

Natural Reserved Area Situated within Urban Context

Case Study of Al-Ghaba Al-Motaharguerah at New Cairo Context

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Abstract

Natural reserved areas are supposed to be sources of great importance on both of the national and local levels. Its important not only due to its ecological or visual values, but it can be the base on which several activities can be established. Also, it can raise the GNP (Gross National Product), of the community and ameliorate its economic conditions.

But, conservation strategies could face different conflicts in the case of the situation of the natural reserves within the city context, like the case of Al-Ghaba Al-Motaheguera at New Cairo city. This area finds many obstacles to realize the needed and the efficient conservation, maintenance, and management on one hand. On the other hand, the presence of natural reserved area within the urban context might have impacts on the main Development Plan of the city as it might be influenced by.

Objectives: Accordingly, the objective of the research is to analyze and evaluate impacts and influences of the existence of Al-Ghaba Al-Motaheguera at New Cairo city context, and to highlight the divergence between the two conflicting strategies: the development strategy of the city and the conservation strategy of the natural reserved area.

Methodology: The research proceeds in three axes of study.

The first axis tries to define the situation of Al-Ghaba Al-Motaheguera, by investigating the conflicting activities around the reserved area. The second axis is concerned about the analysis of the conservation strategies and restrictions of development and suitable activities that can be established to provide the economic profit that affords the maintenance and management of Natural Reserved areas. The third axis is a comparative study between the typical planning of an area around Natural Reserved areas verses the actual development plan of that area, in order to evaluate the efficiency of its conservation and maintenance.

Conclusion The conclusion highlights the importance of reviewing the plans for urban areas around Natural Reserves and advices the setting of special regulations for its development. It gives emphasis to the importance of establishing major suitable activities that can subsidize the conservation and maintenance systems.

Keywords

Conservation Strategy Plan; natural reserves;

Introduction

The law No. 102/1983, issued on July 31, 1983 defined a natural reserved area as an area of land, or coastal or inland water, characterized by its flora, fauna and natural feature having cultural, scientific tourist or esthetic value.

These areas will be designate and delineated by Decrees of the Prime Minister upon the recommendation of the Egyptian Environmental affairs agency (E.E.A.A.). It is forbidden to commit actions or carry out activities, which would lead to the destruction, damage, removal of plants, spoiling or destroying the geological structures and other features from the natural reserves.

Therefore, the Petrified Forest Nature Area at New Cairo city finds many obstacles to realize the needed and the efficient conservation, maintenance, and management on one hand. On the other hand, the presence of natural reserved area within the urban context might have impacts on the main Development Plan of the city as it might be influenced by.

The study tries to highlight conflicting factors in such situation and of review the plans for urban areas around Natural Reserves in order to advice adequate activities for its development

