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Development Vision of Protected Areas in the Republic of Croatia: National Park “Krka” as a Trend Leader

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Abstract

This chapter provides an overview of the current state of the park system of R. Croatia. The effectiveness of management, recent achievements and difficulties in the functioning of national parks and parks of the Republic of Croatia are analysed, especially in the light of fulfilling ecological functions, contribution to sustainable development and strengthening local community economies. Attention is drawn to the lack of a comprehensive strategy of national park system, shortcoming of a unique park policy that is necessary for social valuation of a protected areas' role, their stable financing, professionalisation of park functions, professionalisation of workplaces and positioning in relation to other sectors. Through the development vision of the national park system, prospects of improving management are stated, conditions of increasing the efficiency of management are detected and the models of achieving greater financial sustainability are suggested. In the second part, NP Krka is shown as the leader of the trends through protection and management of its area for more than two decades. The practiced approach has positioned them in the very top of the Croatia park system according to the results of the management and quality of the solution. The key features of the NP Krka management concept are highlighted, due to the achieved financial autonomy and the high level of sustainability of NP Krka management. An important upcoming challenge in managing the NP Krka is the need to effectively preserve the biodiversity and ecosystem services of the protected area through the establishment of a higher level of adaptability and flexibility of management, primarily to reduce the impact and effects of climate change, as well as the more pronounced annual growth of visitors and the consequences it brings. An important impulse for the improvement of the management in the NP Krka will be the adoption of a new spatial plan that will define, based on the results of extensive multidisciplinary research, the opportunities for development of acceptable activities in the protected area.

Keywords: protected areas, Republic of Croatia, Krka national park, management, financing, sustainability, tourism

1. Introduction

Protected areas, as the most significant and representative areas with exceptional natural value, are predestined to become model defined natural areas, ensuring permanent harmony between biodiversity conservation objectives and the environment as a whole, while permitting the rational use of space and natural resources, and contributing to the prosperity of the local community in the area surrounding the protected area.

The management of protected areas in the Republic of Croatia largely achieves the targets defined in the Strategy and Action Plan for Nature Protection of the Republic of Croatia (NSAP) [1, 2], the Convention on Biodiversity (CBD), the Aichi Biodiversity Targets,¹ and other relevant national and global programmes [3, 4, 5].

In abiding by the standard success benchmarks for managing protected areas, drafted by IUCN,² it can be stated that Croatia has achieved prominent results for most protected area functions [6].

Additionally, according to the assessments of WWF, the Croatian protected areas system has been confirmed as efficient in the sense of protecting biodiversity,³ and its management success markedly surpasses that of other protected areas in the region [7].

The strategic objectives of the development of a protected areas system in Croatia (hereinafter: Croatian parks system), are defined by the NSAP. The primary objectives are the integral validation of protected areas, improving quality and efficacy of their management, and ensuring active public involvement in the planning and management of protected areas [7].

An overview of the accomplishments achieved over the past 10 years in the management of protected areas in Croatia includes the following:

- Institutional strengthening of nature conservation at the national, county, and local levels, with a strong positioning of the Croatian Agency for the Environment and Nature (HAOP), as the central expert institution for nature conservation, including the function of development and improving park system management,
- Establishment of a common policy system in the operation of public institutions for managing protected areas,
- Accession, ratification and implementation of all international agreements in the field of nature conservation, and the establishment of a national legislative framework in the area of nature conservation that is aligned with the European Union, the *Acquis Communautaire*,
- Successful implementation of a large number of international projects (**Figure 1**).

¹Aichi Biodiversity Targets 2011–2020; www.cbd.int/sp/targets/default.shtml.

²IUCN—International Union of Conservation of Nature.

³According to a WWF analysis, a total of 133 biodiversity targets were identified in Croatia; 78 targets (58.6%) are adequately covered by protected areas, 52 (39.1%) have been identified as gaps, and 3 (2.3%) as complete gaps—in the project “Dinaric Arc Ecoregion Gap Analysis”.



Figure 1. Celebration of “Burnumske ide” in Krka National Park—Celebrate full moon nights at the site of the Roman Amphitheatre Burnum from 76/77 AD. (Photo gallery NP Krka).

