REVIEW ARTICLE

Tourism in Protected Areas in Spain: Perception of Sustainable Development in Protected Areas with Different Levels of Protection

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Abstract

Protected natural areas have become important tourist destinations around the world, and in Spain, national parks are the most representative figure of this type of enclave, having as one of its objectives to make conservation compatible with public use. One of its objectives is to make conservation compatible with public use. However, its restrictive legal regime prevents sustainability from being achieved. In this sense, UNESCO Global Geoparks emerges as an alternative figure with a vision more focused on socio-economic development. This paper compares the perception of sustainability in these two types of protected areas. For this purpose, a questionnaire was sent to the highest representatives of the municipalities closest to all the national parks and geoparks in Spain. The data analysis was carried out using structural equation modeling. The results of this study show a higher perception of sustainable development in geoparks than in national parks. In conclusion, very strict regulation of protected areas can be detrimental to tourism development and the population's quality of life.

Keywords Protected areas · Rural development · Sustainable tourism · Tourism business management

Introduction

Globally, 15.73% of the world's land area and 7.93% of the world's marine area are currently under some form of protection (UNEP-WCMC 2022a). Protected areas are so important that they are supported by numerous international institutions as an optimal instrument to fight climate change and biodiversity loss, maintain cultural values, achieve sustainable development, and improve the quality of life of the population, among other aspects (EUROPARC Federation 2020; International Union for Conservation of Nature (IUCN), 2022a; UNESCO 2022; United Nations 2022).

For all these reasons, in recent years, numerous scientific studies have focused on studying this type of enclave from the different dimensions affected (Naughton-Treves et al. 2005; Dudley et al. 2010; Mondéjar-Jiménez et al. 2013; Sánchez-Ollero et al. 2021; Cordente-Rodríguez et al. 2021; Breen et al. 2021; Pérez-Calderón et al. 2022).

Thus, the relation between protected areas and tourism has been extensively analyzed from a sustainable development perspective in the literature (Ceballos-Lascuráin 1996; Eagles et al. 2002; Bushell and Eagles 2006). Some of these studies have determined that the world's terrestrial protected areas receive around 8 billion visits annually (Balmford et al. 2015).

According to the Convention on Biological Diversity (2021), Spain is one of the most biodiverse countries in Europe (IUCN 2022b), as evidence of this, it currently has 28.11% of its land area and 12.76% of its marine area covered by protected areas (UNEP-WCMC 2022b). It is a leading country in environmental protection, being one of the pioneer states in declaring national parks, with the enactment of what is considered the first national parks law in the world (Castroviejo-Bolívar 2004; Muñoz and Benayas 2012). It is also the country with the second highest number of geoparks in the world, 16 in total, behind only China, which has 41 (UNESCO 2023).

Furthermore, these natural environments provide an excellent setting for regional development through

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sustainable tourism, especially in Spain, which has one of the most worrying rural depopulations in southern Europe (ESPON 2018).

While it is true that tourism in protected areas is an ideal tool for achieving sustainable development, it must also be borne in mind that they present numerous challenges, including the limitation of certain socio-economic activities as a consequence of the protection regime (Benayas et al. 2007; Prieto-Ballester 2017; Rodríguez-Rodríguez et al. 2021). The specific legal regulation and the consequent environmental protection are crucial to understand the extent, flexibility, and restrictions of the public use of these spaces (Leung et al. 2018).

It is, therefore, necessary to bear in mind that, depending on the category of protection, there will be strict limitations on public use. In this sense, national parks are positioned as the most rigid form of protection in the Spanish legal system, which can be detrimental to the socio-economic development of the surrounding municipalities (Flores-Ruiz 2009; Leco-Berrocal and Mateos-Rodríguez 2021). On the other hand, there are other types of parks, such as natural parks, biosphere reserves, or geoparks, which enjoy greater flexibility and therefore greater options for the exploitation of leisure and tourism activities (Flores-Ruiz 2009; Sánchez-Cortez 2011; Leung et al. 2018). In addition to national legislation, the International Union for Conservation of Nature (IUCN), in its guidelines, establishes the existence of six categories of protected areas, which have different conservation objectives and allowable activities. These categories classify protected areas according to their management objectives, differentiating between strict protection zones and areas where sustainable exploitation of natural resources is allowed. If an equivalence is established between international categories and national figures, national parks belong to category II of the IUCN, while geoparks do not belong to any category of Protected Area suggested by the IUCN, although their geological characteristics must be protected by the legal instruments of each country (Dudley 2008; Tavera-Escobar and Álvarez-Ramírez 2019).

Thus, this paper examines whether there are notable differences in perceived sustainable development in national parks and UNESCO Global Geoparks in Spain. In other words, it aims to answer the following question: what impact does the level of environmental protection of protected areas have on the perceived sustainability of these areas?

There are studies that analyze the difference in local perceptions between geoparks and other protected areas, such as national parks in other continents (Sánchez-Cortez et al. 2014; Cortez et al. 2017). However, to our knowledge, there are no previous studies comparing the perception of sustainability between these two types of natural areas (national parks and geoparks) in Spain, so this article is an enriching contribution to the existing literature.

Finally, this information will be of great use for tourism agents and the management bodies of national parks and geoparks, as well as for the municipal corporations of the localities that are in the area of socio-economic influence or are part of this type of protected area. In particular, this information is especially important for local managers as they are the first level of responsibility in decision-making and management associated with the sustainable socio-economic development of the area.

