Biodiversity Loss and Public Opinion: What Is the Situation in Central Europe?

Anna Kalinowska

One of the main reasons the World faces a global environmental crisis is the belief that we human beings are somehow separate from the natural world in which we live, and that we can therefore alter its physical, chemical, and biological systems without these alternations having any effect on humanity.

Kofi Annan, former Secretary-General of the UN (Annan, 2008, p. VII)

In myriad ways humanity is linked to the millions of other species on this planet. What concerns them equally concerns us. The more we ignore our common health and welfare, the greater are the many threats to our own species. The better we understand and the more we rationally manage our relationship to the rest of life, the greater the guarantee of our own safety and quality of life.

Edward O. Wilson (Wilson, 2008, p. VIII-IX)

1. Introduction

Among the challenges faced by contemporary civilization, globally as well as on our continent of Europe, the alarming biodiversity loss seems to be one of paramount importance, but what should be a cause for deep concern is very much underestimated in public perception.

As signatories to the United Nation Convention on Biological Diversity (accepted during UN Conference on Environment and Development – Earth Summit in Rio de Janeiro 1992) all European countries individually and the European Union committed themselves to the protection of biological diversity. The Convention defines biological diversity as "the variability among living organisms from all sources including *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems" (United Nations, 1992). In other words, as the term is described by Edward Wilson, known as the main specialist and propagator of the idea of biodiversity: "the variety of organisms considered at all levels, from genetic variants belonging to the same species through arrays of species, variety of ecosystems, which comprises both the communities of organisms within particular habitats and the physical conditions under which they live" (Wilson, 1992, p. 393).

Biodiversity matters for all spheres of human life and activity and yet biodiversity loss has accelerated to an unprecedented level, both in Europe and worldwide. The consensus of scientists is that the current global rate of species extinctions is on average somewhere between 100 and 1,000 times greater than pre-human levels (the natural background extinction rate) and that we are moving towards an extinction rate that is on average 10,000 times greater. (Pimm, Alves, Chivian, & Bernstein, 2008, p. 18; Reichholf, 2009, p. 88). The mismanagement and destruction of ecosystems and over--exploitation of species is ongoing around the world. It lowers the quality of the planet's global and local resources and destabilizes the physical environment. On many occasions it can hasten the spread of human infectious diseases and invasive enemies of crops and forests on which our well-being depends. In addition, the exploration of biodiversity is affecting ecosystem services, i.e. benefits that people can obtain from ecosystems such as those which are essential for life (e.g. food, clean air and water) or those which improve our quality of life (e.g. recreation and a beautiful landscape). The condition of most services showed either a degraded or mixed status across Europe (Harrison *et al.*, 2009). There is enough evidence to certify that biodiversity loss is an enormous challenge in the EU. The EU specific answer for loss of biodiversity is the European network of nature protection areas known as the Natura 2000 Network (Natura 2000 Network, 2014). It is clear that biodiversity conservation, especially on the sites of Natura 2000, cannot be achieved without the widespread engagement of society as a whole, and engagement cannot be achieved without public knowledge of biodiversity issues, even on the basic level. With this in mind the European Commission ordered the Flash Eurobarometer survey asking EU citizens to clarify how familiar they are with the term "biodiversity", the concept of biodiversity loss and Natura 2000 Network. The report from current survey (European Commission [EC], 2013) presents comparative data from twenty-seven individual EU States, and a mean value for the EU as a whole. As the results obtained from individual states are presented in the report without references to the regions it can be interesting to answer the question: is the level of awareness and knowledge about biodiversity and Natura 2000 in central european countries significantly different than in the other EU countries? If so, what are the reasons for such differences? Do people agree or disagree that the EU should better inform citizens about the importance of biodiversity? At least better information about biodiversity and its links with Natura 2000 among the priorities of EU is an important factor for building public interest and support for the EU Biodiversity Strategy to 2020. One of the most sound EU

information activities was performed on the occasion of The International Year of Biodiversity 2010. Such a practice in Central Europe was illustrated by examples of the campaign conducted in Poland by the University of Warsaw's Centre for Environmental Studies and Sustainable Development and project BEAGLE – educational initiative undertaken together by several central european countries.

