

The Relationship Between Tourism and the Biosphere Reserve Status: The Danube Delta – If the Danube is “the sustainable highway’ of Europe, then the Danube Delta should be the sustainable gate to the Black Sea

Elitsa I. Barukchieva, MSc

*Graduate, MSc Tourism, Heritage and Sustainability
School of Interdisciplinary Studies, University of Glasgow*

Email: elitsa.baruk@yahoo.com

ABSTRACT: The main aim of this article is to find out whether the Danube Delta Biosphere Reserve (DDBR) demonstrates the characteristics of a biosphere reserve, and if its functions contribute to the sustainable socio-economic development, particularly tourism, without causing negative impacts on the ecological integrity. The study is based on mixed methods, including primary data collected through structured and semi-structured face-to-face interviews with representatives of the Danube Delta Biosphere Reserve Authority (DDBRA), the National Centre for Promotion of Tourism in Tulcea (CNIPT), Romania, and 15 tourists; personal observation during first-hand experience in the Danube Delta; and analysis of secondary data and related previous research. Overall, the research found that the DDBRA undertakes all measures to fulfil the criteria of the biosphere reserve designation: it has the three zones and management plan, it focuses on nature conservation and maintaining cultural heritage, it supports opportunities for environmental education, socio-economic development and local decision-making. However, this article suggests that the functions of the biosphere reserve are not very well understood by visitors and by local people, and that the biosphere reserve objectives are not very clear and are not reflected clearly enough from the DDBR management to the visitors and people living in the Danube Delta. Therefore, the dissemination and implementation of all objectives of the biosphere reserve designation could benefit not only the sustainable development of tourism, but also the biosphere reserve itself. This article recommends the integration of the "cultural landscape", as

described by the German MAB National Committee (2005) and "wilderness" concepts into the official biosphere reserve definition.

Keywords: biosphere reserve, sustainable tourism, Danube Delta, sustainable mobility, cultural landscape, wilderness

Introduction

The mission of the biosphere reserve as a place that identifies and designates land/seascapes is to ensure environmental, economic, and social sustainability through the development and integration of knowledge, including scientific, to advance the understanding and harmonize the interaction between people and nature (UNESCO, 2017). The three functions of biosphere reserves are biodiversity conservation, improving the socio-economic well-being of people, and promoting learning that fosters awareness and ability to balance economic, social, and environmental aspects of development through advancing sustainability approaches (UNESCO, 2017).

However, the image of the biosphere reserve and especially of the word "reserve" is often considered as a place where nature is strictly protected, natural resource use - restricted, and economic activities - forbidden or limited (Ishwaran, 2013). In this light, the main aim of this article is to contribute to the understanding of the biosphere reserve designation and to find out whether the Danube Delta demonstrates the characteristics of a biosphere reserve, and if its

functions help the sustainable socio-economic development, particularly tourism, without causing negative impacts on the ecological integrity.

As the International Conference on Biosphere Reserves, organised by UNESCO in Seville (Spain) in 1995, recognised the strong potential and need to apply the biosphere reserve concept in the coastal and marine environments (Ishwaran, Tri, and Persic, 2008), the Danube Delta Biosphere Reserve (DDBR) is an interesting site to investigate the extent to which people, nature, and economic development are in a harmonious relationship through the involvement of the local communities, international co-operation, use of traditional knowledge, education, and respect for cultural values.

The DDBR is characterised by rich biodiversity, giving shelter to over 300 migratory birds, numerous ecosystems, and diverse cultural heritage. Nevertheless, during the 20th century, the communities in the area have struggled with insufficient economic growth, poverty, and ecosystem degradation. This in part is due to the draining of vast amounts of water and the suppression of the cultural identity of the small communities. The Delta has also been challenged by the impacts of climate change, rapid urbanization, and industrialization along the Danube river, and the increasing number of tourists (Marin et al., 2012). The Danube Delta Biosphere Reserve Authority (DDBRA) has been trying to recover the Delta's ecosystems and improve economic benefits for the local communities, to maintain and develop ecological and cultural diversity – but at the same time – to develop economic systems that include tourism with the contribution of education and collaboration between the different stakeholders in the Danube Delta (Hall, 1993; Nichifor and Covaliov, 2011; Marin et al., 2012). Tourism is being greatly promoted as an important factor for sustainable development for the whole biosphere reserve.

There is weak accessibility in the Danube Delta, but high tourism interest. The question how to

manage tourist flows is significant; to keep the reserve's attractiveness for tourists; creating social and economic benefits for the region; and sustaining the environmental conditions. Therefore, the key question of the article is whether the interconnected functions of the biosphere reserve are contributing to sustainable tourism in the Delta. Do the biosphere reserve functions contribute to the environmental, economic, and social sustainability of the Delta, as provisioned in the biosphere reserve designation?

The main reason for using mixed research methods in this study is complementarity between qualitative and quantitative data (Greene, Caracelli, and Graham, 1989). The aim is to elaborate, develop, and further enhance the literature on this subject with new results, and to give an integrative view from different perspectives. Prior to the fieldwork, a range of secondary sources was consulted. A review on literature concerning the objectives of sustainable development and sustainable tourism and on the biosphere reserve concept was undertaken to provide a broad academic context for the research. Including, to outline the importance of this research in the light of the current objectives and trends in sustainable development and tourism. Materials directly related to the Danube Delta were consulted in order to place the study in its geographical and historical context, and to outline the paradigm of challenges and issues to be covered and discussed in the article.

Certain limitations have hindered the study from being fully elaborated, which will provide further contribution to the successful achievement of this article's aims. Firstly, the time constraint: a period of two weeks is relatively short for interviews with regards to the seasonality and scale of different types of tourism, including the heightened work load of the management and the tourism bodies in the Danube Delta. Secondly, the language constraint: the majority of local people and tourists only spoke Romanian. The research potentially can achieve much deeper and satisfactory results if the Romanian speaking tourists and local people were interviewed. And thirdly, the number of interviewees constraint:

the total number of tourists interviewed was 15. A bigger number might lead to more successful quantitative study results. The list of observational remarks, suggested results, and analysis are a result of qualitative rather than quantitative data collected. Therefore, they should be adopted as general suggestions on the basis of the experiences of the participants, rather than as a general tendency in tourism in the DDBR.

Finally, this article hopes to outline possible recommendations for improving the harmonious relationship between people and nature in this area of remarkable natural, cultural, and ethnographic heritage so that it can turn into a sustainable "gate" to the Black Sea. Having all these characteristics, the Delta has an enormous potential to be a model biosphere reserve on the basis of different economic activities, including sustainable tourism, if sustainable management tools are implemented. While recognising that the objectives of a biosphere reserve and the sustainability approaches can be developed and promoted in any field, it is suggested that tourism has a particular opportunity to demonstrate that travel, recreation, observation, and learning through exploring cultural landscapes and wild nature in biosphere reserves. This contributes a significant impact to the sustainable development and to harmonious human-nature relationship both in the Danube Delta and in other destinations.

Literature Review

Sustainable development and sustainable tourism

In order to understand the relationship between the functions of the biosphere reserve and sustainable tourism, there is a need to critically evaluate theoretical definitions and how have they been explored through research and related to the objectives of protected areas, and biosphere reserves in particular.

Adapting the principles of sustainable development, sustainable tourism was initially viewed as a positive approach to reducing the tensions between the tourism industry, the environment, and the host communities, with the

recognition that tourism is an important form of development (Bramwell and Lane, 1993; Lane, 1994). The principles of sustainable tourism development have been outlined as improving the life of the local host community, while being included in decision-making. Including, satisfying the demands of tourists and the tourism industry; protecting the natural and cultural resource base for tourism; it should consist of holistic planning policy and strategies, and develop in such a way that productivity can be sustained over the long term for future generations (Cox, 1985; Pigram, 1990; Cater, 1993; Bramwell and Lane, 1993; Sharpley, 2000; Foucat, 2002; Honey, 2008; Farelly, 2011; Ahmad, 2014; Coria and Calfucura, 2012).

The convergence between economic incentives and conservation in the concept of sustainable development are increasingly questioned (Friend, 1992; Sharpley, 2000; Kiss, 2004). This is frequently the result of limits on the natural resources and the difference in economic systems (Cohen, 1988; Butler, 1991; Wheeler, 1992; Rees, 2002; Romeiro, 2012). Similarly, other scholars argue that sustainable tourism ignores or is not consistent with the broader principles of sustainable development (Hunter, 1995), or that it is synonymous with eco (or responsible) tourism (Lu and Nepal, 2009; Weaver, 2014; Ruhanen et al., 2015). Other authors, such as Hardy, Beeton, and Pearson (2002), argue that sustainable tourism has given more focus to aspects related to the environment and economic development, and that more focus should be given to community involvement. Rather, there is a need for balanced focus on the different objectives of sustainable development, as studies suggest (Butler, 1998; Bramwell and Lane, 2000), and for interdisciplinary approach towards sustainable tourism research (Lu and Nepal, 2009).

Protected areas and the biosphere reserve concept

The relationship between tourism and protected areas is complex - the economic focus of tourism and the conservation focus of protected areas have been described as contrasting (Wilson et al.,

2009). Tourism infrastructure and visitation and their negative effects on biodiversity, as well as changing visitor demands for facilities in protected areas have been explored (Wang et al., 2012; Wearing and Neil, 2009). On the other hand, the poor communication between the tourism industry and protected area authorities that impose restrictions and prohibitions rather than implementing sustainable development measures is noted (Sharpley and Pearce, 2007). With the growing importance of sustainability issues, Becken and Job (2014) conclude that biodiversity protection and conservation require networks of protected areas that limit or manage economic development, including tourism, but that also acknowledge the role of tourism for creation of financial resources as well as awareness raising. Researchers recommend the necessity for more systematic, integrative, holistic, and innovative approaches towards sustainable development in protected areas; these include sustainable market orientation model (Mitchell et al., 2013), partnership as informal information exchange between tourism representatives in governments (Buckley, 20014), managing sites through creative and integrative approaches (Mitchell and Eagles, 2001) and adaptive resource management at vulnerable sites such as Machu Picchu, Peru (Larson and Poudyal, 2012). Other majorly recommended approaches are shifting finance options towards park self-governance or opportunities for sustainable funding for tourism in protected areas (Marsden, 2000; Eagles et al., 2012; Whitelaw et al., 2014). The concept of the "biosphere reserve" appears to match these needs of integration of ecosystem protection and restoration, sustainable economic growth, and increased research capacity - all objectives from the current UN 17 Sustainable Development Goals (UN, 2015).

The biosphere reserve is a rather unexplored concept. Becken and Job's overview on protected areas (2014) confirms that research on tourism in protected areas has been mainly conducted on World Heritage Sites, national parks (Leask and Fyall, 2006; Su and Wall, 2012; Eagles, 2014; Mayer, 2014; Whitelaw, King and Tolkach, 2014;

Stanford, 2014), and private reserves (Pegas and Castley, 2014).

The evolutions of the concept and its practice, as well as its potentials and challenges are explored through different studies and reviews. For example, Ishwaran, Tri and Persic (2008) give an elaborated overview on biosphere reserves and their evolution as 1st, 2nd, and 3rd generation biosphere reserves, according to the year they have been designated. Other studies discuss and investigate the practical dimensions of the functions of biosphere reserves (Batisse, 1986; Selvam and Ravichandran, 1996; Croze, Sayialel and Sitonik, 2006) and their role for ecosystem conservation and for innovations in sustainable development (Moller, 2007; Jamieson, Francis and Whitelaw, 2008; Hani, 2011) and sustainable tourism development (Nianyong, Qian and Hogn, 2008). With numerous examples from the fourteen German Biosphere Reserves, the German MAB National Committee (2005) conducts an exemplary overview of the strong potential of biosphere reserves for achieving the sustainable development objectives. Nevertheless, as mentioned by the German MAB National Committee as well, the tourism potential of biosphere reserves has not yet been fully exploited. While these investigations suggest practical implications and analyse the characteristics and the evolution of the biosphere reserve concept, no comprehensive studies were carried out on the relationship between the biosphere reserve functions and tourism, and how they contribute to each other and the sustainable development in a particular biosphere reserve. Tourism and its dynamics are seen as one of the most important factors of economic development in the DDBR (Bozagievici and Nichifor, 2007; Gâcțețcu and Știucă, 2008), but research and approaches for sustainable tourism development there are scarce (Hall, 1993). Biosphere reserves are often part of a tourist region, therefore local government decision-making and regional planning for tourism is necessary (German MAB National Committee, 2005).

An empirical analysis on the relationship between the biosphere reserve designation and sustainable

tourism, which would attempt to answer whether the biosphere reserve status contributes to the sustainable development of tourism in the Danube Delta and vice versa, will fill the gap in research on this area. In light of the need of context-specific sustainable tourism cases and approaches (Lu and Nepal, 2009; Ruhanen et al., 2015), this article, which studies a particular biosphere reserve, will provide new perspectives towards illustrating the state of the biosphere reserves around the world.