Theoretical Framework and Literature Review

Protected Area Categories in Spain

In 2008, IUCN developed the concept of a protected area, which is now commonly accepted worldwide. According to this definition, a protected area is a geographic space delimited and managed by legal means to achieve long-term conservation of natural, ecosystem, and cultural resources (Dudley and Stolton 2008).

In Spain, there are numerous categories of protection that can be framed within this definition. Although the specific regulations governing each of them are extensive, the general framework that supports the complex network of protected areas is Law 42/2007 (España 2007). According to this law, Spain's legal protection figures can be divided into three blocks: protected natural areas, the European Ecological Network Natura 2000, and the areas protected by international instruments (see Table 1).

National parks are the spaces that enjoy the highest level of protection in Spain due to the authenticity of their resources and the grandeur of their landscapes. For their part, geoparks are geographic areas in which sites and landscape sites and landscapes of international geological importance are managed. These areas are focused on the conservation of geological heritage while promoting sustainable economic development, protection, and education in an integrated manner (España 2014; UNESCO 2015, 2021).

In this sense, it should be noted that it is not a category of protected space per se, and therefore, it can be differentiated in several aspects with respect to national parks or other types of protected natural spaces, which are under the provisions of national environmental legislation (Gonzalez-Tejada et al. 2017; Canesin et al. 2020). According to Zouros (2007), geoparks can be considered protected areas at the national level, depending on the legislation of each country. For example, in Spain, they are considered "protected areas by international instruments" according to Law 42/2007 (Ministerio para la Transición Ecológica (MITECO), 2023).

Regarding the management of national parks, their restrictive legal regime sometimes prevents achieving

Table 1 Legal categories of protection of the natural environment in Spain

		Number	Area (hectares)
Nature protection areas	National park	16	488,678
	Natural park	152	4,075,116
	Nature reserve	291	169,165
	Natural monument	359	89,505
	Protected landscape	61	160,762
	Marine protected area	2	4,896,316
Natura 2000 network	Sites of Community Interest (SCI)	1468	17,338,757
	Special Protection Areas for Birds (SPAs)	658	15,449,468
Areas protected by inter-national schemes	Biosphere Reserves	52	7,214,754
	Ramsar Wetlands	75	308,246
	Special Areas of Mediterranean Importance	9	148,484
	OSPAR Convention	13	2,034,219
	UNESCO Geoparks Global Network	15	2,693,371
	Natural World Heritage sites	4	76,839

Source: authors based on EUROPARC-España (2021)

sustainability, since the declaration of this type of spaces prohibits and limits the carrying out of all those activities in the vicinity of the environment that endanger the achievement of the park's objectives. Among these limitations are, for example, the establishment of certain infrastructures and buildings, exploitation of natural resources, etc. (España 2014, 2021).

According to Law 30/2014, the management and organization of national parks correspond directly to the autonomous communities in whose territories they are located. Geoparks, on the other hand, are managed by a legal body recognized by national legislation. This management body must be prepared to deal with the whole area and must include all local and regional authorities in the area (UNESCO 2015, 2017). In some cases, these two types of natural environments overlap in the territory, such as in the Canary Islands or in the Sierra Nevada National Park or Granada Geopark.

Sustainable Development According to Protected Area Category

There are two currents that analyze the relationship between the declaration of protected areas and socio-economic development. On the one hand, some studies determine a clear positive relationship, establishing that these types of areas are important drivers of socio-economic development in rural areas, mainly due to the tourism activity generated around them (Eagles et al. 2002; Leisher et al. 2007; Sims 2010; Sala et al. 2013; Stolton et al. 2015; Ghoddousi et al. 2018; Zhang et al. 2020), whereas at the opposite end of the spectrum is research that considers that limitations and restrictions associated with environmental protection led to socio-economic underdevelopment and, consequently, to

a lower quality of life for local people (West et al. 2006; Brockington et al. 2008; De Santo 2013; Paniagua 2018; Rodríguez-Rodríguez et al. 2021).

Previous studies that have analyzed the socio-economic development associated with the declaration of protected areas have concluded that there are significant differences between the different categories of protection, as a consequence of the specific restrictions associated with each one (Sánchez-Cortez 2011; Farsani et al. 2011; Rodríguez-Rodríguez et al. 2019, 2021; Rodríguez-Rodríguez and López 2020).

In this sense, there is no doubt that those with more restrictive regulations can achieve better environmental conservation, but those with more flexible regulations could be considered better drivers of the socio-economic development of local communities (Rodríguez-Rodríguez and López 2020).

Thus, it is striking that in the study by Rodríguez-Rodríguez and López (2020), national organizations perceived a more positive socio-economic impact of national parks compared to the areas that make up the Natura 2000 Network. On the other hand, other studies (Rodríguez-Rodríguez et al. 2021) confirmed that in municipalities located in the vicinity of Sites of Community Interest (SCI) areas of the Natura 2000 Network, rural depopulation had a considerably lower effect than in Special Protection Areas (SPAs) and Biosphere Reserves designated by UNESCO.

Other authors have concluded that geoparks are a good alternative to other types of protected areas when it comes to enhancing the sense of local identity, preserving cultural heritage, and improving the quality of life of the population, due to their special focus on sustainable economic development (Sánchez-Cortez 2011). In line with the above, the research carried out by Farsani et al. (2011) found that the

role played by the local population in the management and conservation of the environment is significantly greater in geoparks than in national parks or other protected areas.

