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BIODIVERSITY CONSERVATION IN ROMANIA – BETWEEN DESIDERATUM AND REALITY

ABSTRACT

Through the entirety of the forms of life, which are interacting among themselves and with the abiotic elements of the environment, biodiversity/biological diversity maintains the ecological processes at local, regional and global level, generating goods and services directly usable by the socio-economic system. Many stress factors (natural disasters, agricultural, industrial and mining activities, tourism activities, etc.) result in significant biodiversity diminution, endangering the ecosystem stability, with economic, scientific, aesthetic and ethic implications, which, mainly in the affected territories, call for concrete protection and preservation measures. As a research field, biodiversity conservation completes the applicative fields (agriculture, forestry, management of protected areas, fishing industry, etc), which, although they started to focus considerably on preservation, they approach it as a subsidiary aspect of other programs.

Keywords: biodiversity, conservation, sustainable utilization, ecological reconstruction.

JEL Classification: Q01, Q57.

1. INTRODUCTION

Biodiversity is a global concern in the field of environment protection. The complexity of the pollution issues made it imperiously necessary to review the environment protection actions, which are defined in close connection with the economic development policy, with the economic and social forecasts on medium and long term. Society and economy must function, while taking into consideration the environment protection, the sustainable utilization of natural resources and the ecological reconstruction of the deteriorated systems.

As in other countries as well, in Romania the environment protection became a goal of national interest. The changes that have been produced at regional and international level with regard to the environmental issues imprinted a dynamic character to the actions necessary for environment quality improvement and protection. No sustainable development can take place in the absence of environment protection, and sustainable development includes the environment protection issue. As a result, the environment protection strategy is found, by its main coordinates, in the national sustainable development strategy of Romania.

2. STATE OF THE KNOWLEDGE

The biological diversity is defined as the abundance of living entities on Earth, represented by millions of plants, animals and microorganisms, the genes these contain, as well as the complexity of the ecosystems of the biological environment.

The preservation of the biological diversity is not concerned only with the study of species and habitats; it also investigates the efficiency of certain active protection measures. The conservationists also include social, economic, political and ethic aspects in their studies. These are working not only at scientific level, but at political and educational level as well, involving the local, governmental officials and the local communities in their protection plans.

Starting with the United Nations Conference on Environment from Stockholm, in June 1972, the interdependence between the social, technological, economic and ecological issues has been officially and internationally acknowledged. Starting from this reality, the concept was developed, followed by the strategy of *sustainable development*, in which ecology plays a main part.

The recognition of the importance of this discipline, a large part of the population getting aware of the importance of the ecological ideas and principles, the insertion of the environmental issues in the programs of parties and governments are incontestable achievements. These brought their contribution to the development of international programs, the elaboration of some coherent normative acts and the establishment of some national and international bodies specialized in the environmental issues.

The Bern Convention (1979) played a main role in the preservation of wild flora and fauna, of natural habitats, but is mainly refers to the preservation of migratory birds.

The high level Conferences from Rio de Janeiro (1992) and Johannesburg (2002) strengthened the will of action of most countries in the environment and sustainable development field. The *Rio Declaration* highlights the principle “the polluter pays”, by which the companies and governments must assume their financial responsibilities for the damages caused to the environment.

At European level, the Gothenburg Summit in 2001, in the Agreement on a Sustainable Europe for a Better World, established a stricter goal: putting an end to the biodiversity decline in Europe by the year 2010, when the United Nations decided to celebrate the International Year of Biodiversity.

The European Commission wants the citizens to participate to solving up these problems. The studies reveal that getting people responsible and individual actions can be the main instruments to contribute to the loss of biodiversity. However, according to the results of the Eurobarometer study, “Attitudes towards biodiversity”, the Europeans do not feel well-informed on the biodiversity issue.

In the study, only 38% of Europeans declared that they knew what biodiversity meant, while 28% heard of biodiversity, but they did not know its significance. Although the large majority of people consider that the loss of

biodiversity is a serious problem, they consider that personally they will not be affected by this decline; only 17% of respondents stated that they were already affected by this problem.

