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(Eds.)

Nature Conservation
Concepts and Practice

With 113 figures, 53 in colour, and a vegetation map

Springer
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SHORT REVIEW AND CONCLUSIONS OF THE
INTERNATIONAL SYMPOSIUM
(“Conceptions and Methods of Nature Conservation in Europe”,
Cluj-Napoca, September 16–19th, 2004)

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1. General review of the symposium
Organized by the Chair of Taxonomy and Ecology of the University „Babeș-Bolyai” (Cluj-Napoca, Romania), in co-operation with the Romanian Society of Phytosociology and the International Federation of Phytosociology, this international symposium was dedicated to Prof. dr. h.c. Franco PEDROTTI (University of Camerino, Italy), on the occasion of his 70th birthday.

Drawn from four continents, the 84 participants (of whom over 50% were young people under 35 years old) represented 12 countries: Belgium, Bolivia, Brazil, Germany, Italy, Japan, Poland, Romania, Russia, Slovenia, UK and USA, thus covering a large part of Earth’s bio-geographical regions.

The opening ceremony took place in the University’s imposing Aula Magna and included two welcome speeches on behalf of the Rector and the President of the Nature Monument Committee, a Laudatio to Prof. F. Pedrotti and a short folk music recital. The symposium programme was composed of two plenary sessions, four short communication sessions (divided into two sections: A – General aspects of nature protection; B – Nature conservation in practice) and a poster session.

The seven plenary lectures, presented by R. Pott (Hannover, Germany), E. Box (Athens, USA.), K. Fujiwara (Yokohama, Japan), N. Boșcaiù (Cluj-Napoca, Romania), R. Wittig (Frankfurt, Germany) and R. Canullo (Camerino, Italy) were much appreciated by the audience. Many discussions and debates were stimulated by the 29 oral communications, the 18 posters and the field excursion to the Suatu Natural Reserve, as well as the visit to the Village Museum and the Arcalia Centre.

Finally, we must mention the presence, during the last two days, of the Santa Lucia Choir of Magras (Val di Sole, Trentino, Italy), who delighted participants with their mountain songs.

2. Conclusions of the symposium
Without giving authors’ names and the hierarchy of importance of the issues presented and debated, the conclusions of the symposium can be summarized as follows:
a. A clearer definition and distinction of the notions protection, conservation, ecological restoration and ecological reconstruction is needed both for the establishment of specific strategies and methods of biodiversity management (preservation and/or exploitation), and the use of a common and accessible language for all specialists in environment-related fields.

b. Floristic and faunistic studies, far from being obsolete, should be carried out specifically by habitat type and should employ – in addition – relevant methodology from biochemistry, molecular genetics, ethology, etc. This approach, beside its theoretical component, can be a solid scientific basis for implementing appropriate management decisions in protected areas and other important sites for biodiversity conservation.

c. The estimation of biodiversity should be performed using widely accepted protocols and the resulting indices should always be interpreted by taking into account environmental variables.

d. The continuation of phytosociological investigations and syntheses is indispensable for hierarchical classification and characterization of habitat types, as well as for the identification of new important areas worthy of protection or conservation. It has been stressed that a diversification of approaches to vegetation study is needed through large-scale GIS mapping and by revealing the adaptive strategies of target, key or dominant species (the latter scenario achieved by the co-operation of phytosociologists with specialists in population ecology, eco-physiology and conservation biology).

e. A multi-level approach to land planning and assessment through five principal components – ecological, economic, social, cultural and political – is needed. In this context, geosynphytosociology can play an important role in the delimitation of landscape units.

f. The modern management of protected areas cannot provide universal ‘recipes’, but all actions must fit within local conditions, ecosystem type, biogeographical region, as well as, in case of large reserves and national parks, with the functional zone.

g. The monitoring of species and ecosystems should be proceeded by complex and differentiated investigations, in order to obtain unbiased and interpretable parameters.

h. Ecological restoration and reconstruction have proved to give better results when using native species, both activities being necessary in many sites for either economic or conservation reasons.

i. An important tool for conservation actions is represented by the elaboration, at regional and/or local level, of the so-called ‘naturalistic catalogues’, which include the most vulnerable species and their habitats along with sites that are particularly species-rich (‘hot spots’). To a certain extent, the Nature 2000 network accomplishes this task.

