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THE NATURAL ECOSYSTEMS BETWEEN TOURIST EXPLOITATION AND DEGRADATION, CASE OF EL KALA NATIONAL PARK (ALGERIA)

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ABSTRACT

Algeria is the largest country in Africa by area and is among the countries in the world that possess a rich natural and cultural heritage due to its size, diversity of regions, environments, cultures, and the civilizations that passed through it, including Phoenicians, Romans, Vandals, Byzantines, Ottomans, and others. Our study area, the El Kala National Park, is one of the most important regions in Algeria with significant natural and cultural resources. It boasts an important coastal strip with numerous beautiful beaches and tourism expansion zones that could attract investors. Additionally, it contains various ecosystems, including lakes, dunes, forests, diverse flora and fauna and historical sites from different eras, most notably the El Kala Church.
However, this heritage faces degradation due to irresponsible practices, such as the destruction of vegetation in summer 2022, despite existing protective laws. These challenges prompted our study, which partly examines Algeria's policies on tourism, environmental conservation, and heritage preservation. The research methodology employs a combined approach, starting with a historical analysis of the park's status since its UNESCO world heritage classification. We then address the natural ecosystems in the area, illustrated with images, and present a comprehensive study of tourism potentials. Finally, we conduct an in-depth analysis using the SWOT method to obtain a holistic view of the region's natural ecosystems and cultural heritage. Based on our findings, we offer conclusions and recommendations to promote tourism and drive regional development while preserving the ecosystems and natural and cultural heritage of El Kala National Park from degradation and damage.

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Introduction.

Algeria is endowed with a rich tapestry of national parks, both natural and cultural, spread across its vast territory. These include renowned sites such as Ahaggar, Tassili, Djurdjura, El Kala, Gouraya, and Chréa (Moulaï, R. 2020). These parks collectively represent a natural, cultural, and historical

heritage that holds immense potential for diverse forms of tourism. However, the imperative to preserve these sites from degradation and damage must be at the forefront of any development strategy.

Among these parks, El Kala National Park stands out as one of the largest in northern Algeria. It encompasses a variety of fragile and pristine natural ecosystems, each offering unique opportunities for eco-tourism, coastal tourism, health tourism, and exploratory tourism. The park's rich biodiversity, including rare and endangered species, its diverse landscapes ranging from coastal areas to lakes and forests, and its cultural heritage sites dating back to prehistoric times, all contribute to its exceptional value.

Despite its significance and the various protective measures in place - including national laws, executive decrees, urban planning guidelines, and its UNESCO World Heritage Site status in 1990 (UNESCO, MAN) - El Kala National Park faces ongoing threats of degradation. The challenge lies in balancing the economic potential of tourism with the preservation of the park's natural and cultural resources.

This delicate balance between exploitation and conservation, coupled with the park's unique attributes and the challenges it faces, forms the core of our research interest. It leads us to pose the following research question:

How can a balance be achieved between exploiting the tourism potential of the El Kala region to drive local development while simultaneously protecting its natural and cultural resources from degradation?

The primary objectives of this research encompass providing a comprehensive overview of El Kala National Park's natural and cultural heritage, including its current conservation status. The study aims to analyze the park's diverse ecosystems (coastal, lacustrine, forest, and mountain) and evaluate their tourism potential. (Dehaba, R, and Labii B. 2012). It seeks to identify and assess current threats to the park's ecosystems and cultural sites, particularly those arising from uncontrolled tourism and negative local practices. The research will examine existing conservation measures and their effectiveness in protecting the park's resources. Ultimately, it aims to develop recommendations for policymakers, park managers, and local stakeholders on achieving a balance between tourism development and resource conservation, while ensuring future generations' right to enjoy these valuable resources.

1. Legal framework for the protection of the environment, heritage, and tourism.

Since independence, Algeria has issued many laws, executive decrees, and orders related to the protection of the environment, heritage, and tourism, perhaps the latest and most important of which are the following:

- Law n° 98-04 of June 15, 1998 relating to the protection of cultural heritage.
- Law No. 02-02 du February 05 2002 au concerning the protection and appreciation of the coast.
- Law No. 03-01 du February 17 2003 au Concerning the sustainable development of tourism.
- Law No. 03-02 du February 17 2003 au specifies the general rules for the tourist use and exploitation of beaches .
- Law No. 03-03 au relates to tourist expansion areas and tourist sites.
- Law No. 03-10 au concerns environmental protection within the framework of sustainable development.
- Executive Decree No. 03-322 of October 05, 2003, related to the exercise of works of art on protected real estate cultural properties.
- Executive Decree No. 03-323 of October 05, 2003, containing the ways of elaborating a plan for the protection and rehabilitation of archaeological sites and their protected areas and their recovery.
- Executive Decree No. 03-324 of October 05, 2003, containing the ways of elaborating the Permanent Plan for the Conservation and Rehabilitation of the Reserved Sectors.
- Executive Decree No. 03-325 of October 05, 2003, identifying the ways of storing intangible cultural property in the National Bank of Data.
- Executive Decree No. 2007-206 of June 30, 2007 setting the conditions and modalities of construction and land use on the coastal strip, the occupation of the natural parts bordering the beaches and the extension of the non-aedificandi object area.