According to Farsani et al. (2011), a geopark is, in essence, a national park in which the local population is involved in the conservation process and at the same time aims to achieve socio-economic development through geotourism. The difference between the two sites lies in the strict degree of protection that characterizes national parks, which largely prevents more socio-economic exploitation activities.

In this sense, although the objectives and purposes of national parks have evolved since the first declaration of Yellowstone National Park in 1872 in the USA, moving from absolute protectionism to greater integration of public use and enjoyment and limitations to different socio-economic activities remains important (Tolón and Lastra 2008; Aparicio 2012; Muñoz and Benayas 2012; Telbisz and Mari 2020).

For their part, UNESCO geoparks considered from the beginning of their creation the socio-economic improvement of their rural environment (Farsani et al. 2011; Dowling 2013); the main objective of geotourism is the harmony between the conservation of resources and the promotion of tourism development (Newsome et al. 2012).

Finally, it is important to note that governance, public perceptions, and local support have a considerable influence on the success of protected environments. This has been shown in previous literature to have a positive and significant influence on the environmental protection and sustainable development of the areas of influence of these natural environments (Borrini-Feyerabend et al. 2013; Bennett and Dearden 2014; Austin et al. 2016).

Objectives

The main objective of our research focuses on comparing the local community's perception of the sustainability of the environment because of the declaration of a protected area. The study analyzes, on the one hand, the iconic figure of national parks and, on the other hand, the UNESCO Global Geoparks. In other words, the study examines how the environmental protection regime can affect sustainable development as perceived by the local population. The time horizon considered was 2010–2020.

To this end, we have worked with two subsamples, one that collects the perception of the top political managers (mayors) of the municipalities located in the socio-economic area of influence of the Spanish national parks and, on the other hand, the perception that these same managers have in the populations that make up the geoparks. The hypothesized relationships between constructs were already highlighted in the study by Pérez-Calderón et al. (2020).

Thus, this study aims, firstly, to determine how economic development influences general satisfaction with the declaration of these areas, the quality of life of the local population, and social development in the national parks and geoparks in Spain; secondly, to analyze the impact of quality of life on social development and overall satisfaction; and, finally, to determine how the social development of the population influences their general satisfaction with these sites.

Research Design and Methods

Sample and Variables

The sample is made up of municipalities located in the area of socio-economic influence of Spanish national parks, in accordance with current regulations (España 2014), and those municipalities that make up each of the UNESCO Global Geoparks. The total sample is composed of 169 towns close to 12 national parks and 313 referring to 15 geoparks (Table 2). A questionnaire was sent to each of the municipalities located in the vicinity of the natural area under study. In line with Devers-Kanoglu (2009), it is important to highlight the suitability of working with data at the municipal scale in studies on sustainable development. In addition, Fig. 1 shows a map with the location of the national parks and geoparks that make up the sample. National parks are marked in blue and geoparks in red. They are identified by the number shown in Table 2.

It should be noted that this study did not consider the Sierra de las Nieves National Park and the Cabo Ortegal Geopark given their recent designation (España 2021; UNESCO 2023). Likewise, no responses were obtained for the Cabrera, Tablas de Daimiel, and Timanfaya National Parks.

The data were collected through a Google questionnaire that was emailed to the top managers of these towns. Subsequently, the number of responses was reinforced by phone calls. Data collection took place in November 2019 and during April and May 2022.

A total of 188 valid questionnaires were used. Of the total, 40% (75 questionnaires) were answered by the political managers of the populations close to the national parks and 60% (113 questionnaires) in the case of the municipalities that form the geoparks. Specifically, questionnaires containing atypical responses (e.g., the same score on all questions, or extreme values on the same questions) were eliminated.

This questionnaire was used in Pérez-Calderón et al. (2020). It is composed of 21 indicators grouped into four categories and were measured on a Likert scale with values ranging from 1 to 7. Thus, values closer to 7 are the optimal values and those closer to 1, the non-optimal condition. This is explained more precisely in the study by Pérez-Calderón et al. (2020), but a summary is shown in Table 3.

Table 2 Descriptive statistics for national parks and geoparks

National parks				Geoparks				
National park	Hectares	Population	Towns	Response rate	Geopark	Hectares	Population	Towns	Response rate
Aigüestortes (1)	14,119	13,801	10	50%	Cabo Gata-Níjar (13)	12,600	767,716	3	66.67%
Cabañeros (2)	40,856	4781	6	66.67%	Cataluña Central (14)	125,000	194,681	36	25%
Cabrera	90,800.52	427,683	2	-	Costa Vasca (15)	1800	20,880	3	66.67%
Doñana (3)	54,252	44,976	4	75%	El Hierro (16)	26,800	11,147	3	33.33%
Garajonay (4)	3984	21,678	6	66.67%	Granada (17)	472,200	97,195	47	42.55%
Guadarrama (5)	33,960	150,369	34	52.94%	Lanzarote (18)	250,000	155,812	7	14.29%
Islas Atlánticas (6)	8480	373,055	4	100%	Las Loras (19)	96,000	18,820	16	43.75%
Monfragüe (7)	18,396	12,267	14	50.00%	Maestrazgo (20)	35,000	11,758	43	48.84%
Ordesa (8)	15,696.20	1822	6	66.67%	Molina-Alto Tajo (21)	430,000	8403	77	12.99%
Picos de Europa (9)	67,127.59	14,164	11	45.45%	Montañas do Courel (22)	57,800	5107	3	100%
Sierra Nevada (10)	85,883	69,841	44	29.55%	Orígens (23)	204,000	15,903	19	42.11%
Tablas de Daimiel	3030	30,644	3	-	Sierra Norte Sevilla (24)	47,300	24,790	10	40%
Taburiente (11)	4690	45,666	9	55.56%	Sierras Subbéticas (25)	32,056	67,343	8	75%
Teide (12)	18,990	284,158	14	21.43%	Sobrarbe-Pirineos (26)	220,200	7490	19	36.84%
Timanfaya	5107.5	23,474	2	-	Villuercas-Ibores-Jara (27)	50,000	12,557	19	63.16%
Total	465,371.8	1,518,379	169	-		2,060,756	1,419,602	313	