j. For the purpose of ex-situ conservation, botanic and zoological gardens have an increasing role, but the usefulness of co-operation with different institutions to assess effective conservation actions has been stressed. Taking as
an example threatened vernal and pre-vernal species, it should be possible to involve local people in their conservation under the guidance of specialists from botanic gardens.

k. Regarding the much-discussed future of small reserves, the field excursion to Suatu brought new evidence that these can accomplish the conservation role for which they were created; however, there is a need for a correct management and the inclusion of a buffer zone, in which the land should be used traditionally.

l. Universities and research institutes must change their strategies through effective co-operation with all institutions and organizations interested in or responsible for the conservation of biodiversity and/or the improvement of environment legislation. The production of specialists through post-graduate studies has proved to be beneficial, but it cannot be achieved without the practical experience of teachers and without effective international collaboration.

m. Starting from the celebration of contributions brought about by some pioneers of the environmental movement, it has been stressed that ‘history of science’ can represent a real source of inspiration for current and future studies and actions.

n. Last but not least, the importance of scientific meetings for consolidating inter-human relationships was acknowledged; this is a good premise for the constitution of regional or continental teams of scientists and, implicitly, for more successful research funding.

Presenting these conclusions, we express our satisfaction at the interest and direct involvement of young people in conservation actions (as demonstrated by their considerable participation to this symposium). We are confident that the demands of all those interested in the destiny of our planet will be successfully fulfilled. The high level of similarity between the above conclusions and the aims declared in BioPlatform Romania is a proof of this convergence of conservation actions.

The publishing of these symposium proceedings is an opportunity for scientists and environmentalists to learn about a panoply of nature conservation issues (theoretical aspects, environment legislation, biodiversity evaluation, case-studies, etc.) as well as to enrich their reference database. But, maybe the most important thing is that this volume can represent for all of us a prompt to do something towards the preservation of the wonderful creations of nature.

The contributors are responsible for the content of their papers included in this volume. The manuscripts were received by the deadline set on December 31st, 2004.
Professor dr. *doctor honoris causa plurime*

FRANCO PEDROTTI
LAUDATIO TO PROF. FRANCO PEDROTTI

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Dear colleagues,
Ladies and gentlemen,

I believe few scientists have received so many plaudits as Professor Pedrotti. I want to recall only some of them, for instance those signed by Konrad Buchwald, Fabio Cassola, Luigi Portoghesi, Piergiorgio Corbetta, Vasile Cristea and Constantin Toma. That is why my talk will be brief and focus more on facts than opinions. I am not going to emphasize Prof. Pedrotti’s scientific achievements, merely his contribution to nature conservation and his human character.

During a prodigious 45-year scientific career, Prof. Pedrotti has published 336 articles, with 76 papers on land management and planning, and 80 on nature conservation. He has organized 22 symposia on vegetation science and 18 meetings on nature protection. He has acted as an associate editor of 26 journals and has been editor-in-chief of four journals (Braun-Blanquetia, Documents Phytosociologiques, L’Uomo e l’Ambiente and La Riserva di Torricchio).

His interest in natural sciences and, especially, nature protection first emerged during his time at high school, when he frequented the Natural History Museum of Trento. On these occasions, he was in contact with famous botanists such Giuseppe Dalla Fior, Benedetto Bonapace and Vittorio Marchesoni. Later, when he was a college student, he met Renzo Videsott (director of the Gran Paradiso National Park) who had a determining influence on his development as a nature conservationist.

Apart from his numerous papers, Prof. Pedrotti’s commitment to the cause of nature conservation emerges from his various practical actions. He is an active member on the scientific and management committee of several national parks (Abruzzo and Sibillini) as well as regional parks in Trentino Province. Prof. Pedrotti is the founder of Torricchio Natural Reserve and Arboretum Apenninicum, but he has proposed the creation of many other protected areas. Concerning this, there is even a saying: “the land on which Prof. Pedrotti puts his foot to perform a study becomes unavoidably a natural reserve!” Prof. Pedrotti has also been an innovator in terms of university curriculum by creating in 1998 a post-graduate school of management of natural environment and protected areas; and more recently, a Master’s degree in protected area planning and management. I prefer to make no further comment on this topic, but simply cite the words of James Sievert: “The Titan behind the emergence of conservation history has not been a historian, but a botanist from the University of Camerino, Franco Pedrotti. More than just
the dean of conservation history, Pedrotti is the high priest, housing extensive archives collected over a five-decade career as a biologist and conservationist”.