To the question about the greatest biodiversity threats, only 26% of the respondents mentioned the disasters provoked by people, while 28% stated that they did not get involved in biodiversity protection, as they did not know what have to be done in order to stop it.

To another question referring to the measures that the European Union must consider as priority to protect biodiversity, 22% of respondents indicated that the concerns should focus on providing the citizens with better information with regard to biodiversity importance.

The campaign initiated by the European Commission will support this objective by getting people more responsible for the biodiversity issue and by stimulating the discussions on providing solutions on this issue. When people and organizations pay for their actions, the environment degradation will be diminished. Thus, industries will have more severe monitoring policies, and they will approach the environment with more prudence.

3. MATERIAL AND METHOD

The informative material at the basis of this article comprises many scientific reference studies, from the international and national literature, as well as a series of documents and governmental reports. As methodological tools, the analysis and synthesis of relevant information for the approached subject are used.

The demonstration of the biological diversity value and of the value of natural resources is a very complex issue, being determined by a variety of economic and ethic factors. The diversity of species can be compared with a manual explaining us how it is possible to keep the Earth alive. The loss of some species is the equivalent of tearing off certain pages from the manual. The information in the lost pages will be necessary in order to save ourselves or another species. If we are aware of this too late, the lost information will be irreplaceable.

4. RESULTS AND DISCUSSIONS

4.1. Biodiversity in Romania – main characteristics

Romania is characterized by a high biodiversity level, as regards both the number of species, habitats and ecosystems, and from the areas these occupy. Yet the recent changes in the natural landscape reveal serious threats: the intensification of agricultural activities that mainly affect the more productive areas and the abandonment of agricultural activities that take place especially in less productive areas.

Romania is characterized by a high biological diversity, both as regards the actual number of species, and the number of individuals from each species, as well as the large number of ecosystems. However, at present, many plants and animals are endangered and the landscape modifications are the first sign of environment deterioration.

As regards *the flora*, 3,700 species of plants were identified in Romania, out of which 23 are declared natural monuments, 74 are extinct, 39 are endangered, 171 are vulnerable and 1,253 are rare. Out of the estimated number of taxa identified in Romania, a significant share (about 60%) is represented by species that are typical for alpine and sub-alpine permanent mountain grasslands and meadows.

As regards *fauna*, 33,792 species of animals have been identified, out of which 33,085 non-vertebrate and 707 vertebrate species. Out of the 191 fish species, 38 have a less favourable preservation status (11 endangered species, 16 vulnerable species, and 11 rare species). Out of the 20 species of amphibians, 12 have a less favourable preservation status (3 endangered species and 9 vulnerable species). Out of the 30 species of reptiles, 5 have a less favourable preservation status (4 endangered species and 1 vulnerable species). Out of the 364 species of birds, 35 have a less favourable preservation status (18 endangered species, 17 vulnerable species); out of the 102 species of mammals, 58 have a less-favourable preservation status (19 endangered species, 26 vulnerable species and 13 rare species).

Following the inventories, it resulted an approximate number of 5,600 brown bears (60% of the total European population of brown bears – *Ursus arctos*), about 3,000 wolves (40% of the total European wolf population – *Canis lupus*), as well as 1,500 lynxes (40% of the total European lynx population – *Lynx lynx*). These species are a symbol of wild life and natural habitats and can be used to repopulate other areas in Europe where these species are under decline. The auroch, a rare animal, disappeared from the Romanian forests more than a century ago and it can be found only in reservations at present.

Natural and semi-natural ecosystems cover some 47% of Romania's national territory. A total of 783 types of habitats have been identified and characterized (13 coastal habitats, 143 habitats specific for wet areas, 196 habitats specific to pastures and hayfields, 206 forest habitats, 90 habitats specific for dunes and rocky areas and 135 habitats specific for agricultural land) in 261 areas that were investigated in the entire country.

The habitats in Romania are characterized by a certain composition of flora and fauna, components of biocenoses, and are influenced by various weather and soil factors. The weather influences, from the dry areas in the Eastern areas, to the ocean influences in the Western areas of the country, as well as the weather differences between the plain and mountain areas due to the relief altitude have determined the appearance of a large number of habitats. The chemical composition of substratum rocks (soil and underground) is another factor that determines the important variety of habitats in Romania.

