comu Nedeii-Ciungii Bălăsinei	Borșa	800	mixed	The Administration of the Natural Park of Munții Maramureșului (O.S. Borșa)	-site NATURE 2000 – SPA, instituted as a special conservation area; -vegetation: 60% mountain pastures 40% coniferous forests and mountain pines (the habitat of the birch rooster).

Table 1. Nature reserves (categoria a IV - a I.U.C.N.) in the Maramures Dpression (Vasilescu, I., 2008)

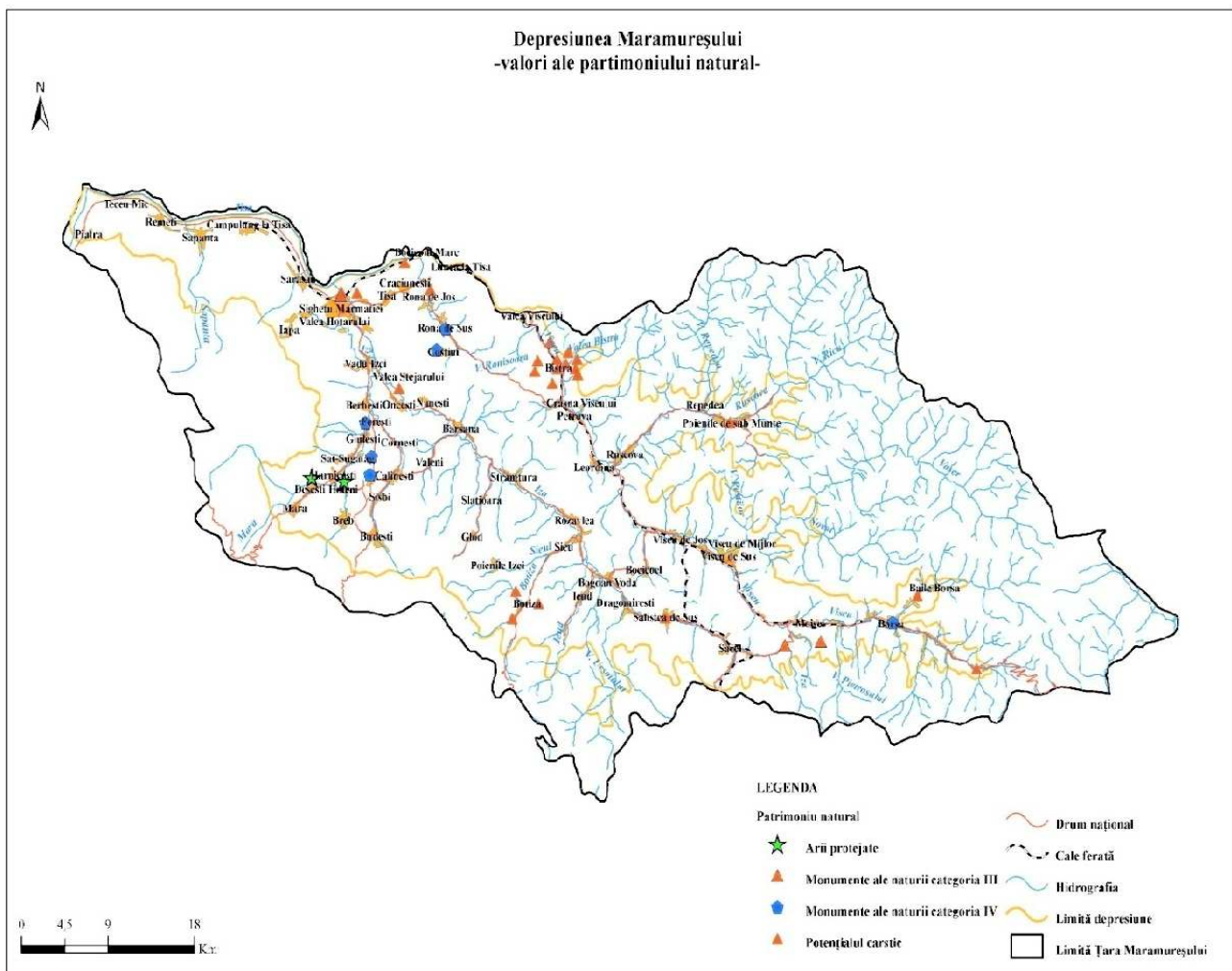


Figure 1. Location of the nature reserves in the Natural Depression of Maramureş (Vasilescu, I., 2008)

In order that we may better understand the environmental significance of nature reserves, it is necessary that we should admit the fact that such means of protection and preservation have an essential contribution to the preservation of the environmental balance and strengthen its regenerating resource. Consequently, although people became pre-occupied with the elements of the environment quite early in history (year 200, the king Devanampiya Tissa of Sri Lanka set up a sanctuary for animals" - www. Sri Lanka Wildlife Conservation Society), the preservation and protection of the environment has become imperative only in the 21st century due to the general awareness of global, respectively local degradation of the environment, mainly as a consequence of man's activities, which are increasingly affecting it in a negative way. Thus, the preservation of the environment has become one of the three pillars of sustainable development and is viewed as one of

the main eight objectives of the millennium as far as development is concerned.