On the other hand, certain recent analyses of the Croatian parks system [8–10] have indicated that the requirements for further development of the system have only been partially achieved, with the lack of an integral vision, non-standardised management, financing difficulties, sporadic sectoral policies, a backlog of property and legal issues, and so on, are recognised as weaknesses.⁴ The system is also marked by a highly unfavourable expenditure structure, in which more than 70% of management costs go towards employee salaries and material costs, and less than 15% of revenues are invested into programmes, including projects to support the local community development.⁵

According to a UNDP report,⁶ in order to improve management of the Croatian parks system, the fundamental barriers lie in the systematic weaknesses of the institutional framework, including inefficient management, and the issues of consistency, allocation and efficacy of financing national protected areas. The same report lists that there is not a comprehensive strategic plan for protected areas, only a limited number of standardised policies and procedures for directing the implementation of best management practices. As such, the 19 public institutions (8 national parks and 11 nature parks), currently function completely independent of one another, with limited accountability to the central government bodies for fulfilling national and international obligations concerning nature conservation [11].

According to Martinić,⁷ the further development of protected areas in Croatia will require their ongoing revision at the national level [12]. Criteria need to be developed and priorities proposed to proclaim new protected areas, and also to determine priorities for the inclusion of Croatian protected areas into global networks, such as the UNESCO World Heritage List,

⁴See Martinić [9].

⁵See Martinić et al. [10].

⁶See UNDP [11].

⁷See Martinić [9].

the UNESCO Man and Biosphere (MaB) programme, the Ramsar list of internationally important wetlands, the Geoparks network, and so on.

The current operational objectives for the parks system pertain to improving the fundamental management documents, digitising boundaries, resolving property ownership issues and the like. A special objective of the NSAP is the establishment of a representative and functional network of protected areas, with the prior assessment of these protected areas according to the IUCN categories, and an analysis of their representativeness and functionality, in order to determine priorities and means of resolving outstanding issues.

2. Development vision for the Croatian parks system

The development vision for the parks system includes strengthening the credibility of all functions of protected areas in preserving natural and other values in Croatia, while also strengthening the influence of protected areas on sustainable development as a whole. The prominent management challenges involve increasing efficacy in conserving species and habitats, a higher level of adaptability in management, improving spatial planning, and more dynamic and elastic management of space in the sense of visitor reception and permitted activities.

Part of the vision is directed at establishing new intersectoral alliances (among agriculture, forestry, tourism, etc.) to address the values and benefits of ecosystems in protected areas to support human health (**Figure 2**).

More so than in other spaces, in the future, protected areas will be polygons for seeking out and finding “natural solutions” to mitigate and adapt to climate change. In order to strengthen this vision, there are plans to establish⁸ a national climate change adaptation centre. The Puljani eco-campus in Krka National Park has been proposed as the future administrative seat of such a centre.

The development of the tourism function of protected areas and national park system, in the spirit of the recommendations of the most recent world parks congress,⁹ will lean more heavily on the principle of “connecting people with nature,” that is, ensuring that visitation to natural areas is based on strict abidance of reception capacities, as a guarantee of achieving greater authenticity and ensuring a better quality experience during the visit, and preventing the degradation of the values of the protected area. On the other hand, the protected areas in Croatia should in the future serve as drivers of specialised tourism programmes. These programmes should be multi-day thematic visits, achieved in part on partnership with the local population, through accommodation, culinary offer, demonstration of old trades, and so on. In order to achieve this objective, it will be necessary to prepare and adopt a new tourism development strategy in protected areas, taking into consideration broad consultations with

⁸Primarily pertains to initiatives from the ministries responsible for environmental protection and nature, science and education, agriculture and forestry.

⁹Contained within “Promise of Sydney,” recommendations of the IUCN World Parks Congress, Sydney, Australia.



Figure 2. Kopački Rit Nature Park (also called "European Amazon"), the oldest nature park in Croatia and UNESCO "Man & Biosphere" Reserve; situated in the central part of the Danube floodplain, between the Drava River and the Danube River. (Photo: Goran Šafarek).

all interest groups. The key stakeholders are the regional and local authorities, the business sector, associations, and the local population.