Source: authors, based on Foro Español de Geoparques (Foro Español de Geoparques (FEG), 2022), Instituto Nacional de Estadística (Instituto Nacional de Estadística (INE), 2022), and Ministerio para la Transición Ecológica (Mnisterio para la Transición Ecológica (MITECO), 2022)

Fig. 1 Map showing the location of the NPs and UGGs in the sample. Source: authors

To evaluate the relationships between the different dimensions of study, perceptions of the sustainability of national parks were considered on the one hand and perceptions of geoparks on the other.

Data Analysis

The data were analyzed using structural equation modeling (SEM). This methodology allows us to determine the effect

Table 3 Latent variables and indicators

	Latent variables			
	Economic development	Social development	Quality life	Global satisfaction
Ítems	Level of wealth (ED1)	Maintenance of residents (SD1)	Travel infrastructure (QL1)	Opportunity awareness (GS1)
	Tourism services (ED2)	Culture maintenance (SD2)	ICT improvements (QL2)	Expectations fulfilled (GS2)
	Signaling (ED3)	Culture tourist attraction (SD3)	Feeling of rootedness (QL3)	Proud to live there (GS3)
	Increase of visitors (ED4)	Tourism-residents' conflicts (SD4)	Resource efficiency (QL4)	Living traditions (GS4)
	Increase in recreational use (ED5)		Environmental awareness (QL5)	Global satisfaction (GS5)
	Conflicts tourism-primary sector (ED6)		Improvement of quality of life (QL6)	
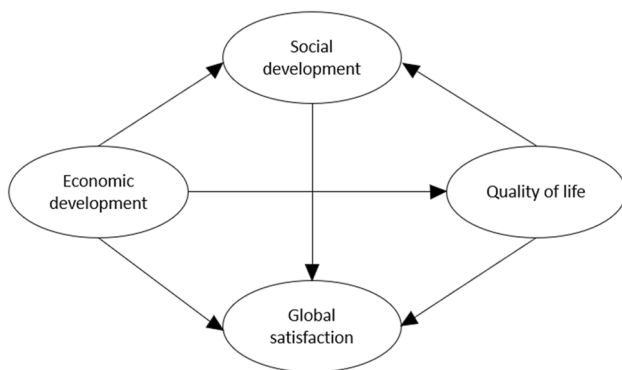
Source: authors

Fig. 2 Relationships between constructs. Source: authors

and dependency relationships between the different latent variables (Hair et al. 2014). The software used was Smart-PLS 3.

The study sample was divided into two subsamples: on the one hand, the responses concerning the perception of sustainability of national parks and, on the other hand, those concerning geoparks. Two structural equation models were estimated for each subsample. The model analyzed is shown in Fig. 2.

In accordance with previous studies (Hair et al. 2014), this analysis was carried out in two stages: first, the measurement model was analyzed to identify the relationships between indicators and latent variables and, secondly, the structural model, through which the causal relationships between constructs are identified (Fornell and Bookstein 1982; Hair et al. 2019).

In addition, the above analysis was complemented by an importance-performance map analysis (IPMA) at the indicator level. This analysis is illustrated by a two-dimensional graph, with the vertical axis representing performance and the horizontal axis importance. In this graph, the different indicators or latent variables are placed considering their performance and importance on a given target construct. The purpose of this analysis is to know which indicators or

constructs need to be worked on to achieve an improvement of the target construct (Höck et al. 2010; Ringle and Sarstedt 2016; Hair et al. 2019). Authors such as Rigdon et al. (2010, 2011) and Schloderer et al. (2014) consider this analysis to be particularly useful when analyzing differences between different groups, given its visual representation.

Findings

Descriptive Statistics

First, Table 4 represents the means and standard deviations of the items included in the questionnaire differentiated by each of the study subsamples. SPSS v25 was used for this statistical analysis.

In the descriptive analysis, numerous differences can be observed between the mean scores obtained in both protection categories. In general, most of the indicators used were evaluated more satisfactorily by the political managers of the municipalities located in the geoparks.

In both figures, a similar and relatively low score is obtained for the question referring to the increase in wealth because of the declaration of a protected area (3.23 and 3.21 out of 7 in national parks and geoparks, respectively). Furthermore, tourism activity in terms of the number of tourist services (ED2) and visitors (ED4) is perceived more positively in national parks (3.84 and 4.56) than in geoparks (3.54 and 4.26), in line with previous studies that have compared high-level protected areas, such as national parks, with other more flexible forms of protection (Rodríguez-Rodríguez and López 2020).

