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FACULTY OF ENGINEERING
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INTERRELATIONS BETWEEN PRESERVED NATURAL AREAS & URBAN ENVIRONMENT

**A Thesis Submitted in Partial Fulfillment of the Requirements for the Master
Degree in Urban Planning**

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DEDICATION

To my supportive parents

To my beloved husband Amr and son Ali

First and Foremost Thanks to God

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Introduction:

Natural environment is everything that surrounds man such as atmosphere, land, water, biological life including man, flora, and fauna.

There are many interrelations between man and environment, as man affects the environment and vice versa.

As a result of man's industrial, social and entertaining activities, the environment had reached a point of deterioration, which aroused voices of many people calling for the protection of natural & environmental resources as well as maintaining the environmental balance and hindering its deterioration.

Eventually these people have developed a healthy proposal that is sensible and respectful towards the environment as a reaction to the rapid deterioration of the environment caused by misuse of its natural resources; this proposal concerns preserving these natural areas which is the subject of this research.

The United States was the first country that announced a national park in 1890 (The Yellow Stone Park) as a preserved natural park, which receives not less than 3 million visitors annually.

The Egyptian government has started to recognize this issue recently, as on July 31st 1983 the government endorsed law number 102/1983, which defined a natural reserved area as " An area of land, or a coast or a lake containing flora, fauna and natural features that could be of cultural or scientific or touristic value". These areas are designated and declared as preserved areas by the Prime Minister upon the recommendation of the Egyptian Environment Affairs Agency (E.E.A.A).

Egypt has 24 protectorates, they comprise about 8% from its total area, and their number is expected to reach 48 protectorates by 2017 comprising about 17% from the total area of Egypt

Introduction

Preserving natural areas is an application for the concept of sustainability that appeared during the last few years, as sustainable development is concerned about keeping natural resources which is the aim of protected areas.

Protected areas are not only fixed boundaries that contain unique resources from fauna or flora, but it is also an item that must play an active role in the urban planning process as there is a mutual effect between them.

The Research Problem:

Natural environment in Egypt has become subject to many shapes of deteriorations caused by man, as preserved areas suffer from many phenomena that threaten its safety, such as the presence of preserved natural area within the urban context, this was a result of the unplanned urban activities and its close adherence to these preserved areas, this hazardous situation may threat the safety of preserved areas, which could lead to the loss of an environmental and geological heritage.

In addition, those preserved areas have been neglected in the planning process, as urban planning in Egypt usually neglects the influence of those areas on the main development plan of any city.

Thus encouraging some urban expansions to grow around some protected areas such as The Petrified Forest and Burllus protectorate.

Also some of our protected areas suffer from conflict in responsibilities between relevant agencies, naturally causing deterioration of some of those areas (Wadi-Degla).

Research objectives:

- To discuss the problems of the protection process in Egypt.

Introduction

- To study the unique Egyptian phenomenon; adherence of urban development to Protected Areas.
- To make some solutions and recommendations to the current protection problem that has appeared in some Egyptian protectorates.
- To Change the perception that preserved areas are obstacles that face development processes, and to emphasize its potentiality within the sustainable development.

The Research Hypothesis:

The research assumes the occurrence of negative effects on preserved areas, due to the neglect of its role in the development process, as well as urban expansions that **crawls** around it affecting it negatively. Ignoring natural preserves in development plans helped in the growth of many violations on its territory. As protection and development are an opposite face to the same coin; if external forces (urban influences) acting on the area are greater than internal forces (conservation management), the protected area will suffer from violations and neglect.

Scope of research

The research is concerned in studying definitions and principles of protected areas used in foreign experiences to get guidelines to apply on an Egyptian case study **contemporary**.

The Research Methodology:

It depends on testing the research hypothesis in three main directions:

First: A generic study of protected areas including factors that negatively affects it.

Introduction

Second: Studying the protected areas principles and guide line to enhance an analytical tool.

Third: study of the protected areas in Egypt including its locations, categories and current problems.

Third: Analyzing the interrelations between preserved areas and urban environment by examining and studying the case study; " the Petrified Forest and Wadi Degla" applying the results concluded from previous chapters.

The Researcher:

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Abstract:

Protected areas in Egypt suffer from many violations and neglecting, this came as a result of many problems and challenges that face the protection process. This protected areas supposed to be source of great importance on both of national and local levels. Its importance not due to its natural and heritage values, but it can be an economic base, as many activities can be established around to it. But, on fact conservation strategies face different conflicts, especially conflicts between aims of protection and aims of conservation. This obviously appears in the Petrified Forest & Wadi Degla Protected Areas. This protectorate suffers from the neglecting of national plans to its presence in one hand. In another hand, its presence within urban context might have impacts on it.

Keywords:

Conservation

Protected Areas

Protection

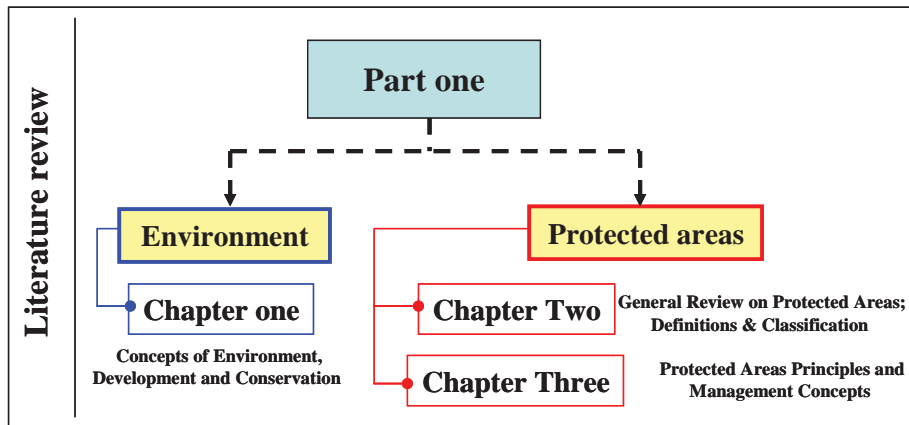
Development

Protectorates

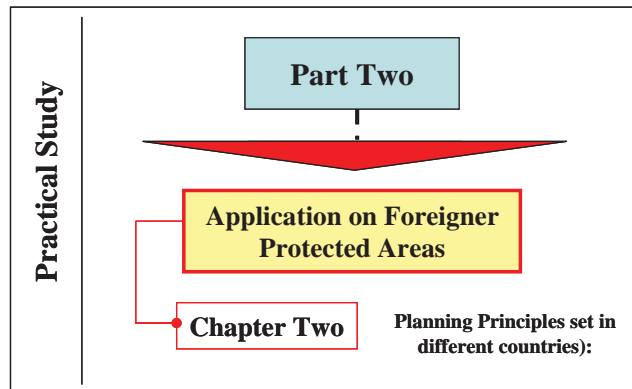
The Research Structure:

The research consists of four parts:

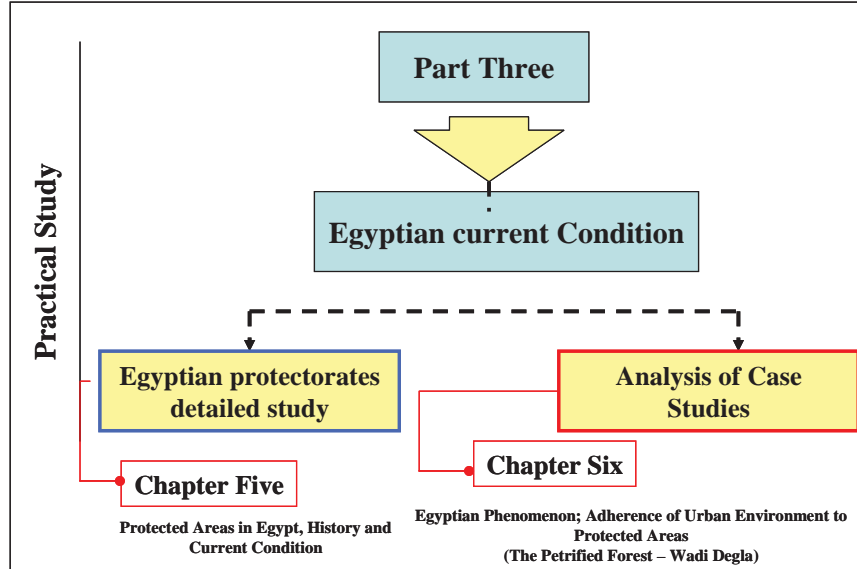
Part one



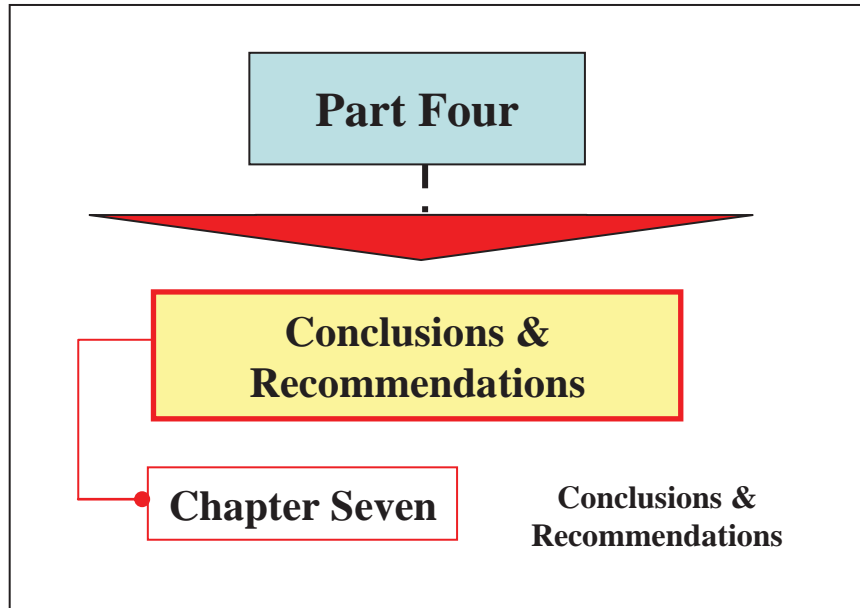
Part Two



Part Three



Part Four



Part one:

Chapter One: (Concepts of Environment, Development and Conservation):

This chapter makes an overall study on Environment, its related terminology, Concept of; conservation, Development and Sustainable development. Additionally it discusses the impacts of urban activities on natural environment.

Chapter two (General Review on Protected Areas; Definitions & Classification):

This chapter deals with the definitions and classification of natural reserves and the compatible activities around them.

Chapter three (Protected Areas Principles and Management Concepts

This chapter deals with the rules and principles of protected areas in terms of management, distribution of uses and land use configuration systems.

Part Two:

Chapter Four: Planning Principles Set in Different countries.

This chapter deals with some foreigner examples of natural reserves and studies it with the methodology that has been divided in the previous chapters.

Part three:

Chapter Five: Protected Areas in Egypt, History and Current Condition

This chapter deals with the nature reserves in Egypt in terms of its history and present situation and problems facing environmental protection in Egypt.

Chapter Six:" Egyptian Phenomenon; Adherence of Urban Environment to Protected Areas (The Petrified Forest – Wadi Degla)"

This chapter deals with the study of Egyptian protected areas which situated within urban context; The Petrified Forest and Wadi Degla Protectorates. It uses the rules and principles that have been experienced in the previous chapters in Analyzing case study.

Part Four:

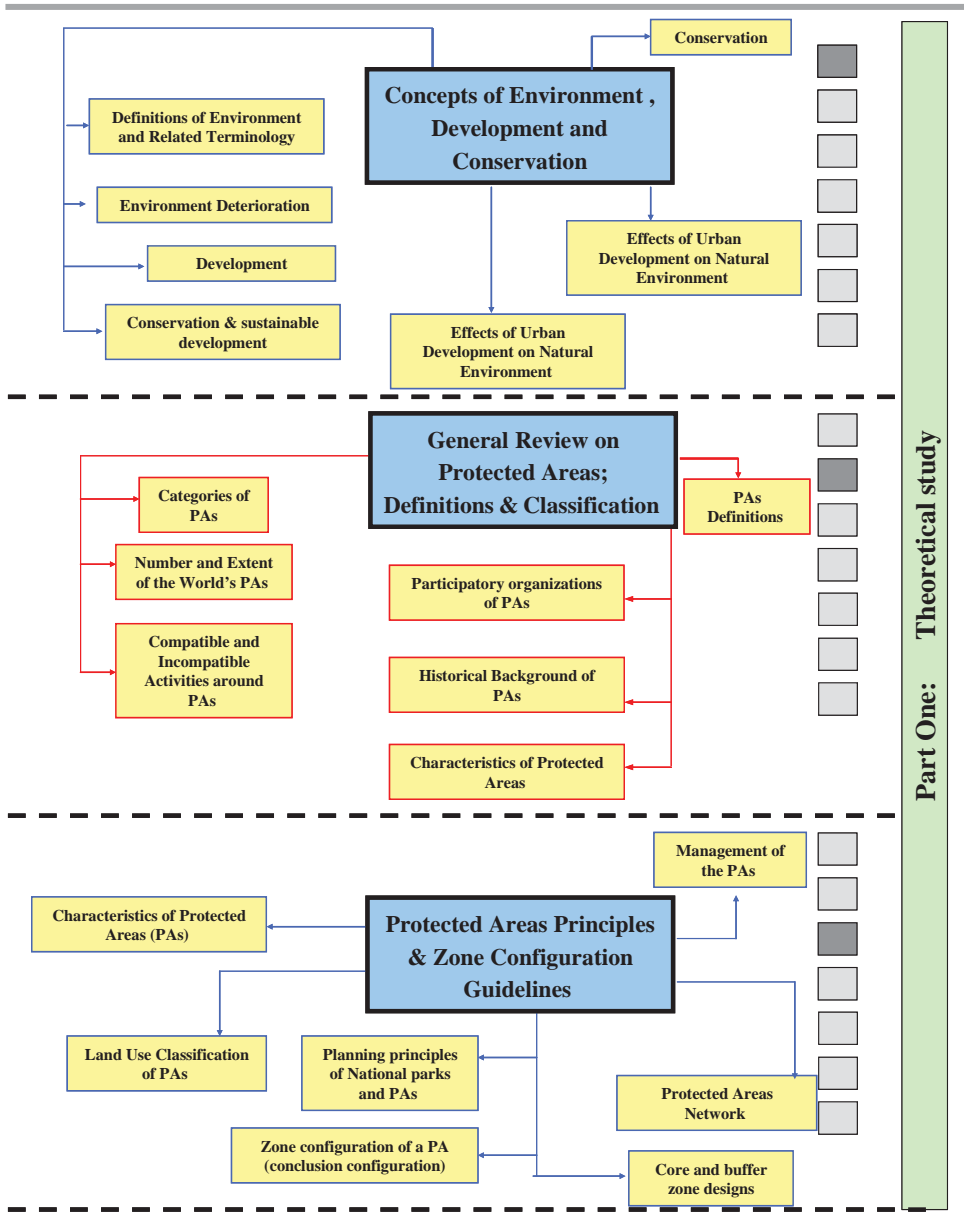
Chapter Seven: Conclusions and Recommendations

This chapter contains conclusions and further research and manifests the validity of the hypothesis all through the research.

Chapter one
Concepts of Environment, Development & Conservation

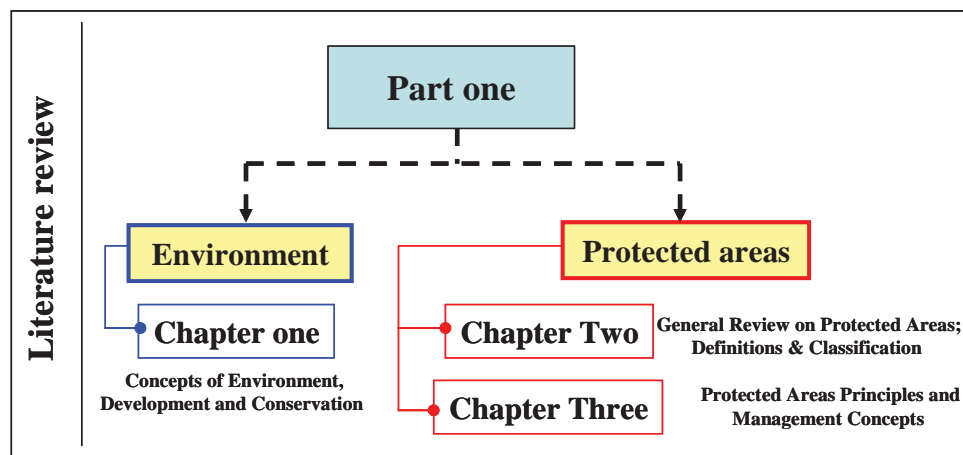
Part I

Literature Review (Theoretical Study)



Chapter one

Concepts of Environment, Development & Conservation



Introduction:

In the last century environment has faced a lot of dangers that caused a lot of environment problems; environment deterioration, loss of biological diversity and climate change. According the general media expressed to save this planet and rescue our environment. Conserving the environment is the necessary attitude toward these dangers. This chapter will present a general review on environment definitions, ecology, development, and conservation.

1-1 Definitions of Environment and Related

Terminology:

Throughout the world, man-made communities have been replacing the communities of nature. However, the principles that govern life in natural communities must be observed if their man-made counterparts are to thrive. These principles include various term such as; environment, ecosystem and biodiversity. The following are definitions of some of the most important environmental terms.

1-1-1 Environment:

Environment is everything that surrounds man such as atmosphere, land, water, biological life including man, flora, and fauna; there are many interrelations between man and environment, as man affects the environment and vice versa.

Environment is the sum of all external conditions affecting the life, development and survival of an organism.

This means that environment is the space where man live in, this space

can be so huge contain many elements and organisms, or it can be so small contain specific species and elements. By another word, environment is the sky above us, and the land under our feet, it is the sum of all organisms; flora, fauna, and graphical features.