2. The state of biodiversity in Europe

To discuss the status of biodiversity in the European Union and the Europeans' perception of it, particularly in Central Europe, the general picture of European nature and its threats is needed.

The EU's Member States stretch from the Arctic Circle in the north to the Mediterranean in the south and from the Atlantic coast in the west to the Pannonian Steppes in the east – an area containing a great diversity of landscapes and habitats and a wealth of flora and fauna. European biodiversity includes 488 species of birds (International Union for Conservation of Nature, 2010), 260 species of mammals (Temple & Terry 2009), 1,151 species of reptiles, 85 species of amphibians, 546 species of freshwater fish (Kottelat & Freyhof, 2007) 20,000–25,000 species of vascular plants (Euro+Med PlantBase, 2011) and well over 100,000 species of invertebrates (Fauna Europaea, 2013). Europe has arguably the most highly fragmented landscape of all continents, and only a tiny fraction of its land surface can be considered as wilderness. For centuries most of Europe's land was used by humans to produce food, timber and fuel and provide living space, and currently more than 80 % of land in Western Europe is under some form of direct management (European Environment Agency [EEA], 2007). Consequently European species are to a large extent dependent upon semi-natural habitats created and maintained by human activity, particularly traditional, non-invasive forms of land management. These habitats are under pressure from agricultural intensification, urban sprawl, infrastructure development, land abandonment, acidification and eutrophication. Many species are directly affected by overexploitation, persecution and impact of alien species, as well as climate changes which poses an increasingly serious threat in the future (van Swaay et al., 2010). Europe is a huge, diverse region and the relative importance of different threats varies widely across its biogeographic regions and countries.

Although considerable efforts have been made to protect and conserve European habitats, decline and the associated loss of vital ecosystem services (such as water purification, crop pollination and carbon sequestration) continues to be a major concern in the region (van Swaay *et al.*, 2010). Currently almost 25 % of European animals face the risk of extinction. For example, nearly one in sixth (15 %) of Europe's mammalian species is threatened and a further 9 % are close to qualifying for threatened status. This proportion is even higher for marine mammals – six of the twenty seven species (22 %) versus 14 % of terrestrial species (Temple & Terry, 2007). By comparison, 13 % of European birds are threatened (BirdLife International, 2004). Despite the lack of good trend data from many countries, the results show that about a third of European butterflies species suffered a decline in their populations over the last 10 years and 9 % are threatened (van Swaay *et al.*, 2010). According to the International Union of Conservation of Nature some of 21 % of Europe's Vascular plants species and half of the continent's Vascular endemic plants are in danger of extinction (EC, 2007b, p. 3).

At present only 17 % of the assessed habitats and species are in favorable conservation status. Most of the Europe's ecosystems are now assessed to be degraded. Today nearly 30 % of the EU-27 territory is considered to be highly fragmented. Europeans currently consume more than twice what the EU's land and sea can deliver in terms of natural resources and in consequences 88 % of the fish stock is over-exploited or significantly depleted (EEA, 2010). Although action to halt biodiversity loss requires money, the cost of inaction is expected to be even higher. Biodiversity loss is in fact very costly for society, particularly for sectors that depend heavily on ecosystem services. For example, within the EU as a whole, the estimated economic value of insects' pollination is 15 billion ϵ annually (EC, 2011).

If we concentrate on Central Europe, i.e. the seven Member States of Poland, the Czech Republic, Slovakia, Hungary, Slovenia, Austria and Germany, it is worth stressing that, obviously, all the problems and threats to biodiversity can be observed there, too. Although the situation of biodiversity and its public perception differs from country to country there are some commonalities due to a similar historical past. Austria and Germany are "old EU members" and politically belonged to "the West". Poland, the Czech Republic, Slovakia, Hungary and Slovenia are "new members" that joined the EU in 2004. They are experienced through their communist past and went through the process of transition and implementation of *acquis communautaire* with all its positive and negative consequences for the natural environment and local communities. The implementation of the Natura 2000 Network was an especially difficult exercise.

