

CASE STUDY OF RECREATIONAL FISHING IN RAJOVA (RAJOVIC) RIVER (MONTENEGRO) PRELIMINARY RESEARCH - PART I

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ABSTRACT

While there are all necessary natural and anthropogenic values for the development of recreational fishing, the observed space Rajova (Rajovic) River is not yet able to meet the demands of modern sports - recreational demand. The largest obstacle to the development of recreational fishing in the observed area represents irrepressible low- quality fishing water that is less able to meet and maintain higher fish populations. On the other hand, recreational anglers of active age are increasingly burdened with professional and work obligations, so they must fight for their daily survival, and existence, which for this type of sport has less time. Promising exit of Rajova (Rajovic) River on sports and the recreational market will require a new approach in the use of basic instruments business and tourism policies through improving management, the establishment of regular monitoring of resources and habitat conservation brown trout, adjustment of fishing capacity with fishing pressure water, the introduction of mandatory adequate records of catches in the sport - recreational and commercial fishing, the introduction more rigorous control measures of hunting and punishing of poaching, popularization of sport recreational fishing in the context of sustainable use. Previous experiences in countries of Western Europe have shown that investing in the development of recreational fishing contributes to improving the overall quality of sports-recreational tourism. Therefore, the design possibilities for a different approach in the development of recreational fishing on the Rajova River, seem to us much needed.

Keywords: Rajova (Rajovic) River, recreational fishing, brown trout, development.

INTRODUCTION

Recreation is a human activity, that according to Kassaye (2017), increases visitors' utility. Following a rise in population, income and mobility the demand for outdoor recreation has been increasing in many developing countries (Clawson and Knestsch, 1966). Theoretically, Clawson (1959) explained that putting an accurate and acceptable value on outdoor recreation would be valuable in resource management in different ways. First, it would provide a means for comparing the importance of recreation with that of other uses of the same resources. Second, the value of the recreation to be provided by a proposed recreation site would provide one measure of the desirability of making the necessary investment in the project. Third, the value of the recreation would provide a ceiling to any fees that might be charged for its use (Kassave, 2017). People's leisure and recreation according to Kassaye (2017) citing researcher Torkildsen (2005) is made possible through a wide range of providers, through powers and duties invested in government and through natural and man-made resources, services, facilities, and management. A range of services and programs is required to meet the diverse needs and demands of individuals, families, groups, clubs, societies, agencies and large and small organizations. One of the places where residents of rural villages in northeastern Montenegro spend their leisure time is the Rajova (Rajovic) River.

The author of this text G.R. as a large fan of the Rajova (Rajovic) River, loved it and her living world-fish or Likewise and people-recreational anglers, on rural village settlements with which Gnjili Potok the gladly unites and collected from them numerous pieces of information which is liberally used when writing their local history publication (Rajović, 2009; Rajović and Rajović, 2010; Rajović and Bulatović, 2012; 2013a; Rajović and Bulatović, 2013b; 2013c; Rajović and Bulatović, 2014a; 2014b; Rajović and Bulatović, 2015; Rajović and Bulatović, 2016a; 2016b; 2016c). The protected areas are in close connection with the water and the aquatic environment. According to Morar and Pop (2016) these fragile environments are valuable assets for local communities, and their values and resources should be used to promote integrated sustainable development mechanisms through the emergence of new types and forms of tourism, where education, conservation and protection should be achieved, as these areas can be viewed as destinations. Beyond relaxation and recreation, the educative focus should be promoted, as tourists understand protected areas without damaging them, and these combined activities support new forms and types of tourism within the region. Morar and Pop (2016) using research by Eagles et al. (2002) and Ilies et al. (2015), suggest that visits should be integrated into appropriate approaches to protected area planning and management, enhancing local economic opportunities, protecting natural and cultural heritage, enhancing the overall quality of life, and raising the environmental awareness of locals considering natural assets.

Rightly Johannes et al. (2000) emphasize that in many developing countries, funds for scientific research in fisheries are very scarce, so the information that fishermen can provide is the only source of data that can be disposed of; It is that cooperation with the

fishermen can provide a source of information, as a complement to the data collected in the classic research way. This cooperation can bring potential benefits for fishermen themselves by strengthening their cultural values, giving them a higher profile and recognition by users of fishing areas and improving cooperation between fishermen and authorities and management (Löffler, 1991).