Environment is "The surrounding in which an organism lives" (*Gupta and Asher, 1998*).

Additionally, Environment can be classified to as shown in figure (1):

- Natural environment
- Built environment
- Urban Environment

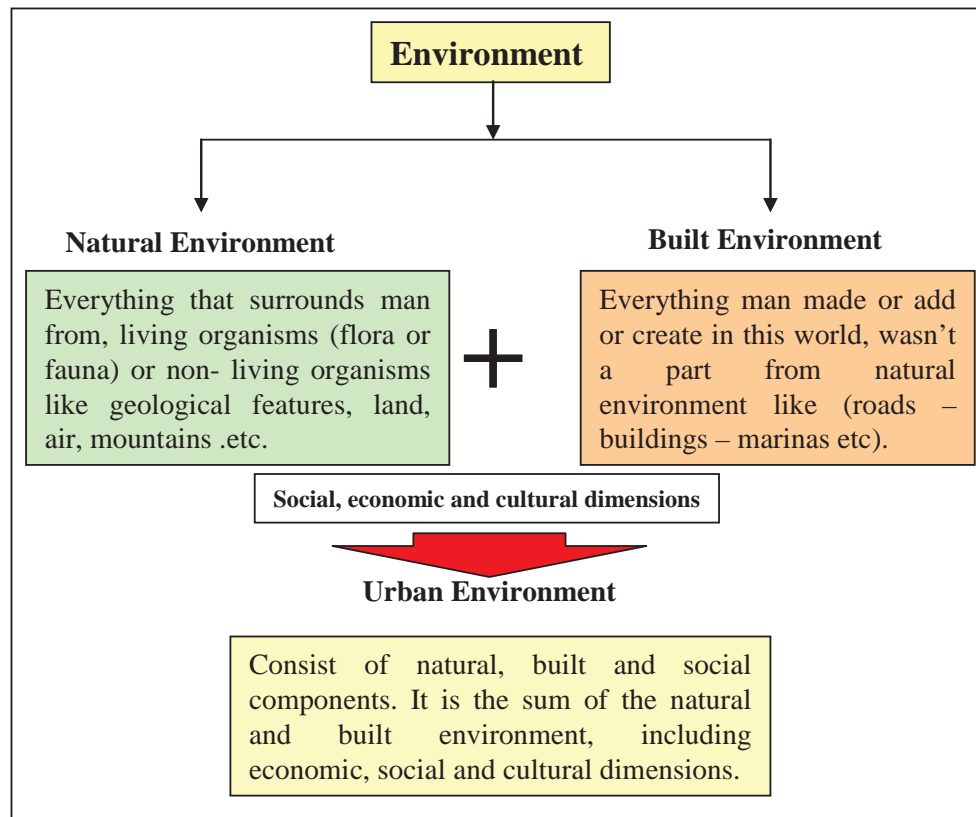


Figure (1): Compounds of Urban Environment, *Source: (Researcher) according to: (Abd El Hamid, 1995) and (Haughton and Hunter, 1994)*

1-1-2 Natural Environment:

Natural environment is everything that surrounds man from; living organisms (flora or fauna) or non- living organisms like geological features, land, air, mountains etc. This variation in organisms makes what is known as biodiversity. The Earth supports some 5 million species of plants, animals, and microorganisms. These interact and influence their surroundings, forming a vast network of interrelated environmental



Photo (1): An example for a natural environment
Source: www.amsterdamsebos.com

systems called ecosystems. This ecosystem diverse from one site to another depends on the variation of organisms from an area to another. In other word, natural environment varied from place to another according to the variation of ecosystem.

Natural Environment includes the following definitions and terminologies:

1-1-2-1 Biological Diversity:

'Biological diversity', (often shortened to biodiversity') is The Variety of living organisms considered at all levels of organization, including the genetic species and higher taxonomic levels. Biological diversity also includes the variety of habitats, ecosystems, and natural process occurring therein. (See appendix 1)

Biodiversity is important for life on earth because it:

- Represents accumulated genetic history and evolution.

- Contributes to the resilience of ecosystems.
- Supports cultural and technical advances derived from nature.
- Contributes to human inspiration and peace. (*Lucas, 1992*)

1-1-2-2 Species:

Group of organisms formally recognized as distinct from other groups. Species richness is the absolute number of species in a given area. (*Abd El Hamid, 1995*)

1-1-2-3 Habitat:

Habitat is the locality, site and particular type of local environment occupied by an organism. Habitat fragmentation is the process of dividing a continuous habitat into non-continuous and smaller sub-units

1-1-3 Built Environment:

Built environment or man made environment is everything man made or add or create in this world, that wasn't a part of natural environment like (roads – buildings – marinas etc). The built environment encompasses



Photo (2): An example for a built environment

Source: Researcher

the fabric of buildings, infrastructure and urban open spaces. Population density varied from an area to another, therefore when population density is high in an area that means; increasing in the effects on natural environment. So we need some kind of balance to govern the interrelations between man and environment in order to avoid dangerous impacts that may threat environment safety.

1-1-4 Urban Environment:

The urban environment is complexly structured and richly textured in its interweaving of a mixture of natural, built-form, economic, social and cultural dimensions. For the sake of convenience, the overall urban environment can be said to consist of natural, built and social



Photo (3): An example for Urban environment
Source: www.amsterdamsebos.com

components. The social component embraces less tangible aspects of urban areas, including aesthetic and amenity quality, architectural styles, heritage and the tradition of resident community. (*Haughton and Hunter, 1994*)

1-1-5 Ecosystems:

Ecosystems are referring to the dynamic and interrelating complex of plant and animal communities and their associated non-living environment.

The ecosystem concept helps to define the order of the natural world. An ecosystem refers to its biotic organisms (plants, animals, fungi, etc.) and interactions among those organisms, as well as the A-biotic physical processes of the system (climate, topography, geology, etc.). Ecosystems are chock-full of lessons in biology, physical sciences, history and other disciplines.

Ecosystem is the natural stock of ecological resources, such as soil, ground and surface water, land biomass and water biomass. (*Graham, 2003*) Ecosystems play a vital life-support function and should be

protected.

1-1-5-1 Characteristics of Ecosystems:

In ecology there have been two competing views on the characteristics of ecosystems. One view assumes nature is constant and that ecosystems always develop toward a diverse stable equilibrium state.

The other holds that while ecosystems develop diversity, they can do this along many pathways and therefore move between multiple equilibrium states. In recent times the steady state perspective has been shown to be incomplete and the view of ecosystems as dynamic is more widely accepted. According to this view ecosystems are said to have a number of important qualities. Typical qualities of ecosystems include diversity and resilience, positive and negative feedback, emergence, self organization, unpredictability and hierarchy. (*Graham, 2003*)

1-1-6 Biotic:

Biotic refers to the living components of a system. It is classified to three groups as shown in figure (3):

- Producers
- Consumers
- Decomposers(See appendix 1)

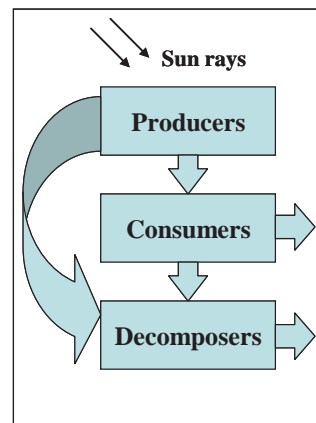


Figure (2): Interrelations between organisms in the ecosystem, Source (Researcher) adopted from (*Abd El Hamid, 1995*)

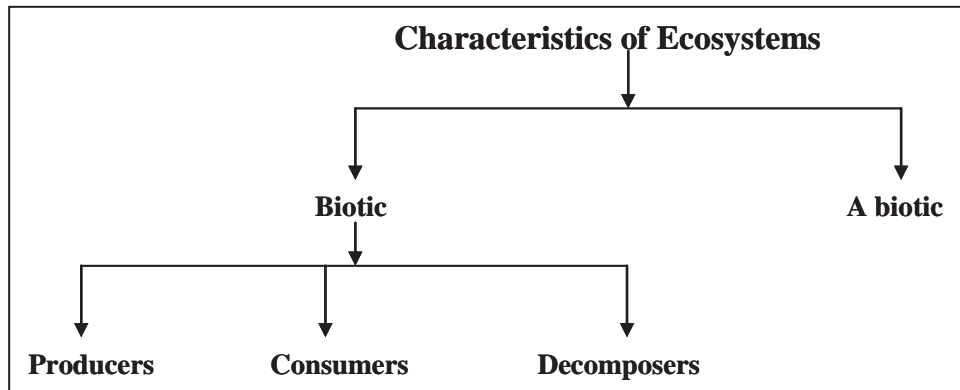


Figure (3): Characteristics of Ecosystems, *Source: (Researcher) adopted from (Abd El Hamid, 1995)*

1-1-7 A- biotic:

A-biotic refers to the non-living components of a system like; (climate, topography, geology, etc.)