3. Europeans' familiarity with the term "biodiversity" and the Natura 2000 Network

The specific situation of Central Europe suggests a question: to what extent do the characteristics of the region influence the level of public familiarity with the idea of biodiversity and perceived seriousness of biodiversity loss. Also, it may be interesting to compare public awareness of the Natura 2000 Network in central european countries with the average awareness across the EU countries. These comparisons are based on the results of the Flash Eurobarometer survey on "Attitudes towards biodiversity" requested by the Directorate-General for Environment (EC, 2013).

The Flash Eurobarometer survey on "Attitudes towards biodiversity" is part of a trend survey. The results of wave 1 were published in 2007 (EC, 2007a) followed by wave 2 in 2010 (EC, 2010) and wave 3 in 2013 (EC, 2013). The last report presents comparative data between those three waves of the survey. The survey was carried out by TNS Political & Social in the 27 Member States of the EU. Some 25,537 respondents aged 15 and over (1,000 by country) from different social and demographic groups were interviewed via telephone in their mother tongue on behalf of the European Commission (EC, 2013).

For the purpose of this chapter I have focused on the data concerning seven central european countries and on the analysis of that data against the background of all other countries covered by the report.

The Flash Eurobarometer survey interviewed EU citizens to clarify how familiar they are with the term "biodiversity", the term "Natura 2000" and with the concept of biodiversity loss. In thirteen questions it examined the perception of the seriousness of biodiversity loss at domestic, European and global levels. The report also dealt with several other aspects of biodiversity conservation examining Europeans views on why preserving biodiversity is important and what EU measures and personal measures can be taken to prevent the loss of biodiversity. Only some issues among those mentioned above were chosen as they were key questions determining other answers. To begin with: Have you ever heard of the term "biodiversity"? (question 1 in the Flash Eurobarometer survey). The comparison between the 2007 and 2010 results showed that in 12 out of the 27 EU Member States the proportion of respondents who had never heard about the term "biodiversity" decreased by at least five percentage points. In 2010 more than 38 % of Europeans had heard of the term "biodiversity" and knew what it meant. The results of the survey requested by the Directorate-General for Environment in 2013 show that familiarity with the term "biodiversity" increased again in the majority of Member States compared with the survey in 2010. Across the EU slightly less than half of Europeans, 44 %, had heard of the term "biodiversity" and knew what it meant.

The situation is different in the central european countries. To compare with the situation in 2007 the Czech Republic initially saw the largest increase in the fraction of respondents who knew the meaning of the term "biodiversity". For example, in 2007 just 6 % of respondents in the Czech Republic said they knew what "biodiversity" meant. In 2010, however, this proportion increased to 21 %, but the results of the 2013 survey show a de-

crease in number to only 17 % of respondents who knew what it meant. A similar trend of initial increase from 18 % in 2007 to 23 % in 2010, and again a decrease to 10 % in 2013 was observed in Hungary. In Poland the results of the survey indicate a trend of permanent decrease in familiarity with the term "biodiversity". In 2007 more than 31 % interviewees said they knew the meaning of the term, but in 2010 this fraction was nine percentage points lower (22%). Three years later, in 2013, only 19% of respondents from Poland declared they had heard of the term "biodiversity" and knew what it meant. It is worth mentioning that in 2012 other than EU, national investigations were carried out in Poland at the request of the Polish Ministry of Environment. Those resulted in a more optimistic picture of the state of national knowledge of the term "biodiversity". According to the Polish report more than 38 % of respondents declared a knowledge and understanding of the term "biodiversity" (Ministerstwo Środowiska, 2012). Only in Slovakia and Slovenia was a continuous increase observed (from 6 % in 2007 to 15 % in 2013 in Slovakia and from 25 % to 35 % in Slovenia). Altogether, even if we include the results for Poland obtained from national research, in the five above mentioned central european countries the average fraction of people familiar with the term "biodiversity" is far less than the EU average of 44 %. This is in stark contrast with the other central european "old" EU members, Austria and Germany, where this fraction is the highest in Europe – 80 % in both countries. The interpretation of this situation can be derived from a historical background. As the countries in transition and then during the accession process were concentrating on building the environmental infrastructure and implementing the EU environmental policy to narrow the gap between the old and the new EU members, the "brown issues" dominated the content of education and the interest of the media. Problems of nature were replaced by the problems of recycling and renewable energy. This had an impact on the sphere of public environmental consciousness causing a state very precisely described by Edward O. Wilson: "Most people understand very well the dire effects of toxic pollution on their health. They also know that ozone hole in the upper atmosphere is not a good thing, and the global warming, destruction of forests and depletion of fresh water reserves are serious global threats. What has been harder to grasp, not only by the general public but also by most scientists, is the profound influence biodiversity has on human well-being. The reason is the prevailing world view that health is largely an internal matter for our species, and with the exception of domesticated species and pathogenic microorganisms the rest of life is something else. For many reasons not least our own well-being, we need to take better care of the rest of life. Biodiversity will pay off in every sphere of human life, from medical to economic, from our collective security to our spiritual fulfillment" (Wilson, 2008, p. VIII-IX).