Prof. Pedrotti is one of the most unselfish scientists I have ever met. He has been always available to share his experience and to collaborate with other colleagues such as Paul Ozenda from Grenoble, Jean-Marie Géhu from Paris, Janusz Falinski from Warsaw, Maximo Liberman Cruz from La Paz, Marcello Martinelli from Sao Paolo, Nicolae Doniță and Doina Ivan from Bucharest, and Vasile Cristea from Cluj-Napoca.

It is almost impossible to quantify how much he has given to students, co-workers, colleagues, and friends in terms of time, patience, and financial, logistical and moral support. Prof. Pedrotti may be proud of the high number of pupils he has supervised. The eldest are now professors at various universities, such as Eduardo Biondi (at University of Ancona), Renato Gerdol and Filippo Piccoli (University of Ferrara), Roberto Venanzoni (University of Perugia), Salvatore Leonardi (University of Catania), and Roberto Canullo, Ettore Orsomando, Antonio dell’Uomo and Beatrice Bellomaria (University of Camerino). On the other hand, Prof. Pedrotti has hosted in Camerino many young scholars from poor countries to undertake research (from Somalia, Algeria, Albania, Bolivia, Brazil, Georgia, Bulgaria, Poland, ex-Czechoslovakia and, certainly, Romania). Prof. Pedrotti has been able to overcome any prejudice and bureaucratic impediment, probably because of his generosity and open-minded spirit. Sometimes I think Prof. Pedrotti’s name – Franco – is no accident but pre-destiny, given his frankness with respect to other people.

In spite of his hidden sentimentality, Prof. Pedrotti has proved all his life to be a hard worker and most tenacious in achieving new and new challenging goals. He is such a tough person that on the occasion of centenary celebrations dedicated to the Italian Botanical Society, whose president at that time was Prof. Pedrotti, some colleagues said he would also organize the bi-centenary festivities!

It is hard to distinguish between his private life and professional career, because his existence has been dominated by love: love for family, friends and poor people, love for nature and his work. For his contribution to science, for his effective work on nature conservation and for everything he has given to other people and future generations, I believe Prof. Pedrotti fully deserves our respect, gratitude and warm applause.
I

PROEMINENT PIONEERS
OF NATURE CONSERVATION
TRADITIONS IN ROMANIAN SOZOOLOGY

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Abstract: Starting from the premise that any field requires knowledge of the ideas of its predecessors, this paper points out the contributions of three generations of representatives of the Cluj School to nature conservation. Thus, the careers of A. Borza and E. Racoviță, who laid the theoretical and practical foundations of this movement, are presented; then, the difficult mission incumbent on E. Pop under the communist regime is emphasized; and the paper ends with N. Boșcai, their disciple, who at the impressive age of 80 still ennobles us with his rich experience.

Introduction
A decade ago, at the United Nations Conference on Population and Development (Cairo, September 5–13, 1994), it was again demonstrated and accepted that the notion of „planetary citizenship” is integral to the equation: population – environment – development. These components cannot be considered in isolation, in the same way that the equation itself does not concern only present generations but, more especially, those of the future [30]. In fact, today we speak of a new spirit, a new collective mentality, and global and pan-European efforts in the field of sustainable development and protection [17].

Then, within the framework of the World Summit on Social Development (Copenhagen, 6–15 March 1995), it was emphasized that development, beyond economic growth, concerns the welfare of populations, and that it should first and foremost serve the cause of the whole of humanity and not just a part [31].

At the same time, it is important to be aware of the fact that nature reserves can only accomplish their role (in the current continental and global context) if they are interconnected within networks of protected areas [18], also considered at national and continental level.

This general framework also includes present concerns for the conservation of nature and biodiversity, whose value and importance no longer need to be mentioned, having been accepted already by national and international authorities.