1-1-8 Ecosystems and Human Systems:

Ecosystem is of course already infused with human systems. It is the farmland upon which we grow our food, tree, plantation, public parks and gardens, even our own backyards are elements of ecosystems. These types of 'managed' ecosystem have been modified in order to enhance the yield of particular goods or services, while 'natural' ecosystems like forests, oceans and range lands retain much of their original complexity and function. Yet because of our interdependency, both 'natural' and 'managed' ecosystems are affected by human activities. (Graham, 2003)

1-1-9 The Concept of 'Natural':

The dictionary define natural as: of concerning or being what exists or happens ordinarily in the world, not caused, made, or controlled by people. (Longman, 1983)

The IUCN guidelines refer to natural areas or areas with natural features.

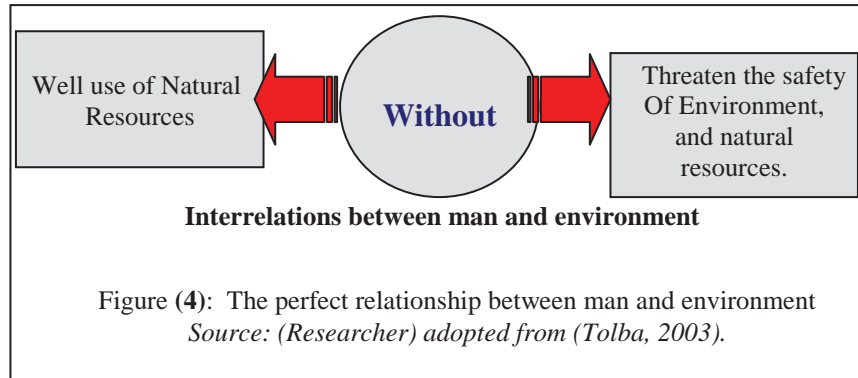
The term '**natural**' is defined as:

"Ecosystems where since the industrial revolution (1750) human impact: (a) has been no greater than that of any other native species, and (b) has not affected the ecosystem's structure. Climate change is excluded from this definition." (*Chape et al, 2003*)

1-1-10 Interrelations between Man & Environment:

Man lives in environment; he affects it and vice versa. The success of his relationship with environment depends on; how he understands it, and how he manages his attitudes and actions towards natural resources.

The perfect relationship between man & environment must achieve the following equation which is shown in the next figure:



This relationship between man and environment is known in another word "**Development**".

1-1-11 Natural Resources:

Natural resources are the natural compounds of environment from air, water, plants, etc. It is classified according to condition, and ownership.

1-1-11-1 Classification of Natural Resources According to Condition:

This type classifies natural resources into two groups:

- Renewable resources.
- Non-Renewable resources.

a- Renewable Resources:

Resources such as trees, fish, oxygen, and fresh water are generally considered to be renewable resources. (See appendix 1)

b- Non Renewable Resources:

Such things as fossil fuels (oil, coal, gas) and minerals that cannot be reproduced and therefore can be vanish. These are called non-renewable resources. (See appendix 1)

1-1-11-2 Classification of Natural Resources According to Ownership:

This kind classifies natural resources into two groups:

- Moving or un-owned resources.
- Owned resources.

a- Moving or Un-Owned Resources:

Resources are not lying under ownership of any government or any specific region. It is too hard to govern it under a physical border like; fishing outside regional water.

b- Owned Resources:

Resources are lying under the authority of a government or a specific region.

1-2 Environment Deterioration:

Every environmental system has a carrying capacity for an optimum, or most desirable, population of any particular species within it. Sudden changes in the relative population of a particular species can begin a kind of chain reaction among other elements of the ecosystem. For example, eliminating a species of insect by using massive quantities of a chemical pesticide also may eliminate a bird species that depends upon the insect as a source of food. Such human activities have caused the extinction of a number of plant and animal species and cause environment deterioration.

Reasons of environment deterioration:

- Ill-usage of environment resources.
- Absence of laws that govern the relation between environment, and man activities throughout many years.

- Pollution and its impacts on natural environment.
- Urbanization & urban expansions that grow on natural environment and change its natural features.

Besides some other natural factors like; climate change, earthquakes and loss of biological diversity. (*Tolba, 2003*)

1-2-1 The Planet in Crisis:

It is commonly accepted that the planet faces an environmental crisis precipitated by anthropocentric activity that is resulting in the earth's productive capacity from which serious consequential social and environmental effects are starting to follow. Human economic activity is the principle cause of environmental crisis through exploitation and pollution, and yet such activity relies on a healthy environment for its continuance and productivity. There are many key issues endangering earth as global warming, waste, pollution, overpopulation, loss of biological diversity, and extinction of species. (*Langston and Ding, 2001*)

1-3 Conservation:

The earth faces many dangers like extinction of species, environment deterioration, and leakage in the natural resources. Because of that many voices appear for the protection of natural & environmental resources as well as maintaining the environmental balance and hindering its deterioration. Eventually these people have developed a healthy proposal that is sensible and respectful towards the environment as a reaction to the rapid deterioration of the environment caused by misuse of its natural resources. This proposal is the conservation of environment and natural resources.

1-3-1 Conservation Definitions:

Conservation is "The protection and maintenance of nature while allowing for ecologically sustainable use". (*Gupta and Asher, 1998*)

Conservation is "The management of human use of biosphere so that it may yield the greatest sustainable benefit to present generations, while maintaining its potential to meet the needs and aspirations of future generations." Thus conservation is positive, embracing preservation, maintenance, sustainable utilization, restoration, and enhancement of the natural environment.

(*IUCN, 1980*)

Concept of conservation doesn't mean build a physical border to preserve an area of land but it is the well management of human activities to save the natural resources to the coming generations.

1-3-2 General Goals of Conservation:

Human needs diverse from an area to another according to the community he lives in and its level of civilization.

According there is an organic relationship between man and environment, as man affects it and vice versa. The objective of conservation is to control the relationship between man and environment, and protect the natural environment from the dangers that threaten its safety due to man's activities.

IUCN and UNEP put some general goals of conservation like:

- Supply a healthy environment to save human health and protect his safety by making our environment free from pollution and noise.

- Protect natural environment and natural resources from misuse and deterioration.
 - Face natural disasters; from earthquakes, volcanoes, river's flood etc.
 - Conserve oceans, seas and the living organisms in them.
 - Control the developmental relationship with nature environment.
 - Searching for clean energy which come from renewable resources like; wind power, atomic energy, and direct solar energy.
 - Observe the changes in our planet and find some solutions for it.
 - Make a good management of environment and its natural resources, in order to keep them safe for coming generations.
- (IUCN, 1980)

1-4 Development:

The dictionary definition of development is "growth, evolution and a 'stage of advancement'." Development has also been defined as "modification to the biosphere to satisfy human needs".

With more specific reference to building, development has also been described as "an outward expansion of undeveloped land". This second definition certainly implies growth but does not necessarily equate with evolution or advancement. Development as evolution suggests an unfolding natural process of improvement where development occurs via learning from past patterns and adapting to new conditions. Development as creation, on the other hand, implies consciously making some kind of product our outcome. (*Graham, 2003*)

Development is " The better utilization of the factors of production, including natural resources, leading to the improvement of the income and the quality of life for a set of people".(*Gupta and Asher, 1998*)

1-5 Conservation & Sustainable Development:

The term "sustainable development" was introduced in 1980 to describe development efforts which sought to address social needs while taking care to minimize potential negative environmental impacts." This concept recognized the need to maintain the natural environment in a state that still allowed humanity to fulfill its needs. The concept did, however, stress that achieving economic and social goals was dependent on, and connected with, achieving environmental goals. The two words that make up the name of this concept need to be explored. While sustainable development might be easy to say, debates about what should be sustained and what constitutes appropriate forms of development are hotly contested. (*Graham, 2003*)

The introduction of the concept of sustainable development in 1980 led to the economic view; that environmental conservation and human development were opposite site of the same coin. Conservation and development were essential to one another if life was to be sustained in such a way to provide equitable access to socio-economic and environmental opportunities. (*IUCN/UNEP, 1980*)

1-5-1 Historical Context of Sustainable Development:

The concept of sustainable development gained momentum in the 1980 when scientific evidence about depletion of the environment became obvious. It is now widely recognized that environment quality and the conservation of natural resources are important for the well-being of humankind today and for the coming generations.

This recognition was first discussed in the 1973 United Nations conference on the human environment in Stockholm. Furthermore, the

ideas of sustainable development have been discussed in the 1980 world conservation strategy (WCS), produced by the international union for conservation of nature and natural resources(IUCN) in collaboration with the united nations environment program (UNEP) and the world wildlife fund (WWF). According to the world conservation strategy the national conservation strategies for sustainable development were prepared and adopted by the government of fifty countries.

By the end of 1988 our common future had received public backing from the leaders of the world. The earth summit was held in Rio de Janeiro in 1992 by the United Nations Conference on Environment and Development (UNCED) to follow up the recommendations and strategies previously identified in the last conferences. This conference, also known as the Rio conference, was the first to discuss the planet's future and was attended by world leaders. The earth summit reached a number of important conclusions, and it was agreed to sitting out 27 general principles for achieving sustainable development.