The situation is somewhat different when we compare public knowledge about biodiversity with the awareness of the Natura 2000 Network. Natura 2000 is a Europe-wide network of protected areas designed to halt biodiversity loss in the EU. It is the centerpiece of the EU nature and biodiversity policy. The aim of the network (established under the 1992 Habitat Directive) is to assure the long-term survival of Europe's most valuable and threatened species and habitats. It includes Special Areas of Conservation (SAC) designated by Member States under the Habitats Directive and also Special Protection Areas (SPAs), which they designate under the 1979 Birds Directive. The establishment of this network of protected areas also fulfills the Community obligation under the UN Convention on Biological Diversity.

Judging from the long time that has passed since the establishment of the Natura 2000 Network, the number of sites (over 26,000 sites across Europe) and its high rank among the EU policies, the idea should be widely known. The question asked in EU Flash Eurobarometer survey: "Have you heard of the Natura 2000 network?" should be answered affirmatively.

Then the results of survey are surprising. Despite of the importance of Natura 2000 for conservation policy, awareness of the Network on the EU level is very low. Roughly eight in ten respondents had not heard at all of the network. Even if the number of people who have never heard of Natura 2000 is decreasing (from 80 % of the EU population in 2007 to 73 % in 2013), the number of people who declared themselves as well informed still does not exceed 11 %. The lowest awareness is observed mainly in the "old" EU countries like UK (1%), Ireland (1%) or Denmark (6%). In comparison with other countries, the level of awareness in Central Europe is relatively high. In most central european countries the fraction of respondents who had heard about the Natura 2000 and know what it is matches or exceeds the EU average of 11 % (Poland 34 %, Slovenia 32 %, Austria 19 % Hungary 15 % and the Czech Republic 11 %). Also, in all central european countries from 2007 up to the present, this awareness has shown a steady increase. The improvement is observed even in Slovakia and Germany - the only central european countries where awareness of Natura 2000 is a little lower than average for the EU. Also, when comparing the percentage of citizens who have heard about Natura 2000 in all central european countries (except Germany) it is much higher than the average for all twenty-seven EU countries. The relatively high level of awareness of the Natura 2000 Network in Central Europe could be explained by the comparatively short time elapsed from the start of the process of accession to the EU. The idea of Natura 2000 Network in the all central european states, which became EU Member States in 2004, is still quite fresh and sometimes controversial. It regularly attracts media attention and causes involvement of the environmental NGOs due to the selection process of candidate areas and related local conflicts. For

example, in Poland a very important role in raising public awareness of the Natura 2000 Network is played by the governmental financial support for educational programs devoted to the introduction of network to the local communities. Several educational campaigns, information leaflets and programs aimed at answering the "frequently asked questions about Natura 2000" are financed by the National Fund for Environmental Protection and Water Management – the institution managing the funds from obligatory fees and fines for the use of the environment.