Biosphere Reserves - an overview and objectives

The biosphere reserve concept was defined within UNESCO's Man and the Biosphere (MAB) Programme and launched in 1971. The institution aims to establish a scientific basis for the improvement of relationships between people and their environments, based on systematic observation of the changes brought by people in the biosphere (UNESCO, 2017). The first biosphere reserves were designated in 1976, when their basic function was to be tools for international co-operation for nature and wild species conservation through interdisciplinary research, public awareness, education, and monitoring approaches (Ishwaran, Persic, and Tri, 2008). They included zones of fundamental importance for the biosphere reserve and were initially core and buffer zones.

The concept and design of biosphere reserves and their application to specific territories have evolved in the First (1983; Minsk, Belarus), Second (1995; Seville, Spain), Third (2008; Madrid, Spain), and the Fourth (2016, Lima, Peru) World Congresses on Biosphere Reserves. Following the Congress on Biosphere Reserves in Minsk in 1983, the vision of biosphere reserves was elaborated to “protected areas of representative terrestrial and coastal environments which have been internationally recognized for their value in conservation and in providing the scientific knowledge, skill and human values to support sustainable development” (UNESCO, 1984). The buffer zone

included a larger area, referred to as “transition zone” (Batisse, 1986) with an emphasis on the need for cooperation between researchers, managers, and the local population to ensure planning and sustainable development, harmonious land, and resource use (UNESCO, 1986). The functions of the newly described transition area included experimental research, traditional use, and ecological restoration (Ishwaran, Persic, and Tri, 2008). Batisse (1986) notes that biosphere reserves continued to serve the three basic roles - conservation, logistic support, and development.

By 1995 about half of all biosphere reserves were simply national parks wherein the biosphere reserve status as well as buffer and transition zones were added. Notably, there was no comprehensive evaluation of the economic, social, and ecological progress, and therefore it was difficult to identify how successful the implementation of the objectives of the MAB Programme was (Price, Park, and Boumrane, 2010). The strategies that were adopted on the Second World Congress of Biosphere Reserves in Spain, 1995, aimed to increase the consistency between the concept and its implementation in practice.

The Seville Strategy (UNESCO, 1995a) emphasised and supported the function of biosphere reserves as international learning laboratories – sites of research to demonstrate and test approaches for sustainable development and conservation. Therefore, to the three fundamental functions of biosphere reserves, the notion of sustainable resource use and economic development was added (UNESCO, 1995). The buffer zone was no longer including the transition zone, but were separated into two different zones. The three zones, the core, the buffer, and the transition zones had to contribute to conservation, sustainable development, scientific research, and public understanding (Ishwaran, 2013) through the three functions of the biosphere reserve. The Seville Strategy appealed for more attention on the transition area of biosphere reserves,

especially on the need to integrate biological and cultural diversity, traditional knowledge and genetic nature resources, and their mutual role for sustainable development. Article 4 of The Statutory Framework of the World Network of Biosphere Reserves (WNBR) states that every site has to comply with the general criteria in order to be qualified for a biosphere reserve designation (UNESCO, 1995b). These criteria include the ecological characteristics, its significance for biodiversity conservation, nature and landscapes protection, opportunities for sustainable development, appropriate size and zoning (including one or more core and buffer zones and a transition area), a management policy or plan with actions, a nationally designated authority or mechanism for implementation, programmes for research, monitoring, environmental education, and training that involves stakeholders and local people in the management of the biosphere reserve (Price, Park and Boumrane, 2010).

The Madrid Action Plan 2008-2013 (MAP) - approved at the 3rd World Congress of Biosphere Reserves (UNESCO, 2008), was developed in order to further highlight the concept of biosphere reserves as exemplary and learning sites for sustainable development. The most recent one, the Lima Action Plan 2016-2025 also places strong emphasis on the dissemination of the models of sustainability and successes throughout the biosphere reserves (UNESCO, 2017). The objectives of the newest MAB strategy include the promotion and support of sustainable development initiatives through labels for products and services that consist of the main biosphere reserves objectives (UNESCO, 2017). One of the main strategic outcomes is the recognition of biosphere reserves nationally and internationally (UNESCO, 2017). Under the increasing threats that climate change, rapid urbanization, loss of biological and cultural diversity pose, and the current Millennium Development Goals, the biosphere reserves need to develop partnership between all sectors to foster sustainable development, test and apply adaptation strategies for climate change, enhance the functioning of zoning with a particular regard

to transition areas, wherein economic activities are greatly allowed, improve financing opportunities, and support traditional knowledge use (UNESCO, 2017).

In spite of all the functions that they have, biosphere reserves are thought to be simply conservation or protected areas - either national parks or nature reserves (German MAB National Committee, 2005). Reserves are referred to as protected areas that do not involve economic development and do not support the objectives of sustainable development, but rather that of nature conservation (German MAB National Committee, 2005; Ishwaran, 2013). The conservation and protection objectives of the biosphere reserve push the sustainable development task into the background and the public does not quite understand what exactly the functions of a biosphere reserve are. It is especially the zoning and the changes in the zoning that create misunderstanding and confusion around biosphere reserves.

In biosphere reserves only the core area is a legally and strictly protected area of relatively unspoiled natural places that support the most sensitive species and natural resources, wherein only scientific research can take place that contributes to the conservation of landscapes, ecosystems, species, and genetic variation (DDBRA, 2007 - 2017; UNESCO, 2017;). The buffer and transition zones both have resident communities that practice nature conservation activities. The difference between them is that the buffer zone surrounds the core areas and traditional economic activities such as forestry, agriculture, and fishing are practiced to foster socio-economic well-being, as well as nature and landscape conservation, monitoring, training, research, and education, and it is designed to reduce the negative human impact on the environment (DDBRA, 2007-2017). In the transition area broader sustainable economic activities are fostered that maintain the friendly relationship between nature and the regional socio-economic development processes. A particular example of such activity is sustainable

tourism (German MAB National Committee, 2005).

As shown by the above examples, and especially as sustainable tourism is promoted in the buffer and mainly in the transition areas by the objectives for sustainable economic, social, and cultural development, sustainable tourism development is an important factor that inevitably influences biosphere reserves and it is important to understand how. As laboratories for sustainable development methodologies, biosphere reserves represent excellent sites to study the relationship between sustainable development, tourism, and the biosphere reserve functions in a specific context and within different sites. Being a vital point for migratory birds, marine, and fluvial ecosystems, home for communities from different ethnic origin and an increasingly popular tourist

destination, the Danube Delta is an interesting place to examine the challenges in the implementation of the biosphere reserve concept with regards to tourism.

Research Site: The Danube Delta characteristics and historical background

Geographic position and area characteristics

Where the Danube meets the Black Sea is the Danube Delta - the largest wetland in Europe, one of the biggest (after the Volga delta) and most diverse deltas in Europe (Gâțescu and Știucă, 2008). The total area of the delta is about 5800 km², 85 percent of which (3510 km²) belong to Romania and the remaining area is in the territory of Ukraine (Gâțescu and Știucă, 2008).



Figure 1. The Danube Delta Geographic Position (DDBRA, 2015). Copyright 2015 by Danube Delta Biosphere Reserve Authority, Tulcea, Romania. Adapted with permission.

The Danube Delta (Figure 1) lies between three main channels – Sfântu Gheorghe, the oldest, Sulina, and Chilia - the youngest, between which the large units Letea, Caraorman, and Dranov are situated (Gâțescu and Știucă, 2008). The Delta consists of river and marine sand banks, predeltaic territories, forests, sand dunes, a complex network of river channels, canals, lakes, swamps, backwaters, swamp, and marsh vegetation (Gâțescu and Știucă, 2008). Danube Delta is home to 30 types of ecosystems, hosting 2383 species of flora and 4029 species of fauna (DDBRA, 2007 - 2017). It is a major refuge for migratory birds that live, migrate, or winter within (Gâțescu and Știucă, 2008).

Population and settlements

There are 24 rural and one (Sulina) urban settlements in the Danube Delta and 12 666 inhabitants (DDBRA, 2007 - 2017). Today, Romanians make up 87 percent of the population, with ten percent Russian Lippovans, two percent Ukrainians, and one percent other nationalities (Turkish-Tatar, Greeks, Hungarians, Bulgarians, Germans, Armenians) (DDBRA, 2007-2017).

Economic activities

Traditional economic activities and occupations in the Danube Delta since ancient times are fishing, sheep and cattle breeding, medicinal plants harvesting, and beekeeping. Agriculture are practiced on the areas with low risk from flooding (the areas Chilia, Pardina, Plaur Sălceni in the Danube Delta, Romania) (Gâțescu and Știucă, 2008).

After the end of the suzerainty of the Ottoman Empire over Romania and the independence of Romania in 1877 (Romania Tourism, 1994 - 2017) and in the beginning of the 19th century, the mosaic of ecosystems are largely impacted by human activity after correction of the Sulina and Sfântu Gheorghe arms to facilitate the navigation of sea vessels (Gâțescu and Știucă, 2008). Subsequently, inland canals to increase fish production were built between 1910 and 1935, enclosures were created for agriculture, and fish-farms were developed, but this resulted in the exploitation of reed and timber.

After 1960, under the communist regime, the traditional occupations were drastically modified by agricultural exploitation, forest plantations, and fishing with large fishing nets (Gâțescu and Știucă, 2008). As Gâțescu and Știucă note, the management works performed between 1960 and 1989 included the creation of navigation channels within the delta, drainage of lakes, swamps, and marshes for agriculture, blockage of side channels. These changes contributed to major negative impacts on the deltaic ecosystems, the water movement, and quality within the delta. As a result of these interventions and modifications, at the end of the 1980's the normal hydrological cycles were disrupted and it is confirmed that the restoration process of the natural balance of the Delta will take a lot of time (Gâțescu and Știucă, 2008).

Danube Delta Biosphere Reserve and functions

The Danube Delta was declared a Biosphere Reserve in 1990, and in 1994 its boundaries and internal zoning were established. The Danube Delta Biosphere Reserve Authority and its Scientific Council (Gâțescu and Știucă, 2002; 2008) were appointed. The DDBR is also a member of the EUROPARC Federation and is listed as a wetland of international importance as important waterfowl habitat under the Ramsar Convention in 1991, and as World Heritage Site since 1990. Beginning in 1998, the Danube Delta became a Transboundary Biosphere Reserve (UNESCO, 2015), with the Ukrainian secondary delta of the Chilia Arm and two kilometers of sea waters (Gâțescu and Știucă, 2008).

Zoning

The Danube Delta consists of core, buffer, and transition zones. In a study from 2002, the three zones were indicated as "core", "buffer" and "economic areas" (Gâțescu and Știucă, 2002, p.?). Now, the Authority refers to the core zones as strictly protected areas, the "transition" zones - "economic zones" or "sustainable development areas" - it might be to avoid confusion in representing the areas to the public and visitors of the DDBR. The ecosystem reconstruction has become a major priority after the Danube Delta was

designated a Biosphere Reserve and there are additional ecological reconstruction areas. Therefore, according to Figure 2, the DDBR includes strictly protected areas (8.7 percent of the Reserve's surface), buffer areas (38.5 percent), economic zones or sustainable development areas (covering 52.8 percent of the Reserve's territory) and areas for ecological restoration where only

projects and activities for ecological restoration and reconstruction can be practiced, as well as activities that are specific to the buffer and sustainable development areas, dependent on the basic areas in which the reconstruction activities are conducted. In both buffer and economic zones, tourism can be practiced, but in the buffer zones no building is allowed.