- Executive Decree No. 11-02 of 05 January 2011, concerning the creation of the National Agency for the Reserved Sectors.
- Law No. 16-55 of 01 February 2016, defining the conditions and modalities of intervention in ancient physical urban tissues.
- Executive Decree n° 21-124 of March 29, 2021 establishing the Cultural Heritage 14. Advisory Council as well as the modalities of its organization and operation.
- Here's the English translation:
- Law No. 23-21 dated December 23, 2023, concerning forests and forest resources, was followed by Executive Decree No. 24-245 dated July 28, 2024, which defines the methods of organizing and coordinating actions related to the prevention and control of forest fires within the framework of a prevention plan. This decree orders the creation of four committees:

- The National Committee for Forest Protection
- The Wilaya (Provincial) Committee for Forest Protection
- The Operational Committee for the Administrative District and Sub-district for Forest Protection
- The Operational Committee for the Municipality

Among their tasks are ensuring the implementation of the forest fire prevention and control plan, as well as studying and approving awareness, guidance, and education programs related to forest fire prevention.

2. Materials And Methods.

The present study employs a monothetic analysis divided into four steps, utilizing the one-factor-at-a-time (OFAT) method (Chaudhry, Buchwald, and Nagel 2021, Ahriz et al. 2021, Brahmi and Ahriz 2022, Ahriz et al. 2022). In contrast to simultaneous multiple-factor approaches, OFAT can be more effective than fractional factorial designs under certain conditions, such as in this study where the analysis factors must be additive and independent of each other.

The four steps in this study are organized from macro to micro perspectives. The analysis begins with a historical examination of the case study area, El Kala National Park, providing a holistic view of its constituent natural ecosystems. Subsequently, these natural ecosystems are detailed through a descriptive presentation of the park's most important documents, supplemented with recent images. The third step highlights the natural tourism potential, which is an integral part of the region's ecosystems. Finally, a comprehensive SWOT analysis is conducted to evaluate the tourist exploitation of the natural ecosystem components and identify ways to protect them from degradation. The study concludes by proposing appropriate recommendations based on these findings. (Figure.1).

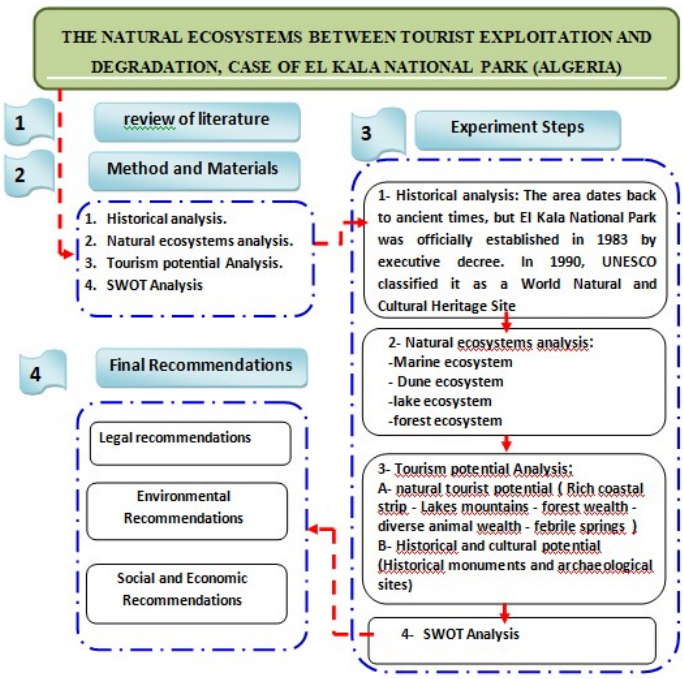

Figure 1. Research Framework.

3. Presentation of El Kala National Park.

The National Park is a protected natural area of significant ecological, scenic, and national importance, designated by a country's government to conserve and preserve one or more intact ecosystems. (Salman, S. 2020). El Kala National Park is situated in the extreme northeastern part of Algeria, administratively falling within the border province of El Tarf. The park encompasses El Kala city, (URBACO. 2009) also known as "The Coral City", which is the most significant urban center in El Tarf province. In the administrative reorganization of 1984(Law, 84-09)., El Tarf was elevated to the status of a province, having previously been part of Annaba (Bône) province. El Tarf shares a border with neighboring Tunisia and is divided into 7 districts and 24 municipalities.