Recreational fishing as a management segment of open water, and thus is an inalienable part of fisheries, undoubtedly has all the elements of economic activity. Holland et al. (2000) indicate that fishing is practiced on a catch-and-release basis and provides positive economic benefits for local communities (employment, importation of new revenues, etc.) and direct financial support (e.g., license sales, park entrance fees, sales of local crafts) in the local area. Even more importantly, it seeks to foster ethical behaviors that protect and sustain fish populations, provide political support for clean water and local conservation initiatives, promote respect for nature and natural settings, and encourage a stewardship ethic. Namely, the state of Montenegro in public competitions gives a certain period of time for fishing areas for fee-lessees (customers), mainly registered associations of citizens. Users are entitled to sell annual and daily permit sport and commercial fishermen and based on that, collected by material gain. At the same time, users have the obligation to promote the licensed area, organize the service protection fish population, prevent illegal activities and report to the competent institutions, observe the pollution of watercourses in their area or improper action concerning water management and in the riverbed, which can have a negative impact on fish stocks. Additionally, users are required to hire expert institutions authorized to perform hydrobiological research and analysis of fish populations in a given area and, based on these results, adopt measures to improve fish stocks. Assets remaining over it represent a profit or earnings. Recreational anglers who purchase a license shall be entitled to be allowed to go out fishing on the water and catch fish. Caught fish including compliance with regulations on the size, number and time of spawning individual species can carry for personal consumption. However, both caught fish and recreational angler do not have the right to put it into circulation and sales.

On Rajova (Rajovic) River, the engagement in recreational fishing is at the discretion of the author of article 6 of recreational fishermen. Water management in the territory of Andrijevica municipality to which belongs and Rajova (Rajovic) River has been entrusted to "Fishermen Association LIM". Recreational fishing as a sports branch is quite popular in Montenegro and this competition takes place at several levels (associations, region, republic, international competition). Our research record based on similar studies by Ćuk and Branković (2015) indicates that in Montenegro, there are a number of good fishing magazines, TV and radio shows dedicated to fishing, and there is a noticeable expansion of the internet sites of these fisheries, resulting in a larger number of monographs in the field of fisheries. Additionally, in Montenegro, there are a number of institutions in the field of fisheries and skilled personnel that may well follow and enhance fish stocks; however, due to a lack of funds for the research, the potential of these institutions is underutilized.

LITERATURE REVIEW

The academic discipline of geography can be said to address two main questions. It is about where things are, and why they are there. Arild Holt - Jensen expresses the major geographical question: "Why is it like this here?" (Holt - Jenssen, 1988). This implies that geography is about location and its explanation. Consequently, everything that has a geographical location or distribution and all processes that influence a geographical localization or distribution are of interest within the discipline. Wooldridge and East (1966) claim that geography has a special role to play: coordination and integration. It fuses the results of other subjects..." According to Haggett (1990), there is a core of geography based on three essential geographical characteristics. First, there is an emphasis on location, spatial analysis, which tries to represent and analyze the spatial pattern of different "phenomena" (Appelblad, 2001). Second, there is an emphasis on land and people relations, and ecology analysis, which stresses the vertical links between man and the environment within a limited geographical area (resource utilization in its widest meaning). Third, there is an emphasis on regional synthesis, regional complexes, in which the spatial and ecological approaches are fused. From this threefold geographical core, there are then links to supporting fields in the periphery such as sociology, economics, history, biology and geology. Williams (1998) emphasizes that the phenomenon of recreational fishing and angling is also of substantial interest within the subfields of leisure and tourism geography (Appelblad, 2001).