THE DANUBE DELTA BIOSPHERE RESERVE

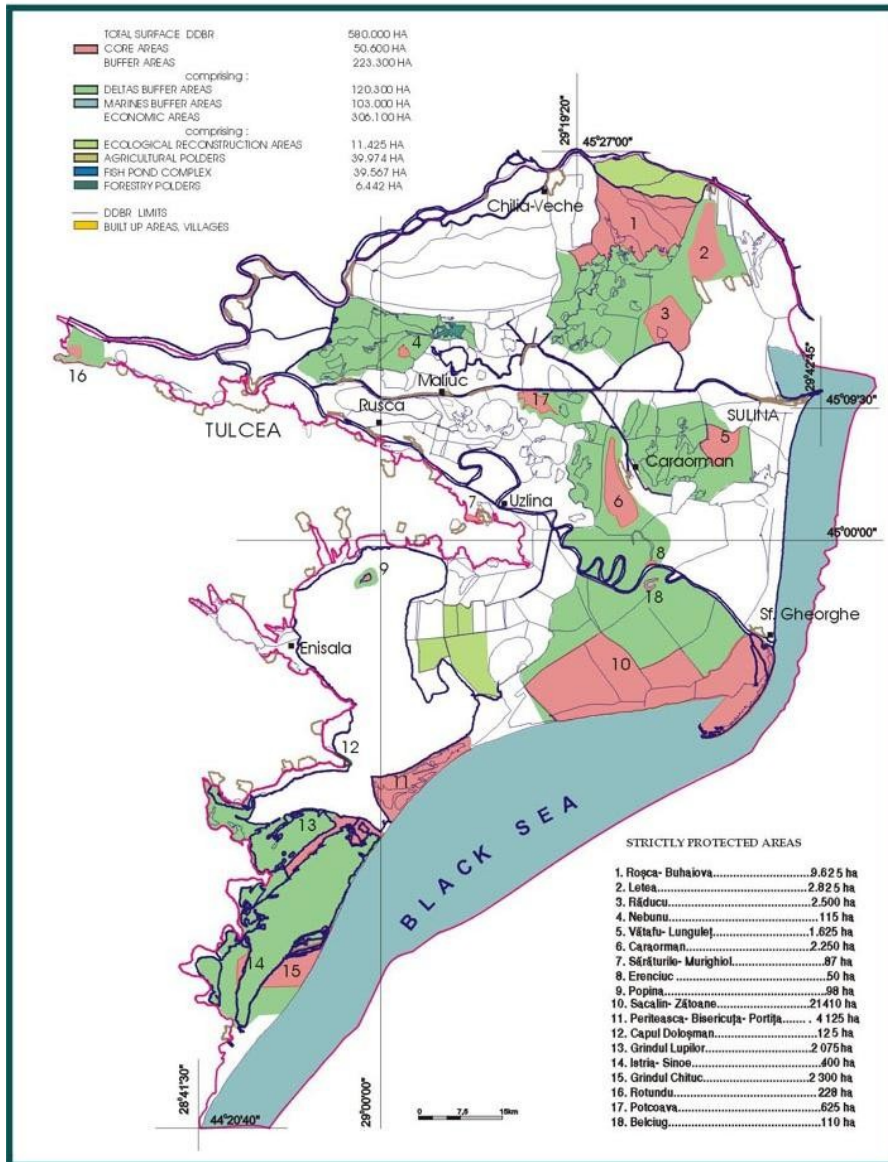


Figure 2. Danube Delta Biosphere Reserve Map (DDBRA, 2007-2017). The red is for the core zones, the dark green is for the delta buffer zones, the blue is for the marine buffer zones, the green is for ecological restoration areas, the plain is for economic areas with agricultural, fish ponds and forest complexes, and the pink is the boundary of the biosphere reserve. Copyright 2017 by Danube Delta Biosphere Reserve Authority, Tulcea, Romania. Adapted with permission.

Tourism in the Danube Delta Biosphere Reserve

Evolution of tourism in the Danube Delta

With rich history and cultural heritage from the Roman, Greek, Byzantine, and Ottoman periods, the natural and cultural values of the DDBR are turned into tourist attractions, and products and tourism is increasing. Some material and spiritual values such as fishing, fish dishes, and rural landscape, were preserved and are important resources for tourism (Popa, Nichersu and Poruncia, 2005). In 2004, the number of arrivals increased by almost 50 percent (total of 17 632 tourists), compared to 2003 (Bozagievici and Nichifor, 2007). This is explained by the huge publicity in mass media, the large investments in new accommodation facilities, and diversified and more attractive tourist packages (Bozagievici and Nichifor, 2007). In 2003, a 4-star green village complex was built in Sfântu Gheorghe village in the Danube Delta, Romania and, due to film and music festivals organised every July and August, the number of tourists reaches 4000 per week in the high season (Ivan, 2012). In 2009, about 85 percent of the local people in Sfântu Gheorghe were involved in activities connected to tourism and, in 2010, they confirmed that tourism is now a traditional activity, wherein men are engaged with fishing and boat tours, and women are in the household and catering for tourists (Ivan, 2012).

In the DDBR, through social, political, and economic influence, the environment and the cultural values underwent changes. By 2005, despite the fact that the Danube Delta was a biosphere reserve for 15 years, there were drawbacks to tourism development. Including, a low socio-economic development and lack of jobs and education, harsh living in the rural environment, youth migration towards the urban centres, low level of accommodation, lack of local handicraftsmen for house building, restricted access to natural resources, high prices of reed harvesting for the locals because of the DDBR objectives, lack of staff in the delta to supervise, inform, and direct tourists, and few funds granted for cultural activities (Popa, Nichersu and

Poruncia, 2005). Different issues and challenges for the tourism development have been outlined: the limited number of foreign visitors, the low level of accommodation and insufficient investment in modern facilities, ecological and landscape changes (due to human actions) (Gâștețcu and Știucă, 2002), as well as the lack of a holistic perspective and the weak training of professionals for the development of ecotourism (Hall, 1993).

Studies reveal that high tourism activity pushes local people to renovate their houses in a modern style with building materials that last longer in time than reed, which makes it difficult to preserve the traditional architecture (Poruncia and Marin, 2007; Ivan, 2012). Popa, Nichersu, and Poruncia's study (2005) reveals that locals adjust to the socio-economic changes but it is difficult for them, especially after many decades of a centralized system, changes to modern resource use, and building patterns that occurred (not necessarily with their approval).

These conclusions suggest that there is perhaps an inconsistency between the sustainability objectives of the biosphere reserve designation, which include the involvement of the local communities and preservation of their cultural values, and the actual state of development in the Danube Delta. On the other hand, traditional architecture in the Danube Delta represents great interest for the tourists. Moreover, one study (Ivan, 2012) showed that despite the increasing economic pressure, and modern ideas and practices brought by tourists, a fisherman's family in Sfântu Gheorghe village adapted well and receives the benefits from tourism directly. Tourism has not disrupted their traditions and activities, but it is rather becoming a durable business for the family and plays an important role in slowing down the youth migration (Ivan, 2012). Therefore, the locals must be supported and encouraged by the local and national authorities to preserve and promote the cultural touristic values and the sustainable development in the Danube Delta as a biosphere reserve.

Danube Delta Biosphere Reserve and tourism - a sustainable relationship?

The results of these studies show that the Danube Delta has a strong potential for a sustainable human-nature relationship especially in terms of tourism. Nevertheless, tourism could have negative impacts that must not be neglected. The laws and regulations of the DDBR are not strictly followed by visitors (V. Bîscă, personal communication, June 24, 2015), and especially fishermen (A. Codreanu, personal communication, June 24, 2015). Understanding how different modes of recreation are influencing the communities and the ecosystems is crucial. For these reasons, ecotourism and sustainable tourism activities are essential for the healthy functioning of the DDBR. The next section summarizes the primary data collected through face-to-face interviews with representatives of the DDBRA and with tourists and aims to outline general suggestions about the practical state of tourism in the DDBR.

Interviews: context, aims and overview of the focus groups

Context: The Danube Delta Biosphere Reserve Authority

The Danube Delta Biosphere Reserve Authority (DDBRA) is the public institution appointed to administer the DDBR and it is subordinated and funded by the Ministry of Environment and Waters of the Republic of Romania (A. Codreanu, personal communication, June 24, 2015). The Authority regulates and provides assessment of natural resource status and conditions, monitoring of natural resource use, and authorisation of all economic activities in DDBR (setting maximum quota limits for resource use) (DDBRA, 2007-2017). The Authority issues permits for all activities conducted in the Reserve (DDBRA, 2007-2017). As required by the World Network of Biosphere Reserves (WNBR), the DDBRA establishes and implements a Management Plan. It comes out every five years and consists of objectives and measures organised in a program of planned actions consulted with all

stakeholders and local communities. This is based on researching the natural conditions in the Biosphere Reserve, conducted in collaboration with the Danube Delta National Institute for Research and Development. The main objectives are separated into different actions and priorities (DDBRA, 2017b), such as:

management of species and habitat protection
sustainable use of natural resources
conservation of cultural heritage, including restoration of buildings with historical and cultural value, infrastructure and waste management improvement, and trade of traditional products, such as honey, medicinal plants, products made of reed
public awareness and environmental education support, including community involvement, working meetings and public debates, Public Awareness Strategy for different target groups, and codes of good behaviour
scientific research and monitoring
international co-operation, including collaborative projects and experience sharing with the Transboundary Danube Delta Biosphere Reserve partner, Ukraine
support of sustainable tourism.

Interviews with DDBRA representatives

The structured interviews with Ms. Bîscă Viorica, the executive director of the DDBRA, Ms. Alina Codreanu, a councillor from the Ecological Education and Information Department of the DDBRA, and Monica Cacencu, a DDBRA officer in Crişan, Danube Delta, aimed to obtain information on the management activities and functions of the DDBRA, as well as on the challenges that they face. A customer service representative from from The National Centre for Tourism Promotion (CNIPT) - Tulcea was also interviewed on the tourism promotion process in the DDBR.

Interviews with visitors

The aim of the interviews was to observe and discover how familiar the visitors were with the concept of the biosphere reserve, and what the reasons were for choosing the Danube Delta for their vacation. The people interviewed were approached randomly during travelling in different parts of the biosphere reserve.

15 tourists were interviewed from Romania (2), Albania (1), France (4), Germany (2), Austria (2), Switzerland (1), United Kingdom (2) and Bulgaria (1). Among them there were cyclists (who were cycling along the Danube and their final point was the Delta), nature lovers, bird watchers, students in Romania, and recreation tourists. All of them preferred travelling with small boats or kayaking, which enables the potential observance of wildlife, but does not harm nature. The semi-structured interviews included general questions on the purpose of visiting the delta, accommodation and activities. Table 1, 2 and 3 indicate the questionnaires for each participant group.

Results, observational remarks, and analysis

In accordance with the groups of questions and the biosphere reserve functions, the results from the interviews are separated in sections.

Nature conservation. As it is indicated in the DDBRA website, Ms. Codreanu and Ms. Bîscă confirm that no activities, except for research, management, and monitoring, are allowed in the core zones:

They are strictly protected areas. Except for our staff and the Research Institute no one can go there. The access is forbidden, totally forbidden. Only in buffer zones, ecotourism is allowed, but without building roads or facilities, only walking, this kind of light tourism. (V. Bîscă, personal communication, June 24, 2015).

Table 1. Interview questions for DDBRA Representatives.

1. What had the state of the Danube Delta been before it became a biosphere reserve?
2. How do you achieve the functions of the biosphere reserve - conservation, development, knowledge and research place, logistic support for training and research?
3. What are the core, buffer and transition zones in the Danube Delta?
4. How do you provide knowledge and information to the local people regarding the

sustainable development of the area and the other objectives of the biosphere reserve?
5. How do you educate the tourists in the issues of ecosystem conservation, local communities benefits and natural heritage protection?
6. What are some of your past, recent and future projects for ecosystem management, conservation and development?
7. Does the Danube Delta Biosphere Reserve get funding from the UNESCO Man and the Biosphere Programme, The Ramsar Wetland Sites Network, the UNESCO Network of World Heritage Sites to fund projects?
8. How do you control tourist activity? Do you issue special permits?
9. Do you integrate ecosystem conservation with tourism in the Danube Delta and how?
10. Do you work together with other institutions and organisations and with the local communities on your projects?
11. In what way do you demonstrate and maintain the Danube Delta's "Biosphere Reserve" status and do you do periodic reviews?
12. How do you integrate the cultural with the biological diversity in the Danube Delta and do you use traditional knowledge and the help of the local people in ecosystem management and nature conservation?
13. What, in your opinion, are the biggest problems and challenges that the Danube Delta is currently facing and how do you think they can be dealt with?
14. Do you think tourism helps or is an obstacle for sustainable development in the Delta? What types of tourism are allowed? What is the influence of tourism on other activities, on the local people and on the environment in the Danube Delta?
15. Do you think that access and transportation harms the environment and is a problem for the sustainable development of the region and how it could be improved?

Table 2. Interview questions for tourists.

1. Is this the first time you visit the Delta? How did you find out about it?
2. What do you know about the Danube Delta?

3. Where are you staying?
4. What are you doing while on vacation here? Which places in the Delta do you visit?
5. Where do you come from and what is your profession?
6. How did you come here - by car, by bus, by boat/ship?
7. Do you know what a "biosphere reserve" is? Do you have an entrance permit?
8. How do you protect and conserve nature while you are here and when you go back home?
9. Do you meet and talk to any local people, and buy local products?
10. Is there anything that you do not like in the DDBR?
11. Are you going to visit any other cultural or natural heritage attractions here?
12. Did you come to the Danube Delta only or this is only a part of your vacation?
13. What do you think can be improved in the Danube Delta?

Table 3. Interview questions for CNIPT – Tulcea (National Centre for the Promotion of Tourism, Romania.)

1. What types of tourism are mainly practised in the Danube Delta?
2. What types of tourists are mainly visiting the Delta? Mostly individuals or families?
3. Are there specific zones for tourism activities - with free, restricted or prohibited access?
4. What types of tourism are allowed in the Danube Delta?
5. Do you work together or get advice from other institutions - the Ministry of Tourism, other organisations or government institutions, companies or other tourism businesses and do you work on specific projects to market Danube Delta as a tourist attraction?
6. Do you use the "biosphere reserve" designation to market and advertise the Danube Delta or you think that people do not know what a "biosphere reserve" is?
7. Do you integrate the issues of ecosystem conservation with tourism in the area and how?