Likewise, there is a small difference in the perception of the limitations to public use perceived in both environments (ED6), with the national parks having the highest score for the existence of conflicts between tourism and the primary sector (3.92) compared to the geoparks (3.05). Related to the above, it is noteworthy how in geoparks there is a less perceived conflict between tourism and residents (SD4) (2.44)

Table 4 Descriptive statistics of the indicators

		National parks (n = 75)		Geoparks (n = 113)	
		Mean	S. desv	Mean	S. desv
Economic development	ED1 (level of wealth)	3.23	1.590	3.21	1.755
	ED2 (tourism services)	3.84	1.732	3.54	1.866
	ED3 (signaling)	3.89	1.599	4.27	1.738
	ED4 (increase of visitors)	4.56	1.788	4.26	1.903
	ED5 (increase in recreational use)	3.77	1.640	3.99	1.883
	ED6 (conflicts tourism-primary sector)	3.92	1.923	3.05	1.894
	Average value	3.87		3.81	
Social development	SD1 (maintenance of residents)	3.75	1.868	4.17	2.026
	SD2 (culture maintenance)	4.81	1.617	5.19	1.757
	SD3 (culture tourist attraction)	4.27	1.758	4.61	1.952
	SD4 (tourism-residents conflicts)	3.16	1.669	2.44	1.500
	Average value	4.00		4.19	
Quality life	QL1 (travel infrastructure)	2.95	1.643	3.12	1.743
	QL2 (ICT improvements)	2.63	1.402	3.24	1.754
	QL3 (feeling of rootedness)	4.27	2.016	3.84	2.153
	QL4 (resource efficiency)	2.97	1.559	3.48	1.691
	QL5 (environmental awareness)	4.05	1.692	4.23	1.685
	QL6 (improvement quality of life)	3.17	1.680	3.31	1.582
	Average value	3.34		3.61	
Global satisfaction	GS1 (opportunity awareness)	3.36	1.512	3.85	1.910
	GS2 (expectations fulfilled)	2.72	1.438	3.12	1.501
	GS3 (proud to live there)	3.57	1.876	3.77	1.793
	GS4 (living traditions)	2.64	1.666	3.29	1.776
	GS5 (global satisfaction)	3.60	1.693	4.24	1.681
	Average value	3.18		3.74	
Value of sustainability		3.58		3.81	

Source: authors

compared to national parks (3.16). In addition, national parks have a higher score for the preference not to live elsewhere (QL3) (4.27) compared to geoparks (3.84).

Finally, geoparks have a higher average rating for sustainable development (4.24) compared to national parks (3.60).

Structural Equation Modeling Analysis

The structural equation modeling technique was used to analyze the relationships between the four constructs under study. As explained above, the proposed analysis was carried out in two stages: firstly, the measurement model was analyzed and, secondly, the structural model was analyzed.

Some indicators used in the questionnaire were deleted because their loadings did not meet the required minimum of 0.707 (Carmines and Zeller 1979). As can be seen in Figs. 2 and 3, once these data have been cleaned, all the loadings are above this threshold or close to it, so that the individual item reliability is considered adequate.

As far as the measurement model is concerned, Table 5 shows that all values are satisfactory. Thus, referring to the reliability of the constructs, Cronbach's alpha values range between 0.755 and 0.920, exceeding the suggested minimum threshold of 0.70 in both subsamples (Cronbach 1951; Hulland 1999). Furthermore, composite reliability is also shown to be optimal, with all values within the commonly accepted threshold of 0.7 and 0.95 (Hair et al. 2019). In terms of convergent validity (AVE), we find that all values exceed the accepted lower limit of 0.5 (Hair et al. 2014).

In addition to the above, the values achieved by the R^2 coefficients in both subsamples range between 0.216 and 0.832, considerably exceeding the minimum recommended value of 0.1 (Falk and Miller 1992). Therefore, the latent constructs have a satisfactory predictive ability.