Since the 1990s, many studies according to Ferrara (2016) have focused on the effects of sports events (Chalip et al., 2003; Baloglu and McCleary, 1999; Waitt, 2003; Zukin, 1995; Pearce, 1982). These studies have attracted the interest of economic-geography researchers (Korstanje, 2012; Gartner, 1989; Ritchie and Smith, 1991). Sports events can affect the quality of host residents' lives and support the realization of recreational activities for the community (Litvin and Fetter, 2006; Gartner and Hunt; 1987). These events can also strengthen local traditions and cultural identity. These events can also influence the destination image by promoting its beauty, evidencing the efficiency of local services and reinforcing its traditional reputation (Littlejohn and Watson, 2004; Goodrich, 1978; Sinclair, 2005; Roche, 1994). However, despite the relevance of geographical aspects, several studies show only economic effects (Richardson, 2012; Paddison, 1993; Roche, 2000; Richardson and Crompton, 1988). This study attempts to fill the gap in the literature by examining the geographical effects of a touristic event (Bramwell and Rawding, 1996; Chon, 1990; Zhang et al., 2009; Tapachai and Waryszak, 2000; Ferrara, 2016). Currently, according to Shafiei et al. (2017) brands in rural destinations play an important role in the development of the green economy and sustainable tourism. Cai (2002) proposed one of the first conceptual destination rural branding models. In the model, the brand elements mix to uniquely identify and position the destination through positive image building. This understanding is derived as emphasized by Shafiei et al. (2017) from the general branding literature (e.g., Aaker, 1997; Keller et al., 1998; Pham and Muthukrishnan, 2002) and emphasizes the role of image building. Furthermore, Cai (2002), in an article titled "Cooperative branding for rural destinations", illustrated that the conceptualization and modeling of cooperative branding will help advance the field of destination marketing and bring about the efficient use of rural tourism resources and effective marketing practices. In addition, Embacher (2013) urged that building and managing a rural tourism brand brings benefits by supporting business chains, creating trust in unknown products and services, giving security, facilitating decision-making, allowing identification and self-presentation, creating familiarity and positive prejudices, minimizing the risk for disappointment, standing for values, giving orientation, standing for controlled quality and creating repeat business (Shafiei et al., 2017). With the aim of evaluating the implications of recreational fisheries, we analyze the issues regarding the development of recreational fisheries: the case of the Rajova River.

Therefore, my review of the available literature on brook trout entailed three main steps. The first step was a literature survey targeting specific studies to obtain additional relevant data. The second step involved searching the bibliography of natural history summaries for publications related to the terms and study of interest. In the third step, I screened all publications obtained from my searches. Drašković (1996) in the series "Great peoplegreat sports fishermen" indicates, for example, Ernest Hemingway. This world-famous writer became a great authority in fishing literature. He won the Nobel Prize for Literature (1954), and many of his works are "painted" the fish ("Great River deceitful heart," "The Sun Additionally Rises," "On the blue", "The Old Man and the Sea", "Islands on the wind"). In a review of domestic literature, on this occasion, we highlight the monograph "Hunting and Fishing" (1963), and "Fishing and water" (2003). For us, it is also a very interesting book "Secrets of fishing-a collection of articles on fishing" (2002) dedicated to fishermen who want to be in one place and find all they need for successful fishing. Namely, publications include over 120 fishing methods with systems where the attention is addressed to the specifics of each fish species; the manner and place of taking the bait; 70 techniques of attracting recipes depending on the fish species, water and time of year; 70 types of bait animal or vegetable origin with full explanations of the method of preparation, storage and use; 40 local river fish species to over 150 pages with a brief review of the habitats and natural foods each. The focus of research in the forward mentioned publication is on fishing techniques, typical baits and 40 tested recipes for catch and detailed instructions on how to make your own personal fishing equipment... At this point, we also cite research texts such that of Marić and Milošević (2009), Marić and Talevski (2009). Similar studies were also found in the international literature: Gaudet (1977), Norling (1977), Tuomi (1977), Gerdeaux (1991), Marta - Rodrigues and Bochechas (2001), Cooke and Cowx (2004), Cooke and Cowx (2006), EIFAC (2010), Phan (2010), Flåten (2011), Gupta et al. (2014), and Gupta et al. (2015).

Ecotourism is a component of a broader category of tourism-nature tourism. The main attraction in nature tourism is according to Ditton et al (2002) citing researcher Laarman and Durst (1993) a natural-resource based destination with activities such as viewing the natural scenery, plants, wildlife or birds, and canoeing, biking, hiking, scuba diving, etc. The purpose of nature tourism is to enjoy mostly undeveloped natural areas or wildlife. Ditton et al. (2002) by Honey (1999) defines ecotourism as travel to fragile, pristine and usually protected areas that are low impact and small scale. In addition, it should help educate the traveler, provide funds for conservation, directly benefit the economic

development and political empowerment of local communities, and foster respect for different cultures and their human rights.