8. Do you work together with the local communities to develop tourism and to gain economic benefits for the area and how?
10. Do you think that too many or too few tourists come to the Delta? What are the negative impacts of tourism in the Danube Delta?
11. How do you connect the importance of cultural heritage with the importance of biological diversity when you advertise the Danube Delta?
12. How do you disseminate information about the environment and about how important nature protection is to the tourists and to your employees?
13. How do you think the transport to and within the Danube Delta influences the tourism development?

Furthermore, the Authority promotes ecological education for children. Ms. Cacencu is involved with ecological education in the school in Crişan and she works very closely with teachers. The participant highlights the importance of environmental education for children:

It is very important to provide ecological education to the children so that they can discover nature: to feel, to touch, to observe, to stimulate their creativity... I like the idea of adopting the place, to feel that it belongs to you and it is important to clean it... You cannot change one adult's life, but you can change the children. Life is hard here and they do not have many perspectives, some of them go abroad. They can go outside and have more, and different experiences, or they can return and appreciate the beauty of our place or country. I want for the children to talk about the Danube Delta (M. Cacencu, personal communication, June 15, 2015).

Providing ecological education and supporting awareness. One of the important elements for information provision and awareness raising are the six information and ecological education visitor centres in the main localities in the DDBR. They promote the importance of the Biosphere Reserve and nature conservation, allow the access

to information, its correct understanding and interpretation for visitors, and encourage the local communities to take part in the decision making and in nature conservation activities. They provide information, leaflets, brochures, and ecological conservation guidelines not only to tourists, but also to students, organisations, and public institutions (A. Codreanu, personal communication, June 24, 2015). The centres use different interpretation techniques. One example is a wooden interactive map of the Danube Delta, where the strictly protected areas are highlighted by red lights, and the other areas by green and yellow lights (see Figure 3).

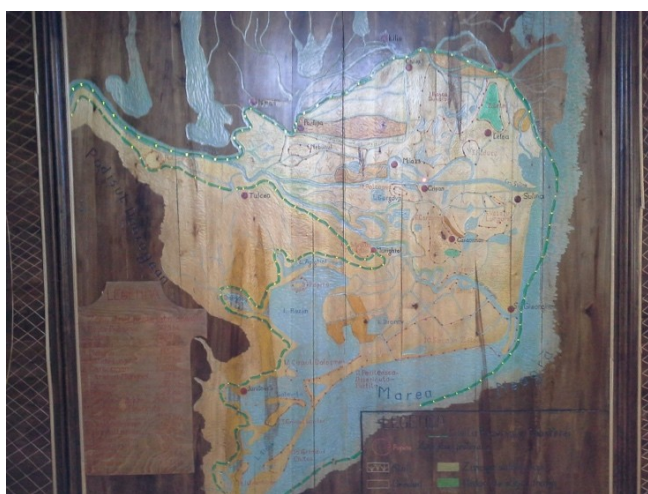


Figure 3. Interactive map of the DDBR in the Visitor Information Centre in Crisan. Photograph: Elitsa Barukchieva, 2015®.



Figure 4. Plans for the renovation of the Visitors Education and Information Centres in DDBR. Photograph: Elitsa Barukchieva, 2015®.

Currently, as seen from the plans on Fig.4, the visitor information centres in Tulcea, Crişan and Sulina are being renovated, through a project funded by the European Union (A. Codreanu, personal communication, June 24, 2015).

Unfortunately, the DDBRA is financed only by the Romanian government. The finances are not sufficient to equip the visitor centres with staff throughout the whole year and outside the tourist season, and in the Centre in Chilia village there are no personnel at all (A. Codreanu, personal communication, June 24, 2015). The DDBR does not receive funding from the UNESCO MAB Programme or from the Ramsar Convention on Wetlands (Ramsar, 2014). The Authority only applies for individual or collaboration projects funded by the EU or through the EU Strategy for the Danube region (V. Bîscă, personal communication, June 24, 2015; A. Codreanu, personal communication, June 24, 2015). This could be problematic for the achievement of the DDBR objectives and strategies.

Despite the renovation of the visitor information centres, there are many unused and underdeveloped facilities, some of which are falling into disrepair. For example, an observation tower next to the Visitor Information Centre in Crişan (Figs. 5, 6 and 7) is not only unused but almost destroyed and surrounded by dense vegetation.

Old watchtowers for hunters within the Danube Delta are rust-eaten and are intentionally destroyed so that they are not dangerous both for people and fauna. Ms. Cacencu believes that having modern and renovated visitor information centres is not enough:

They put European money in the hotels, restaurants, pensions... I do not think it is not so important to put it in some other categories - old people, children... In

Romania they make buildings like this, the visitor information centre, and do not put anything inside! But this is nothing without good materials, without people. If you do not have materials for them to see, to work with, and to go in the nature... In Donau Auen National Park when I saw the children's camp, it was like a revelation for me: 'Wow! It is possible!' (M. Cacencu, personal communication, June 15, 2015).



Figure 5. The Visitor Information Centre in Crişan. Photograph: Elitsa Barukchieva, 2015®.

In relation to this, four of the interviewed tourists shared that they would like the communication between the services within the DDBR to be better. For example, more information in English, more maps, instructions, and information about the DDBR for international tourists can be provided. The website that provides information for public boat transportation, Navrom Delta (2015), is only in Romanian. It could be extremely difficult for independent tourists to travel on their own without paying for an organised tour. Cyril, a French student in Bucharest, could not even find the DDBRA building:

I think that the signs can be improved. For example, this building should be more indicated with signs. It is hidden. When I first came to the Delta, I should have come here, but I did not

because I did not see it or did not know where it was. And I came now when I am already leaving" (C. Villiev, personal communication, June 25, 2015).



Figure 6. Watchtower, Visitor Information Centre in Crisan. Photograph: Elitsa Barukchieva, 2015.



Figure 7. The view from the watchtower. Photograph: Elitsa Barukchieva, 2015®.

Do people know what a biosphere reserve is?
According to the Director of the DDBRA, Bîscâ

Viorica, most of the local people know what the biosphere reserve functions are and they work together with local committees and NGOs. Additionally, they have regular meetings to spread information and they also consult different stakeholders, including tourism agencies, about the decisions they make (V. Bîscă, personal communication, June 24, 2015). The Director notes that they have a lot of brochures, there are inscriptions and signs with information about the protected areas, as well as the rules and regulations. Furthermore, they provide education programmes and activities for children:

We celebrate different events - World Environment Day, Wetland Day, Danube Day, and so on. We work together, we go on trips. The local people usually ask me, I do not meet with them in special meetings. They ask me about the laws, what is forbidden, what is not I think if I manage to develop in them love for the nature, the rest will be from the mind - knowing what is good for the nature, caring about nature. Nowadays it is important to study outside the school as well. (V. Bîscă, personal communication, June 24, 2015).

However, Ms. Cacencu says that "not many locals know English and it is difficult for the local people to educate the tourists" (M. Cacencu, personal communication, June 15, 2015). Also, according to Ms. Codreanu, not many tourists know what a biosphere reserve is (A. Codreanu, personal communication, June 24, 2015). On the contrary, a customer service representative from the Tourism Promotion Centre claims that people visiting the centre already know what a biosphere reserve is and the tour guides are local and they explain to the tourists everything about the biosphere reserve. The participant notes that only individuals who are familiar with the concept visit the centre, not big groups (CNIPT representative, personal communication, June 18, 2015).

In order to shed more light on this matter, interviews with tourists were conducted and they were asked if they know what a biosphere reserve is. The research results show that from the fifteen

interviewed tourists, three knew what a biosphere reserve was and they have known and read about it before they came to the Delta. Two of them were from Germany and gave reference to a German biosphere reserve, and one was from Austria. The rest of the participants connected their reasons to visit the Danube Delta with its natural uniqueness and attractiveness, and four of them indicated their strong desire to see pelicans and other flagship species of birds of the Danube Delta. Six people thought a biosphere reserve is a kind of area for nature protection and two visitors thought it is a nature reserve. Roman Dueckeus from Germany says that it is hard to explain in English what a biosphere reserve is (R. Dueckeus, personal communication, June 20, 2015). Four of the participants did not know that they should purchase permits for the DDBR. This suggests that the permit system is not successfully indicated and information provision for tourists is not sufficient.

Economic activities and sustainable tourism. As this article has already outlined, traditional farming and fishing are slowly being replaced by other economic activities (Price, 1995; N.Damian, 2011). As the communities in the Danube Delta are very poor (A. Codreanu, personal communication, June 24, 2015), tourism represents a very important economic activity that helps the local people to earn some additional money, above what they earn from agriculture and fishing with its reduced importance and increased restrictions nowadays. It is hard for the local communities in the DDBR to earn enough money from the traditional activities of the past. Especially the isolated communities in the areas with sand dunes in the Delta because they cannot earn enough from fishing, they are too far away from water, and they cannot do agriculture as there is only sand dune vegetation present (A. Codreanu, personal communication, June 24, 2015).

Danube Delta is a part of the so-called "unfavoured zones" in the South-East Region of Romania with a strong potential for good development but with more disadvantages for the local people, as transportation, communication,

education, work commute and health-care are challenged by lack of roads and by the deltaic ecosystems (MDRL, 2007; A. Codreanu, personal communication, June 24, 2015). According to Ms. Codreanu, the state has passed a law to help the local people from these areas, but in the Danube Delta this does not happen. Furthermore, the Biosphere Reserve does not have any doctors - the state has offered a 200 percent increase in the salary of Romanian doctors who go to live in the Delta and practice there, but no one wants to go in the isolated Delta, where access is difficult and it is more difficult for people to provide for themselves. Consequently, tourism is an economic activity of vital importance. Many local people and families, including fishermen and farmers, offer tourist accommodation and tours (A. Codreanu, personal communication, June 24, 2015; M. Cacencu, personal communication, June 15, 2015). The question arises on how tourism is promoted in such a way so that the objectives of the biosphere reserve for sustainable development and sustainable people-nature relationship can be fostered.

An issue in the sustainable tourism development is that from the 10 925 permits issued between January and June 2015, 7 885 were for fishing in the Delta, whereas only 18 were for scientific research, and seven were for educational and documentary filming and photography. This information, provided by Ms. Codreanu (personal communication, June 24, 2015), shows that ecotourism and ecological education activities and scientific research can be further developed to correspond to the biosphere reserve objectives.

The DDBRA promotes and takes measures to implement ecotourism by strategic planning, education and promotion, public involvement and support, monitoring and regulations (V. Bîscă, personal communication, June 24, 2015). In the DDBRA there is a special department that controls tourism activity in the biosphere reserve. It issues entrance permits for visiting the buffer and the sustainable development areas, and Reserve Authority inspectors periodically check all the areas for poachers and whether tourists follow the regulations. here are 31 specially designated areas

where recreational and sport fishing is allowed (A. Codreanu, personal communication, June 24, 2015). The Visitor Information Centres provide information through materials, guides, maps or indication of tourist routes within the Delta that aim to create understanding and spread knowledge about the Biosphere Reserve and its functions, and the allowed or prohibited activities. For example, the Visitor's Guide to the DDBR presents all the information about the Delta, as well as recommended and specially designed tourist routes (15 boat routes and nine hiking trails), regulations and requirements for conducting tourism in the Danube Delta. According to the Director, there are panels indicating the strictly protected areas in the DDBR, where access is forbidden (V. Bîscă, personal communication, June 24, 2015).

According to the Executive director, there are not too many tourists in the biosphere reserve, but there are boats with engines too powerful for the Delta and people that do not respect the laws:

We have got enough places to accommodate tourists... That is not the problem, the problem are the boats, the engines, the speed. That is why we try to have a special regulation for boats - a special law, which is, hopefully, coming soon. At that moment we will be able to control the speed of every boat, the location of every boat - we can find them and there will be punishment too (V. Bîscă, personal communication, June 24, 2015).

Traditions and knowledge of the local people are maintained and promoted. The Tourism Promotion Center in Tulcea advertises the cultural attractions and heritage in the Danube Delta to tourists (CNIPT representative, personal communication, June 18, 2015). The DDBRA supports traditional architecture (Figs. 8 and 9) and they have a special regulation law for buildings:

They need our approval to build something and they have to follow this regulation. The height, the colour of the roof (must be blue or green),

materials (reed), they cannot use all kinds of materials there. Also, how much of an area they can use for a building - let's say 1000 km². They cannot use more than this. The traditions are very important...This is the area where you can find big ethnic diversity - there are at least 13 nationalities and they have lived together in peace for so much time. Every nationality has its own traditions - songs, costumes, and so on, and they respect each other very much. They have coexisted peacefully for decades (V. Bîscă, personal communication, June 24, 2015).



Figure 8. A traditional house in Chilia Veche town, on the Chilia branch. Photograph: Elitsa Barukchieva, 2015®.



Figure 9. A traditional house in Crișan, Crișan village. The height cannot be more than two floors and the roof must be made of reed or green/blue wood. Photograph: Elitsa Barukchieva, 2015®.

Apart from the traditional knowledge, collaboration with local organisations and councils is developed on all levels and they consult with tourism agencies when taking decisions on ecosystem conservation (V. Bîscă, personal communication, June 24, 2015; A. Codreanu, personal communication, June 24, 2015; CNIPT representative, personal communication, June 18, 2015).