4. Information and education as a means to protect biodiversity

Socio-demographic analysis of the results of Eurobarometer surveys as well as the results of several other sociological researches and reports on environmental awareness revealed that the level of education is the characteristic that most significantly influences the knowledge level of biodiversity and Natura 2000 issues (Kalinowska, 2004; Bortłomiuk & Burger, 2008; Ministerstwo Środowiska, 2012; Pietrzyk–Kaszyńska, Cent, Grodzinska-Jurczak, & Szymańska, 2012; EC, 2013). It is clear that biodiversity conservation cannot be achieved without the widespread engagement of society as a whole. The active involvement of stakeholders, key policy sectors and civil society will therefore be fundamental. A higher level of education and access to sufficient information on biodiversity are the best guarantees of that.

During the Flash Barometer survey Europeans were asked (question 8) whether they agreed or disagreed that the EU should take various measures to protect against biodiversity loss. Nearly three quarters of respondents in all EU countries totally agree that the EU should better inform citizens about the importance of biodiversity. Not one of the seven central european countries was in the group of states who least likely confirm their needs for better information (EC, 2013). Such a declaration is very important as a signal confirming that demand for more education and information be provided in EU.

In May 2011, the European Commission adopted a new strategy to halt the loss of biodiversity and improve the state of Europe's species, habitats and ecosystems and the services they provide: "The EU Biodiversity Strategy to 2020". The 2020 headline target is: "Halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020 and restoring them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss" (EC, 2011, p. 6).

It seems impossible to implement the Strategy without improving public familiarity with the concept of biodiversity and the perception of the important role biodiversity plays in our civilization and the effect it has on our lives.

The Strategy focuses on six major targets to address the main pressures on nature and to lay down the policy foundations for EU-level actions. One of the proposed EU-level actions, together with Member States, will be developing and launching a major communication campaign on biodiversity and the Natura 2000 Network.

Such a declaration does not mean that nothing has been done before the formulation of the Strategy. Several educational activities were going on and are going on currently in central european countries. It's worth mentioning that events such as the UN International Year of Biodiversity 2010 (IYB) gave the impulse. A good example from Central Europe is the huge campaign to increase awareness on biodiversity in Poland and celebrate 2010 IYB. This nation-wide campaign entitled "Many Faces of Biodiversity" was initiated and managed by the Centre for Environmental Studies and Sustainable Development at the University of Warsaw. The Centre is an inter-faculty, interdisciplinary academic unit that carries out research on education and communication on various themes in sustainable development and biodiversity.¹ The Centre's team works on the principle that we cannot expect spectacular successes in protecting biodiversity until we can broadly spread the message to various social groups diverse in age, level of education and profession. Each group is a specific audience with specific communication expectations. Hence, a successful campaign needs to open many doors for a range of potential supporters. This was the philosophy of a multifaceted, multimedia educational campaign aimed at raising public awareness of biological diversity under the theme Many Faces of Biodiversity. The perception of the events of the campaign was raised by the patronage of The Minister of the Environment and The Secretary General of Polish Committee for UNESCO. The campaign was co-financed by the National Fund for Environmental Protection and Water Management (NFOŚiGW) and the EU Lifelong Learning Programme.

Why the title "Many Faces"? The process of raising awareness needs "many faces" in terms of the educational methods addressed to different target groups: students from across the numerous faculties of Warsaw University and academies of fine arts, journalists, teachers, school children, and the general public.

Multimedia and multi-target campaign "symphonies" were designed to increase awareness. They consisted of:

• Competition for students of the Academies of Fine Art to coin slogans and design posters promoting the International Year of Biodiversity. It resulted in forty projects prepared by young artists from the art academies across Poland. The two best projects were printed as posters in 4,000 copies and distributed to municipal institutions, schools, town libraries, teachers training centers, etc. Young artists are a very

¹ www.ucbs.uw.edu.pl

influential group as "actors" in social communication. Their emotional message on how important biodiversity is in our life can be a key to attracting a broader audience by informal education.