Most tourism scholars do not consider fishing "ecotourism" (Ceballos-Lascurain, 1996; Goodwin, 1996; Fennell, 2000) because of its consumptive nature. A case has been made, however, that some forms of fishing can be viewed as ecotourism (Holland et al., 1998, Holland et al., 2000). In these cases, fishing is practised on a catch-and-release basis and provides positive economic benefits for local communities (employment, importation of new revenues, etc.), and direct financial support (e.g., license sales, park entrance fees, sales of local crafts) in the local area. Even more importantly, it seeks to foster ethical behaviors that protect and sustain fish populations, provide political support for clean water and local conservation initiatives, promote a respect for nature and natural settings, and encourage a stewardship"ethic" (Ditton et al., 2002).

Brook trout movements are "a potentially common and important phenomenon" (Gowan et al., 1994). Funk (1957) introduced the idea that stream fish populations may often consist of a relatively sedentary component and a more mobile component of wideranging individuals. He also suggested that the degree of movement depends on habitat and season. The degree of movement by salmonid is important to invasion as it presumably reflects dispersal ability, if not dispersal tendency. Goldwasser et al. (1994) demonstrated that even a few wide-ranging individuals greatly increased the rate of spread of a simulated population, and including variability of individual movements resulted in an even faster spread. The conclusions reached in studies of fish movement are often relative to the research methods used (Gowan et al., 1994). While many markrecapture studies conclude limited movement by stream fishes, nearly all radio telemetry studies indicate that some individuals move long distances (Gowan et al., 1994). Studies of wild (native or naturalized) brook trout movements to date can be separated into four categories according to the methods employed: mark and recapture with minimal manipulations, mark and recapture with alterations of fish communities, populations, or habitats, radio telemetry (one study) and definition and recolonization (Adams, 1999).

STUDY AREA

The first historical sources about Rajova (Rajovic) River, we find approximately 1744, i.e., from the time when the brothers Rajo (brotherhood Rajović) and Vuka (brotherhood Vukić) inhabited a rural village, Gnjili Potok. Three years later, this place is inhabited by Labo (brotherhood Labović). When the writes about the people of rural village Gnjili Potok, the author of this article, has thought whether the general people rotten Potok and Rajova River I can separate and describe special. I cannot or I am not a researcher to do it for the simple reason that the people of the rural village Gnjili Potok a more wonderful landscape of Rajova (Rajovic) River, freely permeate the complement each other the in both joy and satisfaction. Rajova (Rajovic) River is named after the founder of the brotherhood Rajović-Rajo, who first came with their own herd of sheep two hundred yes lives in this area. In technical terms, Rajova Rivers often used the name Rajović River

(hereinafter). With this name have nothing to find fault with. Maybe are more appropriate. However, the author of this article respects the historical origins and traditions of the rural village Gnjili Potok under the name Rajova River.

On Rajova River fishing is a traditional activity. Research by Rajović (1995) and Rajović and Rajović (2010) indicate that the man throughout history Rajova River, in various ways fishing. Fish-brook trout man rural village Gnjili Potok is the first hunting with his bare hands, which is still in heavy use or has made a variety of networks and traps. Excess mercury caught fish that he could not take advantage of at that moment, kept in various pools, of artificial or natural origin, as a reserve for the winter period. Over time, the brown trout on the Rajova River began to be so reproducing that man in a rural village Gnjili Potok, started to gain valuable experience and establish knowledge that enabled recreational fisherman to become breeders. Today, a typical example of a successful breeder fish is brook trout, found in the neighboring village Kralje (fish pond - Perović). From all this we can conclude that fishing is a very old human activity, that dates back to the earliest times of settlement of the Rajova River and its surroundings.



Figure 1: Rest, recreation and research - author text GR on Rajovoj (Rajović) River

Rajova River springs from below the mountain Lise, namely below Slatinskog katun, formed from three sources. Downstream in the upper stream of the Dobrog Rta to Bridge na Rajovoj River, it has characteristics of a fast mountain river with two fountains deeply embedded between Žunjaka, Dobrog Rta, Žara and Paljine. In the medium flow of the Rajova River, which is from the Upper alluvial plains on the left and right sides, forming small and large alluvial plains, and the most widespread in the confluence Radmiličkog Stream and Trešnjevička River (Alluvial plains Rajović, Alluvial plains Milićević, Alluvial plains Kastratović, Alluvial plains Labović), at Watermill "Božović" (again