1. The Petrified Forest (*Al Ghaba Almotahaguera*)

1.1 Location And Importance

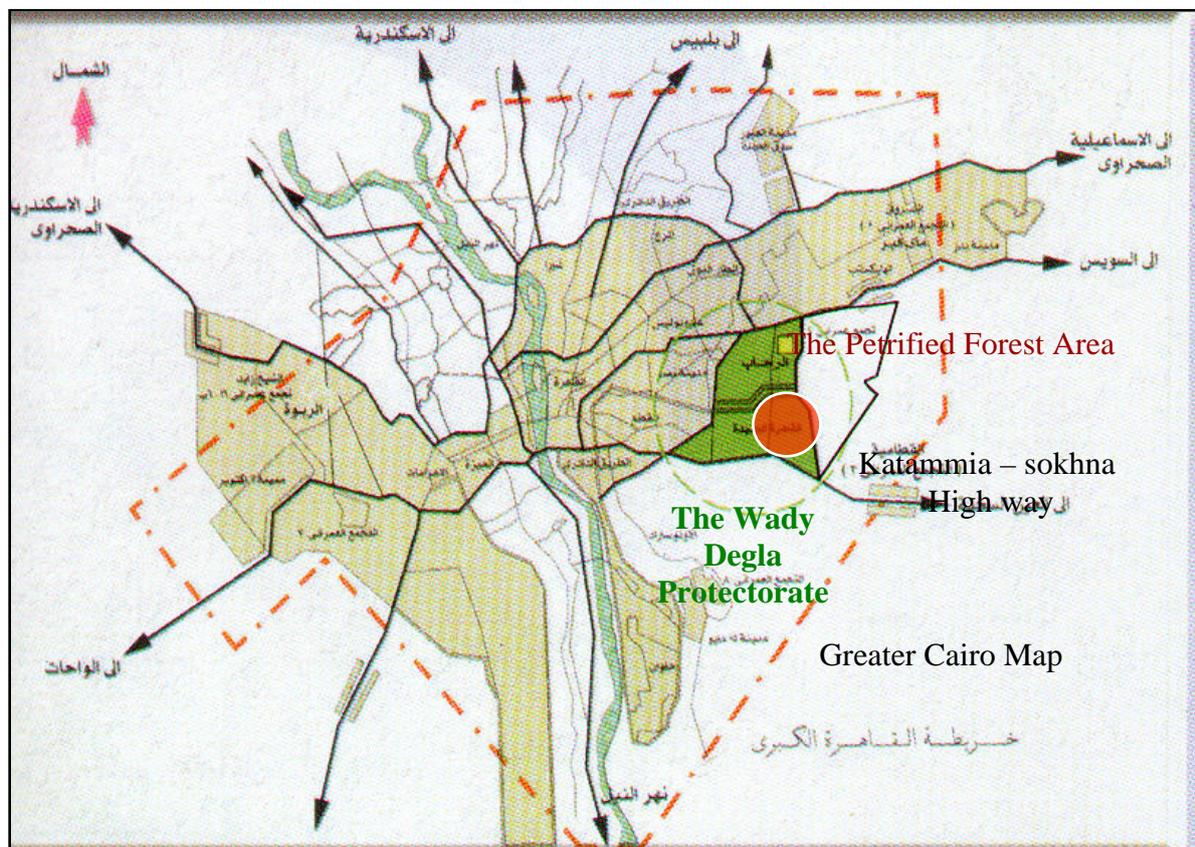


Fig. 1 the location of the Petrified Forest Nature Area

The Petrified Forest area is referred in some scientific references as the Wood Mountain. This natural reserved area is located at about 18 km of al Maady City, north of Al Qattamya-AlSokhna highway, in the southern part of the New Cairo Urban context. The area extends for 2 km along the main road, with depth of 3 km to the north, therefore an area of 6 km² i.e. 1428.5 feddans.

The Petrified Forest Area was declared as a natural reserved area by the decree 944/1989.

It is a part of the geological history of Egypt and represents an area of interest for the visitors and scientists of the world

1.1.1 Origin and contents of the Petrified Forest area

The area is densely filled with fossilized tree trunks dating back to the Oligocene. The surface layer is made up of sand, gravel and clay 70 to 100 meters thick on average. These fossilized tree trunks are under-laid by Eocene sediments containing invertebrate fossils. These trunks are arranged horizontally and are 15-25m in length and 0.5-1m across.

Different theories were presented to explain the Origin of this Petrified Forest. Most of them advocate that it dates back to the time when one of the branches of the Nile River carried these trees for long distances and left them at this place where they become fossilized through the process of exchange of the organic components of the trees with the dissolved silica brought by the ground water of this area. This reaction took place from 35million years ago.

1.1.2 Aims of managing and protecting the Petrified Forest Area according to the E.E.A.A.

The authorities aim in order to realize protection and the management of that area to:

- Plan, encourage and carry out necessary studies and programs to enhance develop the reserved area.
- Survey and monitor natural features and threats
- Manage and coordinate activities related to the reserved area.
- Guide the public through the area and introduce to them the natural resources, management within the reserved area and the objectives and reasons for creating it.

They observe the following to maintain protection:

- Not to commit actions deeds or carry out activities which would lead to the destruction or deterioration of the natural environment or which would detract from the esthetic standards within the reserved area
- Not to spoil or destroy the geological features within the protectorate.
- Not to pollute the soil, water, or air of the reserved area, in any manner or discharge dangerous liquids, chemicals , oils,...etc in the area or it buffer zone.

- It is also forbidden to erect buildings, pave roads, drive vehicles or undertake any agriculture or industries or commercial activities except with the explicit permission of the E.E.A.A.

1-2 The Petrified Forest Area And The Urban Growth

As mentioned the Petrified Forest Area was declared a natural reserved area in 1989. Till that date, the surrounded areas were totally undeveloped. But, today the urban growth and expansions are surrounding the reserved area and impose conflict between the aims of development to provide new residential zones and services for the population growth on one hand and the preservation aims to provide protection and conservation, on the other hand. As shown in fig. the urban mass of greater Cairo faced from 1970 to 1991 four phase of growth, which followed four different development plans:

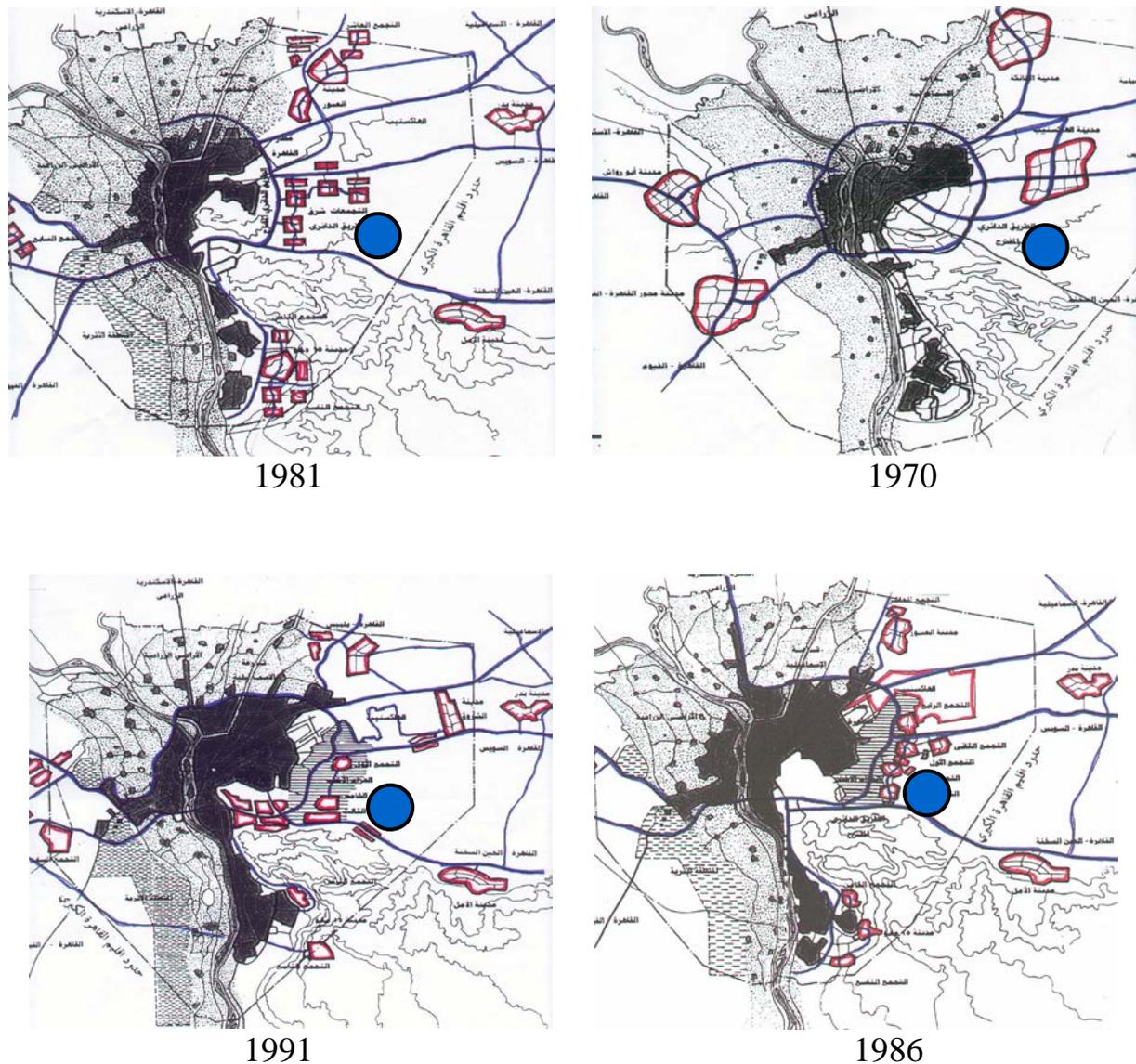


Fig 2 : The Petrified Forest Area And The Urban Growth

It is distinguished that, until 1986 the Petrified Forest Area was totally separated from urban development plans. But after that date and with the trends of the new communities around the ring road, the urban mass becomes more and closer the reserved area. At present the Petrified Forest Area is a part of the New Cairo urban context.

The research tries to study the uses and activities around the reserved area to reveal conflicts or impacts due to this situation

1.3 Present Land Use Around The Petrified Forest Area

The Petrified Forest Area is located in the south of the extension of the new Cairo city. It is situated along AlQattamyia-Sokhna highway on the northern side. Many industrial activities are located along the southern side of the high way, in the south and southeast direction from the study area.

On the macro level, it is distinguished that the high way and the industrial zones separate the reserved area of the Petrified Forest Area from the Wady Degla natural reserve.