In December 1997 the Kyoto Climate summit was held to set targets for green-house gas emissions. The conclusions were that the industrialized countries, known as Annex1, were to reduce their emission at least 5% below by 2008-2012. That target was important to avoid the risk of dangerous climate change. (*Langston and Ding, 2001*)

1-5-2 Sustainable Development Definition:

There are more than 70 definitions of sustainable development; they have been made by different groups to suite their own goals.

The most popular definition is the one given in the Brundtland report:

Sustainable development: "Development that meets the need of the present without comprising the ability of future generation to meet their own needs" (*Kirby et al, 1995*). (See appendix2):

The means of achieving sustainable development are consisting of three values are shown in figure (5):

- Environmental value: Sustainable development has a strong relationship with natural, built and cultural environments.
- Futurity: Sustainable development involves a concern not only for the short term, but also for the longer term which will impact on future generations and their quality of life.
- Equity: Sustainable development is providing the needs for society and for future generations.

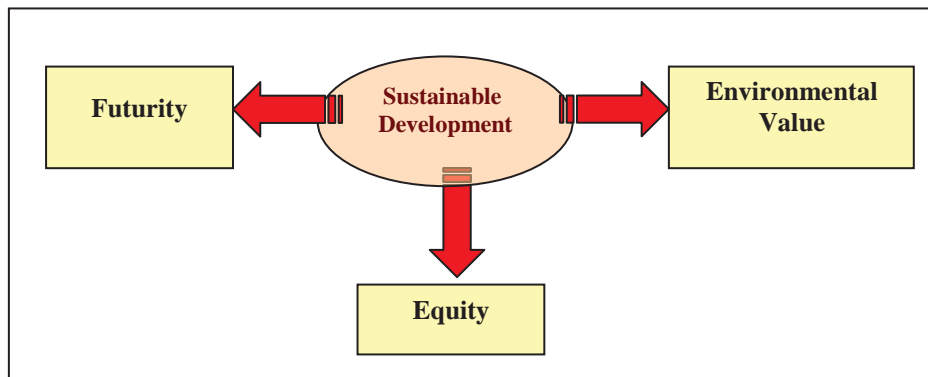


Figure (5): The three concepts of sustainable development

Source (Researcher) based on (*Kirby et al, 1995*).

1-5-3 Principles of Sustainability:

To demonstrate the link between economics and environment we must define sustainability in both economic and ecological terms.

Economic and ecological sustainability percepts may be considered as partially overlapping circles, as shown in figure (6). The overlap marks the territory of sustainable development.

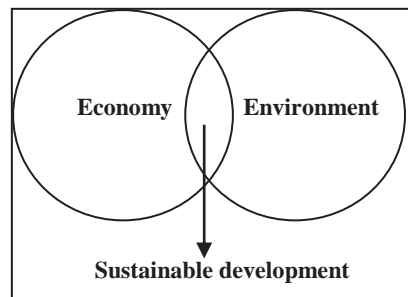


Figure (6): The conceptual framework for sustainable development.
Source (Researcher) adopted from ((Langston and Ding, 2001)

IUCN (The International Union for the Conservation of Nature) is first and foremost a union of members that are concerned with species loss and ecosystem integrity. However, IUCN recognizes that the causes of environmental problems are largely political, economic and social. Thus, the IUCN Program 2005–2008 recognizes a need for the Union to simultaneously focus on the direct and underlying causes of biodiversity loss. The 2005–2008 Program equally recognizes the link between environmental health and human wellbeing and explicitly seeks to address the elements of the UN Millennium Development Goals and the World Summit on Sustainable Development's Johannesburg Plan of Implementation that relate to the environment-development nexus.

The Program is described in terms of the three ‘pillars’ of sustainable development – economic, social and environmental – and it explicitly seeks to improve the attention of decision makers on the role of a healthy environment in sustainability by expanding the role of the environment in sustainable development. (IUCN, 2005)

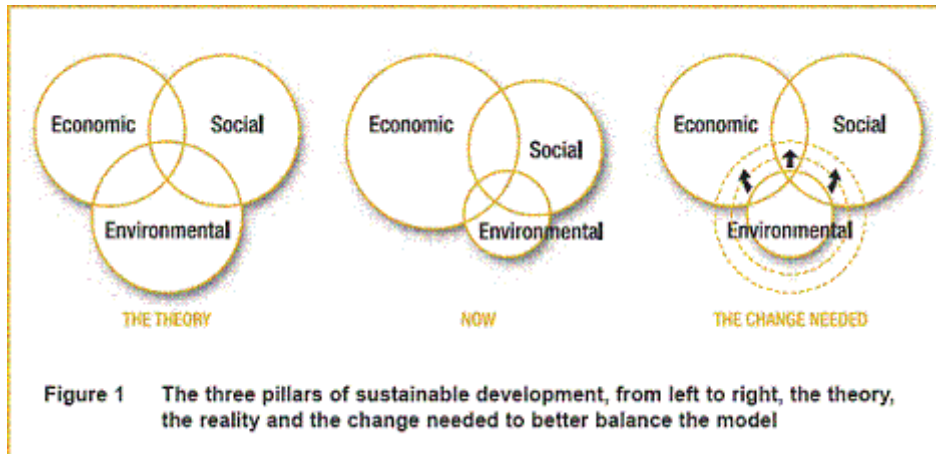


Figure (7): The three Pillars of sustainable development
Source (www.IUCN.org)

1-5-4The Relation between Conservation and Sustainable Development:

The success of conservation efforts hinges on a balanced and equitable process of development. This interaction suggests that the various interests involved can work together towards the common objective of conservation through concepts that involve species conservation, sustainable use and social support. The world conservation strategy outlines a world wide policy for conservation (IUCN, 1980). The major environmental aims include:

- The conservation of resources to support long-term sustainable development.

- The maintenance of essential ecological processes and life-support systems.
- The preservation of genetic diversity.
- The sustainable utilization of species and ecosystems.

These aims clearly promote development through the management of human use of the environment in such a manner that it may yield the greatest sustainable benefit to current generations while maintaining its potential to meet the needs and aspirations of the future. Thus, conservation is positive, embracing preservation, maintenance development, sustainable utilization, restoration, and enhancement of nature.

	Conservation	Sustainable Development	Development
Definition	The management of human use of biosphere so that it may yield the greatest sustainable benefit to present generations, while maintaining its potential to meet the needs and aspirations of future generations.	Development that meets the need of the present without comprising the ability of future generation to meet their own needs	The better utilization of the factors of production, including natural resources, leading to the improvement of the income and the quality of life for a set of people
Major goal	Saving Environment is the major goal.	Use natural resources and leave it save for next generations.	Achieving financial benefit is the major goal.

Table (1): Comparison between conservation, development and sustainable development. *Source (Researcher)*

1-6 Effects of Urban Development on Natural Environment:

Urban areas are the major areal sources for many forms of pollution, being centers of industrial activity, energy production and use, and vehicular traffic. The impacts of general air pollution are most frequently couched in national or international terms, with only very limited information available for individual urban areas.

We can say that pollution is largely a problem generated by urban activities. A lot of the pollutants come from urban activities. Many industrial activities emit many pollutants which harm natural environment. The next table shows major potential ecological effects of some air pollutants.

1-6-1 Air Pollutants Caused from Urban Activities:

Table (2) Major potential ecological effects of some air pollutants.

Source: (Haughton and Hunter, 1994)

Pollutants	Effect on the Natural Environment	Urban activities
Nitrogen Oxides	NO and NO ₂ can contribute significantly to acid deposition, damaging aquatic ecosystems and possibly other ecosystems such as forests, NO _x can also have fertilizing effect on forests.	<ul style="list-style-type: none"> • Burning of fossil fuels. • Factories
Sulphur Oxides	SO ₂ and other sulphur oxides can contribute significantly to acid deposition causing impairment of aquatic and possibly other ecosystems. It also reduces visibility even at low concentrations.	<ul style="list-style-type: none"> • Industrial areas • Oil-burning power stations. • Space heating systems. • Oil refineries • Metal processing
Particulate Matter	High dust and soot levels are associated with a general perception of dirtiness of the environment.	<ul style="list-style-type: none"> • Power generation • Industrial activity

1-6-2 Water Pollutants Caused from Urban Activities:

Pollutants	Major sources	Effects
Organic wastes	<ul style="list-style-type: none"> Human domestic sewage, Industrial wastes 	<ul style="list-style-type: none"> Depletion of dissolved oxygen in water. Destroy ecosystems if wastes reach underground water.
Pathogenic microorganism	<ul style="list-style-type: none"> Human sewage. 	<ul style="list-style-type: none"> Effect aquamarine life
Acids	<ul style="list-style-type: none"> Wide range of industrial activities 	<ul style="list-style-type: none"> Toxic to many organism Disruption of aquatic ecosystems

Table (3): Major potential ecological effects of some water pollutants.
Source: (Haughton and Hunter, 1994)

1-6-3 Soil Pollution Caused from Urban Activities:

Soil pollution comes mainly from the human sewage; it may increase the ground water, and change the layers of the soil. Also the construction operation (digging operation) may affect the layers of the soil and cause some deformations.