Among the 27 EU Member States, Romania has the highest bio-geographical diversity (5 bio-geographical regions out of the 11 in EU) and most of these are in a good conservation condition.

The total surface of the *natural protected areas* in Romania is about 1,886,705 ha, covering about 7.83 % of the country's territory. It includes the "Danube Delta" Biosphere Reserve – 576,216 ha; 13 National Parks – 318,116 ha; 13 Natural Parks – 772,128 ha; 981 Natural Reservations – 179,193 ha, and 28 Special Avifaunistic Protection Areas with 21,052 ha.

Among these, certain protected areas are of very great interest at both national and international level:

- Danube Delta Biosphere Reserve – Biosphere Reserve, Wetland of International Importance and Natural Universal Heritage Site;
- Retezat National Park – Biosphere Reserve;
- Rodnei Mountains National Park – Biosphere Reserve;
- "Balta Mica a Brailei" National Park – Wetland of International Importance.

Besides the protected areas of national interest, in Romania, through the IBA Program (Important Birds Area/ Special Avifaunistic Protection Areas), the most important areas were identified, in order to maintain the populations of wild birds, including those of international interest or priority at Community level, as well as the migratory species. On the basis of data collected in the last 10 years, 132 Special Avifaunistic Protection Areas were identified at the level of the entire country, covering about 17% of the country's area.

An important part of the national territory is covered by the *EU Network of Nature Protection Areas Natura 2000*. Among the 198 types of European habitats, out of which 65 are priority habitats, 94 types of habitats can be found in Romania, out of which 23 are priority habitats at EU level and require the designation of Special Areas of Conservation (SAC) for their preservation.

So far, in Romania, 108 SPA sites (Special Avifaunistic Protection Areas) were identified as Natura 2000 sites, covering about 11.89% of the Romanian territory and 273 SCI sites (Sites of Community Importance), covering about 13.21% of Romania's territory.

The protection of these sites of Community interest was imposed at national level, according to the provisions of Government's Emergency Ordinance no. 57/2007 on the regime of natural protected areas, conservation of natural habitats of wild flora and fauna, by the following normative acts: MMDD Order no. 776/2007 SCI declaration and Government's Decision no. 1284/2007 for SPA. The area of the sites included under Natura 2000 European Network covers about 17.84% of the national territory.

4.2. Biodiversity conservation on agricultural land

The High Natural Value (HNV) farmland in Romania covers a significant part of this country's UAA, yet both the abandonment of farming activities and agriculture intensification represent a threat for their proper conservation.

In Romania's case, an important step was made in order to identify the high natural value farmlands, by using methods offered by the studies currently developed. The target was to identify the areas characterized by rich presence of semi-natural grassland, generally associated with the existence of a high diversity of species and habitats. The result of the classification indicates that for the time being about 2.4 millions hectares of semi-natural grasslands can be classified as agricultural land with high natural value.

Semi-natural grasslands represent the most valuable ecosystems of the agricultural land areas, however giving up certain traditional agricultural activities (haymaking, grazing) in certain areas led to natural landscape degradation and modification. It is mainly in the mountain areas that the abandonment of agricultural activities can be noticed with effects upon the semi-natural grassland. At the same time, in some other regions of the country, the meadows are threatened by the intensive agriculture system, by which the large and consolidated agricultural areas put pressure upon the environment components, mainly on biodiversity.

Moreover, in certain areas of the country classified as IBA, birds can be found that have a large share in the EU bird population, and in certain IBA birds considered as vulnerable, endangered or rare are present, the number of individuals from these bird species being very small. The avian influenza was a threat in recent years, affecting wild birds, especially in areas with a high presence of migratory birds such as Danube Delta.

In general, it can be stated that populations having farmland and forest as habitats are well preserved and they are not threatened by major pressure and risk factors. This is generally due to the large extensive farming present in Romania. However, there are also areas on which the pressure of the human activities results in an unfavorable impact as regards the preservation of wild species.