Having been designated as partially or entirely protected territories through legislation and strategy, respectively by using different physical means and monitorship, either willingly, because the (public or private) owner wanted so, or because authorities or a community decided this way, such nature reserves are set up having the main goal of preserving and managing special natural resources that are endangered in one way or another (species of plants or animals, patrimonial habitats, fossils and minerals, unusual landscapes or sites that play an important role as they have become live records of the history of mankind.

Some of the natural scientists draw attention to the intrinsic paradox of the concept of nature reserve, stating that "a nature reserve cannot be something natural". (Francois Terrason, 1988) and that "this designation is rather a source of cognitive discord for the

masses". Nature reserves can have a local, regional or national importance, irrespective of their size.

The establishment of a nature reserve aims at a removal of the territory or element in question from the direct impact of human activities liable to raise suspicion of harming in any way or destroying certain species. This aspect should not be taken literally, on the contrary, the important assets of patrimony belonging to an environmental complex system in the given territory, they should be integrated in the life of the community and, first and foremost, it is the local population itself that should be aware of the importance of such an accomplishment. The system of social assistance itself becomes unconceivable without an adequate environmental protection and the preservation of the protective functions of the natural ecosystems have become of an utmost importance and an unavoidable social responsibility, without which we cannot ensure efficient activities, be them economic, cultural or of any other nature.

Within the larger background of the conception of projects for territorial management in the county district of Maramures, the thorough study of the protective functions of the ecosystems and their prospects of evolution (wherefore we mention the significant contribution of life scientists: Marta and Iosif Beres and Gavril Ardelean, etc) has been done in several occasions and so we are left to understand that under the circumstances of this trend of economic development of the world, in which the region of Maramures is expected to integrate, urbanization and the population growth will be unable to adjust to certain restrictive parameters/criteria. Therefore such actions of protection and preservation of nature should be increased and adjusted to the way the contemporary society evolves.

To this aim, the element having the most important capacity of limiting the destructive anthropic actions is the management plan for the protected environmental areas and elements. Without going into the details of this important document, we should mention the fact that its rigorous elaboration requires:

- Careful monitorship, concrete representation and detailed treatment in relationship with the set objectives;
- Long duration, since natural cycles being slow, the biocenosis system of reserves is also long;
- The management plan should be included as a major element in the conception of the annual work plans;
- It should also consider the dynamics of the landscape and the ways in which is used by man (including, if the case be, recommendations in favour of

the future extension of the reserve);

- It should take into account the integration of the nature reserve in a network of similar reserves, since reserves do not evolve in an isolated area, on the contrary, they are part of an area characterized by certain physical and geographical conditions.

In order that we might not be restricted to the only approach of reserves as means of protection of the natural environment, we shall point out to a few of the possible aspects/attributes of the environmental significance of reserves.

The scientific aspect/attribute has been and still is one of the major motivations of setting up nature reserves. Scientific research is undertaken to gain knowledge, which is the foundation for possible action and arguments in favour of assumed responsibility. Despite the plan of those who had set up nature reserves in the Depression of Maramures with the definite intention of saving from imminent extinction plants, animals or samples of ecosystems of utmost scientific importance, the above mentioned reserves have acquired in time much deeper significances. In addition to the huge amount of ecological, and biogeographic information, as well as of natural history, which is encoded in the structure of the preserved ecosystems, nature reserves tend to become live schools of ecological instruction, mainly for researchers, but also for the population (local people, tourists, authorities, etc)

One of the most relevant examples supporting the scientific foundation of the nature reserves in the Natural Depression of Maramures is the mixed reserve of Poiana Brazilor (a protected bog) which, alongside with other bogs, have enabled us to plausibly recreate postwurmian history in Northern Transylvania, the slow decay of pine woods in the era preceding glaciation and the glacial sanctuaries of the spruce fir in the Carpathian area. (Pop, E., 1942) We mention the fact that the graphical study of the layers of bogs and other quaternary deposits in the Baltic area lead to the realization of the post glaciation climate diagram of Blitt and Semander, which was of major help to many geologists, climatologists, biogeographers in Europe. Many of the nature reserves in Maramures are genuine "archives of natural history", still holding invaluable resources for the scientific research in Romania, that is why, in order that we may prevent an irrecoverable loss, the network of nature reserves should be extended so that it may cover representative samples of the entire assortment/classification of regional ecosystems.