1-6-4 Ecological Principles for Sustainable Urban Development:

There are different aspects to achieve sustainable urban development. We can illustrate the main ecological principles for sustainable development in the following points:

- **Prevention is better than cure:** This stresses the importance of a precautionary approach to urban development; environmental impact assessments must be conducted on all major development projects.

- **Nothing stands alone:** Account should be taken of the local, regional and global implications of urban activities and urban environmental policies.
- **Minimize waste:** In moving towards greater urban self-reliance, maximize reuse and recycling of materials; minimize unnecessary wastage of resources; and encourage built-in longevity in products.
- **Maximize the use of renewable and recyclable materials:** The use of low-and non-waste technology should be especially encouraged; maximize the use of renewable resources.
- **Maintain and enhance "requisite variety":** This should be encouraged in the natural, cultural and even economic environments.
- **Identify and respect local, regional and global environmental tolerances.** This ensures that urban development is sensitized to its capacity to interact with, and indeed alter, local and global capacities to cope with environmental disturbances.
- **Enhance environmental understanding through research.** This ensures that complex environmental and economic interdependencies are better understood as a basis for informed decision-making. *(Haughton and Hunter, 1994)*

Aspects	Key element	Objective for planning and design
Marinating the globe ecology Concerted with atmosphere and climatic stability and with biodiversity	1- atmosphere & climate	-Reduce co2 and other emission -Reduce energy used in transport -Reduce energy used in buildings
	2- Biodiversity	-Conserve extend and variety of habitat/ -protected area -vulnerable species
Husbanding natural resources Concerned with the appreciate use and quality of our resources of air, water, the land and minerals	3- Air	-Maintain / enhance local air quality -Reduce pollution to levels that do not threaten health.
	4-Water	-Improve the quality of watercourses and bodies. -Protect ground water and
	5- Land	-Maintain / enhance soil fertility -Protect land from erosion and contamination
	4-aesthetic quality	-Enhance perceived environmental quality in terms of sight, sound, smell and history
	5- culture heritage	-Safeguard archaeological remains, historic monuments

Table (4): Ecological Principles for Sustainable Urban Development. *Source: (Barton et al., 1995)*

1-7 Protected Areas and Conservation:

The rapid deterioration of the global environment has drawn the attention of people nationwide and worldwide. This awareness of the need for environmental protection and sustainable practices has led to the formulation of statues and polices for protecting the environment and identifying solutions to environmental problems. With increasing global concern over the need to protect the environment, protected areas is becoming an important and rapidly expanding attitude. *(Langston and*

Ding, 2001)

1-7-1 Challenges of Conservation in Developing Countries:

One of the most significant challenges facing the world today is the tension between human development and natural resources management. Also, existing land use practices lead to pollution, deforestation, habitat loss and reduction in biodiversity. Land tenure, management policy, legislation, and economic incentives are often at odd with the sustainable use of natural resources. In addition population growth, human migration, and local strife tend to augment trends that threaten the environment conditions for human survival and progress.

Developing countries are considered most affected by the previous factors since most have neither the tools nor the knowledge to combat the ill effects of the much needed developmental process on the environment. In the preparations for the United Nations conference on environment and development - the Earth Summit- held in Rio de Janeiro in 1992, a number of priority environmental problems were identified for industrialized countries and other more specific problems for developing countries, at different levels of intensity. (*UNESCO, 1992*).

In developing countries environmental issues generally involve the loss of natural areas and the exploitation of their resources. There are attributed to various factors that along several sectors including the government, the population and the economy.

Environmental problems are particularly serious in developing countries where their primary concern centers on economic growth, prevention of starvation and disease control.

1-7-2 Environment Protection and Conservation Movements in Egypt:

The environment has long been a subject of interest in Egyptian culture; ancient inscriptions such as those depicting the journeys of Queen Hatshepsut (1450BC) illustrate the wildlife expedition to the land of Punt. These, among others suggest that a form of nature protection exist in a very early stage in Egyptian history and include basic management principles which were followed through by succeeding civilizations: the ancient Greeks, Romans and Ottomans.

Traditional forms of community protection also developed through the ages and still exist. A number of areas were regarded as sacred under the traditional law of the local Bedouin tribes, with the "lineage preserves". The official onset of environment protection in its modern form originated in 1990 and was the basis for most of the long reigning conservation policies.

Egypt has been active in the conservation of wildlife, natural resources and natural habitats. This is clearly manifested in the involvement of international organizations such as the UNEP and declaration of protected areas, which cover about 7.5% of the total area of the country by Prime Ministerial Decrees since 1983. (*Raslan, 2003*)

1-8 Summary of Chapter One: (Concepts of Environment, Development and Conservation):

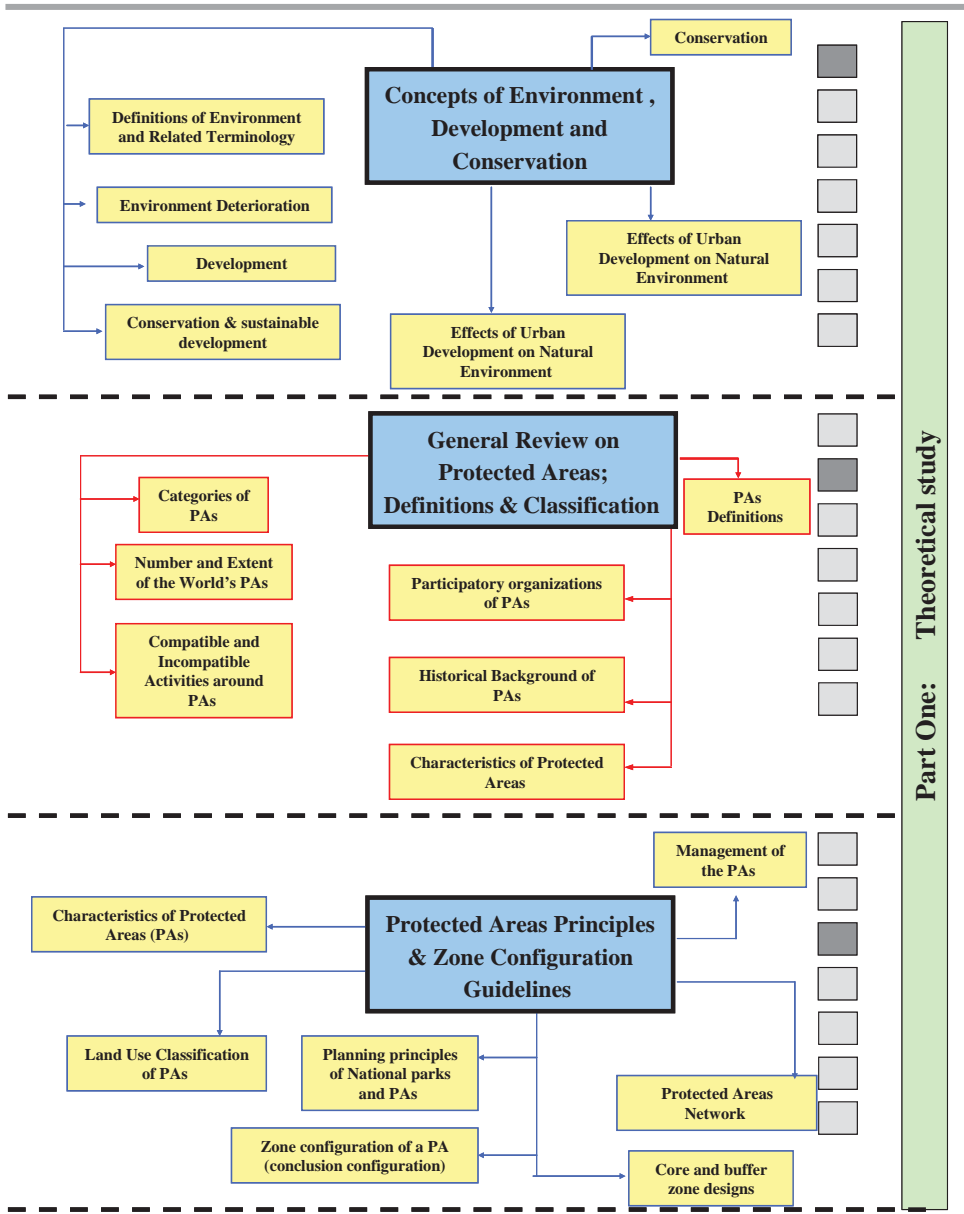
- Environment is everything that surrounds man; there is a relationship between man and environment this relationship is called in another way "development".

- Because of all human activities and development; the earth faces many dangers like; extinction of species, environment deterioration that threat the safety of the earth, and cause shortage in the natural resources. That's why the protection of natural & environmental resources becomes an essential demand.
- The ideal relation between man & environment is called sustainable development: "**Development that meets the need of the present without comprising the ability of future generation to meet their own needs**". This means that there is a strong relation between conservation and sustainable development.
- Urban environment consists of natural, built and social components.
- Environmental conservation and human development are opposite site of the same coin.
- Urban areas are the major areal sources for many forms of pollution, being centers of industrial activity, energy production and use, and vehicular traffic.
- A lot of the pollutants come from urban activities. Many industrial activities emit many pollutants which harm natural environment.