Romania has an important genetic basis, both as regards crops and domestic animals, in close connection to the traditional agro-systems. As regards *agro-biodiversity*, Romania is one of few European countries where traditional agro-systems represent significant pools from the point of view of the genetic diversity of crops and livestock, which were preserved at the place of formation and development (i.e. *in situ*).

Romania is interested to preserve a series of local species of domestic animals, specific to certain regions, which are in danger of extinction. The catalogue of domestic mammals includes 79 breeds (out of which 26 are still active, 19 are endangered and 34 are extinct). It has to be mentioned that many local species (Turcana, Tigaia, Carpathian Goat etc.) have a reproduction system in local communities (reproduction isolation in a certain area, but without a genealogic register and official control of production, the selection being done according to owners' preferences). As regards the crop cultivar, there are also local endangered populations, distributed in many regions. Orchards also have a great importance.

4.3. Biodiversity conservation on forest land

Romania has a significant forest diversity and is one of the few European countries that still have virgin forests. Many of these forests play important environmental roles and represent leisure areas, while having an important economical value at the same time.

Out of the 6,742.8 thousand hectares of forests, the coniferous species account for 29%, and 71% broadleaves. At present, 65% of forests (i.e. 4.2 million hectares) are into public ownership and administered by the National Forest Administration, and the remaining part is into private ownership. Forest land into private ownership is characterized by relatively small and fragmented exploitations, which is a constraint to reaching the economic potential of these areas in a sustainable manner.

Responsibility for controlling illegal tree cuttings has been vested in the Territorial Inspectorates for Forestry and Hunting, but while it is possible to regulate activity on the NFA's property or the property of private individuals located in national parks, extending regulatory control to private forest holders beyond national parks is a significant challenge.

Regarding the relationship between forestry and biodiversity management, Romania is one of few European countries that still have virgin forests – about 300,000 ha, mainly located in the mountain areas. All forests have multiple functions, including wild life habitats (especially those situated in potential Natura 2000 sites), soil and water conservation and other protection functions, while also providing important environmental services with a positive impact for human communities. Where these values are considered to be of high or crucial importance, forests may be classified as forests with high conservation value. Over 9% of forest land area is located in the protected areas, its management targeting biodiversity conservation.

5. CONCLUSIONS

Biodiversity plays an essential role in supporting life and means of existence, the economic and social development and people's well-being, as well as in reaching the development objectives of the millennium by 2015.

Biodiversity erosion is a global phenomenon, which cannot be hidden. It is influenced by the exponential demographic growth and by the forms and rates of the socio-economic systems development. Yet its approach at global level is undermined by the gaps and economic and social inequities present in the world, impeding the implementation of the Convention on Biodiversity from Rio de Janeiro (1992), which promoted a series of principles based on economic, social, ecological, genetic, scientific, cultural, aesthetic, and recreational potential of

biodiversity and acknowledged the sovereign right of each nation to defend and preserve its existing species and to establish its network of protected areas.

Scientists are almost sure that the main guilt for this loss is born by the human factor, and under these conditions, we are aware that a greater loss will involve a higher cost. While the limits are still to be defined, it is clear that the present biodiversity diminution rate endangers our future. At the same time, people became aware that investments in biodiversity and ecosystems restoration can be efficient means to adapt ourselves to the climate changes and other challenges that might appear, such as food security.

The efficiency of the conservation measures is threatened by global processes and phenomena, practically out of control now: acid rain, greenhouse gas effect, the hole in the ozone layer, water eutrophization, soil nitrification and acidification, desertification.

In Romania, the biodiversity conservation is to be found in normatives which transpose the European directives on biological diversity and wildlife, as well as the directive on landscape preservation. The change of people's mentality, the professionalism and improvement of the quality against the background of the inspection and control in the field of the biodiversity will lead to a responsible approach to the tasks of the environmental commissioners, of the local administrations, so that people's interests and nature integrity are harmoniously blended.

The environment conservation activities, the sustainable use of natural resources and the ecological reconstruction of the deteriorated systems represent an alternative of the contemporary world. It is more and more obvious that the social, ecological and economic problems are interdependent and by getting involved in this work we fulfill our duty for the next generations.

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