All of the interviewed tourists supported local communities. They communicated with the locals and bought local products during their stay in the Delta. Mr. Dueuckeus and his Romanian girlfriend wanted to especially go around the Delta with a small boat and they paid an old Romanian fisherman to be their guide in order to learn more things and to help the local people with additional money (Dueuckeus, 2015). Furthermore, all of the interviewees were mainly focused on nature-based activities during their stay and were staying overnight in local accommodation facilities.

Inside the Biosphere Reserve there are no places where local people sell souvenirs, except for Sulina town which is at the entrance to the Black Sea. Restaurants and dining places are scarce. Six of the tourists that were interviewed in Crișan admitted that they were hoping to find a place to eat and they could not. Two journalism students regretted that they could not buy any fish from the local people:

I have met some fishermen from the local villages (for example Mila 23) and I have talked to them. It was a time to remember. I buy from the shops - drinks and food. I wanted to buy fish, but I did not... If you know them better, they can give you fish, but not if you don't know them (J. Cimpoero, personal communication, June 14, 2015).

Therefore, it is concluded that the tourists spent their money locally, but only on organised tours, accommodation, and public transportation (e.g. ferries) along the channels (Fig.10).



Figure 10. Tourists going on a tour with a small boat with local guides from Letea village. Photograph: Elitsa Barukchieva, 2015®.

Apart from all the measures and regulations that the DDBRA implements for the promotion of sustainable and ecotourism in the biosphere reserve, there are still a lot of problems regarding the achievement of the sustainability in the relationship between people, nature, and tourists in the Delta.

Challenges

Waste management is not very well developed in the villages and localities in the Delta. Despite the fact that there has been collaboration with a company for cleaning materials that provided waste receptacles for the local people, transport to Tulcea (where waste is processed) is expensive (A. Codreanu, personal communication, June 24, 2015). A lot of garbage is left by fishermen, especially the sport fishermen (A. Codreanu, personal communication, June 24, 2015), and the tourists (M. Cacencu, personal communication, June 15, 2015).

Pollution of waters with nutrients leads to acute algae blooms in the warm season, which forms a layer on the surface of the water (DDBRA, 2015). Because of this and climate change, water is deprived of oxygen and light and this leads to the death of animals and plants (Bîsca, 2015). Another issue is the transportation; boats with powerful engines can disturb ecosystems and wildlife. Recently, a colony of birds has moved from their

living place in Murighiol village to make home in a place where the tourist flow is not concentrated (A. Codreanu, personal communication, June 24, 2015). Ms. Cacencu illustrates this with an interesting experience: " and then there are the other - they have big boats, loud music. Sometimes they come to me and ask me: 'Why don't we see any birds?', and I say: 'You are strange...'" (M. Cacencu, personal communication, June 15, 2015).

High tourist activity also disturbs wildlife and causes pollution. According to Nichifor and Covaliov (2011), individual camping in the Delta is increasing and is the biggest threat to the integrity of the delta ecosystems, even if it is practiced in areas specifically designated for this type of tourism. By 2011 there were 28 designated camping areas (Nichifor and Covaliov, 2011). However, presently, there are only three authorised camping sites (DDBRA, 2007-2017). In the Danube Delta camping is forbidden in most of the area to reduce littering (Höfer et al., 2014) and to increase control of tourist activity (Nichifor and Covaliov, 2011).

Big ships and motor boats cause waves that cause erosion and loss of riverbanks and sediments (Höfer et al., 2014). Illegal hunting and poaching are also a big threat to many species (A. Codreanu, personal communication, June 24, 2015). According to the DDBRA representatives, the biggest problem for the Reserve to achieve its objectives is lack of education, both for local people and tourists, as well as disrespecting the laws and regulations: "They want to use the most powerful engines, expensive boats, they want to see the entire Danube Delta in several hours and some of them do not care that this is a protected area" (V. Bîscă, personal communication, June 24, 2015). Such tourists do not care about the speed (M. Cacencu, personal communication, June 15, 2015)

Lack of education and respect for nature is resulting in pollution and the picking of big quantities of water-lilies, such as these on Figure 11, by Romanian tourists:

Romanians usually cause this big problem - they bring lots of water lilies with them back home to do...nothing! Because they (the water-lilies) die! And it is forbidden to pick them. Maybe it is normal to bring one, but they take a lot of them! Why? With the children we make these water lilies from paper so that we can give them instead of them picking the water lilies" (M. Cacencu, personal communication, June 15, 2015).



Figure 11. Water-lilies in the DDBR. The water-lilies are an essential part of the natural habitats in the DDBR, but also an important touristic value. Photograph: Elitsa Barukchieva, 2015®.

The DDBRA develops monitoring system and assessment of the tourism flow (V. Bîscă, personal communication, June 24, 2015). The visitor centres have monthly reports for visitors and all tourism companies need to report how many tourists they take in the Delta and for how many days and where (A. Codreanu, personal communication, June 24, 2015). However, according to Ms. Codreanu, not all of them conduct these reports. Consequently, it is hard to control the tourist flow and activity, as well as the tourism companies. For example, the report for the January-May 2015 period shows that 339 tourists in total have visited just the visitor information centres, whereas the reported tourists that visited the entire Danube Delta for this period are only 186 (172 Romanian and 14 international), which cannot be possible, says Ms. Codreanu, because at least six ships, with around 180 people each, visit

the Delta monthly and there are a lot more individual tourists.

In order to improve the monitoring and the control in the Biosphere Reserve, the Authority has implemented different strategies, such as training courses for rangers in collaboration with the DANUBEPARKS Network in 2010. They have consisted of English language course and international nature protection course in order to improve the day-to-day contact with visitors and the transfer of knowledge. Constant monitoring and research is important, because the ecosystem conditions are not static, but very dynamic (A. Codreanu, personal communication, June 24, 2015). However, there are not sufficient financial resources for training and for enough staff in the DDBR (V. Bîscă, personal communication, June 24, 2015).

Having all this in mind, it is especially hard to maintain a people-friendly and environment-friendly tourism. Despite the fact that Ms. Codreanu believes that the cruise ship tourists are not more in numbers than the individual tourist, in reality they do not practice sustainable tourism. For example, most cruise ships reach the Black Sea along the Sulina Channel and go back, which means the tourists do not travel around the Delta, do not communicate with the local people, do not buy local products or spend money locally, do not observe the nature and therefore do not acknowledge the importance of nature conservation, and understand the hardships of life in the Danube Delta (A. Codreanu, personal communication, June 24, 2015). The DDBRA does not encourage this type of tourism. The DDBRA promotes sustainable and slow tourism and such activities that bring benefits for the local people. As long as the cruise ship tourism companies arrange local tours with local guides, tourism has only positive impacts on the sustainable development of the area (A. Codreanu, personal communication, June 24, 2015).

DDBRA promotes slow tourism and sees rowing as the most suitable means of transportation for tourists (V. Bîscă, personal communication, June 24, 2015; M. Cacencu, personal communication,

June 15, 2015; A. Codreanu, personal communication, June 24, 2015). Especially interesting is the *canotca* - a new type of rowing boat that has been created by Ivan Patzaichin, a Romanian canoe champion, and his Rowmania Ecotourism Association (ROWMANIA, 2015). Since it is bigger than the canoe it can take bigger groups. However, it is not as harmful as the motor boat. It is built from local wood of highest quality in the tradition of Danube Delta wood crafts (A. Codreanu, personal communication, June 24, 2015).

Furthermore, the DDBRA believes that tourism helps the local people and brings benefits, when it is sustainable and light: "It helps because people who live there need money from something else, not only from fishing. And why not - this is a special place! We would like to have tourists here. But - respecting the laws..." (V. Bîscă, personal communication, June 24, 2015).

Among the biggest challenges that most visitors indicated were poverty, lack of communication between the different services and public institutions, and pollution. Pollution was seen as a major negative impact of tourism in the Danube Delta according to five of the visitors. One couple, a German man and a Romanian woman, was especially upset with the situation with the waste:

There is quite a lot of garbage here. We went to the other side of the houses here in Crișan and we saw so much garbage: plastic, a car, a refrigerator! Just so much. There are cows and chickens. But there is the car and the refrigerator which leave a lot of chemicals. So much garbage, we are so upset. We see a lot of places around the delta that were in garbage plastic, cans. All this is very sad. I think in two ways: in one way you destroy the nature - the fish and the birds eat the garbage and they die, and in the other way, when the garbage increases, after 10 years nobody will want to go to the Delta. It is sad from every point of view... (R. Dueckeus, personal communication, June 20, 2015).

The man thought that the most important problem is the garbage and the ignorance of the local people:

We were talking to our guide. We mentioned the garbage problem, but he just said 'Yeah, yeah'. We were by his house and there were a lot of plastic things. He surprised me because obviously he likes the nature, but...he doesn't care about it. I think the people do not think about this problem. Maybe the children need to be more educated, maybe is an important topic for the children. (R. Dueckeus, personal communication, June 20, 2015).

Even though the DDBRA claims that the local communities are involved in the decision-making and in the projects for the development of DDBR, poverty is still a huge problem, as three of the interviewees indicated. Erina, a student from Albania, shared:

I saw that in the villages people are really poor. The only thing that they do is fishing. This is good but they do not earn a lot of money from this because they do not have possibilities to sell all the fish. I think if the Danube Delta Biosphere Reserve Institution does something to help these people, this will be good. They live in a biosphere reserve with beautiful nature. A lot of people would like to have such nature around them. The people here have it, so why cannot they live better (E. Kryeziu, personal communication, June 14, 2015).

A retired German couple, travelling on a bike along the Danube has the feeling that there is a great deal of poverty and something needs to be done about it, because there are a lot of old people in the Delta: "There are different parts along the Danube: the Western part is more developed and when we came to the Eastern part we saw a great deal of poverty..." (B. Waltje, personal communication, June 18, 2015). Furthermore, Mr. Waltje shares that the cycling route along the Danube is really well maintained but when it reaches the Romanian part, the conditions are not as good, there are no signs or indications or they are only in Romanian; therefore, the cycling infrastructure could be improved.

Observational remarks and analysis: drawbacks and positive aspects in management of the DDBR

Overall, the research found that the DDBRA undertakes all measures to fulfil the criteria of the biosphere reserve designation: it focuses on nature conservation and maintaining cultural heritage, it supports opportunities for socio-economic development, it implements a management plan, monitoring, it has the three basic zones, it supports research and environmental education, and involves all stakeholders in the decision-making. The changes in the biosphere reserve concept from emphasis on nature conservation to broader sustainable development activities are visible in the Management Plan of the DDBR: actions for socio-economic development, sustainable tourism, research, and ecological education support as well as information provision and international co-operation are prioritised.

On the basis of the findings it can be suggested that the functions of the DDBR are not very well understood by visitors and by local people; therefore, the Biosphere Reserve objectives are rather separated and not convergent in the management of the DDBR. Visitors do not realise they are in a biosphere reserve or that it has special objectives, even though they know that the Danube Delta is a kind of protected area for particular species. Tourists, especially those on organized trips and tours, do not know that they need a permit for the DDBR or they do not know what the permits are for. Therefore, there are many challenges perhaps due to lack of integration between the biosphere reserve functions in the DDBR Management Plan, whereas they need to be viewed together, as an integrated whole, and disseminated among the visitors of the DDBR. As a result, there is no clear evidence how the biosphere reserve status and sustainable tourism contribute to each other and how the DDBR has functions different than that of a nature reserve in support of sustainable tourism.

At present, it is more realistic to conclude that sustainable tourism could contribute more to the dissemination of the biosphere reserve concept

and development, than it is to conclude that the biosphere reserve status of the Danube Delta contributes to sustainable tourism development. Sustainable tourism in biosphere reserves could not only help nature conservation, but also improve the lives of the local people, as shown in the case of the Danube Delta. After analysing the results from the primary data collected, potential drawbacks, but also positive aspects in the management of the DDBR could be observed, that, respectively, limit or could enhance the mutual contribution between the biosphere reserve status and sustainable tourism.

Potential drawbacks

Insufficient finances for staff and rangers in the biosphere reserve, poor control of the violations of the DDBR regulations, and tourist flow

There are training courses for rangers in the DDBR, but, as noted by the DDBRA, the financial capacity is insufficient for human resources that can improve the monitoring and law enforcement in the Reserve. For example, in one of the core areas, Letea Forest, there were visitors being transported to the area by big tourist jeep vehicles (Fig.12). Although they were on foot, they were violating the regulations by entering the strictly protected area. Moreover, despite the fact that a long fence separates Letea Forest from the buffer zone around it (Fig.13), there was no sign indicating that this is a strictly protected area, even though the Executive director highlighted that there are such signs.



Figure 12. Tourist vehicles parked at the gate of Letea Forest strictly protected area. Photograph: Elitsa Barukchieva, 2015®.



Figure 13. A fence separates the Letea Forest core area from the buffer zone. Photograph: Elitsa Barukchieva, 2015®.