The socio-economic attribute is based on the principle of systemic approach, respectively on the principles of sustainable development, and renders void

the very contradiction between the socio-economic development and the aims of eco-protective actions. In fact, research studies (Cristea, V, 1996) show that, on a long term, the two of them complete each other and render each other mutual support, if applied correctly. According to the above mentioned researcher, the seven directions of the eco-protective action (improvement of the quality of the environment, the rational use of the resources, the preservation of the species' genome and of the natural environment, the perpetuity of species and of individuals, ecological reconstruction) can be in harmony with the development socio-economic activities (the author mentions ten domains: industry, transport, commerce, tourism, hunting and fishing, social assistance, cultural activities, research, education). This is by all means certain to happen if the policies applied in the social and economic fields take into account the requirements of the environment (noticeable by means of the information it conveys) and aim at preserving a balanced state of the environment.

Among the above mentioned solutions are: the good use of refuse/waste matter, the discovery and good use of beneficial plants (medicinal plants, newly cultivated ones). As far as tourism is concerned, as well as hunting and fishing, the strict measures of protection and preservation of the diversity of the landscapes and ecologic systems are imperative.

The ethical and aesthetic attribute derives from man's attitude and conduct regarding nature and is manifested through his very actions, gestures and activities. Ecological ethics investigates the entire range of man-nature relationships with regard to their cooperation and involvement as "parties" of an agreement and their consequences and impact on the aesthetics and landscape of nature reserves. In fact, the aesthetics of a geographic landscape has been the main argument in favour of the creation of the first protected areas.

The aesthetic attribute originates in the harmony between shape and colour, between detail and perspective, between what nature can accept and what it can offer, starting from the important prerequisite that a natural monument is organically integrated in the endless evolution of nature.

The cultural attribute is an objectification of the ways in which the human being permanently relates to all the other components of the environment. Let us not overlook the fact that any cultural act contains the production of a work of art as well as the capacity to preserve, interpret and value it. We have set up nature reserves in order to preserve beauty, natural aesthetics, to maintain harmony and balance, that is to achieve a cultural act.

In order that we may learn and preserve the cul-

tural significance of the environment, by means of the nature reserves as well, we should attain that type of environmental conduct that comes from responsibility and conscience. Education in its entirety belongs to the sphere of culture, and environmental education is nothing else but a certain direction of the instructive process. One of the results of the achievement of the cultural attributes of an individual or of society at large is the system of values he/ they develop.

The system of values regarding the environment generally depends on the following important aspects:

- The nature of the individual and of the society that perceive and assess the environment;
- The degree of instruction and culture of the society, its outlooks and attitudes regarding the environment;
- Traditions and beliefs;
- Topophilia (love for a certain place);
- Experience previously acquired;
- Society's level of interest;
- General stage of development of a society;
- The purpose for which the perception and the evaluation of the environment is done in accordance with a (subjective or objective) requirement;
- The way in which the individual or society at large searches and obtains the environmental information (directly or indirectly)
- Duration of residence;
- Interval of time along which perception takes place;
- Nature of the environment and the way in which it "provides information"

Assets and goods of patrimony	Primary school	Secondary school	High school	University
1. Historical monument	33 %	31%	46%	61%
2. Natural monument	38%	32%	33%	47%
3. Churches	61%	57%	67%	60%
4. Maramures wooden gates	61%	46%	54%	52%
5. Traditions and customs	61%	22%	53%	54%
6. Folk costumes	56%	22%	50%	54%
7. Traditional crafts	48%	12%	41%	47%
8. Country-side crafts	52%	17%	34%	39%
9. Country-side equipment ("pive", "vâltori")	47%	33%	30%	32%
10. Traditional country homestead	43%	10%	38%	32%
11. Archaeological site (the ruins of an old fortress or settlement)	42%	3%	35%	32%
12. Museum of folk art	38%	8%	31%	42%

Table 2. Correlation between the perception of the most representative assets of patrimony and the level of education. (Vasilescu I., 2008)