Alluvial plains Rajović, Alluvial plains Šekler), further downstream forming the alluvial plain (Alluvial plains Milićević and Alluvial plains Labović). From "Watermill Labovića", disappearing alluvial plains and the Rajova River again run so that its lower reaches, that is at the foot of Čuka, on the right side receive the Čukačka River. On the locality of Miravčine or Dubokalj the Rajova River reformed smaller and larger alluvial plains (Alluvial plains Novović, Alluvial plains Martinović and Alluvial plains Dekić). In the area, Dubokalja loses its name (Rajova River) and further runs under the name Kraštica and empties into the Lim at Mosta Bandović. In certain places, from the source to the Dubokalj trough, the Rajova River is so deep that real natural swimming pools were created, a depth of approximately seventy cm to a meter and a half, in which the water descents in the powerful waterfalls from the program "National Geographic".



Figure 2: Satellite image of the Rajova River (www.me.geoview.info)

The bridge on the Rajova River is elegantly elevated above the river. At this point, an exceptional beauty was concentrated in the unity of water, forests, villages and the sky was reflected in it. Under the bridge, the Rajova River has its own dynamic or sea obscured life. At the same time, the author of this text regretted that I did not an artist who would faithfully paint or describ the unreal beauty of the environment that is provided in this area of the Rajova River. I remembered the "Signs along the Road" by Andrić (2005): "Of all the things a man in life builds, nothing in my mind is better or worthier than bridges. They are more important than houses, more sacred, and universal than temples. Suit every and treat all alike, useful, raised always deliberately in place on the entwine the largest number of human needs, they are more durable than other buildings and serve no secret or evil...In addition, when I on bridges, in my memory

emerge, not the ones I crossed most often than those who kept and captivated my attention and my spirit".

We should not be unfair nor Rajova River tributaries according to the river! And if different in the distance traveled and the amount of water you carry the, done are its tributaries equally pure and clear, equally fast and cold. The Rajova River on both sides of the entire length of the basin receives numerous sources and streams. On the right side: Trešnjevička River, Brestov Do, Vranjak, Vrelo, Laz, Žunjački Stream, Jagodnjak, Ravni Lom, Jelar, Stream Ornice and Stream Lanište. On the left side: Parlog, Laščić, Radmilički Stream, Bakin Stream, Gnjili Stream and Suvi Stream. The Tributary Rajova River has its own dynamic but in terms of the sheltered life. Supplied with power water are subterranean springs and additional surfaces. Depending on the weather conditions, the water level is raised and lowered. In the complex tributary of the Rajova River, a great age experienced old beech and fir trees, which formed a real forest reserve. Thick trees, tall trees, and to preserve peace and tranquility Rajova River.



Figure 3: Rajova (Rajović) River due to high water level - cruel but still beautiful

In the not distant past on Rajova River, there were six watermills that testify to the life of the people of this geospace: watermill Rajović, watermill Božović (Rajović), watermill Novović, watermill Labović and on Trešnjevička River - watermill Novović. Watermills for processing cereal had in the national life of great significance, which will be reflected in several directions: they are a significant part of the economic power of the old village; a worthy monument of architecture through which invaded technical knowledge and technology of construction of milling they are still living monument of the provisions of the old common law, and with it a significant factors daily life in the countryside - one of its community centers. From all mentioned withstood the ravages of time is the only watermill "Božović".



Figure 4: No part of our cultural heritage does not go so deep, nor includes many streams of life of the rural village Gnjili Potok, as doe's old Watermill "Božović" (Rajović).

It is necessary to organize thorough research to determine the space covered by the watermill of this type, the incidence of certain names, customs and rules of customary law, to determine the economic importance of rural life at the company, and document construction techniques mill buildings and installations, in short, that it will build a view with which it will obtain a comprehensive picture of this valuable monument of the material culture of our people (Findrik, 1983).