The DDBR has a complex network of branches and channels. Therefore, it is important to have nature rangers to restrict the devastating effects on wildlife of illegal poaching, fishing, and violation of tourist rules. Observation in one of the core zones near Sfântu Gheorghe village, *Sacalin-Zatoane*, concluded that illegal fishing is a problem that is hard to be controlled when there are not enough rangers. Conversely, higher control of activities in the DDBR will also solve a portion of the pollution problem, caused by tourists and by local people. Moreover, the findings show that not all of the tourist companies create monthly reports of their

tourist numbers and activities, including environmental impacts.

Unsustainable mobility

Another issue highlighted is excessive tourist activity and large, powerful motor boats that disturb wildlife, cause erosion and loss of vegetation. However, rowing is too slow for people that want to see the entire Delta in a day or two. Consequently, among other reasons, motor boats dominate the DDBR waterways to detrimental effect.

As stated before, most cruise ships do not ensure that their activities are sustainable, including tourists not spending money in local businesses and interacting with the local population. Unfortunately, as a result of the predominant popularity of powerful personal boats, and cruise ship traffic, the majority of water transportation is unsustainable in the DDBR.

Insufficient development of traditional craftsmanship

Traditional craftsmanship could be turned into a tourist product. Regional products and souvenirs for tourists and the number of restaurants have the capacity to expand. A very interesting example is the making of the *canotca*, a boat-canoe combination, made of high quality Romanian wood to encourage slow ecotourism along the waterways. This initiative is not very popular and needs to be further supported.

Low level of education and respect for the rules and insufficient scientific research

The results of the interviews illustrate the local people's lacking ability to communicate in English and other languages. This can result in insufficient dissemination of information about the DDBR and lack of understanding between tourists and locals. In addition, there are a low number of permits for scientific research in comparison to those for tourism. Furthermore, according to the interview responses, pollution and picking of water-lilies, is a result of low education levels and lack of respect for the law.

Lack of familiarity with the biosphere reserve concept

Not many tourists know what a biosphere reserve is. This in part, can be attributed to a lack of information signs. While there are visitor information centres, brochures, tourist guides, and maps, they are only in Romanian. Conversely, the three tourists from Germany and Austria that knew about biosphere reserves, indicates that in these countries the biosphere reserve concept is more prevalent within education, or culture.

Positive aspects.

There are different interactive interpretation techniques and information provision methods, such as guides, brochures, leaflets, ecological education for children, interactive maps, and six visitor information centres. The DDBRA promotes ecotourism and sustainable tourism activities, such as kayaking. Furthermore, the innovation by a local canoe champion, *canotca*, is ingenious and has a strong potential to be further developed through advertising and promotion by the DDBRA, and by international ecotourism organisations. The tourism businesses and accommodation facilities, including the indigenous boats, are locally owned, small-scale, and the tour guides are local. The Danube Delta is big and there are enough accommodation facilities and zones for tourist activities without disturbing flora, fauna, and habitats. However, community-based tourism requires further development, which will boost the ethnic and cultural diversity within the Biosphere Reserve.

The results suggest that sustainable tourism in the DDBR has strong potential, however, it is challenged by many factors. The biosphere reserve objectives need to be further spread among the different stakeholders and visitors. The relationship between sustainable tourism and the biosphere reserve designation in the Danube Delta could be developed and turned into a more symbiotic relationship. Through better dissemination of information on the biosphere reserve concept, regulations and educating the importance for sustainable development of the

Danube Delta (and the whole region) will be improved. The use of terms "strictly protected areas" and "economic areas" instead of "core" and "transition" areas can help people can better understand the concepts of zoning. This is a good example for the MAB Programme to facilitate the simplifying of these terms, which could eventually eliminate the confusion around the biosphere reserve concept.

This article has shown that traditional knowledge and landscape play an important role for the management of the DDBR (e.g., transportation, economic activities, and tourism). The MAB Programme focuses on the relationship between humans and the environment. In line with this idea, the harmonious human-nature relationship depends on the traditional knowledge in society and the importance and use of landscape by each community, nation or region (German MAB National Committee, 2005). Therefore, the concepts of "cultural landscape" and "wilderness" as untouched nature (discussed below), can convey the complicated terminology of the biosphere reserve to the tourists and local people through simple description that is closer to them and can boost sustainable tourism development. On the basis of the research results and the analysis, suggestions and recommendations regarding the DDBR management and the relationship between the biosphere reserve and tourism are offered in the next section.

Recommendations

Cultural landscapes and wilderness

"Cultural landscape", as described by the German MAB National Committee (2005), is the continuous process of changing the surrounding nature by developing transport routes on water and land that use natural resources. This includes the symbolic appropriation of nature and its cultivation through artistic representations, myths, stories; wherein knowledge, religion, language, and traditions play a crucial role. In the same way, in the Danube Delta, the indigenous peoples and larger community have adapted to

the living conditions and natural resources to create cultural landscapes. Subsequently, every inhabitant or tourist appropriates this landscape by exploring the areas, by using, but also protecting and appreciating the environment and the diverse knowledge systems (German MAB National Committee, 2005).

Natural landscapes have slowly come from cultural to exploited, or "production landscapes" (German MAB National Committee, 2005). However, the need to live in the countryside and to see wild nature is growing both in the tourism industry and in the concept of the world as a whole (German MAB National Committee, 2005). The biosphere reserve concept stands for the conservation of rural areas, cultural landscapes, and of unfavourable zones, such as the Danube Delta, through more ecologically and socially oriented land use policy and through core zones in which nature can be restored to its original function and dynamics. In that sense, the wilderness concept has an interesting potential for the promotion of the Danube Delta on both national and international level.

Danube Delta is still relatively wild, such as forest landscapes in their natural state, including the wild horses and cattle. Furthermore, the dynamic river network, the ecosystems and the influence of the Black Sea have formed favourable habitats for huge biodiversity and landscape that is relatively unspoiled from infrastructure (Rewilding Europe, 2014). Under the biosphere reserve criteria, the core zones preserve the ecological integrity of the Danube Delta ecosystems and wildlife (DDBRA, 2007-2017). The harsh conditions, difficult access, and use of traditional knowledge provide the grounds for restoration of vast areas and of native species. Furthermore, these wilderness areas can attract tourists, scientists, activists, and entrepreneurs.

If the cultural landscape and wilderness concepts are added to the description of the DDBR, the biosphere reserve concept can be wisely elaborated and the Danube Delta can be the first to demonstrate this integration. In other words, the human-nature balance, which the biosphere

reserve as a model strives to achieve, can be represented by the relationship between cultural landscape (an expression of the interaction between humans and nature, of cultural and biological evolution, as described by the German MAB National Committee) and wilderness (wild or semi-wild nature that the reserve is trying to preserve and restore in the core areas). Additionally, the relationship between cultural landscape and wild, untouched areas can boost environment-friendly and sustainable forms of tourism. Sustainable tourism can contribute to socio-economic development in these cultural landscape-wilderness areas, as people - both visitors and locals - become more environmentally-sensible as a result (German MAB National Committee, 2005). It is confirmed that nature-based tourists are sympathetic to environmental issues and they are more open to learning (Wight, 2001). Furthermore, research has shown higher levels of tourist satisfaction when activities are combined with education (Orams, 1997). Last, but not least, tourism development drawbacks have been outlined in the Danube Delta, such as the decline of traditional activities and building techniques due to modern requirements, lack of jobs, tourist flow control, waste management systems, and insufficient knowledge of foreign languages. Conversely, this can be overcome when nature conservation community projects are combined with slow, small-scale, landscape, wildlife, or nature-based tourism (Koens et al., 2009).

Sustainable tourism contributes to restoring and preserving wildlife, and can further simplify the biosphere reserve concept and contribute to its dissemination. However, the three fundamental functions of the biosphere reserve need to be integrated in the Danube Delta so that they can serve an equally strong role in the sustainable development mission. If sustainable tourism is the link between the cultural landscape and wilderness, then it could also be the link between the sustainable development, conservation, and logistical functions of the DDBR. On the basis of the research results, components that further enhance the balanced relationship between the

Biosphere Reserve and sustainable tourism are recommended.

Tourist flow control and carrying capacity

One of the ways to boost sustainable tourism and to implement visitor management in the biosphere reserve is to measure the carrying capacity in the biosphere reserve. The DDBR is one of the pilot areas for measuring the carrying capacity in the protected areas along the Danube within a project (*Danube River Network of Protected Areas - Development and Implementation of Transnational Strategies for the Conservation of the Natural Heritage at the Danube River, 2007-2013*, DANUBEPARKS, 2014; DDBRA, 2007-2017). This study shows that visitor's access to nature parks in May and July must be restricted for effective preservation of flora and fauna. Furthermore, visitors' information, guidance, and education programs can encourage the awareness towards the sensitivity of wildlife and regulations (e.g. sticking to paths) are essential (Höfer et al., 2014). However, only general statements and recommendations were made as a result of this research because the evaluation of carrying capacity is based on general indicators and is made for all the parks from the DANUBEPARKS Network. Therefore, it does not take into consideration the specific characteristics of flora, fauna, and their habitats and visitors of each park and it cannot be completely accurate in assessing the carrying capacity in the Danube Delta context.

Monitoring and evaluation strategy according to the Danube Delta's individual characteristics, including regular carrying capacity studies, are needed in order to control and manage all elements in the biosphere reserve. Tourist flow control can be improved by better indicated permit purchase points, incentives for tourist companies to send their monthly business reports, and more rangers within the Biosphere Reserve. Violation of regulations for tourism in the core areas could be prevented if better indication and signs existed, as well as better co-operation between stakeholders.

Sustainable mobility

Sustainable tourism promotion in the Danube Delta was part of the TRANSDANUBE Project (2012-2014), which was a collaboration of the 10 countries along the Danube for environmentally-friendly mobility in sensitive areas and transboundary regions (TRANSDANUBE, 2014). After carrying out of feasibility studies and implementation plans, sustainable mobility solutions are integrated in the Danube Delta. For example, cycling, canoeing, electric boats, and, in addition to the existing five cycling routes, there are two new potential biking trails (TRANSDANUBE, 2014). These ideas are also illustrated by the *canotca* local project, as well as by ecotourism companies that operate in the Danube Delta.

Despite these provisions, motor boat speed violations are still an issue and need to be regulated and controlled. Bike routes in the DDBR need to be developed and improved. For a better human-nature relationship, and for the promotion of slow and sustainable tourism, special regulations for cruise ships and better regulations for water transport and speed of boats are needed (e.g., different signs for boats rather than the use of km/h instructions, or the use of kayaks, canoes or boats without motors in specified areas, as well as restricted number of cruise ships per week/month). The Executive Director of DDBRA has admitted that if only rowing is practiced there will be too many boats within the Reserve. That is why a balance between cruise ship tourism and slow tourism, such as kayaking and cycling, can be fostered. Ship-to-bike connections in the entrance (Tulcea) or exit (Sulina) points of the DDBR, as suggested by the TRANSDANUBE Project (2014), could be a possible solution. Promoting sustainable mobility and tourism and transboundary co-operation with different countries in the region and along the Danube River can be essential in encouraging sustainable development in terms of access, biodiversity protection, healthy lifestyle, research and education, and economic benefits.

Socio-economic development and use of traditional knowledge

The local people live in unique environment with diverse natural resources and they have always known ways to use natural resources in a sustainable way. Today, their traditions are slowly dying because of the historical past, the out-migration of the young population, the lack of infrastructure, health and education institutions, and restrictions related to the management of the biosphere reserve. Because of the hardship of life and the uneasy access, the local people could revive and re-create old traditions, re-use old knowledge and re-examine the sustainable use of natural resources - this could lead to sustainable socio-economic development. For example, rather than developing tourism instead of traditional agriculture and fishing, local people could diversify their traditional activities and combine production with rural, farm tourism, or cultural events and traditional agriculture festivals for tourists. Furthermore, the DDBRA can raise awareness for nature protection among the tourists by combining existing projects for species conservation and restoration (e.g. Dalmatian pelican, Danube Sturgeon, or the Letea wild horses) with ecotourism and volunteer tourism activities. For example, an international poster competition on ecological themes called *A Chance For The Blue Danube* - in partnership with *George Georgescu Arts High School* in Tulcea, is displayed in exhibitions in museums and in ecotourism centres in order to maintain the interest of the public, the tourists, and of the younger generation on the need for conservation of natural ecosystems (DDBRA, 2017). Such projects can attract the attention of tourists on the issues of nature protection (Fig.14). The bringing of traditional knowledge and the involvement of the local population are driving factors in the expansion of the biosphere reserve concept.

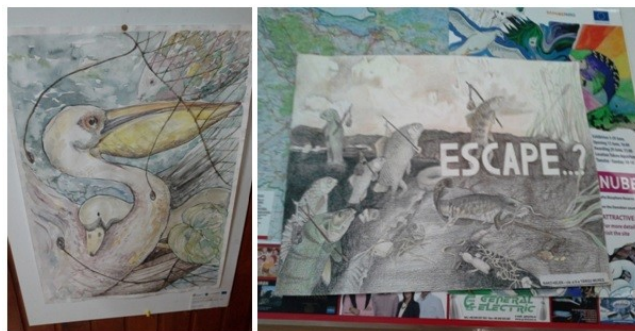


Figure 14. Participants in the poster competition "A Chance for the Blue Danube". Photograph: Elitsa Barukchieva, 2015®.