Covering an expansive area of approximately 77 thousand hectares, El Kala National Park is geographically positioned at 8°25' East longitude and 36°49' North latitude (Google Earth. 2023), This strategic location contributes to its rich biodiversity and diverse ecosystems which we will detail later. (Figure 2).

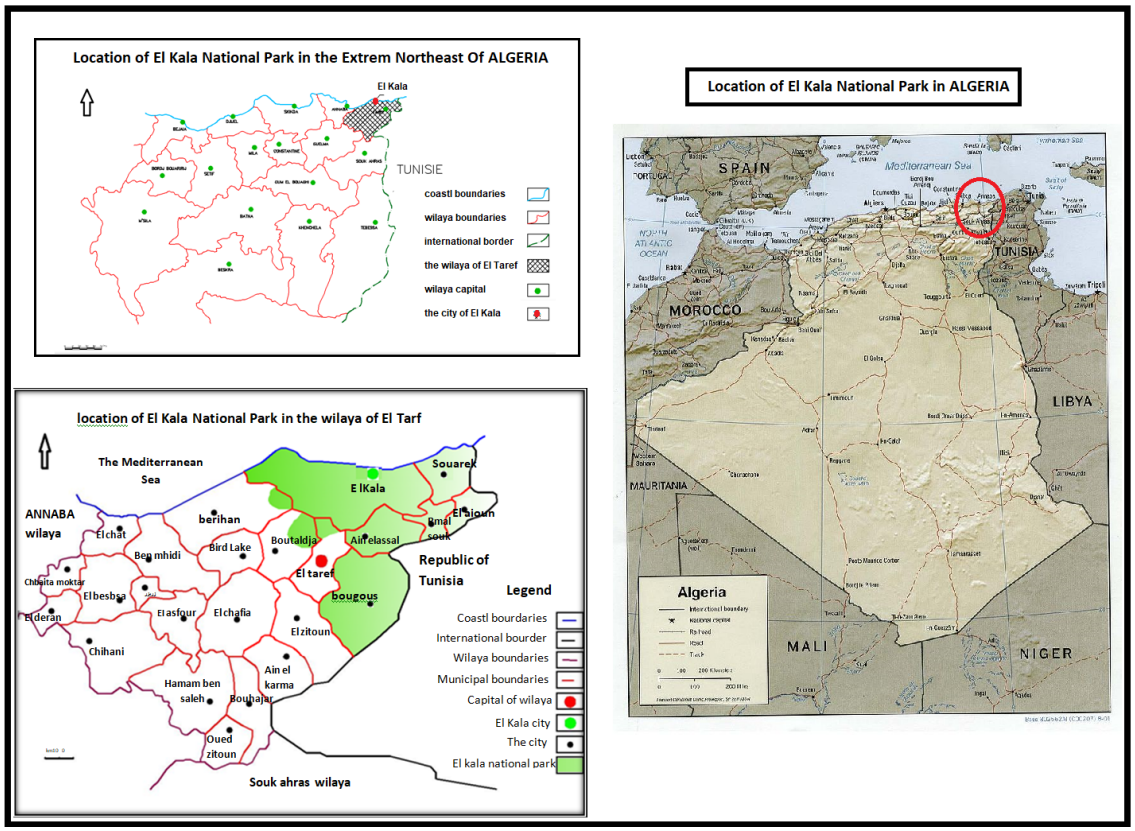

Figure 2. Location Of El Kala National Park.

4. Resultats And Analysis.

The National Park is a defined area characterized by unique natural resources, including exceptional plant and animal biodiversity. These areas enjoy special legal protection to ensure the preservation of their natural and cultural heritage.(Salman, S. 2020). El Kala National Park stands as a prominent example of this concept, combining stunning natural beauty with a rich cultural heritage that reflects the succession of civilizations that have left their mark on the region throughout the ages.

The park's domain is rich with numerous archaeological and historical sites, testifying to the cultural diversity the area has witnessed. This cultural heritage harmoniously integrates with the park's natural wealth, creating a unique blend of touristic and environmental attributes. Humans have added an urban dimension to this natural and historical landscape in the form of El Kala city (URBACO. 2009), which is considered a jewel that completes the park's mosaic and provides a service center.

4.1. The Establishment of El Kala National Park.

El Kala National Park was created primarily due to its unique mosaic of ecosystems, characterized by diverse wetlands that form an environmental complex unparalleled in the Mediterranean basin. This distinctive ecological composition was a key factor in the park's establishment.

Within the park's boundaries lie two of the region's most promising areas for tourism development: Messida and Cap Rosa. Additionally, the park encompasses three significant lakes : Oubeïra, El Mellah, and Tonga, further enhancing its ecological importance (Benlabidi, M. 2023).