As can be seen in Table 6, discriminant validity is confirmed by Fronell and Larcker criterion, which establishes that the square root of the AVE of each construct must be higher than its highest correlation with any other construct (Fornell and Larcker 1981).
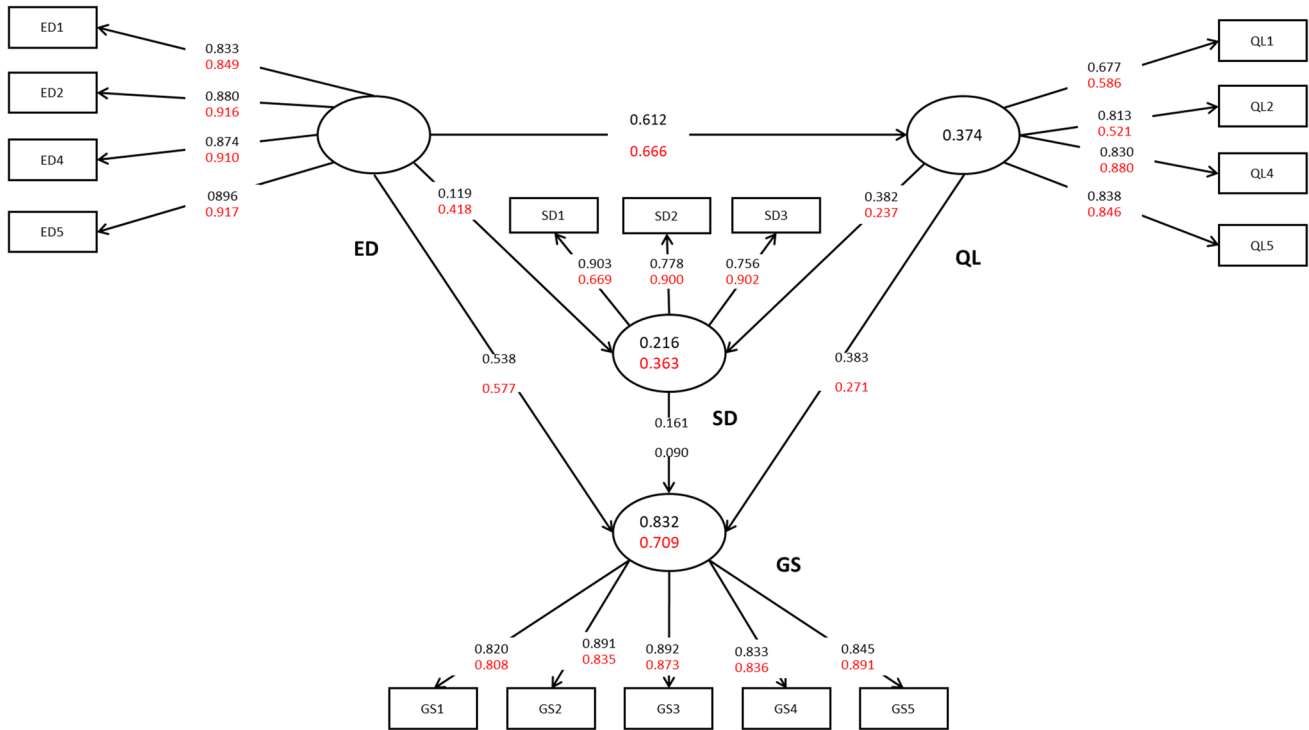
Fig. 3 Estimation of the structural equation model for national parks and geoparks

Table 5 Reliability and validity measures

Constructs	National parks				Geoparks			
	AVE	Composite reliability	R square	Cronbach's alpha	AVE	Composite reliability	R square	Cronbach's alpha
ED	0.758	0.926	-	0.894	0.807	0.943	-	0.920
GS	0.734	0.932	0.832	0.909	0.721	0.928	0.709	0.903
QL	0.627	0.870	0.374	0.800	0.587	0.848	0.443	0.763
SD	0.664	0.855	0.216	0.755	0.691	0.868	0.363	0.786

Source: authors

Table 6 Discriminant validity analysis by Fronell and Larcker criterion

	National parks				Geoparks			
	ED	GS	QL	SD	ED	GS	QL	SD
ED	0.871				0.898			
GS	0.829	0.857			0.810	0.849		
QL	0.612	0.786	0.792		0.666	0.702	0.766	
SD	0.353	0.526	0.455	0.815	0.576	0.563	0.516	0.831

Source: authors

Once the measurement model has been analyzed, the study of the structural model is shown to determine the effect of the relationships between the constructs. Thus, the relations between constructs indicate that there are differences between perceptions in the two spaces studied.

Figure 3 shows the values for the subsample of national parks (black) and the geoparks (red). This figure allows us to visually observe the differences between the relationships raised.

Table 7 Hypothesis test

	National parks		Geoparks	
	Direct effects	T statistics	Direct effects	T statistics
ED—>GS	0.538	9.217***	0.577	7.523***
ED—>QL	0.612	8.884***	0.666	12.455***
ED—>SD	0.119	0.806[ns]	0.418	4.270***
QL—>SD	0.382	2.605***	0.237	2.366**
QL—>GS	0.383	5.465***	0.271	3.295***
SD—>GS	0.161	2.562*	0.090	1.268[ns]

Significance level: ***p-value < 0.01; **p-value < 0.05; *p-value < 0.10. Source: authors

Table 7 presents the results obtained from the hypothesis test on a bootstrap of 10,000 samples, providing the regression coefficients between the latent variables and the T-values.

Looking at the results shown in Table 7, it can be determined that all relationships raised are significant except the influence of economic development on social development for the case of national parks and the influence of social development on overall satisfaction for the subsample of geoparks.

Starting with the first relationship raised, the influence of economic development since the declaration of a protected area on overall satisfaction is remarkably similar in both subsamples. Thus, the relationship between the perception of economic development and sustainable development is homogeneously perceived in both types of environments. Similarly, the perception of economic development conditions the assessment of the quality of life of the local population in a similar way, reaching regression coefficients with similar values in both subsamples. Regarding the effect of economic development on the social development of the populations, the difference between the two studies is

striking, since in geoparks, it has a significant impact, while in national parks, this relationship is not significant. Furthermore, quality of life conditions social development with a higher effect in the case of national parks than in geoparks. And the same is true for the impact of quality of life on the overall perception of sustainability. Likewise, in national parks, the perception of social development influences the perception of environmental sustainability, while in the case of geoparks, there is no such influence.

Finally, the factor that most influences the perception of the sustainability of the declaration of national parks is economic development, followed by quality of life and social development. However, in the case of geoparks, it is only economic development and quality of life, in second place. Lastly, the factor that has the greatest impact on social development in geoparks is economic development, followed by quality of life, whereas in the case of national parks, it is only conditioned by the quality of life, without being affected by economic development.