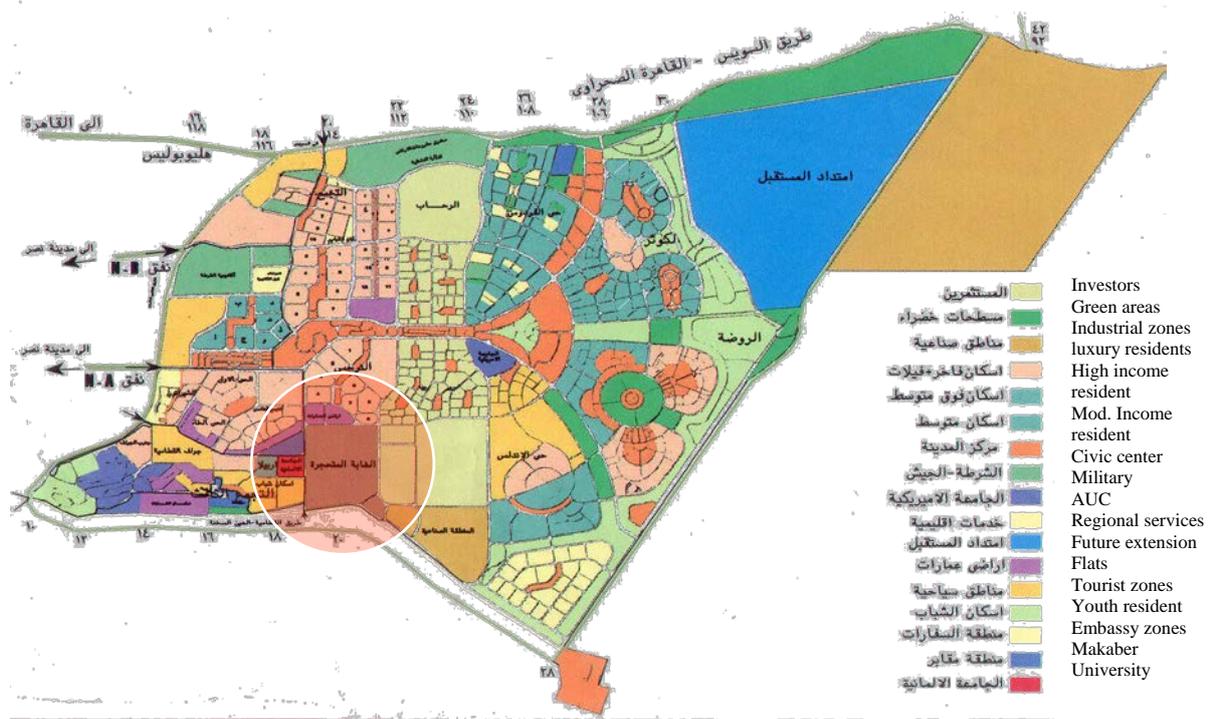


Fig 3 Present Land Use Around The Petrified Forest Area

The succession of several regional planning concepts that define the urban growth of the Greater Cairo and its expansion, as shown in fig, has impacts on the master plan of the New Cairo city. The transformation from the concept of separate settlements to the grouped huge community, reflect some confusion in the land use concept. Therefore a main spine of services is prolonged from the east to an intermediate core in the center of the western part of the city. That spine divides the city in three residential zones; the Petrified Forest Area is

taking place in one of these zones. Therefore, that main spine has no link with the nature-reserved area.

On the micro level, land use surrounding the study area is mainly residential and commercial zones, and their related activities.

Industrial zone is at the southeast side of the study area, also there is some petroleum stores and tanks near of the site.

Planning considerations around the Petrified Forest Area

The master plan of the New Cairo and its extension does not show any consideration concerning the nature-reserved area except:

- the allocation of the industrial zones counters the wind direction.
- The allocation of some high rise residential building around the Petrified Forest Area to profit the view
- The allocation of a shopping area near of the Petrified Forest Area

It is important to note that there is no special regulations were set to control development around the Petrified Forest Area concerning about height, densities or type of activities.

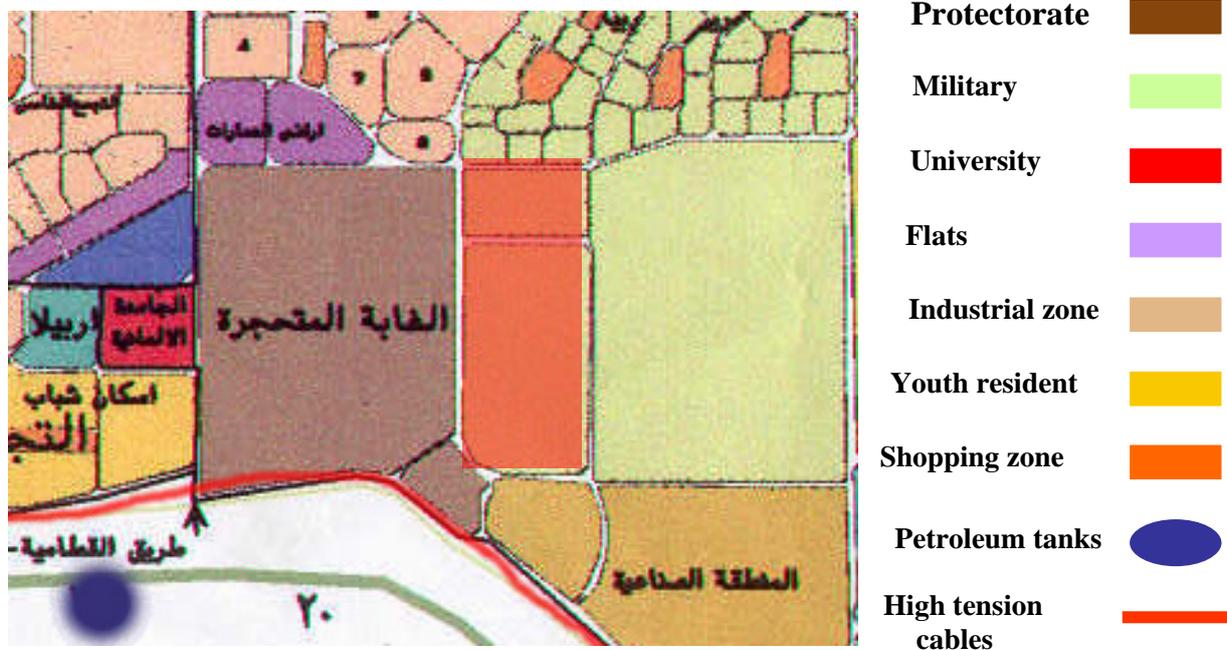


Fig 4: show Conflicting uses around the Protectorate

1.4 Conflicting Situation

The conservation strategies and aims of the Petrified Forest area could face different conflicts in this case. This area finds many obstacles to realize the needed and the efficient conservation, maintenance, and management on one hand. On the other hand, the presence of natural reserved area within the urban context might have impacts on the main Development Plan of the city, which is not realized in fact. Those conflicts are:

1.4.1 Conflict In Aims

The main conflict is between aims of conservation and aims of development:

The conservation strategy aims to Not commit actions deeds or carry out activities which would lead to the destruction or deterioration of the natural environment or which would detract from the esthetic standards within the reserved area.(E.EAA. Department of Nature Protectorates, 1989)

In contrary, the development strategy aims to set communities and to create activities that improve productions and reproductions.

That conflict might have a compatible solution that realize the two different aims

1.4.2 Conflict In Uses and Activities :

As Petrified Forest area is supposed to be resources of great importance on both of the national and local levels due to its ecological or visual values, it can be the base on which educational, scientific, tourist, and recreational activities can be established. Also, it can raise the GNP (Gross National Product), of the community and ameliorate its economic conditions.