Chapter Two

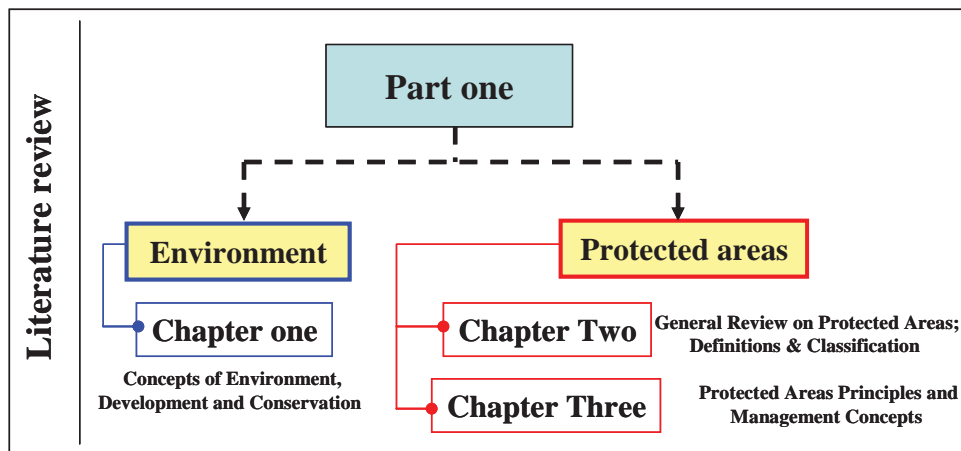
General Review on Protected Areas; Definitions & Classification

Part I Literature Review (Theoretical Study)



Chapter Two

General Review on Protected Areas; Definitions & Classification



2-1 Introduction

By 2000, the world's 30,000 protected areas covered over 13, 250, 000 km² of the land surface of the world. A much smaller proportion of the world's seas (barely 1%) are protected. This represents a tremendous investment by the countries of the world to protect their biological diversity for future generations.

Protected areas perform many functions. They are essential for conserving biodiversity, and for delivering vital ecosystem services, such as protecting watersheds and soils and shielding human communities from natural disasters. Many protected areas are important to local communities, especially indigenous peoples who depend for their survival on a sustainable supply of resources from them. They are places for people to get a sense of peace in a busy world, places that invigorate human spirits and challenge their senses. Protected landscapes embody important cultural values; some of them reflect sustainable land use practices. They are important also for research and education, and contribute significantly to local and regional economies, most obviously for tourism. (*Chape et al, 2003*)

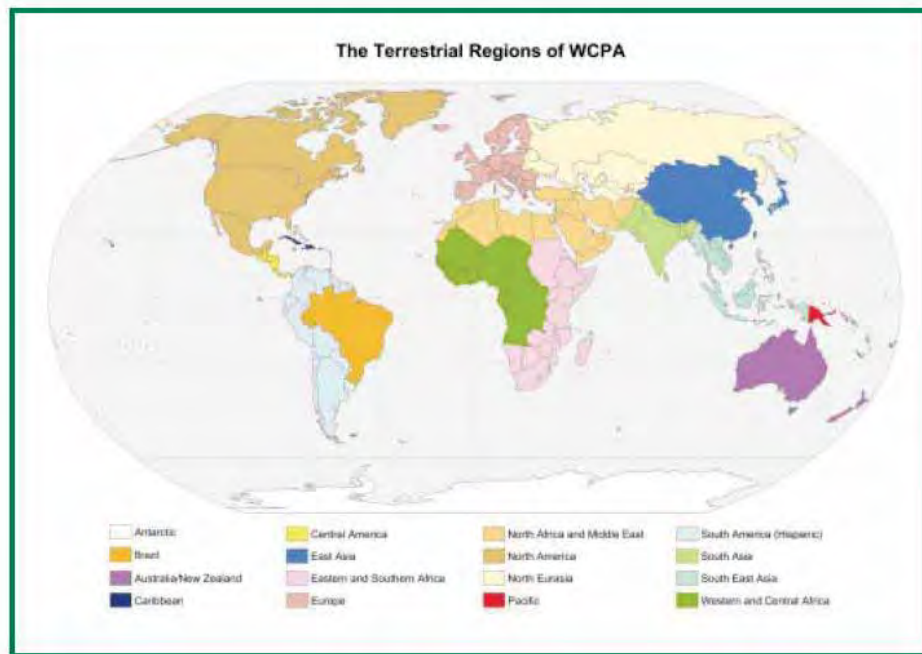


Figure (8): Protected Area Extent by IUCN, WCPA Region
(Source: Chape et al, 2003)

2-2 Protected Areas Definitions:

(1)- "An area that is dedicated with the principal objective not directly related to the protection and maintenance of biodiversity or natural"; or

(2)- "An area which protects cultural resources, which are presented with no relationship to their natural context. (Ex. some historic sites) "

(3)-" An area of land that has legal measures limiting human use of the plants and animals within that area; includes national parks, game reserves, protected landscape, multiple-use areas, biosphere reserves, etc." (McNeely et al, 1990). Protected areas are for more specifically defined than environmentally significant areas due to the involvement of legislative protection and regulatory management procedures. Globally

recognized definitions have been issued by international organizations concerned with environmental affairs and have become binding to the nations that participate.

2-2-1 The Definition of a Protected Area Adopted by the International Union for the Conservation of Nature IUCN is:

"An area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means." (IUCN, 1990)

This definition therefore provides two major tests for determining whether an area is eligible for classification as a protected area. These are:

- Is the area particularly or chiefly **dedicated to protection and maintenance of biological diversity, and of natural and associated cultural resources?** *and*
- Is the area **managed through legal or other effective means?**

2-2-2 The definition of a protected area adopted by The World Conservation Monitoring Center (WCMC) is:

"Legally established sites managed for conservation objectives-are an essential means for saving Biodiversity. These areas are managed for objectives ranging from strict nature preservation to controlled resource harvesting." (WCMC, 1995)

2-3 Participatory Organizations of PAs:

A hierarchical structure is emerging for planning and overseeing environmental issues and associating them with development strategies at a global level. This operates through organizations such as:

2-3-1 The United Nations (UN):

Through its divisions, the UN is the leader organization that heads environmental conservation efforts as: "a responsibility shared by the international community".

2-3-2 The United Nations Environmental Program (UNEP):

The UNEP consists of several integrated and specialized divisions most notably, the UNEP-WCMC which locates and compiles information on protected areas.

2-3-3 The International Union for the Conservation of Nature (IUCN) & Affiliates:

The IUCN, established in 1960 (also identified as the World Conservation Union, formerly as commission on National Parks and Protected Areas), has provided classification guidance and include the largest network of management specialists. It is affiliate, the World Commission on Protected Areas (WCPA), is a leading scientific and technical body concerned with selection, establishment and management of protected areas. (UN, 19992)

2-4 Historical Background of Protected Areas:

The United States was the first country that announced a national park in 1872 (The Yellow Stone Park) as a preserved natural park, which receives not less than 3 million visitors annually. It was the world's first national park which identified by IUCN. Yellow stone was proclaimed a national park because of the outstanding qualities of a large area of land where nature was dominant. The United States Congress and Senate made their intentions clear when they said that Yellowstone should be "reserved from settlement, occupancy or sale..."

The inspiration of Yellowstone's establishment saw the national park concept expand slowly at first and then gain momentum until, by the time of Yellowstone's centennial in 1972, there were 1000 national parks along the world, meeting the definition adopted by the IUCN. That definition in brief, sees a national park as a relatively large natural area, where human use is for inspirational, educational, cultural and recreational purposes. (Lucas, 1992)



Yellowstone iterance



**The grand canyon
in Yellowstone park**

Photo (4): Yellow Stone the first national park in the world
Source: (www.yellowstonepark.com).

2-5 Characteristics of Protected Areas:

2-5-1 Protected Areas Regulations:

It is forbidden to commit actions or carry out activities, which would lead to destruction, damage, removal of plants, spoiling or destroying the geological structures and other features from the natural reserves.

Although all protected areas meet the general purposes contained in this definition, in practice the precise purposes for which protected areas are managed differ greatly. The following are the main purposes of management:

- Scientific research.
- Wilderness protection.
- Preservation of species and genetic diversity.
- Maintenance of environmental services.
- Protection of specific natural and cultural features.
- Tourism and recreation.
- Education.
- Sustainable use of resources from natural ecosystems.