Information channel expansion can go beyond only information centres. For example, through local skills and handicrafts, markets, and workshops. The abandoned and rust-eaten watchtowers and other facilities can be repurposed and used for observation towers for tourists and educational activities, including for souvenir shops, handicrafts workshops, small museums, and ranger stations. This will promote the Biosphere Reserve and attract visitors interested in alternative tourism, but also increase benefits for local people without putting the integrity of their local culture at risk. Furthermore it will increase tourists' attention on the importance of nature conservation (e.g., donations, volunteering). Volunteering and awareness raising can increase human and financial resources for nature conservation and increase visitor satisfaction from first-hand experience and familiarity with the objectives of the Danube Delta as a biosphere reserve. And last but not least, the local involvement in these initiatives can decrease the levels of pollution and degradation of water-lilies and other species by local people.

Support for training and scientific research

Increased support for research projects and training for universities and schools can successfully disseminate knowledge on the biosphere reserve functions, and on the importance of sustainable economic development among all the stakeholders. Language courses

organised by the DDBRA in collaboration with local communities, NGO's, and representative organisations, can improve the knowledge of English. More positive contributions include, educational facilities for children (e.g., camps), for professionals, economic agents, and NGO's, as well as maps and ecological education for tourists, and training for nature rangers. Nature rangers can play an important role for the enforcement of the core and buffer zones, ecological education, and the dissemination of information about the Biosphere Reserve through different events, guided tours, presentations, and everyday contact.

In conclusion, the integrated and simultaneous implementation of all objectives can benefit not only the sustainable development of tourism but also the biosphere reserves. The integration of the cultural landscape and wilderness concepts into the biosphere reserve description in combination with the two complementary UNESCO Programmes present the opportunity for the Danube Delta to be a leading example for a biosphere reserve that is a model for sustainable development (Fig.15). If the adequate measures are adopted in achieving the symbiotic and clear relationship between sustainable tourism and the aims of the biosphere reserve status, it will not be perceived as futuristic for the Danube Delta to receive the image of the "sustainable gate" to the Black Sea.



Figure 15. Landscape from the Danube Delta where culture and wilderness meet to form a peaceful relationship.

Conclusion

The research aimed to find out whether, under the biosphere reserve objectives, tourism development, nature, and human well-being are convergent in the Danube Delta. On the whole, the results did not identify clear evidence that the biosphere reserve status of the DDBR contributes to the sustainable development of tourism. Although sustainable tourism has a great potential and the DDBRA focuses on each of the objectives prescribed by the biosphere reserve criteria, a lot of challenges are present for the environmental, social, and economic sustainability in the DDBR. The majority of the research participants were not aware of the status. This suggests that visitors in the DDBR are not very familiar with the biosphere reserve concept, even though the administrative authority has prioritized information campaigns and the dissemination of the biosphere reserve objectives.

A lack of sufficient financial resources for staff in the biosphere reserve result in poor control of the tourist flow and violations of the DDBR regulations. Pollution, lack of education, and low respect for the rules, unsustainable mobility, and low socio-economic development especially in terms of traditional activities, are also problematic for the healthy functioning of the DDBR. Conversely, the DDBRA is trying to develop ecological education activities and information provision and supports local communities for sustainable development of tourism, specifically through active domestic and international co-operation. Tourism businesses and accommodation facilities are locally owned, and while cruise ship tourism is increasing, small-scale tourism is developed and vast natural areas are still relatively wild.

The DDBRA uses different terms for the core and transition zones, such as strictly protected and economic (sustainable development) areas, that serve to simplify the biosphere reserve concept if better information signs, maps and indication in English were provided for visitors in the DDBR. On the basis of the findings, recommendations for the improvement of the relationship between the

biosphere reserve designation and sustainable tourism were suggested. Referring to the description of cultural landscapes and wilderness areas that are continuously interacting through people's resource use, traditions, knowledge, and cultural diversity (German MAB National Committee, 2005).

It is suggested that the biosphere reserve concept and its basic functions for conservation and sustainable development can be further elaborated and better comprehended if the cultural landscape and wilderness concepts are added, and sustainable tourism is the link. Being a part of the WNBR, this can contribute to economic development and market the Danube Delta as a unique destination for sustainable and ecotourism, volunteering and development of different local traditions, and natural heritage conservation projects. The components of the cultural landscape, (traditional knowledge and activities, local businesses, big ethnic and cultural diversity, transportation, community projects) and of the wild areas, nature in the core areas, native species, restoration and sustainable tourism as the balancing wheel, represent the DDBR and can improve the explanation of the basic functions of the biosphere reserve to tourists. Sustainable forms of tourism, which are happening right on the doorstep or even in the houses of local people, help to fulfil one of the main objectives of the Danube Delta Biosphere Reserve, such as educate and guide visitors so that they acknowledge and conserve nature, raise awareness about the vulnerability of the natural resources, and their sustainable use.

Why is there need for further research?

Secondary research on the evolution of the wilderness and cultural landscape concepts, including primary research on the affinity of people towards these concepts, can contribute to an evaluation of how these could be implemented in DDBR's and in other biosphere reserves tourism marketing strategies. This, as well as research on cruise ship tourism and on the specific impacts of transportation on the components of the Danube Delta; on the number, types of

tourists, and tourism companies, activities and expenditure can give clear results on the negative and positive impacts of tourism and contribute to establishing a tendency for tourism activities in the biosphere reserve.

Overall, the biosphere reserve designation and sustainable tourism can contribute to each other if the biosphere reserve concept is more comprehensive and better understood by people. As places of excellence that can be used to experiment and learn practical approaches to sustainability objectives (UNESCO, 2017), biosphere reserves should provide innovative solutions, where ecosystems, local communities, traditions and modern economies can be combined, and where technologies and policies that can help meet the 17 Sustainable Development Goals (UN, 2015). Therefore, through harmonizing cultural landscapes and wildlife through sustainable tourism, biosphere reserves can provide a solution and accomplish one of the main goals of the MAB Programme - the harmonious human-nature relationship.

Acknowledgements

I would like to express my deep gratitude to Mrs. Alina Codreanu, Mrs. Bîscă Viorica, Mrs. Monica Cacencu and all employees from the Danube Delta Biosphere Authority for their hospitality and extremely nice attitude, for the things they taught me and showed me, for all the materials, maps, and memories.

In addition, I would like to thank all the participants that agreed to answer my questions with such enthusiasm, and that shared with me their experience of the Danube Delta.

There is no need to mention my gratitude to my supervisor, whose thoughtful advice, encouraging discussions and invaluable support made it possible for the research question to be formulated and for the research to be conducted *in situ*, in the serene and pristine nature of the Danube Delta Biosphere Reserve.

References

- Ahmad, A. (2014). The Disengagement of the Tourism Businesses in Ecotourism and Environmental Practices in Brunei Darussalam. *Tourism Management Perspectives* 10, 1–6.
- Arežina, R. (2014). *TRANSDANUBE. Sustainable Transport and Tourism along the Danube. Final Brochure.*) p. 22. In: TRANSDANUBE (2014) Retrieved from http://transdanube.eu/uploads/contenteditor/PM6_belgrad/TD_finalbrochure.pdf [Accessed: 28th July 2015].
- Batisse, M. (1986) Developing and Focusing the Biosphere Reserve Concept. *Nature and resources* 22 (3), 1–12.
- Becken, S. & H. Job (2014) Protected Area in an Era of Global-local Change. *Journal of Sustainable Touris* 22(4), 507-527.
- Bîscă, V. (2015) *Personal communication, June 25, 2015.* Tulcea, Romania. [Recording in possession of author].
- Bozagievici, R. & C. Nichifor (2007) Tourist Circulation Dynamics in DDBR Between 2004 and 2006. *Scientific Annals of the Danube Delta Institute for Research and Development* 13. Tulcea-Romania.
- Bramwell, B. & B. Lane (1993). Sustainable Tourism: An Evolving Global Approach. *Journal of Sustainable Tourism* 1(1), 1-5.
- Bramwell, B. & B. Lane (eds.) (2000). *Tourism Collaboration and Partnerships. Politics, Practice and Sustainability.* Clevedon: Channel View.
- Buckley, R. (2004). Partnerships in Ecotourism: Australian Political Frameworks. *International Journal of Tourism Research* 6 (2), 75-83.
- Butler, R. (1991). Tourism, Environment and Sustainable Development. *Environmental Conservation* 18 (3), 201- 209.
- Butler, R. (1998). Sustainable Tourism - Looking Backwards in Order to Progress? In: C. M. Hall, C. & Lew, A. *Sustainable Tourism: A Geographical Perspective* 25–34. Essex: Longman.
- Cacencu, M. (2015). *Personal communication, June 15, 2015.* Crișan, Romania. [Recording in possession of author].
- Cater, E. (1993). Ecotourism in the Third World: Problems for Sustainable Tourism Development. *Tourism Management* April, 85-90.
- Cimpoero, J. (2015). *Personal communication, June 14, 2015.* Tulcea, Romania. [Recording in possession of author].
- CNIPT Representative. (2015). *Personal communication, June 18, 2015.* Tulcea, Romania. [Recording in possession of author].
- Codreanu, A. (2015). *Personal communication, June 24 June, 2015.* Tulcea, Romania. [Recording in possession of author].
- Cohen, E. (1988). Authenticity and Commoditization in Tourism. *Annals of Tourism Research* 15, 371-386.
- Coria, J. & E. Calfucura (2012). Ecotourism and the Development of Indigenous Communities: The Good, the Bad, and the Ugly. *Ecological Economics* 73, 47-55.
- Cox, J. (1985). *The Resort Concept: The Good, the Bad and the Ugly.* Keynote paper presented to National Conference on Tourist resort Development, Kuringai College of Advanced Education, Sydney, November.
- Croze, H., S. Sayialel, S. & D. Sitonik (2006). *What's on in the Ecosystem? Amboseli as a Biosphere Reserve. A Compendium of*

- Conservation and Management Activities in the Amboseli Ecosystem*, Amboseli Elephant Trust, Nairobi, Kenya, 28.
- Damian, N. (2011) Unemployment and Poverty in The Danube Delta Settlements. Territorial Disparities. *Romanian Journal of Geography* 55 (1), 11-22. Bucharest.
- DANUBEPARKS. (2014). *DANUBEPARKS STEP 2.0 : PROJECT REPORT 2012-2014*. Brochure [Brochure] The Danube Delta Biosphere Reserve Authority Building, Tulcea, Romania.
- DDBRA. (2007 - 2017). *Rezervația Biosferei Delta Dunării*. Retrieved from <http://www.ddbra.ro/en>.
- DDBRA. (2017a). *DDBRA Map*. Retrieved from <http://www.ddbra.ro/en/ddbra-map>.
- DDBRA. (2017b). *Action Plan to Achieve the management objectives in Danube Delta Biosphere Reserve*. Retrieved from http://www.ddbra.ro/media/ACTION_PLA_N_for_DDBR_Management_Plan_2008-2012.pdf.
- DDBRA. (2017). *A Chance For the Blue Danube. International competition on ecological theme, The XIVth edition, Tulcea - 2013*. Retrieved from <http://www.ddbra.ro/en/danube-delta-biosphere-reserve-authority/international-relations/a-chance-for-the-blue-danube-international-competition-on-ecological-theme-the-xivth-edition-tulcea-2013-a944>
- DDBRA. (2015). The Danube Delta Geographic Position. *Danube Delta Biosphere Reserve General Presentation*. [Archived document] DDBRA, Tulcea, Romania.
- Dueckeus, R. (2015). *Personal communication, June 20, 2015*. Crișan, Romania. [Recording in possession of author].
- Eagles, P., F. Romagosa, W.C. Buteau – Duitschaeffer, M. Havitz, T.D. Glover & B. McCutcheon (2012). Good Governance in Protected Areas: An Evaluation of Stakeholders' Perceptions in British Columbia and Ontario Provincial Parks. *Journal of Sustainable Tourism* 21 (1), 60–79.
- Eagles, P. (2014). Research Priorities in Park Tourism. *Journal of Sustainable Tourism* 22(4), 528-549.
- Foucat, V. S. (2002). Community-based Ecotourism Management Moving Towards Sustainability in Ventanilla, Oaxaca, Mexico. *Ocean & Coastal Management* 45, 511-529.
- Friend, A. (1992). Economics, Ecology and Sustainable Development: Are They Compatible? *Environmental Values* 1 (2), 157-170.
- Gâcșețcu, P. & R. Știucă (2002). Danube Delta. State-of-the-art. *Scientific Annals of the Danube Delta Institute for Research and Development*, Tulcea-Romania.
- Gâcșețcu, P. & R.Știucă (2008). (eds.) *Delta Dunării. Rezervație a Biosferei*. Romulus Știucă - București: CD PRESS.
- German MAB National Committee. (2005). *Full of Life. UNESCO Biosphere Reserves - Model Regions for Sustainable Development*. German MAB National Committee at the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety; MAB Secretariat in the Federal Agency for Nature Conservation. Verlag Berlin Heidelberg: Springer.
- Greene, C., V. Caracelli, & W. Graham (1989). Toward a Conceptual Framework for Mixed-method Evaluation Designs. *Educational Evaluation and Policy Analysis* 11(3), 255–274.
- Hall, D. (1993). ECotourism in the Danube Delta. *The Tourist Review* 48(3), 11-13.
- Hani, N. (2011). *Creative and Innovative Approaches to Alleviate Poverty, Stop Immigration, Improve Livelihood and Manage Sustainably the Shouf Biosphere Reserve. A Case Study from the Shouf Biosphere Reserve*. UNESCO-MAB Secretariat, Paris.
- Hardy, A., R. Beeton, & L. Pearson (2002). Sustainable Tourism: An Overview of the Concept and its