In conclusion, every component of the natural environment, every process or phenomenon may have different values from individual to individual, from a society to another one, in different historical periods, etc

3. CONCLUSIONS AND RESULTS OF THE RESEARCH REGARDING THE ATTITUDE OF THE INHABITANTS OF THE MARAMURES DEPRESSION WITH RESPECT TO THE DECLARED VALUE COMPONENTS OF THE ENVIRONMENT

- A strong affective attitude towards the cultural heritage, respectively an uninterested attitude towards the environment they have evolved in, for instance towards natural monuments (table 2);

- A rather high value for the aggregation index (14.79 reported to 17, the maximum theoretical aggregation index) for the knowledge about heritage values from the locality they live in, hence resulting a responsible attitude towards their existence;

- The knowledge and the nominalization (for most of the cases), of the proximity heritage values, strengthens the fact that attitudes have their origins in the acquired experience, hence resulting the fact that for an object for whose existence one knows nothing, or has no contact whatsoever with, there is no attitude (attitude is formed, then, from the moment

when a certain element or object enters the field of consciousness). This demonstrates the weak interaction with the community's external environment (a result of the communities' autarchic development from the Maramures Depression), or a strong toponymy feeling.

- An incorrect/unrealistic attitude of the population towards the capitalization of the natural and cultural heritage (the rapport between investment and benefit): the charts show the fact that irrespective of religion, going abroad, male/female, or age groups, the people in the survey consider that they have to invest the least in the capitalization of the heritage, in exchange they should benefit from these investments, even more than those who had actually invested (with the exception of students and pupils, who consider that they should invest more than they should benefit from);

- Negative attitude towards the personal benefits from the capitalization of the locality's existing heritage, resulted from the index of 4.7% reported to the maximal value 10 of the theoretical index;

- A rather high value of the index that shows the extent to which the population considers that tourism development would lead to the preservation of heritage values, which indicates an awareness of the necessity of some financial investments (facilitated by touristic development) in order to achieve the integrated conservation of the environment;

• The frequency of opting for certain goods or for a given heritage value is influenced by topophily,

namely many inhabitants consider that the most important heritage goods belong to the area they live in.