Therefore, surrounded activities (residential zones for low and moderate income) don't realize the adequate profit from that important area:

Also the presence of the petroleum tanks and the industrial zones on the southeastern border of the protectorate may cause great damage especially at time of Khamassyne winds, or when prevailing wind changes its direction. Winds can bring polluted air to the reserved area. Solid or chemical wastes can thread the reserved area through ground water or soil.

In plus, there is no regulation or specifications controlling types of industries established there; as well as, there are no special regulations controlling densities, heights, ways or materials of constructions around the protectorate.

1.4.3 Conflict in planning concepts:

According to its importance, such natural reserved areas are supposed to be poles of attractions. This fact has to be reflected in the planning concepts of the surrounded areas: through the urban fabric, the roads network, and the distribution of activities.

The actual plan of the surrounded area doesn't reflect any importance the Petrified Forest area.

The following section discuss the planning principles of natural reserves and the surrounded area applied in different part in the world. This study will clarify the adequate zoning and regulations controlling development around the reserved area, in order to evaluate the present situation.

2. Planning principles of natural reserves and surrounded areas

Protection of important natural areas, of ecosystems, which have not been significantly altered by human activity, may be secured by land use classification as a national park. (Bovy, B. and Lawson, F. 1998). The two fundamental objectives, both calling for staff highly skilled in protection and management are:

- the protection of natural resources, providing legal protection against all exploitation (including hunting, stock grazing, agriculture, lumbering and mining);
- the reception, under special conditions, of visitors for educational, cultural and recreational purposes (using guides and rangers)

The rather strict conditions were defined by the International Union for Conservation of Nature. Where the conservation of vast areas appears to be in the national interests, a less restrictive definition may be adopted.

2.1 The Evolution Of Related Policies

It is important to note that the policies related to protected areas have evolved (Agee and Johnson 1988) in recent year:

- earlier aims: adequate protection of undeveloped, essentially unmanaged areas within protected boundary
- later aims: need for active management within park and wilderness boundaries
- Present aims: refined goals and implementation of cooperation management with the neighboring landowners.

2.2 Planning Principles of natural reserves areas

With the evolution of the related policies, planning of surrounded areas becomes important to realize the profit from the natural reserves without affecting its conservation.

In fact, most national parks have tourist/recreation facilities. Their density and location are largely dictated by circumstances and policies. As general rule, in countries, which are sparsely populated, the main facilities may be conveniently located in the core of extended parks (such as the tourist facilities in African wildlife reserves) but densely inhabited countries they have to be located at the periphery of smaller parks. In planning terms, this may be represented by the principle of concentric zoning. (Bovy, B. and Lawson, F. 1998):

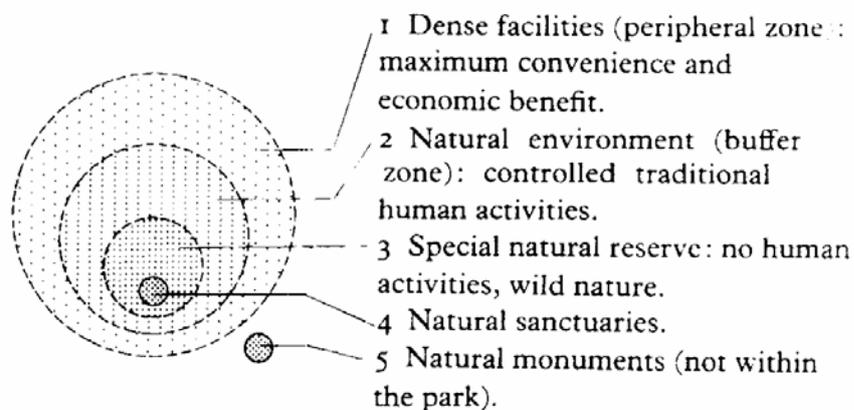


Fig 5: Planning Principles of natural reserves areas

Peripheral zones:

Facilities for tourism and recreation (accommodation, catering, sport, picnicking) including associated buildings (with strict control over siting and quality). Preferably grouped together near access routes and existing settlements).

Natural environment (Buffer zone):

Buffer zone located around the natural reserved area. Those areas are defined by severe controlled traditional human activities.

Facilities may include catering and light sports facilities (for swimming, sailing, boating, fishing, skiing etc), accommodation of a temporary nature: camping and caravan camps or eco-lodges, or nature based lodges. They are built with natural materials reflecting local traditions and building methods and operated in an environmentally sensitive manner (Hawkins D.E. and others 1995).

Museums of natural history, park information center should be provided at the entrance to the zone, giving a complete briefing on the park's significance and information about the natural reserved area. They may serve as an excursion base where individual cars are parked and visitors transfer to Public Park transport (buses, tramways, cable lifts

Special natural reserve

No roads, other than essential ones restricted to public transport; organized circuits for nature interpretation, trails for bicycling walking, horse riding, limited activities. There are no facilities other than rudimentary camping sites and shelters for mountaineering.

Natural sanctuaries No access, no facilities.

The following sections will analyse different foreign natural reserved areas around the world, where comparison of sizes and zones restrictions will take place.