Although Sozology, as a discipline in course of consolidation, has its roots in the second half of the 20th century, its foundations were laid in the first half of that century, and at present it is being enriched from a conceptual and methodological point of view. However, as in any construction, where the foundation is extremely important because depending on it one can build bigger and better, in conservation it is important to know how our predecessors, those who laid this foundation, thought and acted. And the exhortation of the strategy of sustainable development – “Let’s think globally, let’s act locally!” – also obliges
us to know what has been done at international level in the field with which we are concerned, in order to act within a regionally defined plan.

These are the premises of this historical approach; this is why we should like to place the four personalities of the Cluj biological school (A. Borza, E. Racoviță, E. Pop and N. Bociaiu) among the “citizens of the planet”, of which Professor F. Pedrotti (to whom this Symposium is dedicated) has earned – by his work, by actions organized and by the friendship manifested towards the naturalists of the five continents – a place of great honour.

A. Borza, the true champion of the movement for nature protection in Romania

Without any doubt, none of the Romanian naturalists of yesterday and today had the vision, energy and skill of A. Borza in organizing scientific and cultural institutions or in founding a new scientific school. In order to reinforce our statement, we add here the words of the great Academician E. Pop: "The organization achievements of professor Borza are the best known to the public, due to their concrete, permanent and spectacular character" [22, p. 15]. We owe to A. Borza the creation of the botanical garden of Cluj-Napoca (a pearl of this part of Europe); he was the founder of the Romanian school of phytosociology; he also gathered the Romanian ethnobotanists into a movement that still breathes his own spirit; and most importantly, he organized and gave impetus to the nature protection movement in our country. Referring only to this last aspect, we shall emphasize the following contributions:

- Before World War I, he increased the awareness of the Transylvanian public, as well as that of European specialists, regarding the need to protect certain rare plant species (e.g. *Leontopodium alpinum*, *Saponaria bellidifolia*), centuries-old trees or “ancient nature” areas of preservation (e.g. the Craiului plain from Belioara).

- After he came to the young Romanian university of Cluj (in 1919), he became involved in the formulation of the law project of the agrarian reform, requiring that certain territories be "completely used for the benefit of science". In this way he created the premises for the foundation of the first natural reserves, first in Transylvania, then throughout Romania. The political changes of that time led to the exclusion of the article concerned from the law, but a total of 27 areas remained under the custody of the Cluj Botanical Garden and became, after more than a decade, officially constituted natural reserves.

- It is interesting to note that, in 1925, speaking of the study of vegetation in such reserves, A. Borza also proposed the delimitation of "permanent squares for the exact study of succession" [3, p. 11], an approach which today has become a rule in the ecological management of these areas.

- In addition to some popular articles, in 1924 he elaborated a real "programme manifesto" for "nature protection in Romania", considered by us as a "synthesis rich in information, practical by its advanced proposals and visionary..."
Part I – Proeminent pioneers of nature conservation

by the concepts presented” [15, p. 11]. Of the multiple aspects developed by A. Borza in this “programme manifesto”, we wish to emphasize the fact that, ever since that time, he saw the need to involve the international community in such protection activity, which today seems perfectly natural. Here is one of his statements, which we would strongly recommend to the politicians of the contemporary world: ”Science belongs to everyone, the right and the duty to study nature belong to the whole humanity, consequently the control of natural monuments is an international duty of everyone” [1, p. 18].

Although published in a popular journal, another article of that year launches two important ideas for today: ”architectural pollution” and ”the setting up of reserve networks”. In this article, the author urges us”...not to spoil beautiful landscapes by ugly and inadequately placed buildings” and ”...to create a network of natural reserves across the whole country ...” [2, p. 1];

- He was aware that, without a legal base, any action for the protection of nature was destined to fail, which is why in 1925 he submitted a law project to the Ministry of Domains, and in 1927 he published an article in which he stated: ”So, we need before anything else a special law for nature protection...” [4, p. 10]. Then, he emphasized (which we consider to be a novel concept) that the aim of setting up reserves and parks was to ensure ”...the protection of special life environments...” [4, p. 5], in other words habitat types! His proposals also concerned some practical aspects, like the organization of a special commission at national level (with subcommissions at regional level), as well as of an ”office” which ”...will be concerned with the technique and carrying out of effective protection” [4, p. 11], etc.