Importance-Performance Analysis (IPMA)

In addition to the hypothesis testing discussed above, a performance-importance map analysis (IPMA) was performed for the national parks and geopark subsample to further investigate the results (Figs. 4 and 5). By performing this analysis, it is possible to know what considering an objective construct (Höck et al. 2010; Ringle and Sarstedt 2016; Hair et al. 2019), which in our case was the perception of overall satisfaction about sustainability (GS).

From a general perspective, Figs. 4 and 5 show that the indicators are dispersed in both subsamples, showing a rather similar distribution in the two situations.

According to the results, in both cases, the best-positioned indicator with the highest importance and performance (around 60%) is the increase in the number of tourists

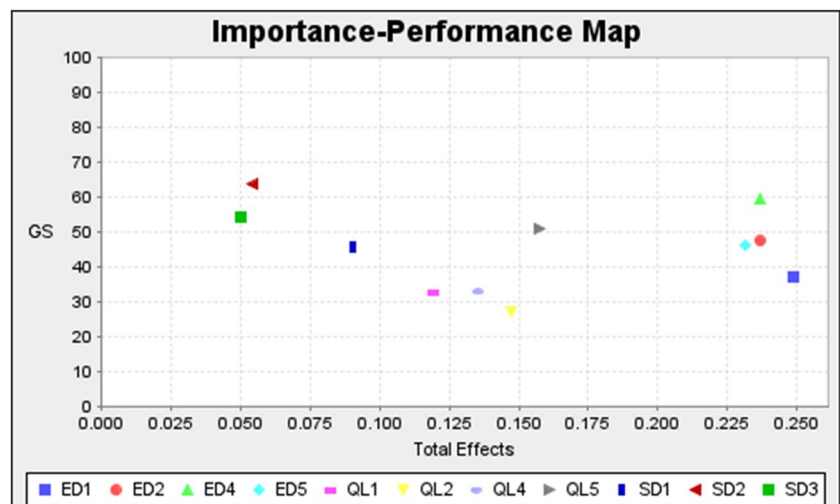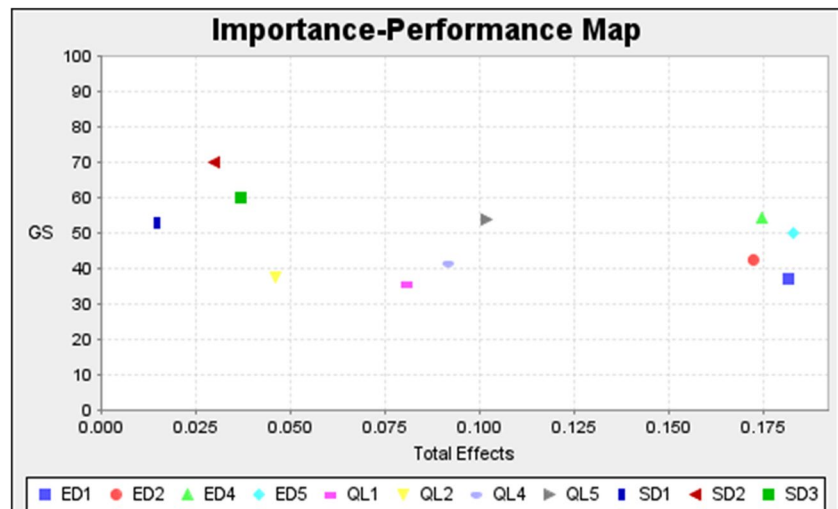**Fig. 4** IPMA diagram for national parks. Source: authors

Fig. 5 IPMA diagram for geoparks. Source: authors

(ED4). This means that the increase in the number of tourists traveling to these sites is considered an especially important factor in the perception of the sustainability of the environment and that it is being adequately managed.

The analysis also identifies that the indicators located in the lower right quadrant, relating to the increase in the level of wealth of the population (ED1), the number of tourist services (ED2), and recreational use (ED5), are of great importance in the overall satisfaction with the declaration of the protected area, but their performance indices could be improved, as they are not being managed well enough. In other words, these are particularly important aspects that need to be addressed by tourism managers and protected areas, since an increase in their performance would mean a significant improvement in the perceived sustainability of these areas.

On the other hand, the aspects related to the maintenance of culture and traditions (SD2) and the exploitation of these as tourist attractions (SD3) are indicators that, despite their high performance, have relatively low importance in the perception of sustainability in both areas.

Moreover, it is particularly striking how maintaining the resident population in the locality (SD1) and improvements in communication technologies (QL2) are aspects with lower relative importance in the perception of the sustainability of geoparks than in the case of national parks.

Discussion and Conclusion

This paper has analyzed the sustainable development perceived by the local population in protected areas in Spain considering their legal protection, specifically, in national parks and UNESCO Global Geoparks. To this end, a set of dimensions that make up sustainability, such as economic and social development and perceived quality of life, have

been considered. Thus, in line with other studies, local actors have a crucial role in the development of tourism in terms of environmental, sociocultural, and economic dimensions (Sobhani et al. 2022).

In line with Martini and Zouros (2009), we consider that the figures of national parks and geoparks share many similarities, being two types of environments that compete for a similar type of tourist, although they differ quite a lot from the legal level and the corresponding restrictions on public use.