2-3 Planning principles set different countries

In France, as in Quebec, Germany and U.K. areas of natural conservation and different corresponding activities area usually zoned as:

Reception areas: non-asphalted car parking at access point;

Recreation areas: grassed areas for picnics at the edges or cleanings (with rubbish containers and, possibly, water points and fire grates for barbecues) linked to a variety trails;

Reserved areas: as buffer zones to provide protections

Nature reserves: with restricted entry

2.3.1 The European Alpine Park, France-Italy

Located over the French-Italian border, two parks have been united; with the summit up to 4000m both alpine are aimed at safeguarding unique landscape, a rich flora and fauna.

Size

- The Italian Gran Paradiso (70000ha, created 1922)
- The French La Vanoise (53000ha (the natural zone, 140000ha the peripheral zone, created in 1963)

Restrictions

The creation of La Vanoise caused conflicts with important ski resort such as Val Thorens, Meribel and Val d'Isere. Hence the national park was limited and supplemented with a peripheral zone, which includes the main ski resorts and smaller, more traditional, mainly summer resorts.

The peripheral zone provides a variety of accommodation, sports and leisure facilities, park information offices.

The notion of a peripheral zone did not exist at the time the Parco Gran Paradiso was created: the park is zoned between areas of total preservation and village areas with controlled development.

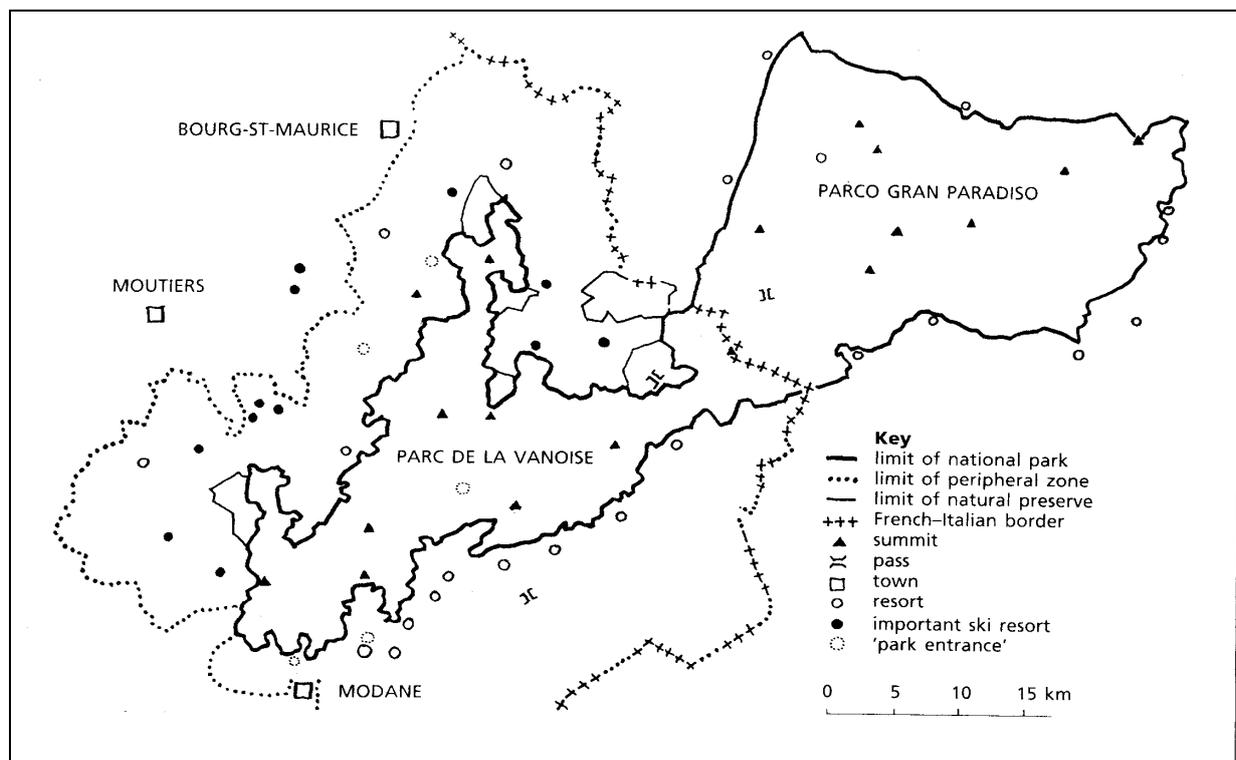


Fig 6 : The European Alpine Park, France-Italy

2-3-2 The Japanese "Richiri island national park "

The Japanese regulations for the protection of a park and the implementation of activities or facilities inside their boundaries are defined by the environmental Agency and reviewed every five years.