The park was officially designated as a national reserve by Decree No. 83-462, dated July 23, 1983, which established the fundamental law for national parks in Algeria. This park covering an area of approximately 77 thousand hectares.

Recognizing its exceptional natural and cultural value, UNESCO classified El Kala National Park as a World Natural and Cultural Heritage site on December 17, 1990. This international recognition underscores the park's global significance in terms of biodiversity conservation and cultural preservation.

El Kala National Park is located in the eastern part of El Tarf Province and is bordered by: - North: The Mediterranean Sea - East: The Republic of Tunisia - South: Souk Ahras Province - West: El Tarf and Bouteldja (Brahmi, S. 2011).

The park encompasses six municipalities entirely, as well as parts of El Tarf, Bouteldja, and Bérihane municipalities. The following table illustrates its administrative division:

Table 1. Administrative Division of El Kala National Park.

Municipality	Area within the Park (ha)	Percentage of Total Park Area
El Kala	29,016	37.96%
El Aioun	16,750	21.91%
Raml Souk	10,740	14.05%
Ain El Assel	9,470	12.39%
Souarekh	6,245	8.17%
Berrihane	2,471	3.23%
El Tarf	1,113	1.46%
Bouteldja	633	0.83%
Total	76,438	100%

This table provides a clear breakdown of how the park's total area is distributed across different municipalities, showing the percentage each municipality contributes to the overall park area. El Kala municipality covers the largest portion of the park, while Bouteldja has the smallest area within the park boundaries, As for the population of the park, it reached about 166 thousand people in 2022, while it was about 129 thousand in 2008. Regarding the city of El Kala, which is the largest population center in the province, it has about 35 thousand people in 2022, while it had about 28 thousand people in 2008 (NBS. 2008, PBWD. 2022).

The table sets out the division of national Park into 05 types and the methods of intervention on it (EKNP, 2010).

Table 2. Components of the EL KALA national Park (E.K.N.P).

ZONES	SUPERFICIE (HA)	CARACTERISTIC	PROVINCE AREA (%)
Integral Reserve (strict protected area)	9292	Areas humides and important people It is supposed to be free of all kinds of interference, except for scientific studies licensed by the Ministry of Environment	3.21%
Wilderness Rserve	9222	Sensitive dune environments and Possible interventions in this area must not change the natural surroundings, and every intervention is subject to a license from the Ministry of Environment	3.18%
Low-Productivity Area	29859	Forest production ecosystem, which is represented by sites with scientific, cultural, pedagogical, tourism, and recreational activity, provided that these activities have a relationship with nature and also for the development of agricultural wealth and traditional industries. Any intervention in this area is subject to a license from El Wali.	10.32%
Buffer Area	26274	It is reserved between seriously protected areas and areas open to agricultural, natural and afforestation activities, and any interference with them is subject to a permit from El wali after taking the opinion of the director of park .	9.08%
Peripheral Area	1791	The urban areas within the park include all social and economic structures, relaxation and leisure area and any intervention outside the recommendations of the urban planning tools must be approved by El Wali	0.61%
TOTAL (E.K.N.P)	**76438**	**-**	**26.40%**

4.2. The natural ecosystems in Park (E.K.N.P).

1. The Marine Ecosystem.

This coastal strip extends for 40 km out of the 90 km coast of the wilaya of El Tarf (Brahmi, S. 2011) and boasts unique environmental characteristics. Its waters harbor precious treasures, including endangered Mediterranean species such as Cystoseira colonies, submerged coral reefs, and dense Posidonia meadows. These meadows are crucial oxygen sources and are protected due to their slow reproduction.

The park's marine section hosts prominent species like groupers, pearl oysters, sea urchins, and distinctive seagrasses. Algeria possesses one of the Mediterranean's largest red coral reserves, historically harvested since the 16th century. Due to its durability, coral became a symbol of wealth, particularly in 18th-century jewelry making. (URBACO, 2009)

Recognizing the alarming overexploitation of coral, Algeria banned its extraction in 1998. The region boasts a rich fishing tradition, including hand fishing and diverse techniques using nets and hooks. However, deep-sea fishing, waste dumping, and unregulated camping threaten the marine environment.

The absence of comprehensive legal frameworks for protected marine areas exacerbates these challenges. Nevertheless, well-regulated zones have witnessed the return of nearly extinct species. This marine biodiversity represents a fragile, precious heritage that requires careful preservation, not just for national interests but for its global significance.

2. The Dune Ecosystem.

Extending from Cape Rosa in the east to Segleb in the west, a unique chain of landscapes stretches for 40 km in length and 1 to 4 km in width, characterizing this coastal segment with beaches,

a dune strip, valleys, watercourses, and lakes. This composite space forms an interface where terrestrial and marine environments converge, harboring a considerable floral and biodiversity wealth. The distinctive landscape is delineated by the dune strip of El Kala National Park, which serves as a natural barrier between the sea and the lakes and dense forests.