- Several exhibitions of award-winning posters, together with popular lectures on biodiversity for visitors and for the media were organized.
- The popular lecture series entitled "Many Faces of Biodiversity" were offered to students from all faculties, journalists, teachers and the general public. They were delivered by leading scientists and practitioners in a wide range of topics related to biodiversity The National Conference "Let's Talk about Biodiversity" brought together more than 120 representatives of academic society and the media to discuss more effective ways of science communication in the field of biodiversity as academics and scientists need to pay more attention to the popularization of scientific and practical knowledge. Training programs and workshops for more than 100 teachers and environmental educators supported pedagogic preparation to educate in the areas of biodiversity. Teachers and school pupils can play a major role in such activities as the monitoring of nature, e.g., trees.
- Printed materials: Two important books (1,000 copies each) were printed to round off the "Symphony of Methods" in the Biodiversity Campaign:
- Teachers training manual: "Na spotkanie różnorodności biologicznej" (Let's Meet Biodiversity), to help teachers to carry out lessons outside the classroom (Batorczak & Kalinowska, 2010) and the textbook "Różnorodność biologiczna w wielu odsłonach" (Many Faces of Biodiversity) contains lectures and conference papers designed to support students, teachers and journalists with modern interdisciplinary knowledge on biodiversity (Kalinowska, 2010).

The Warsaw University's Centre now pays much more attention to the education of senior citizens preparing teaching materials for numerous Universities of the Third Age across Poland. Due to the demographic situation, both in Poland and in the whole of Central Europe, senior citizens are a growing social group whose awareness of biodiversity issues can be very important.

The evaluation carried out within the target groups directly involved in the mentioned activities confirmed positive effects on the familiarity with the term biodiversity and the links between biodiversity and the Natura 2000 Network. However such an effect on the national level was not observed. Results of the Flash Barometer survey even indicate a decrease in familiarity with the term biodiversity in the period 2007–2013.

So what conclusions can be drawn from the Centre's campaign? Should it be regarded as an example of good practice for other central european countries? According to the results of survey conducted in Poland (Burger, 2005) for the majority of the general public (more than 70 %) television is the main source of information about the environment. Only a minority derive information about the environment from sources other than television. Such results were also reported from the USA (Hannigan, 1997). It does not mean that educational and informational activities other than television should be neglected. Such activities can also be sound if the information flow is directed straight to the most influential groups of society. But it is very problematic if the effect can be obtained when educational activities are limited to a short period such as IYB alone. Because such a doubt is shared globally, the United Nations announced a Decade on Biodiversity 2011–2020. Then the experience gained during the University Centre's Campaign in 2010 IYB can be very helpful for planning the long term activity during the United Nations Decade on Biodiversity.

As a good example of the educational initiative undertaken together by several central european countries one can give the project BEAGLE (Biodiversity Education and Awareness to Grow a Living Environment)² aiming to raise the level of familiarity with biodiversity. This online project with the objective to improve the quality of learning outside the classroom was coordinated by Warsaw University's Centre for Environmental Studies and Sustainable Development. Participating institutions were from Poland, Slovakia, Hungary and Germany, as well from the United Kingdom and Norway. The result was the creation of the Pan-European Biodiversity Observation Project (BOP) based on monitoring the phenology of trees across Europe. One hundred schools from Poland participated in BEAGLE observations, along with two hundred schools from the United Kingdom, Germany, Slovakia, Hungary and Norway.

In spite of many previous educational initiatives aimed at various target groups, there is still a great need to seek new methods of education and, especially, to increase the involvement of the local media and electronic media in raising social awareness of biodiversity issues in Central Europe, at least to the average level of all EU countries.

5. Conclusion

Like the rest of our planet, Europe faces a crisis of biodiversity. European habitats are under strong pressure from agricultural intensification, urban sprawl, infrastructure development, land abandonment, acidification and eutrophication. Many species are directly affected by overexploitation, persecution and impact of alien species, as well as climate changes being set to