An important part of the development vision for the parks system relates to improving the sustainability of financing. The perspectives for sustainable financing stem from social acceptance that the management concept must be based on clear financial mechanisms and diversified sources of funding such as state budget transfers, concessions and other fees, own revenues generated by park administration, domestic and international project funding, and so on. All revenues from fees for protected area services must be reinvested into conservation, maintenance, and development of the system.

To that end, it is necessary to secure the threshold of financial sustainability of the protected area system at the ministry level, which should take into account not only the direct and indirect values of these protected areas but also the non-market and unused benefits, and services ensuing from their functioning [12]. Only such a validation structure for protected areas can cast a light on the significance and true costs of their functioning in the implementation of appropriate protection, conservation, and development.

According to Martinić [13], the generator of improvements to the Croatian parks systems should be the National Parks Agency (NPA). At the national level, this agency should be the leader of forming a single parks policy, and be responsible for presenting the common interests relating to the social validation of protected areas, their stable financing, professionalisation of park functions and tasks, position in relation to other sectors, and other issues.

3. Krka National park as the trend leader

Krka National Park is one of eight national parks in Croatia. The protected area, known for the many lakes and waterfalls, was proclaimed as a national park in 1985. It is situated in central Dalmatia over 109 km² of the course of the Krka River, and the lower course of the Čikola

River. The Krka River is marked by seven travertine waterfalls, and its beauty is in this natural karst phenomenon, and the exceptional wealth of flora and fauna, particularly birds.¹⁰ Each year, more than a million tourists from all over the world visit Krka National Park.

For more than a decade, Krka National Park has been among the leaders of the Croatian parks system, both in terms of its overall results and its exceptional accomplishments in specific management aspects. Results include the following:

- Integral validation and a high level of conservation of natural and cultural values, through its approach to applying research results to raise the scope and quality of conservation, and to create new solutions in management and/or development of park products and services.
- Wide ranging contribution to the development of the local community, achieved through employment of local people, hiring local operators for specific park functions (i.e. fire-fighting measures, boat transfers of visitors, etc.), equipping structures of common interest (park branch offices, information centres), and improving the local municipal infrastructure (roads, sewage, etc.).
- Investing ongoing efforts to enhance the visitor experience through dynamic development of organised visitor systems, in which the key elements are a unified visitor management plan, diversified models of ticket sales, synchronised network of entrance points, internal transport system, route directions, and so on (**Figure 3**).
- Ongoing research on the reception capacities of the protected area and constant efforts to unburden the most heavily visited sections of the park, through the development of innovative visitor management solutions and the affirmation of new visitor locations.
- Inclusion in global visitor trends for protected areas through the creative development of a park programme that meets the specific and sophisticated visitor sensibilities, including exhibits, festivals and performances, active education, participation in authentic culinary and wine events, and so on [14–17].

These accomplishments, above all, should be attributed to a strong management concept of Krka National Park, which has achieved financial and overall management sustainability based on good organisation and the application of functional project management models [18]. Such a management approach in the park serves to protect the park resources, and ensures a high level of service for visitors, while placing equal significance on the execution of conservation programmes, enforcement of the law, supervision over concessions and the performance of commercial activities, with high quality information services and visitor safety.

In the management of Krka National Park, the principles of adaptive management are applied. This is based on strictly defined tasks and responsibility of individual services, with the aim of achieving specific project goals. This requires precisely defined procedures, activity leaders and resources, all focused on the clearly defined indicators of goal achievement, and accompanied by dynamic reporting.

¹⁰More about Krka National Park at: www.parkovihrvatske.hr/nacionalni-park-krka?



Figure 3. Stairway on the trail towards the "Oziđana pećina" cave in the NP Krka—view of the cascades (known as "necklaces") on the Krka River at the Roški slap. (Photo gallery NP Krka).

To conserve nature and protect biodiversity, intensive inventarisation of species and habitats is performed regularly in the park, encompassing all ecosystem components. Monitoring is regular and, where required, protection measures are implemented. In order to reduce the detrimental impacts of human activities on biodiversity and the environment, the impacts of tourism on the park ecosystems are constantly examined, and mitigation measures implemented.