This dune zone, by virtue of its arid nature, supports a suite of specialized vegetation adapted to such conditions, including juniper, broom, Retama raetam, and pine species. Interspersed within this dune corridor are several lakes, encompassed by characteristic vegetation. The dune strip plays a crucial role in impeding coastal valleys, causing water retention and forming lakes - some saline, such as Lake Mellah, and others freshwater, like the Blue Lake. (Dehaba, R, and Labii B. 2012)

The dunes provide habitat for distinctive fauna, including European rabbits and hedgehogs - mammals that have found both shelter and sustenance in this environment. This geomorphological feature boasts a rich history, with the sand dunes suggesting an absence of human activity. However, in adjacent villages, peanut cultivation is practiced, representing a deeply ingrained cultural tradition.

Human activities exert pressure on these dunes, with sand extraction and other detrimental practices serving as negative factors that compromise this natural ecosystem. The preservation of this environment can only be achieved through strict adherence to regulations and respect for nature's intrinsic value.

3. The Lacustrine Ecosystem.

El Kala National Park encompasses a rich mosaic of lakes that collectively form one of the region's most spectacular landscapes. These wetlands are recognized for their unique ecosystems, characterized by high biodiversity in both flora and fauna. The park is strategically situated along migration routes for tens of thousands of aquatic birds that overwinter before traversing the Sahara and Mediterranean Sea.

Several sites within the park have gained international recognition through their registration on the Ramsar List of Wetlands of International Importance, Lake Tonga (2,600 hectares) and Lake Oubeira (2,200 hectares), registered in 1982, Ain Khiar marsh (170 hectares) and Lake black (5 hectares), added in 2002 and Lake Mellah and Lake Bleu, included in 2004. (Brahmi, S. 2011)

These diverse aquatic environments serve multiple ecological functions

Nesting sites: The lakes provide crucial breeding grounds for numerous rare and endangered bird species, including the globally threatened white-headed duck, purple swamphen, and whiskered tern.

Wintering grounds: The area typically accommodates over 20,000 wintering birds, including significant populations of common pochard and ferruginous duck

Unique habitats: Lake Oubeira, for instance, is covered with distinctive vegetation such as Myriophyllum and Ceratophyllum, and is the only location in Algeria hosting two rare species of yellow water-lily and water chestnut.

Fish populations: Lakes like Mellah support important fish species, including sole, eel, and oysters, while others are crucial for carp and eel fishing.

Insect diversity: Smaller water bodies like Lake Bleu serve as excellent reproduction sites for various insect species, particularly dragonflies.

Water pumping, prohibited fishing, water pollution, and urban expansion at the expense of park lands are factors threatening these sensitive sites, particularly the lakes. These factors need to be more clearly defined, and the activities of the park, responsible bodies, associations, and researchers should be directed towards protection programs and raising awareness about the importance of these natural sites and sensitive ecosystems to achieve significant environmental benefits.

4. The Forest Ecosystem.

The Park boasts a rich biodiversity, with woodlands covering over 54,000 hectares, equivalent to 70% of the park's area. This extensive forest network comprises various natural assemblages, including cork oak forests dominating plains and mountains, Aleppo pine stands in the dune complex, coastal dune maquis vegetation, Zeen oak forests at 900 m elevation, and riparian forests featuring elm, willow, and alder. The cork oak is the predominant species, covering over 43,000 hectares, with its

sustainable harvesting representing a significant economic activity within the park and providing income for local communities. Maritime pine forests occupy 5,000 hectares along coastal hills, while Acacia and Eucalyptus plantations cover 1,000 and 8,000 hectares (EKNP. 2010), respectively. These forests support diverse fauna, including endangered mammals such as the Barbary stag, wild boar, fox, and golden jackal, as well as other threatened species like the wildcat, lynx, leopard cat, and hyena. The dense forest canopy provides crucial habitat for numerous bird species, amphibians, and reptiles. Arbutus trees are widespread, providing raw material for traditional crafts, particularly the renowned pipe-making industry, which, along with pottery made from local clay deposits, contributes to the region's cultural heritage and traditional product promotion. The park's nurseries, such as Tonga nursery, serve as focal points for visitors and biodiversity conservation, cultivating species like the bald cypress and willow. However, This forest ecosystem faces many challenges as a result of various negative human practices, which requires increasing awareness of the importance of these environments and their role in advancing development by exploiting them in a sustainable and well-planned manner.

4.3. Naural Tourism Potential.

The region boasts enormous tourism potential, positioning El Tarf Wilaya among the top Algerian provinces for attracting tourists. It possesses unique tourism qualifications, some of which are unparalleled at the national level. Among these are the following natural assets: (EKNP. 2010, Brahmi, S 2011).