² www.beagleproject.org

become an increasingly serious threat in the future. Obviously, all mentioned problems and threats for biodiversity are also observed in central european countries. Although the situation of biodiversity and its public perception differs from country to country there are some commonalities due to a similar historical past. Austria and Germany are "old EU members" and politically belonged to "the West". Poland, the Czech Republic, Slovakia, Hungary and Slovenia are "new members" that joined the EU in 2004. Citizens of Austria and Germany are better informed about the meaning of the term "biodiversity" than citizens from "new member" countries with a communist historical background. During the accession process "new EU countries" were concentrating on building an environmental infrastructure and implementing EU environmental policy, so the "brown issues" dominated the content of education and the interest of the media. Biodiversity issues were replaced by the problems of the pollution of the environment and waste management. Even the process of the establishment of the Natura 2000 sites was mentally linked more with the implementation of EU directives than with biodiversity. The concentration of media concern on the Natura 2000 Network resulted in better informed citizens. The level of awareness connected with Natura 2000 in Central Europe is relatively high in comparison with other EU countries. In most central european countries the fraction of respondents who had heard about the Natura 2000 and know what it is matches or exceeds the EU average of 11 %. Also in all central european countries from 2007 to date, the awareness shows steady improvement when comparing the percentage of citizens who have heard about Natura 2000. It is much higher than the average for all twenty-seven EU countries. The idea of a Natura 2000 Network in the all central european states which became the EU member states in 2004 is still quite fresh. It permanently attracts media attention and causes the involvement of the environmental NGOs. This had an impact on the sphere of public environmental consciousness. What is common for all central european countries is a strongly expressed need for better information about the importance of biodiversity. The citizens' "hunger" for information should obligate the media and scientific or educational institutions for the preparation of appropriate offers and presentation of examples of good practice. As the final conclusion of the debate on the biodiversity loss and as one of the main challenges faced by Central Europe let me quote, as a sign of hope, the words of Commissioner Jan Potočnik from the foreword to the New EU Biodiversity Strategy: "Biodiversity loss is one of the main environmental challenges facing the planet. With this new strategy the EU is striving to ensure that its natural capital is managed sustainably for the benefit of future generations" (Potočnik, 2011, p. 4).

References

80

- Annan, K. (2008). Preface. In E. Chivian & A. Bernstein (Eds.), Sustaining Life. How Human Health Depends on Biodiversity (pp. VII). Oxford: University Press.
- Batorczak, A., & Kalinowska, A. (2010). *Na spotkanie różnorodności biologicznej. Szkolne obserwacje drzew. Poradnik Nauczyciela* [Let's Meet Biodiversity. Observation of Trees by the School Children. Teacher's Manual]. Warszawa: Uniwersyteckie Centrum Badań nad Środowiskiem.
- BirdLife International. (2004). Birds in the European Union: A Status Assessment. Wageningen: BirdLife International.
- Bołtromiuk, A., & Burger, T. (2008). Polacy w zwierciadle ekologicznym. Raport z badań nad świadomością ekologiczną Polaków w 2008 r. [Poles in an Environmental Mirror. Report from the Studies on the Environmental Awareness of Poles 2008]. Warszawa: Instytut na rzecz Ekorozwoju.
- Burger, T. (2005). Swiadomość ekologiczna społeczeństwa polskiego [Environmental Awareness of the Polish Society]. Warszawa: Instytut Gospodarki Przestrzennej i Mieszkalnictwa.
- Euro+Med PlantBase. (2011). Retrieved from http://www.emplantbase.org
- European Commission. (2007a). Attitudes of Europeans Toward the Issue of Biodiversity. Analytical Report – Wave 1. Flash Eurobarometer 219. European Commission, The Gallup Organisation.
- European Commission. (2007b). LIFE and Endangered Plants. Conserving Europe's Threatened Flora. Luxembourg: Office for Official Publications of the European Communities.
- European Commission. (2010). Attitudes of Europeans Toward the Issue of Biodiversity. Analytical Report – Wave 2. Flash Eurobarometer 290. European Commission, The Gallup Organisation.
- European Commission. (2011). The EU Biodiversity Strategy to 2020. Luxembourg: Office for Official Publications of the European Communities.
- European Commission. (2013). Attitudes of Europeans toward the issue of biodiversity. Analytical report – Wave 3. Flash Eurobarometer 379. European Commission, TNS Political & Social.
- European Environmental Agency. (2007). Halting the Loss of Biodiversity by 2010: Proposal for a First Set of Indicators to Monitor Progress in Europe. EEA Technical Report No. 11/2007. Luxembourg: Office for Official Publications of the European Union.
- European Environmental Agency. (2010). European Environment: State and Outlook 2010. Luxembourg: Office for Official Publications of the European Union.
- Fauna Europaea. (2013). Retrieved from http://www.faunaeur.org/

Hannigan, J. A. (1997). Environmental Sociology. London, New York: Routlege.