A study on the preliminary visitor reception capacity was drafted with the aim of reducing the negative impacts of tourism [19]. The study defined the daily visitor quotas for the park in an attempt to ensure more effective visitor management and to prevent degradation of the park values. An important measure was the organisation of new visitor content in areas of the middle flow (Stinice, Roški slap) and upper flow (Burnum, Puljani, Nečven) of the Krka River. Considering the pronounced annual growth in the number of visitors¹¹ and the increasing seasonal overload of certain park localities, since July 2017, visitor number restrictions have been implemented at Skradinski buk, by far, the most visited site in Krka National Park. The new visitor regime allows for a restriction of the number of visitors to Skradinski buk at one time to 10,000 visitors. In order to inform visitors and to regulate the number of visitors, display screens have been installed at the entrances to the park, indicating the number of available tickets that may be purchased at any time (**Figure 4**). Those visitors arriving during the busiest times are directed to wait, or are redirected to other less burdened areas of the national park.

Krka National Park is the leader of the pack among Croatian protected areas in terms of the number of achieved joint projects with the regional and local authorities. The high level of cooperation with and contributions to the local community is accomplished through the stimulation and development of programmes that bring sustainable solutions and win-win results to successfully respond to development goals and challenges of protected areas, and to the social and economic needs faced by the local and regional community and national authorities. The main framework of these programmes will comprise the new spatial plan of Krka National Park.¹² One of the main professional areas of focus in the new spatial plan will be that the majority of

¹¹In 2016, a total of 1,071,561 visitors entered the park, with an annual growth of 12.6% in comparison to 2015.

¹²Adoption of a new spatial plan for Krka National Park is expected by the end of 2017.



Figure 4. Krka National Park; display screen at the Lozovac entrance with information on the current number of tickets available for Skradinski buk. (Photo: TRIS/J. Krnić).

activities surrounding visitors will concentrate on existing visitor sites or those where visitation can have a lesser impact on the most ecologically valuable areas in the protected area.

A special challenge in the management of Krka National Park is the need for an effective response to conserving biological diversity and ecosystem services in light of climate change. Such tasks will certainly increase the requirements for a management model that will focus on the work of the park administration on protecting ecosystem integrity and establishing greater ecosystem elasticity. In the proposed initiative for the establishment of a national centre that would address the issues of adapting park management to climate change, Krka National Park can provide the opportunity of hosting the administrative seat of such a centre at the Puljani eco-campus.

The development of tourism function of Krka National Park is directed at further optimisation of an organised visitor system, to achieve greater authenticity and to improve the quality of the visitor experience. A very important accomplishment in the park management will be the expected inclusion of the park onto the UNESCO World Heritage List in the near future. Krka National Park already meets the general and additional criteria for inclusion onto the UNESCO World Heritage List,¹³ particularly the integrity criteria. The strongest support for this inscription is the adopted and successfully implemented Management Plan and the many years of successful management and excellent results.

4. Conclusions

In the contemporary social context, the role and significance of Croatia's protected areas should be viewed through the fulfilment of long-term goals to protect global and national biodiversity and ecosystem process, and to make recognisable contributions to sustainable development and strengthening of the local and regional economies.

In the management of Croatia's protected areas, many of the goals of the main global and national policies and programmes have been accomplished. In terms of international bench-

¹³Criteria for the inclusion of natural properties in the World Heritage List—Chapter D.

marks of success in managing protected areas, it could be stated that the Croatian parks system is achieving excellent results in best practices of protected area management.

An important hurdle for improving management of the Croatian parks system is the lack of a comprehensive strategic plan for protected areas, systematic weakness of the institutional framework, ineffectiveness in resolving outstanding issues (legal and property relations, spatial planning, etc.), and issues concerning sufficient financing and cost structures.

For the continued development of Croatian protected areas, their ongoing revision is required. At the national level, it is necessary to adopt a strategy to strengthen the credibility with specific instruments to improve management and to define the priorities in resolving outstanding issues in protected area functioning.

The national parks system is expected to strengthen the contribution of developing the local communities, through sustainable and win-win solutions, which will have equal success in responding to the development challenges of protected areas and to the socioeconomic needs of their broader surroundings.