1. The Coast: Stretching 40 km linearly, this coastal strip is rich with three (03) tourist expansion zones out of five (05) in the entire wilaya, designated for investment in tourism development such as the establishment of tourist facilities. It also features 08 beaches authorized for swimming, including El Naouaris, El Mordjane, Old El Kala, Messida, Cap Rosa, La Grande Plage, Seroub, and El Hanaya.

2. The Lakes: These include Lake Tonga, Lake Oubeira, Blue Lake, Lake Mellah, Bourdim Marsh, and Black Lake. These lakes were discussed in more detail in the section on the lacustrine ecosystem.

3. The Mountains: The park contains several mountain ranges in the far south, an extension of the renowned regional El Medjerda mountain range. They are characterized by steep slopes and dense vegetation cover consisting of cork oak, zeen oak, pine, eucalyptus, maquis shrubland, and willow. These mountains represent a preferred area for developing mountain tourism, especially since this type of tourism requires only the creation of tourist trails and the establishment of some facilities. The area of these mountains is estimated at 54,587 hectares.

4. Forest Wealth: Forests cover 74% of the total area of El Kala National Park, due to favorable climatic conditions. There are 78 species of trees forming various forests, 26 types of plants, 114 species of fungi, and more.

5. Animal Wealth: There is a wide variety of animal species including mammals, amphibians, reptiles, fish, and birds. All these animal species are protected due to their rarity, and most of them are endangered. (EKNP. 2010).

6. Springs and Mineral baths: Park is not only renowned for its rich biodiversity and cultural heritage but also for its natural mineral springs, which add another dimension to its appeal. The park's landscape, characterized by a harmonious interplay between land and water, creates a visually stunning environment that attracts visitors from far and wide. Of particular interest are the park's two mineral springs, which are part of a larger network of five springs found throughout the wilaya. These springs, Hammam Sidi Trad and Hammam Maksena, have been the subject of scientific studies These investigations have revealed the significant therapeutic potential of the springs' mineral-rich waters. The presence of these thermal springs enhances the park's value as a destination for both nature enthusiasts and those seeking health benefits. The therapeutic properties of the springs could potentially be harnessed for the development of health tourism, providing visitors with opportunities for relaxation and wellness treatments in a pristine natural setting (Figure 3).