Size: the Richiri island national park is about 22500ha

Restrictions:

Four zones are defined:

Special protection zone: areas required to maintain scenic beauty unspoiled

Class I special zone: areas ranking after special protection zone and required to conserve the present scenic beauty as far as possible

Class II special zone: areas required to adjust the activities of agriculture forestry and fisheries as far as possible

Class III special zones: areas other than class 1 and 11, and where there is little fear of affecting the maintenance of scenic beauty in principle even though ordinary activities take place

Map of Rishiri Island
National Park

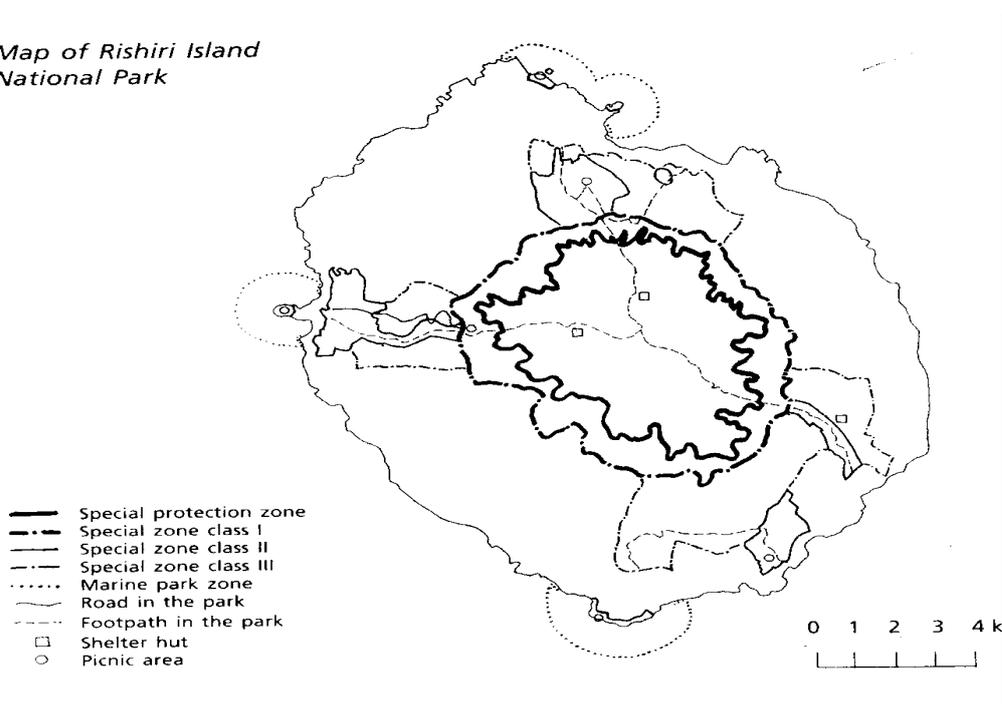


Fig 7 : The Japanese "Rishiri island national park

3. Evaluation of the Present Situation of the Petrified Forest Area

The following comparison will help in evaluating the efficiency of protection and the adequate profit from the natural reserves as economic resource. From the above section, it can be concluded that Protection is more efficient if there is more than one zone buffering the nature reserves, and if concrete regulations control development in and around it.

It can be concluded also that the establishment of adequate activities such as aquariums, museums, information centers, scientific research centers, can raise the economic profit of the reserves areas, as well as the establishment of suitable accommodations, sports, parks and place for picnic increase factors of attractions at the reserved areas.

The establishment of such activities that improve the economic profit of the site can, not only, increase the gross national product, but also, afford the operating costs of managing and maintaining the reserved areas

	The European Alpine park, France-Italy	The Japanese Richiri island national park	The petrified forest area
Size	1400km²	225 km²	6 km²
Zones definitions	<u>Nature reserves</u> : with restricted entry <u>Reserved areas</u> as buffer zones to provide protections <u>Recreation areas</u> : grassed areas for picnics <u>Reception areas</u> : non-asphalted car parking at access point;	<u>Special protection</u> to maintain scenic beauty <u>Class I zone</u> to conserve the present scenic beauty <u>Class II zone</u> : to adjust the activities of agriculture forestry and fisheries <u>Class III zones</u> : where there is little fear of affecting the maintenance of scenic beauty	One area reserved with no classification zones
Regulations	Hierarchy in restrictions controlling development according to zones	Hierarchy in restrictions controlling development according to zones	No special restrictions for development in areas around the protectorate
Related activities	Accommodation, sports and leisure facilities, park information offices. Located in the reception and recreation zone	Recreational activities and ordinary activities located class III zone and out of it.	No related activities except the shopping zone if oriented to the protectorate service

Table 1 comparison between the French, Japanese, and the Egyptian Planning principles for reserved areas

3.1 Evaluation Of The Efficiency Of Protection

From the above comparison, it is clear that the Petrified Forest areas missed efficient protection due to the inadequate uses around its site. Such uses (especially industrial uses) may affect environment and destroy the fossilized tree trunks through polluted air or underground polluted water.

- The current plan of the peripheral area does not provide the buffer zone needed to improve the protection of the nature reserves.
- There are no restrictions of development in accordance with to the distance to the reserved area.
- The information center (usually closed) doesn't have staff highly skilled in protection and management
- The uncompleted fence allows the entry of individuals to the protectorate and the carrying of pieces of the fossilized tree trunks.

- There are no arranged tours to encourage visitors to visit the site, and to provide people with the ability to learn experience and appreciate the nature and the importance of the site.
- There is no tourist and recreational activities that can afford the conservation, the management, and maintenance of the reserved area.

Conclusions and recommendations

It's clear now that the current situation of the Petrified Forest Area represent a threat that can destroy the unique ecological feature. Then, an important scientific and tourist resource might be loosed.

The presence of industrial zones in the south periphery of the protectorate, the disorganization, careless and the unaccomplished fence around are factors contributing in the deterioration of natural reserves areas.

Conservation and protection for the ecological environment of the protectorate need highly skilled staff for management and maintenance. They are concerning about the reviewing of the environmental conditions periodically, and setting the adequate policies and actions.