Harrison P. A., et al. (2009). Conservation of Biodiversity and Ecosystem Services in Europe: From Threat to Action. PENSOFT.

- International Union for Conservation of Nature. (2010). *IUCN List of Threatened Species*. Gland: IUCN.
- Kalinowska, A. (2004). Artykuł 13. W poszukiwaniu społecznego wsparcia dla w zarządzaniu Konwencją o różnorodności biologicznej. Polska praktyka na tle doświadczeń światowych [Article 13. Towards Public Participation in Management of the Convention on Biodiversity. The Practice in Poland Against the Background of the Global Trends]. Warszawa: Agencja Wydawnicza A. Grzegorczyk.
- Kalinowska, A. (Ed.). (2010). *Różnorodność biologiczna w wielu odsłonach* [Many Faces of Biodiversity] Warszawa: Uniwersyteckie Centrum Badań nad Środowiskiem.
- Kalinowska, A., & Batorczak, A. (2013). *Różnorodność biologiczna to także my. Zielona Wiedza dla Uniwersytetów Trzeciego Wieku* [Biodiversity – We Are All in This Together. "Green Knowledge" for Universities of the Third Age] Warszawa: Fundacja Ziemia i Ludzie.
- Kottelat, M., & Freyhof, J. (2007). Handbook of European freshwater fishes. Berlin: Kottelat, Cornol.
- Ministerstwo Środowiska. (2012). Badanie świadomości i zachowań ekologicznych mieszkańców Polski. Raport TNS Polska dla Ministerstwa Środowiska [Research on Environmental Awareness and Behaviors of Polish Citizens. Report of TNS Poland for the Ministry of Environment]. Warszawa: TNS, Ministerstwo Środowiska.
- Natura 2000 Network. (2014). European Commission. Retrieved from http://www. ec.europa.eu/environment/nature/natura2000/index_en.htm
- Pietrzyk-Kaszycka, A., Cent, J., Grodzinska-Jurczak, M., & Szymańska, M. (2012).
 Factors Influencing Perception of Protected Areas The Case of Natura 2000 in Polish Carpathian Communities. *Journal of Nature Conservation*, 20(5), p. 284–292.
- Potočnik, J. (2011). Foreword by Commissioner Potočnik. In *The EU Biodiversity Strategy to* 2020 (pp. 4). Luxembourg: Publications Office of the European Union.
- Pimm, S. L., Alves, M.A. S., Chivian, E., & Berstein, A. (2008). What is Biodiversity?
 In E. Chivian, & A. Bernstein (Eds.). Sustaining Life. How Human Health Depends on Biodiversity (p. 18). Oxford: University Press.
- Reichholf, J. H. (2009). The Demise of Diversity. Loss and Extinction. London: Haus Publishing.
- van Swaay, C., Cuttelod, A., Collins, S., Maes, D., Monguira, M. L., Sasic, M., et al. (2010). European Red List of Butterflies. IUCN Species Programme, Butterfly Conservation Europe. Luxembourg: Office for Official Publications of the European Union.
- Temple, J. H., & Terry, A. (2007). The Status and Distribution of European Mammals. IUCN Red List of Threatened Species – Regional Assessment. Luxembourg: Office for Official Publications of the European Union.
- United Nations. (1992). *Convention on Biological Diversity*. Retrieved from http://www.cbd.int/doc/legal/cbd-en.pdf
- Wilson, E. O. (1992). *The Diversity of Life*. London: The Penguin Press.
- Wilson, E. O. (2008). Foreword. In E. Chivian, & A. Bernstein (Eds.), *Sustaining Life. How Human Health Depends on Biodiversity* (p. VIII–IX). Oxford: University Press.