- position in Relation to Conceptualisations of Tourism. *Journal of Sustainable Tourism* 10 (6), 475-496.
- Honey, M. (2008). *Ecotourism and Sustainable Development: Who owns Paradise?* Second Edition. Washington D.C.: Island Press.
- Höfer, A., C. Kramschuster, R. Rettinger & I. Steinhauser (2014). *Evaluation of Carrying Capacity in the DANUBEPARKS - Network of Protected Areas. Final Report. DANUBEPARKS Step 2.0*. Retrieved from http://www.danubeparks.org/files/2133_CarryingCapacityFinalReport_DE.pdf [Accessed: 15th August 2015].
- Hunter, C. (1995). On the Need to Re-conceptualise Sustainable Tourism Development. *Journal of Sustainable Tourism*, 3(3), 155-165.
- Ishwaran, N. (2013). Sustainable Tourism Development and Climate Change. In: Reddy, M. and Wilkes, K. (eds.) (2013). *Tourism, Climate Change and Sustainability*. London and New York: Routledge, Taylor & Francis Group, 81-95.
- Ishwaran, N., A.Persic, & N. Tri (2008). Concept and Practice: The Case of UNESCO Biosphere Reserves. *International Journal of Environment and Sustainable Development* 7(2), 118-131.
- Ivan, O. (2012). The Consequences of Tourism for a Fisherman's Family in Sfântu Gheorghe, the Danube Delta. *Scientific Annals of the Danube Delta Institute for Research and Development* 18, 279-284. Tulcea, Romania.
- Jamieson, G., G.Francis & G.Whitelaw (2008). Canadian Biosphere Reserve Approaches to the Achievement of Sustainable Development. *International Journal of Environment and Sustainable Development* 7(2), 132-145.
- Kiss, A. (2004). Is Community-based Ecotourism a Good Use of Biodiversity Conservation Funding? *Trends in Ecology and Evolution* 19 (5), 232-237.
- Koens, J., C. Dieperink & M. Miranda (2009). Ecotourism as a Development Strategy: Experiences from Costa Rica. *Environment, Development and Sustainability* 11, 1225 - 1237.
- Kryeziu, E. (2015). *Personal communication, June 14, 2015*. Tulcea, Romania. [Recording in possession of author].
- Lane, B. (1994). Sustainable Rural Tourism Strategies: A Tool for Development and Conservation. *Journal of Sustainable Tourism* 2 (1,2), 102-111.
- Larson, R. & N. Poudyal (2012). Developing Sustainable Tourism through Adaptive Resource Management: a Case-study of Machu Picchu, Peru. *Journal of Sustainable Tourism*. 20 (7), 917-938.
- Leask, A. & A. Fyall (2006). *Managing World Heritage Sites*. Oxford: Butterworth-Heinemann, Elsevier.
- Lu, J. & S. Nepal (2009). Sustainable Tourism Research: an Analysis of Papers Published in the Journal of Sustainable Tourism. *Journal of Sustainable Tourism* 17 (1), 5-16.
- Marin, E., I. Nichersu, M. Mierlă, C. Trifanov & I. Nichersu (2012). Examples and Lessons for Best Practices for Danube River Revitalisation. *Scientific Annals of the Danube Delta Institute* 18, 235-240.
- Marsden, T. (2000). Financing Protected Areas: Guidelines for Protected Area Managers. In: A. Phillips (Ed.) *Best practice protected area guidelines series* 5. Gland, Switzerland: IUCN.
- Mayer, M. (2014). Can Nature-based Tourism Benefits Compensate for the Costs of National Parks? A Study of the Bavarian Forest National Park, Germany. *Journal of Sustainable Tourism* 22(4), 561-583.
- MDRL (Ministry of Development, Public Works and Housing) (2007). *Romanian Info Regional*. 2. Retrieved from http://www.mdrl.ro/_documente/info regional/1_june_2007.pdf
- Mitchell, R. & P.Eagles (2001). An Integrative Approach to Tourism: Lessons from the

- Andes of Peru. *Journal of Sustainable Tourism* 9 (1), 4-28.
- Mitchell, R., B. Wooliscroft & J.E.S. Higham (2013). Applying Sustainability in National Park Management: Balancing Public and Private Interests Using a Sustainable Market Orientation Model. *Journal of Sustainable Tourism* 22 (4), 507-527.
- Moller, L. (2007). UNESCO Biosphere Reserves: Model Regions With a Global Reputation. *UNESCO Today*, Issue 2.
- NavromDelta. (2017). *Transporturi in DeltaDunarii*. Retrieved from <http://www.navromdelta.ro/>.
- Nianyong, H., Z.Qian, & Z. Hong (2008). From Experience to Institution: the Management of Jiuzhaigou Valley Biosphere Reserve Faced with Institutional Transformation and Upgrading. *International Journal of Environment and Sustainable Development* 7(2), 145-155.
- Nichifor, C. & S. Covaliov (2011). Camping Areas in the Danube Delta Biosphere Reserve. *Scientific Annals of the Danube Delta Institute for Research and Development* 17,127-136. Tulcea - Romania.
- Orams, M. (1997). The Effectiveness of Environmental Education: Can We Turn Tourists into "Greenies"? *International Journal of Tourism Research* 3(4), 295-307.
- Pegas, F. & G. Castley (2014). Ecotourism as a Conservation Tool and its Adoption by Private Protected Areas in Brazil. *Journal of Sustainable Tourism* 22(4), 604-625.
- Pigram, J. (1990). Sustainable Tourism: Policy Considerations. *Journal of Tourism Studies* 1 (2), 2-9.
- Popa, L., I. Nichersu, & A. Poruncia (2005). Transformation of Cultural Values and Their Valorization by Tourism in the DDBR. *Scientific Annals of the Danube Delta Institute for Research and Development*, Tulcea-Romania.
- Poruncia, A. & E. Marin (2007). Rural Architectural State in Sfântu Gheorghe Village. *Scientific Annals of the Danube Delta Institute for Research and Development* 13, 201-206. Tulcea - Romania.
- Price, M., J. Park & M. Boumrane (2010). Reporting Progress on Internationally Designated Sites: The Periodic Review of Biosphere Reserves. *Environmental Science & Policy* 13, 549-557.
- Ramsar. (2014). *Ramsar Sites Around The World*. Retrieved from <http://www.ramsar.org/sites-countries/ramsar-sites-around-the-world>
- Rees, W. (2002). *Globalization and Sustainability: Conflict or Convergence?* *Sage Journals. Bulletin of Science, Society & technology*. 22 (4), 249-268. <https://doi.org/10.1177/0270467602022004001>
- Rewilding Europe. (2015). *Danube Delta. Europe's Unrivalled Wetland*. Retrieved from <http://www.rewildingeurope.com/areas/danube-delta/>
- Romania Tourism (1994 - 2017) *Romania's History*. Retrieved from <http://romaniatourism.com/history.html>
- Romeiro, A. (2012). Sustainable Development: An ecological Economics perspective. *Estudos Av.* 26 (74). Sao Paulo. <http://dx.doi.org/10.1590/S0103-40142012000100006>
- ROWMANIA (2015) *Rowmania*. Retrieved from <http://www.rowmania.ro/?id2=0001&lng=1>.
- Ruhanen, L., B. Weiler, B. D. Moyle & C. J. McLennan (2015). Trends and Patterns in Sustainable Tourism Research: a 25-year Bibliometric Analysis. *Journal of Sustainable Tourism* 23 (4), 517-535.
- Selvam, V. & K. Ravichandran (1996). Community Participation in the Restoration of Degraded Mangroves: a Case Study of Pitchavaram Mangroves, Tamil Nadu, India. In: Hong, P. et al. (Eds). *Community Participation in*

- Conservation, Sustainable Use and Rehabilitation of Mangroves in Southeast Asia, Proceedings of the ECOTONE V, Seminar held during 8–12 January 1996, Mangrove Ecosystem Research Centre, Vietnam National University, Hanoi, Vietnam, 30–41.*
- Sharpley, R. (2000). Tourism and Sustainable Development: Exploring the Theoretical Divide. *Journal of Sustainable Tourism* 8 (1), 1-19.
- Sharpley, R. & T. Pearce (2007). Tourism, Marketing and Sustainable Development in The English National Parks: The Role of National Park Authorities. *Journal of Sustainable Tourism* 15 (5), 557–573.
- Stanford, D. (2014). Reducing Visitor Car Use in a Protected Area: A Market Segmentation Approach to Achieving Behaviour Change. *Journal of Sustainable Tourism* 22(4), 666–683.
- Su, M. & G. Wall (2012). Global–local Relationships and Governance Issues at the Great Wall World Heritage Site, China. *Journal of Sustainable Tourism* 20(8), 1067–1086.
- TRANSDANUBE. (2014). *TRANSDANUBE. Sustainable Transport and Tourism along the Danube. Final Brochure*. Retrieved from http://transdanube.eu/uploads/contenteditor/PM6_belgrad/TD_finalbrochure.pdf
- UN (2015). *Transforming our world: the 2030 Agenda for Sustainable Development*. Retrieved from http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E
- UNESCO (1984). Action Plan for Biosphere Reserves. *Nature Resources* 20 (4), 1-12.
- UNESCO (1986). Report of the Scientific Advisory Committee on Biosphere Reserves. In: *Final Report, Ninth Session, International Coordinating Council of the Programme on Man and the Biosphere*. MAB Report Series 60, Paris, 66-79. UNESCO, Paris.
- UNESCO (1995). *Biosphere Reserves. The Seville Strategy and the Statutory Framework of the World Network*. UNESCO, Paris, France.
- UNESCO (1995a). *The Seville Strategy for Biosphere Reserves*. UNESCO, Paris.
- UNESCO (1995b). *The Statutory Framework of the World Network of Biosphere Reserves*. UNESCO, Paris.
- UNESCO (2008). *Madrid Action Plan for Biosphere Reserves (2008-2013)*. UNESCO, Paris.
- UNESCO (2015a). *MAB Strategy 2015-2025. Preliminary Draft (2 February 2015)*. Retrieved from http://www.unesco.org/fileadmin/MULTIMEDIA/HQ/SC/pdf/MAB_Strategy_2015-2025_final_text.pdf
- UNESCO (2017). *Man and the Biosphere Programme* Retrieved from <http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/man-and-biosphere-programme/>
- UNESCO (2017). *Lima Action Plan* Retrieved from http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/Lima_Action_Plan_en_final.pdf
- UNESCO (2017). *Lima Declaration* Retrieved from http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/Lima_Declaration_en_final_01.pdf
- Villiev, C. (2015). *Personal communication, June 25, 2015*. Tulcea, Romania. [Recording in possession of author].
- Waltje, B. (2015). *Personal communication, June 18, 2015*. Sulina, Romania. [Recording in possession of author].
- Wang, G., J. L. Innes, S. Wu, J. Krzyzanowski, Y. Yin, S. Dai, X. Zhang & S. Liu (2012). *National park development in China: Conservation or commercialization? AMBIO* 41 (3), 247–261.
- Wearing, S. & J. Neil (2009). *Ecotourism: Impacts,*

potentials and possibilities? Oxford: Routledge.

Weaver, D. (2014). Asymmetrical dialectics of sustainable tourism toward enlightened mass tourism. *Journal of Travel Research* 53(2), 131-140.

Wight, P. (2001) Ecotourists: not a homogenous market segment. In: Weaver, D. (ed.) *The Encyclopaedia of Ecotourism*. CABI Publishing: Wallingford, 37-62.

Wilson, E., N. Nielsen, & J. Buultjens (2009). From lessees to partners: Exploring tourism

public – private partnerships within the New South Wales national parks and wildlife service. *Journal of Sustainable Tourism* 17(2), 269–285.

Wheeler, B. (1992) Is progressive tourism appropriate? *Tourism Management* 13 (1), 104-105.

Whitelaw, P., B. King, & D. Tolkach (2014). Protected areas, conservation and tourism – financing the sustainable dream. *Journal of Sustainable Tourism* 22(4), 584-603.