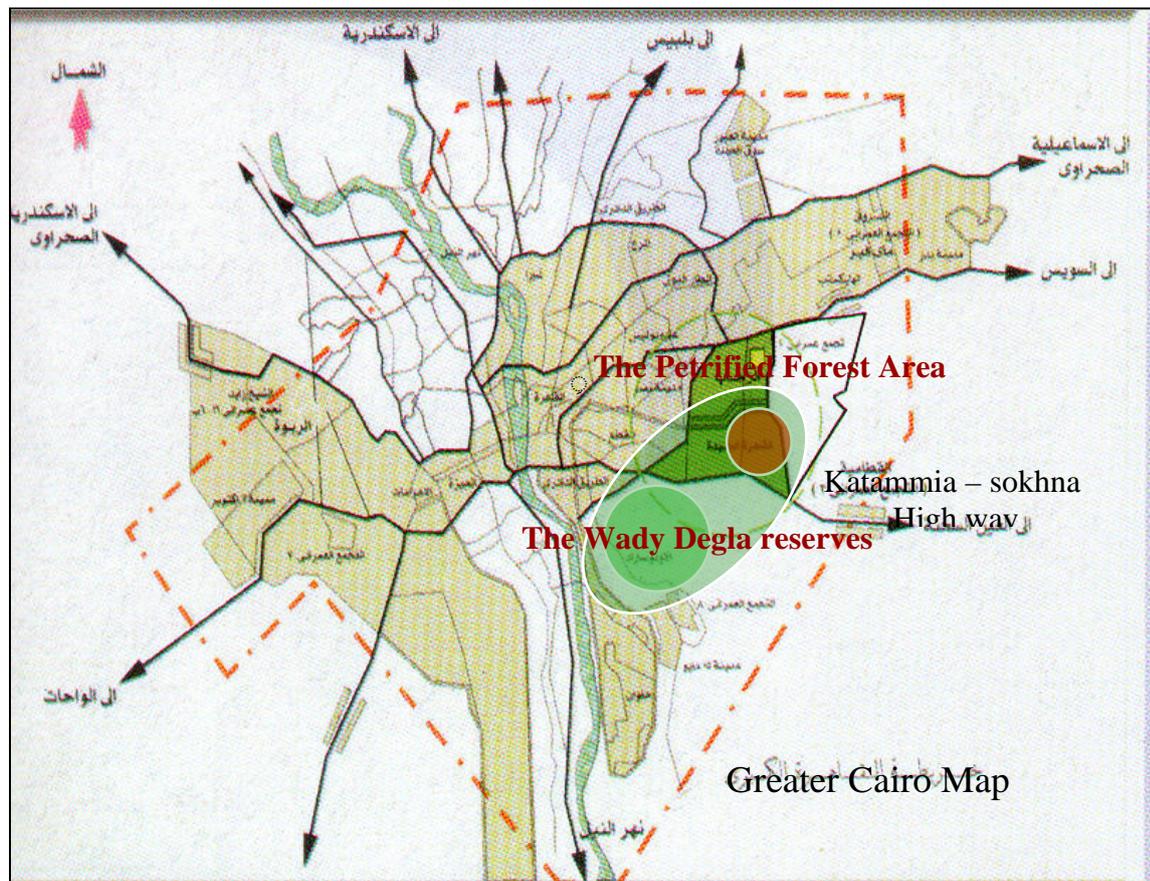


Fig 8 : The proposed national park grouping the Petrified Forest Area and the Wadi Degla Nature Reserved

The Petrified Forest Nature Area that is characterized by natural and ecological unique features can be the base of the establishment and the development of many activities, such as tourist, recreational, scientific activities. Museums, terrarium, research centers are examples of activities that improve the significance of the protectorate. Accommodations of light structures, for visitors and daily trippers, camping sites and picnic areas are adequate activities that don't cause negative impacts to the reserved area, and can improve the recreational and tourist development around the Petrified Forest Area.

The Petrified Forest Nature area need such development to realize economic benefit that can contribute to the management and maintenance costs.

The concentric zones planning concept is the adequate planning concept that realize the conservation of the natural reserves and the development of the surrounded area at the same time.

To realize efficient protection for the Petrified Forest areas it is recommended to:

- Displace all industrial and threaten activities away from the reserved areas. As well as accomplish as soon as possible the construction of the fence and the controlled entry of the Petrified Forest Area
- Reviewing the current plan and utilize zoning concept to identify and plan areas where higher levels of impacts may occur without harming areas the areas of ecological significance.
- Develop the limits of acceptable use and regulations for all parts in the periphery of the protected areas, set environmental standards, and ensure they are met.
- Determine which tourist activities are compatible with the protected area such as camping, sightseeing, picnicking, and develop related policies. Their incomes should contribute in the maintenance and the management of the reserved areas
- Develop educational and interpretation programs for visitors and local people that increase understanding and appreciation of the reserved area
- The establishment of a research center and information center, to arrange tours and encourage the related scientific research.
- Training programs to improve high skilled staff for the nature reserves management.

On the regional level it is recommended to link between the Petrified Forest area and the Wadi Degla protectorate by a national park after the displacement of inadequate activities. The proposed natural park should be the main recreational park for the greater Cairo citizens as well as can solve many environmental problems and can limit the urban expansion of the Greater Cairo.

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