At the beginning of this study, several relationships were put forward that pointed to the existence of significant differences in the perception of sustainable development in both types of protected areas. The results conclude that the type of legal regulation affects local perceptions of the sustainability of protected areas, as discussed below.

Taking all the national parks and geoparks located in Spain as a reference, this study shows that the localities affected by the UNESCO Global Geopark declaration perceive a greater sustainable development than those located in the vicinity of the national parks. The reason for this lies mainly in the different limitations on public use that affect each type of protected area and the socio-economic approach that characterizes the geoparks as opposed to the national parks. Therefore, in line with our results, we consider that a strict legal framework may affect the development of populations around national parks.

It is shown that the economic component contributes similarly to the overall perception of local sustainability in Spanish national parks and geoparks, while the quality of life contributes more to perceived sustainable development in national parks. Moreover, it is only in the national parks that social development influences the perception of sustainability. In other words, the economic component is perceived to have a strong influence on perceived sustainable development in Spanish geoparks, while in the case of national

parks, other dimensions such as quality of life and social development are also of significant importance.

The IPMA analysis shows that in national parks and geoparks, it is necessary to invest in and sustainably promote tourism so that it has an impact on the level of wealth of the local population. Thus, in line with Rodríguez-Rodríguez et al. (2021), greater economic support from the government (local and regional) and national and European organizations would be necessary to promote sustainable tourism in these unique enclaves, as it is essential to achieve the development of these rural areas. In line with previous studies, tourism in protected areas should ensure the conservation of nature and the development of local communities by securing economic activities (Zhang et al. 2022).

Infrastructure development is essential for tourism, as improved accommodation and transport accessibility can lead to an increase in visitors and improve their tourism experience (Sobhani et al. 2023). However, like other authors (Latorre and Del Olmo 2011), we warn of the problem that any tourist activity and infrastructure can lead to a distortion of the natural environment. In other words, if tourism is not properly managed, it can lead to the loss of biodiversity and different social conflicts between stakeholders (Zhang et al. 2022). Such is the importance of tourism infrastructure that other studies, such as that of Blanco-Cerradelo et al. (2022), have revealed that the establishment of adequate infrastructure has a significant impact on the well-being of the population and economic development. Therefore, it is necessary not to prioritize tourism development over the environmental conservation objective of any protected area; otherwise, they would lose the reason for their existence, the ideal being a balance between both dimensions. In this line, as stated by Blanco-Cerradelo et al. (2022) in his research, it is necessary not to focus exclusively on the economic and short-term dimension, given the devaluation of the destination's identity resources. In this sense, an interesting measure is the awarding of quality seals that represent the quality and environmental respect promoted by this type of destination, and that allows us to see that the combination of socio-economic development and conservation is possible. An example of this type of initiative is that promoted by the EUROPARC Federation through the European Charter for Sustainable Tourism (ECST). In this respect, it should be borne in mind that protected areas are the result of the coexistence of human activities with other natural processes (Rodríguez-Darias and Díaz-Rodríguez 2023).

In short, we believe that protected areas are an excellent means of achieving territorial cohesion in a country such as Spain, marked by a strong trend towards rural depopulation and a benchmark in environmental protection. However, the socio-economic activity generated around protected areas differs considerably according to the different categories of protection. In this case, national parks are the most rigorous form of protection in the Spanish legal system, given their unique ecological and landscape values, which make them worthy of such protection. However, the rural development of their local populations must also be considered, as this is another element intrinsic to the desired sustainability. Thus, excessive protection can lead to isolation from the environment when this type of area should be advocating the opposite: territorial cohesion. In this scenario, the UNESCO Global Geoparks are an excellent alternative from a sustainable point of view, since at the same time as they are committed to conservation, they promote the improvement of the quality of life of the local population and the socio-economic development of rural settlements.

Finally, national parks and geoparks are two figures that may seem very similar in some aspects but are very different in reality. Thus, in many cases, as in the case of Spain, the national systems of protected areas belong to a national system that provides budgets, surveillance, follow-up, and monitoring. Similarly, their action and management plans are managed by the central government. On the other hand, in the case of geoparks, not being a national policy (with some exceptions in countries with geoparks within the national system of protected areas), they must manage resources from other local aspects, including agreements with local authorities or charging for services. In this sense, it can be said that geoparks work on a more local basis, so the economic impact on communities may be more evident.

About the limitations of this research, it is worth mentioning the difficulty of obtaining responses from the municipalities that make up the study sample, due, among other factors, to the complexity of working on a municipal scale. On some occasions, we have also encountered the difficulty that the municipalities themselves were not aware that they formed part of the protected area, which highlights the need for greater awareness of the opportunity that this type of space represents, even among public and political organizations themselves. Previous studies have already highlighted the difficulty of accessing data at such a disaggregated level (Zhang and Xing 2023; Wang et al. 2023). In this sense, studies such as that of Chen et al. (2023) establish that the distribution of questionnaires at the local level may cause the perception of tourists to have different regional characteristics.

Given the results of this research and the wide range of protection typologies existing in Spain, it would be of great interest to carry out a new study comparing other different types of protection and to add to the methodological model some variables related to the environmental or ecological sphere, to observe the possible differences between them and be able to reach more solid conclusions on the sustainability of protected natural areas.

Declarations

Conflict of Interest The authors declare no competing interests.

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