Future priorities in improving the tourism function of protected areas should be placed on optimising organised visitor systems and achieving greater authenticity and quality of the visitor experience.

With the existing management concept of Krka National Park, based on functional and project organisation, a decisive advantage has been gained in management efficacy, which ensures a high level of results of Krka National Park in all fields of management. Many of the key objectives of protected areas have already been accomplished, to the highest level of excellence, and some have been recognised as the best global practice in managing protected areas.

An important management challenge the park still faces is the need for an efficient response to protected biodiversity and ecosystem services through the establishment of a higher level of adaptability and management elasticity, above all to reduce the impacts of climate change and the increasing pressures of growing numbers of visitors and the consequences that these impacts bring.

An important impulse in achieving the management goals of Krka National Park will be the adoption of the new spatial plan, which will set out to define the spatial organisation of park infrastructure and visitation models, and to define the possibilities of developing permitted activities in the park, and their content, positioning, and intensity.

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References

- [1] Radović J, editor. Pregled stanja biološke i krajobrazne raznolikosti Hrvatske sa strategijom i akcijskim planovima zaštite. DUZPO, Zagreb, 1999
- [2] Strategija i akcijski plan zaštite biološke i krajobrazne raznolikosti Republike Hrvatske. NN 143/08, Zagreb, 2008
- [3] Strategija održivog razvitka Republike Hrvatske. MRRŠVG RH, Zagreb, 2009
- [4] WCPA. Sustainable Tourism in Protected Areas – Guidelines for Planning and Management. 2007
- [5] IUCN. World Parks Congress Durban – Kongresni Materijali, Durban. 2003
- [6] IUCN. Promise of Sydney – Preporuke IUCN World Parks Congress, Sydney. 2014
- [7] Izvješće o stanju prirode u R. Hrvatskoj 2008-2012, Ministarstvo zaštite okoliša i prirode, Zagreb. 2014
- [8] Martinić I. 55. obljetnica NP Paklenica – kako osigurati održivost i vitalnost funkcioniranja u svjetlu naglasaka V. svjetskog kongresa nacionalnih parkova. Paklenički zbornik, Starigrad-Paklenica. 2004;2:147-150
- [9] Martinić I. Perspektive razvoja sustava zaštićenih područja u Hrvatskoj. Zbornik radova simpozij "Zaštita prirode u 21 vijeku". Žabljak. 2011
- [10] Martinić I, Sladonja B, Zahtila E. Development prospects of the protected areas system in Croatia. In: Sladonja B, editor. Protected Area Management. Rijeka: InTech; 2012. ISBN 978-953-51-0697-5
- [11] UNDP. PRODOC PIMS 4731 Project – Institutional and Financial Sustainability of Croatia's National Protected Area System, Zagreb. 2014
- [12] EFI. What science can tell us 5. In: The Provision of Forest Ecosystem Services. Vol. I. Quantifying and Valuing Non-marketed Ecosystem Services. 2014
- [13] Martinić I. Upravljanje zaštićenim područjima prirode – planiranje, razvoj i održivost. Zagreb: Šumarski fakultet Sveučilišta u Zagrebu; 2010
- [14] Marguš D. Bibliografija radova o rijeci Krki. Šibenik: Nacionalni Park Krka; 1994
- [15] Marguš D, editor. Simpozij Rijeka Krka i Nacionalni park "Krka": prirodna i kulturna baština, zaštita i održivi razvitak. Šibenik: Nacionalni Park Krka; 2005
- [16] Marguš D, editor. Nacionalni Park Krka – prirodoslovni vodič. Šibenik: Nacionalni Park Krka; 2006
- [17] Nacionalni Park Krka. Zbornik radova sa simpozija Rijeka Krka i Nacionalni park "Krka": prirodna i kulturna baština, zaštita i održivi razvitak. Šibenik; 2007
- [18] Nacionalni Park Krka. Plan upravljanja "Nacionalnog parka Krka", Šibenik. 2006
- [19] Legović T, editor. Prihvatni kapacitet okoliša za posjetitelje nacionalnog parka "Krka". Zagreb: Institut Ruđer Bošković. Izvješće o provedbi projekta; 2013