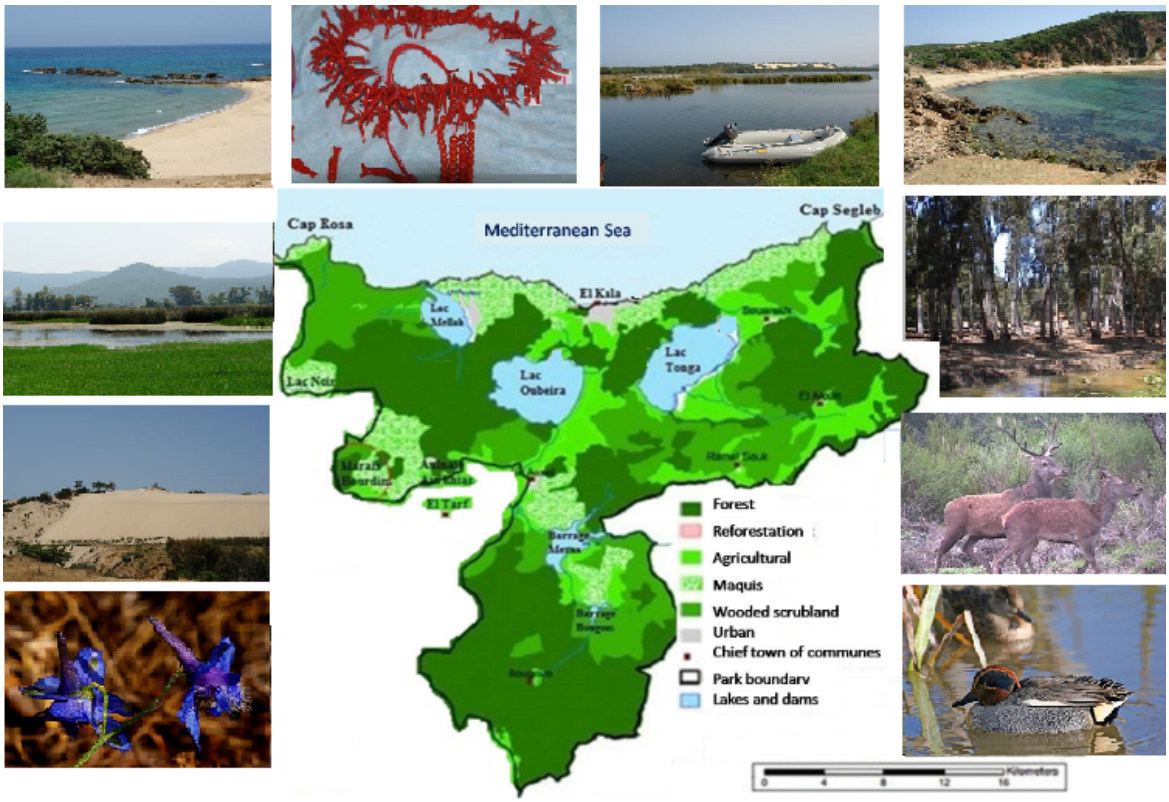

Figure 3. *El Kala National Park: Natural Ecosystems and Tourism Potential - Some Images (Authors.2024), (Latreche, C, and Rouag-saffidine, D. 2024).*

4.4. Cultural tourism potential.

The Park is distinguished by its exceptional cultural and historical richness, reflecting the succession of civilizations in the region throughout the ages. The park encompasses approximately 110 archaeological and historical sites, spanning from prehistoric eras to the Roman, Arab, and French periods. This cultural diversity is manifested in a variety of archaeological landmarks, including ancient structures such as the Church of El Kala and numerous ruins of old buildings (URBACO, 2009).

These sites serve as living testimonies to the continuity of cultures in the region across different epochs, endowing the park with a unique cultural and historical value that complements its environmental and natural importance. The Church of El Kala, for instance, stands as a prominent example of the area's diverse architectural heritage, offering visitors a glimpse into the region's history.

The multitude of ruins scattered throughout the park provides archaeologists and historians with invaluable insights into the daily lives, architectural styles, and cultural practices of past civilizations. These remnants of ancient settlements, fortifications, and places of worship offer a tangible link to the past, allowing for a deeper understanding of the area's historical development.

This unique blend of natural and cultural heritage opens up vast horizons for scientific research, tourism, and environmental and historical education. Researchers from various disciplines - including archaeology, history, anthropology, and ecology - can find rich material for interdisciplinary studies, exploring the intricate relationships between human societies and their natural environment over time.

For visitors, the park offers a rare opportunity to experience both natural beauty and historical depth in one location. Furthermore, the park's dual significance in nature protection and cultural heritage preservation enhances its value as a site of national and international importance.

The most important of these historical sites and archaeological monuments are shown in the following table.

Table 3. Historical Sites and Archaeological Monuments in E.K.N.P.

Culturel sites		**Ruins**	
Site Name	**National Classified or Not**	**Site Name**	**Classified or Not**
Bastion of France	**Classified in 1930**	Nazel El-baldi	**Not Classified**
Church of El Kala	**Classified in 1953**	Ain kebir	**Not Classified**
Kssar Fatma	**Not Classified**	Dar El Hakem	**Not Classified**
Mill Fort	**Not Classified**	The enhirs and dolmens of Segleb	**Not Classified**

The presence of these historical sites within a protected natural area also presents unique challenges and opportunities for management. Balancing the preservation of both natural ecosystems and cultural artifacts requires innovative approaches to conservation, involving collaboration between ecologists, archaeologists, local communities, and policymakers. (Figure 4).