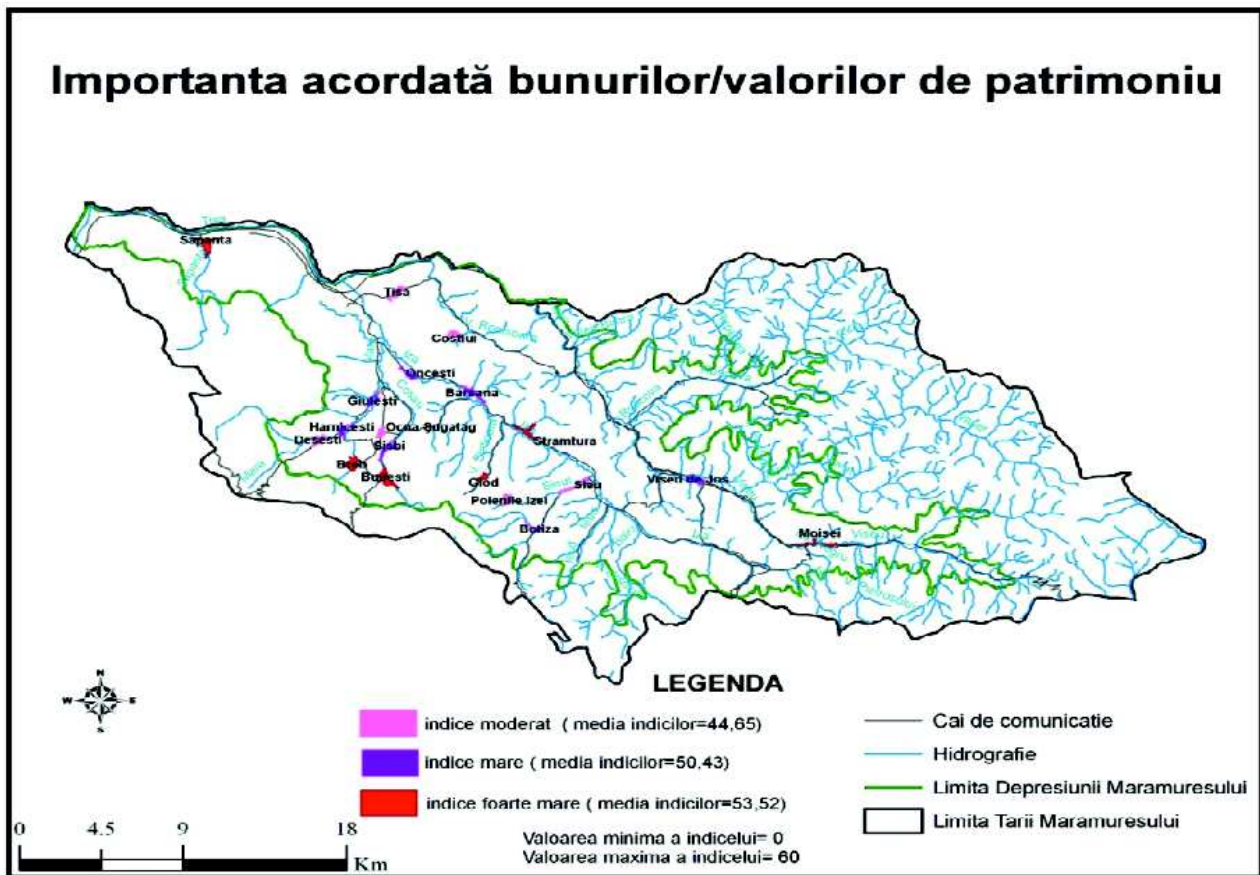


Figure 2. The attitude index towards environmental values with declared values, representation from the communities in the Maramures Depression, where questionnaires have been applied (Vasilescu I., 2008)

FINAL CONCLUSION

The present day environmental reality asks for the implementation of certain educational measures, firstly through the educational system, but also through actions and activities having as a purpose the rendering aware, the motivation and the involvement of the population in the process of preservation and integrated capitalization of the natural heritage, the education of esthetics and tastes, but also the urgent endorsement of some laws to ban inhabitants' intervention inside natural reserves.

REFERENCES

Ardelean, G., Beres I.(2000)- Fauna de vertebrate a Maramuresului, Editura Dacia, Cluj Napoca;
 Beres I., Istvan D.,Pop I.,(2000) – Inventarul obiectivelor turistice naturale din zona periurbană a municipiului Sighetu – Marmației.
 Bleahu, M., Moțoiu Maria Dana, (2002),

Jurisdicția privind ariile protejate și protecția naturii în România, studii și cercetări de geografie, t. XLIX, București. Gâstescu P., (2000), managementul mediului, Editura Sfinx, București

Cristea G., Dancus M.(2000)-Maramureș, un muzeu viu in centrul Europei, Editura Fundației Culturale Romane, București;

Cristea, V., Simone D., Herremans J.P., Goia Irina, 1996, Ocrotirea naturii și protecția mediului înconjurător, Editura University Press, Cluj napoca.

Deffontaines P., (1932), L'homme et la foret, Paris, Gallimard.

Demangeot, J., (1990), Les milieux „naturels” du globe, Masson, Paris-Milan-Barcelone-Mexico.

François Terrason La Peur de la nature, Sang de la Terre (Paris) : 1922

Nădișan, I. și colab., (1976), Monumente ale naturii din Maramureș, București

Mac, I. (2000), Geografie generală, Editura Europontic, Cluj Napoca;



Mac, I. (2003), Știința mediului, Editura Euro-pontic, Cluj Napoca.

Moser, G. & Weiss, K. (2003). *Espaces de vie: Aspects de la relation homme environnement*. Paris : A. Colin, Collection «Regards », 402 pp.

Pop, E., 1929, Analize de polen în turba Carpaților Orientali (Dorna-Lucina), *Bul. Grăd. Bot., Cluj, IX*, (3-4):81-210.

Pop, E., 1939, "Evoluția științelor biologice în Ardeal de la Unire până azi", *Rev. "Gând românesc"*, Cluj, nr. 7-9, p. 3-15.

Pop, E., 1942, Contribuții la istoria pădurilor din nordul Transilvaniei, *Bul. Grăd. Bot., Cluj, XXII*, (1-4): 101-177

Savu, Al., (1973), *Depresiunea Maramureș*, Terra/1, București.

Tuan, Yi-Fu, (1974), *Topophilia: a study of environmental perception, attitudes, and values*, Prentice-Hall, Englewood Cliffs, NJ.

*** (1994), *Caiet final al taberei internaționale de protecție a mediului, Nires*.

*** (1996), *Caiet final al taberei internaționale de protecție a mediului, Colibi*.

*** *Le petit Larousse illustre*, 2001

*** *Le grand Robert de la Langue française*, Robert, Paris, 2001

*** [www. Sri Lanka Wildlife Conservation Society](http://www.srilankawildlifeconservation.org)