- As the law proposed by him was not considered for discussion in Parliament, A. Borza organized in Cluj the first Congress of Romanian Naturalists (18–21 April 1928), convening a conference on nature protection. His exposition had the general scheme of the paper from 1924, developed with the ideas suggested by his visit to the USA (in 1926), with what he stipulated in the law project and with some new aspects, referring to: 1. the education of the public, action in which ”The priests of all cults will assist the naturalists in this action” [5, p. 26], and; 2. taking into consideration of nature protection in all standard activities and actions of central and local administrations. In this sense, he stated: ”We will have to insist that all laws and actions of our State administration be impregnated with the principles of Nature protection... Thus, we will create an atmosphere of sacred respect for ancient Nature, which will be the strongest source of a well understood patriotic feeling and the feeling of universal cultural solidarity, which should animate humanity in the future” (idem). Today, we witness such solidarity at both international and national level, but only after a delay that has significantly affected the ecological balance in many areas of Earth.

- Legislative success was accomplished in July 1930, when the first Romanian law „for the protection of natural monuments” appeared, to which new articles and two regulations were added in 1933. All this allowed A. Borza to plan
new courses of action, among which was the fulfilment of his dream to create the first national park in Romania. This was achieved in March 1935, when about 10,000 ha from the Retezat Mountains became "...sacred land for science...a huge sanctuary of Nature..." [6, p. 7]. Today, this national park (with an area of 38,047 ha) is included in the international Biosphere Reserves network, and some naturalists (or pseudo-naturalists!) who have not tried hard enough to inform themselves adequately have attributed (in tourist guides and maps) to other people the credit for having created this first national park. Official documents, starting in December 1923, can be consulted in the journals of the Cluj Botanical Garden (Bul. Grăd. Bot. Muz. Bot. Univ. Cluj, IV, 1924) and the Commission of Natural Monuments (Bul. Com. Mon. Nat., XI, 1-4, 1943).

- The resolutions of the Congress of Cracovia (December 1929), elaborated by well-known names in natural sciences from Poland, Czechoslovakia and Romania (K. Domin, W. Szafer, W. Goetel, J. Komarek, M. Siedlecki, A. Borza, etc.) propose, among others, the creation of "transfrontier parks and reserves", another direction of action which is increasingly gaining ground and is regarded by many naturalists as something new.

- A. Borza did not neglect the varieties of cultivated plants, especially traditional varieties, campaigning for setting up living collections of these local varieties or land races "...especially for future times, when, following the "standardization" of production, they will be forgotten and will disappear...", suggesting that, in this way "...we keep... a living archive of our cultural history and we consider a duty of honour to do this in the interest of science" [9, p. 6].

- More than six decades ago, A. Borza drew our attention to the danger of "aesthetic pollution" by various advertisements: "Industrial and commercial advertisements are still rare...but they are diabolically placed where nature organically repels such inadequate settings" [7, p. 4]. But who is now approaching this problem, except for some ‘old fashioned’ naturalists and architects?

- After his brutal exclusion from the Botanical Institute (in 1947), Romanian naturalists would lose the source of ideas and enthusiasm of this great naturalist, trying devious roads in the new (!) society which some were intending to build. A. Borza would only write after his partial rehabilitation (1953), but he would no longer be allowed to be directly involved in teaching and organizational activity.

Of his writings from this last period, we wish only to mention that published in 1959, in the journal Naturaliste Canadien. Again, he would suggest a way (considered by contemporary conservationists as a great discovery!) via the closing statements of the chapter on "nature protection": "But now, when the danger of the rapid disappearance of these ethnobotanical notions and practices....., we become more and more preoccupied with this circle of para-botanical events, especially in combination with ethnography and economical technical research work... Then, we should combine the millenary experiences and the wisdom of our forefathers with the new methods of utilizing the endless gifts of
the sacred earth of our country in order to grant a better and happier living to our descendants” [8, p. 110].