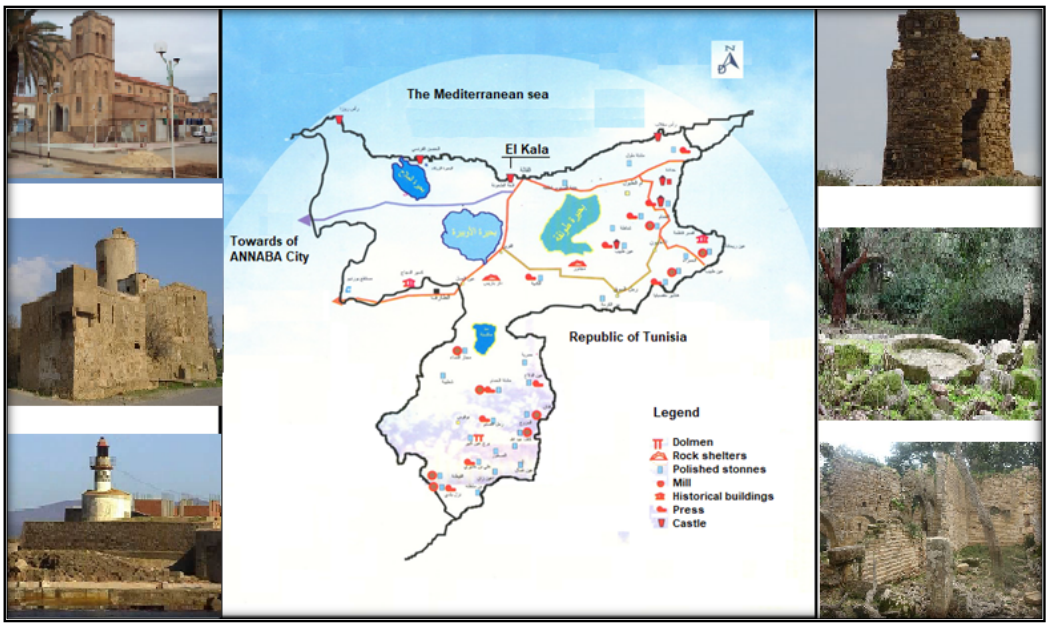

***Figure 4**. Archaeological sites located in El Kala National Park and some images.*

5. SWOT Analysis.

5.1. Strengths Factors (Internal Factors).

- Rich biodiversity "diverse flora and fauna, including rare species".
- Variety of ecosystems "coastal, lacustrine, forest, mountain".
- Cultural and historical heritage "110 archaeological sites".
- 40 km coastline with beautiful beaches
- El Kala borders Tunisia, featuring the important Oum El Teboul crossing. Its position on the East-West highway makes it a key transit point for travelers between coastal cities and Tunisia.
- Designated as a national park and includes Ramsar sites
- Thermal springs with therapeutic potential
- The presence of a university that includes many doctors and researchers in various fields who can be involved in the framework of agreements and the establishment of forums, study days and festivals…

5.2. Weaknesses (Internal Factors).

- Fragile ecosystems vulnerable to human influences and bad practices
- Limited tourism infrastructure, especially high-quality equipment

- Possible lack of awareness about environmental conservation among visitors and even residents
- Lack of funding and financial resources for El Kala National Park in light of the policy of wealth creation and self-financing.
- Challenges in achieving a balance between environmental preservation and local economic needs that may cause excessive consumption of resources.

5.3. Opportunities (External Factors).

- Promoting and developing many types of tourism, especially ecotourism, which are in line with the principles of sustainabilityResearch opportunities in ecology, biology, and archaeology.
- Environmental education programs for visitors and local residents and disseminating them in various educational institutions
- International cooperation for conservation and protection efforts through agreements and treaties that work on this while developing international research.
- The potential for sustainable economic development through carefully managed tourism that may continue throughout the year.
- Expanding protected areas or buffer zones and protecting them from various negative interventions.

5.4. Threats (External Factors).

- Over-exploitation of natural resources (e.g., illegal fishing, logging(
- Uncontrolled tourism development leading to ecosystem degradation
- Climate change impacts on sensitive ecosystems
- Waste and pollution (water, soil, air) from increased human activity
- Loss of biodiversity due to habitat destruction or fragmentation
- Potential conflicts between conservation goals and local development needs

6. Conclusions And Recommendations.

As a conclusion, we will present these recommendations that we believe will address the delicate balance between tourist exploitation and environmental preservation in El Kala National Park. We will focus on the legal framework, promoting social and economic development, with reference to implementing targeted environmental protection measures. This approach should help develop a good tourism model that benefits the local economy while preserving the park's unique ecosystems, which are as follows:

6.1. Legal Recommendations:

- Develop and update the legislation balancing tourism development with ecosystem protection and heritage protection.
- Tighten penalties for violations and irresponsible practices (e.g., illegal logging, waste dumping, wildlife disturbance) that harm ecosystems and fragile environments.
- Establish operational legal frameworks to facilitate investment in eco-friendly tourism and recreational activities.
- Mandate regular environmental impact assessments for all tourism-related activities through appropriate legislation.
- Enact regulations requiring tourism businesses to contribute financially and operationally to conservation efforts.
- Develop legal mechanisms to ensure local community participation in decision-making processes regarding tourism development in the park.

6.2. Socio-Economic Recommendations:

- Promote eco-tourism initiatives that benefit local communities while preserving natural ecosystems.
- Develop education and training programs for local residents in sustainable tourism practices.
- Encourage partnerships between the university, local communities, and park authorities for research and conservation projects.

- Implement a fair revenue-sharing system from tourism activities to support local development and conservation efforts.
- Create incentives for businesses adopting sustainable practices in tourism operations.

6.3. Environmental Recommendations.

- Establish a comprehensive monitoring system to track the impact of tourism on various ecosystems within the park.
- Develop and implement ecosystem-specific management plans, particularly for sensitive areas like wetlands and forests.
- Create buffer zones around critical habitats to minimize direct tourism impacts.
- Implementing renewal programs for deteriorated areas affected by excessive exploitation of resources.
- Develop environment-friendly infrastructure (hotels, eco-friendly accommodation and waste management systems) to support tourism while minimizing environmental impact.
- Conduct regular biodiversity assessments to ensure tourism activities do not negatively affect flora and fauna.

Establish "no-go" zones in highly sensitive ecological areas to protect them from tourism pressures.

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