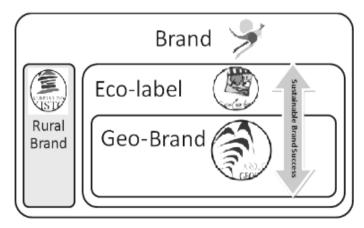


Figure 5: Sustainable Brand Success in Rural Tourism Destinations (Shafiei et al., 2017)

In the last two decades according to Shafiei et al. (2017) with the emergence of geotourism as a sustainable form of tourism in protected and rural areas, a new concept of "Geo-brand", an earth-friendly brand, has created an image that identifies the geomorphologic heritage of territory-entered tourism marketing. Last, it can be concluded that Eco-labels and Geo-brands undoubtedly helped fuel sustainable brand success in rural tourism destinations (Fig. 5).

RESEARCH METHODOLOGY

The recreational fishing based upon the application of the measures recommended for good environmental practices has a visible impact on sustainable development, which is noticed in the economic, social, ecological and historic-cultural plans, both at the local and national levels. The whole information volume in this article was obtained through specific methods for the selective research, respecting all its stages from the methodological point of view: identification of the researched issue, research framework delimitation, information collection, data processing, analysis and interpretation drawing up the conclusions. Research also played an important role in the article, which consisted, on the one hand, of the identification of other studies and articles on the same subject, and in the processing of the survey, on the other hand. Hence, the information sources used can be classified into national publications (research institutes, universities, etc.), and into nongovernmental sources (independent publications). A special place in the study takes text from the international literature, based on similar studies. As there are few data on recreational fishing and its impact on tourism, the research results are based on a series of mainly qualitative analyses, on the one hand, and on a series of logical rationales, on the other hand.

The methodological procedure of the survey is based on research by Smederevac (2007), adapted for the purposes of this study, bearing in mind the research experience of the author of this article on similar research (see Rajović and Bulatović, 2008; Rajović, 2009; Rajović and Bulatović, 2011; Rajović and Bulatović, 2013; Rajović and Bulatović, 2015; Rajović and Bulatović, 2015; Bulatović and Rajović, 2015; Rajović and Bulatović, 2016; Rajović and Bulatović, 2016; Rajović and Bulatović, 2016; Rajović and Bulatović, 2016). A questionnaire or survey served as a useful machine, which could be used in practice to assess the level and usage of fish faunal resources and the possible reasons for the problems that arise in relation to the number and composition of the fish population in the Rajova River. In the preparation phase poll, the participants visited the study area. For the purpose of visiting the territory and seeing the potential for the planned research, it was necessary to collect existing information concerning previous results and the history of the area in the field of recreational fishing. The survey covered five recreational fishermen in the rural village Gnjili Potok, which, according to survey data for the year 2016, accounted for 8.2 % of the total number of permanently occupied population (61) dealing or have dealt with the activity in the field of research. The questions referred to the demographic characteristics of the target group, equipment and fishing methods, economic valuation, legislation, control, pollution, problems and suggestions for solutions and better management. Recreational anglers are interviewed on two occasions in July 2014 and August 2016.

However, according to Caldwell et al. (2016), this suggests that individuals in the research community should be cautious of choosing a survey method based solely on local influence, as it may not be the most beneficial for successful management, conservation, or scientific comparison. Frequently, the primary goal of fisheries surveys is to increase understanding of and bettering, the health of our river's resources. One of the most effective ways of achieving this goal is to provide scientists, managers, and policymakers with the most complete and comparable datasets possible; this may ensure that managers can measure the impacts of certain activities, compare these effects, and make the most effective and educated management decisions possible. Developing and implementing standardized survey methodologies that are effective across regions is one way to provide managers with that information.

CONCLUSION

With its geographical location and natural and anthropogenic tourist values, Rajova River is an appropriate space for the definition and implementation of development goals and recreational fishing. Prerequisite for the development of recreational fishing eats coordination of the development goals and future actions of a large number of entities involved in its implementation. For recreational fishing in the Rajova River, it is important to involve local communities and highlight the value of those fisheries that are based on preserved natural and cultural resources. The practice has shown that local communities that have reached a higher level of socioeconomic and cultural development are more likely to develop recreational fishing, modeled on similar geo-spaces of Western Europe. The environmental values and beauty of the landscape of the Rajova River enrich the rich biodiversity dominated by complexes of deciduous and coniferous forests. The diversity of forest vegetation enables the development of sports and recreational tourism. The moderate, mild climate, with a wealth of diverse flora and fauna at the foot of Komova, complements existing natural values. It can thus be concluded that destination branding Rajova River for recreational fishing is a process by which destinations seek to express their unique identity and are well positioned in relation to competitors.

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