E. Racoviță, a vanguard theoretician

After he travelled in the boat ”Belgica” across the Antarctic seas, after he worked for almost two decades in France, falling in love with the world of caves, E. Racoviță was appointed a professor at the University of Cluj, where he organized the world’s first Institute of Biospeleology. At that time a celebrated scientific personality, he presided over the Congress of Cluj (in 1928), and in 1934 offered Romanian specialists a ”guide” to the definition, classification, role and management of ”natural monuments”. Subsequently published in French (in the Bulletin of the Society of Biogeography), this guide preceded by more than a decade that of Bourdelle (1948), considered an authoritative reference by IUCN. Whether it was known or not by specialists, Racoviță’s first guide in the field of nature protection presents:

- A definition of natural monuments, considered as ”...all prehistoric stations, living beings, underground deposits and human works which, due to their scientific, artistic, picturesque and legendary interest, deserve to be conserved for the present and future use and which are considered as such by the law” [26, p. 4-5];
- A classification of these monuments according to their purpose and use (natural reserves, scientific reserves, tourist reserves) and according to their nature: station reserves (national parks, forest reserves, ornithological shelters, etc.), reserves for geographical and geological formations, reserves for mineral, paleontological and archaeological deposits, protected species and individuals;
- A methodology regarding the declaration of an area as a reserve in which, after obligatory detailed studies, the land area will receive a temporary status of protected area, period during which the efficacy of the proposed protection measures, the social and economic impact (in relation to scientific, touristic and aesthetic benefit), and the practical possibilities of ensuring protection will be monitored;
- An extremely modern outlook, stating that ”...an ideal protection can only be achieved if a species, plant or animal is protected in an extensive reserve, in its original biotope, in other words, in its normal, consequently necessary and sufficient habitat” [26, p. 6].

In the same year that Borza was ”forbidden”, E. Racoviță died, refusing special treatment compared to his fellow citizens, under conditions of cold, food deprivation and under the terror of change!

E. Pop, in the cobweb of the socialist society

A disciple of the two professors presented above, E. Pop remains in Romanian science as the founder of the school of palynology, plant cytophysiology and, certainly, as a militant proponent of nature protection. After the
political changes of 1947, for almost a decade he did not escape the attacks of those who wished to climb up the university hierarchy according to political rather than scientific criteria.

We estimate that E. Pop started to get officially involved in the field of nature protection with the publication (in 1942) of the work ”The forests and our national destiny”. Considering the forest not only as a “capital of richness and beauty”, with decisive economic and ecological implications, but also as a “spiritual necessity” for certain peoples, he defined it in an unequalled manner: ”...a collective being, the most magnificent of all that we know, which palpitates with its own life, made up of millions of individual lives...assimilated into a harmonious appearance and a unitary spirit, which impresses in a stunning and unique way the human spirit...” [19, p. 8]. After 39 years, he would again turn to research, protection and conservation of forests, urging us all to disturb ”... the great natural biological balance only to the extent to which its restoration is possible by the native powers of nature” [21, p. 498].

After legislation in the field of nature protection was changed in the „new Romania’ (1950 and 1954), and the Commission of Natural Monuments passed under the authority of the Academy, E. Pop also approached the problem of the conservation of peat bogs, both oligotrophic and eutrophic. The first category ”is not only perfectly defined from a physiognomic, economic, ecological, floristic and biocenotic point of view, but its individuality implies a dimension that other formations do not possess: depth. The living bog forms a common body with its deposit,... which is nothing else but the complete succession of the conserved mummies of the ancestors of the present living flora...” [20, p. 58]. Regarding the second category, E. Pop states: ”...intra-Carpathian eutrophic bogs should be considered among the most prominent relict-conserving formations that we know in the Central European floristic area [20, p. 79].

Taking the leadership of the Commission of Natural Monuments in the early 1960s, E. Pop gave an impulse to the setting up of new natural and scientific reserves, as well as of two natural parks; he ensured rhythmicity in the publication of the specialist journal; he developed collaborative relations with foreign specialists; he initiated the organization of itinerant conferences entitled ”Nature protection on ecological grounds”; he offered the public a fine synthesis of the Romanian reserves [24]; and he co-ordinated the realization of the project for a new law (Law for the Protection of the Environment, no. 9/1973).

He ended this activity with a swan song, entitled ”Glorification of the Carpathians”, published posthumously in 1975, in which he draws our attention to the fact that natural monuments are distinguished from monuments of human art ”...by the monumentality of vast, immense proportions, which impresses in an inimitable way the spirit, all the more so as a natural monument is never a finished piece, but is organically integrated, without borders, by soft or wild lines, but natural by excellence, into more and more endless aspects” [23, p. 7].

Throughout this whole activity of protection, he had to make extensive use of his diplomatic spirit and support any initiative in as a detailed a manner as