- Maintenance of cultural and traditional attributes. (www.unep-wcmc.org/protected_areas/pavl/define.htm)

2-5-2 Functions of Protected Areas (PAs):

Beyond their traditionally accepted inherent environmental merits, PAs possess the capacity to perform functions which can be incorporated into various fields of development. Many of these are only recently being recognized. The following lists functions, which can be interpreted as uses and values of PAs:

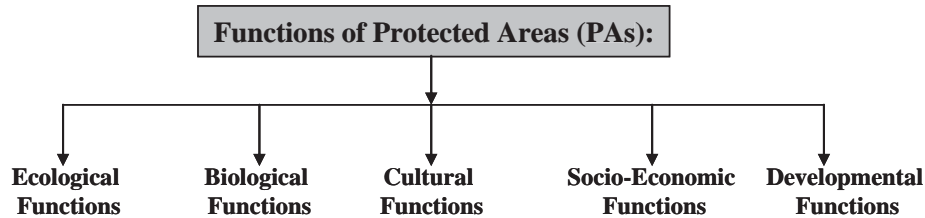


Figure (9): Functions of Protected Areas

Source: (Researcher) based on (Lucas, 1992) & (Raslan, 2003)

2-5-2-1 Ecological Functions:

The designation of PAs indicates the value of both biotic and a-biotic resources within a site. This ensures the continuing flow of ecosystems services, the maintenance of sensitive geological and hydrological features, and the conservation and enhancement of an environment which is productive, healthy, harmonious and aesthetically pleasing.

2-5-2-2 Biological Functions:

PAs allow for the preservation and conservation of mature and stable ecosystems, this in turn, provides security for various dependant habitats, species and communities. Often, the overall goal of employing PAs inventories into land use plan is to maintain viable populations, genetic continuity and natural distributions of indigenous species and communities that occur within specific ecosystem.

2-5-2-3 Cultural Functions:

PAs provide options for humanity in a rapidly changing world and also help fulfill our ethical responsibility to respect nature. They also act as research areas for earth and life science studies and provide areas for public education of resources and their management.

2-5-2-4 Socio-economic Functions:

The identification and management of PAs is a valuable addition to the traditional socio-economic factors that have largely determined land use planning and management in the past. PAs as correctly managed entities are anticipated to be the most cost-efficient and, in many cases, the only means available for maintaining adequate levels of biological diversity at appropriate economic scales. (*Raslan, 2003*)

2-5-2-5 Developmental Functions:

As an integral component of sustainable development strategies, PAs provide long-term benefits to society by maintaining ecological processes and by providing orderly growth and development of land-use plans, biodiversity conservation can be incorporated into appropriate land management plans and sustainable developmental strategies.

Forbidden Activities in PAs	Main Purpose of Management	Functions of PAs
<ul style="list-style-type: none"> • It is forbidden to commit actions or carry out activities, which would lead to destruction, damage, removal of plants, spoiling or destroying the geological structures and other features from the natural reserves. • It is forbidden to collect, remove or damage any material, living or dead, from PAs (corals, shells, fish, plants, fossils, etc) 	<ul style="list-style-type: none"> • Scientific research. • Wilderness protection. • Preservation of species and genetic diversity. • Maintenance of environmental services. • Protection of specific natural and cultural features. • Tourism and recreation. • Education. • Sustainable use of resources from natural ecosystems. • Maintenance of cultural and traditional attributes. 	<ul style="list-style-type: none"> • Ecological Functions • Biological Functions • Cultural Functions • Socio-economic Functions • Developmental Functions

Table (5): The main purpose of management PAs, functions of PAs, and the forbidden activities in them. *Source: Researcher*

2-5-3 Benefits of a Protected Area System:

A system of protected areas is the core of any program that seeks to maintain the diversity of ecosystems, species, and wild genetic resources. Generally it protects the world's great natural areas for their intrinsic, inspirational and recreational values.

A protected area system provides safeguards for:

- Natural and modified ecosystems that are essential to maintain life support services conserve wild species and areas of particularly high species diversity, protect intrinsic and inspirational values, and support scientific research.
- Culturally important landscapes (including places that demonstrate harmonious relationships between people and nature), historic monuments and other heritage sites in built-up areas.
- Sustainable use of wild resources in modified ecosystems.
- Traditional, sustainable uses of ecosystems in sacred places or traditional sites of harvesting by indigenous peoples.
- Recreational and educational uses of natural, modified and cultivated ecosystems (*Lucas, 1992*).

2-6 Categories of Protected Areas:

IUCN listed two groups of protected areas covering eight categories, as well as identifying two internationally recognized designations – Biosphere Reserves and World Heritage Sites (Natural). Subsequently, a third such designation was added of wetlands of International Importance. (See appendix 2)

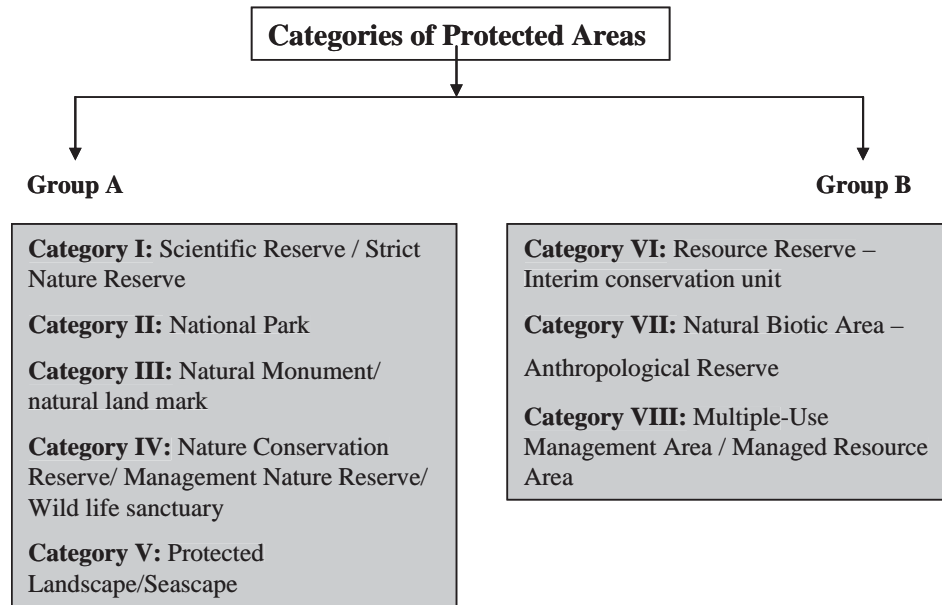


Figure (10): Categories of Protected Areas *Source: (Lucas, 1992)*

2-6-1 IUCN Categories System for Protected Areas:

IUCN has defined a series of protected area management categories based on management objective. (*IUCN, 1994*) The six categories are:

Category	Name
Category IA:	Strict Nature Reserve
Category IB:	Wilderness Area
Category II:	National Park
Category III:	Natural Monument
Category IV:	Habitat/Species Management Area
Category V:	Protected Landscape/Seascape
Category VI:	Managed Resource Protected Area

Table (6): Global number and extent of protected areas in the world.
 Source : (Chape et al, 2003)

Category	No. of sites	Proportion of total no. protected areas (%)	Area Covered (km ²)	Proportion of total area protected (%)
Ia	4,731	4.6	1,033,888	5.5
Ib	1,302	1.3	1,015,512	5.4
II	3,881	3.8	4,413,142	23.6
III	19,833	19.4	275,432	1.5
IV	27,641	27.1	3,022,515	16.1
V	6,555	6.4	1,056,008	5.6
VI	4,123	4.0	4,377,091	23.3
No Category	34,036	33.4	3,569,820	19.0
Total	102,102	100.00	18,763,407	100.00

The present category system was adopted by the IUCN at its General Assembly in Buenos Aires in January 1994 and was published later that year.. The category system represents the culmination of an extensive process involving a wide-ranging review within the international protected area constituency over a number of years (Chape et al, 2003).

2-6-1-1 Category IA: Strict Nature Reserve: protected area managed mainly for science. (See appendix 3)

Definition: Area of land and/or sea possessing some outstanding or representative ecosystems, geological or physiological features and/or species, available primarily for scientific research and/or environmental monitoring. Outstanding ecosystems include those which are notable

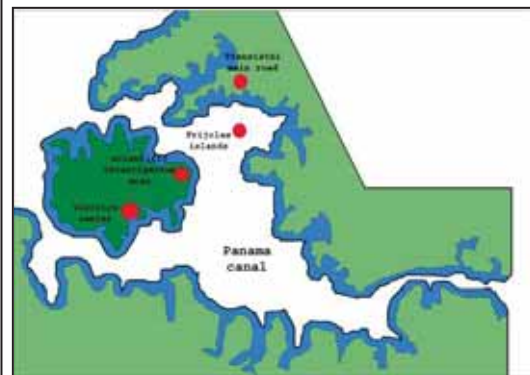


Figure (11): Island of Barro Colorado
 source: Researcher based on:
http://www.panamatours.com/Rainforest/barrocolorado_eng.htm

for their rarity. Physiological features relate to the function of living organisms. Point features or more general features such as landscapes may be represented. (IUCN and WCU, 1994) figure .(11)

2-6-1-2Category IB: Wilderness Area: protected area managed mainly for wilderness protection.

Definition: Large area of unmodified or slightly modified land, and/or sea, retaining its natural character and influence, without permanent or significant habitation, which is protected and managed so as to preserve its natural condition. (See appendix 3)

The reference to ‘without permanent or significant habitation’ implies that indigenous communities, living a traditional lifestyle may be acceptable in Category IB. Significant features of European habitation such as public access roads and farming are not acceptable in Category IB. (IUCN, 1994) figure. (12)

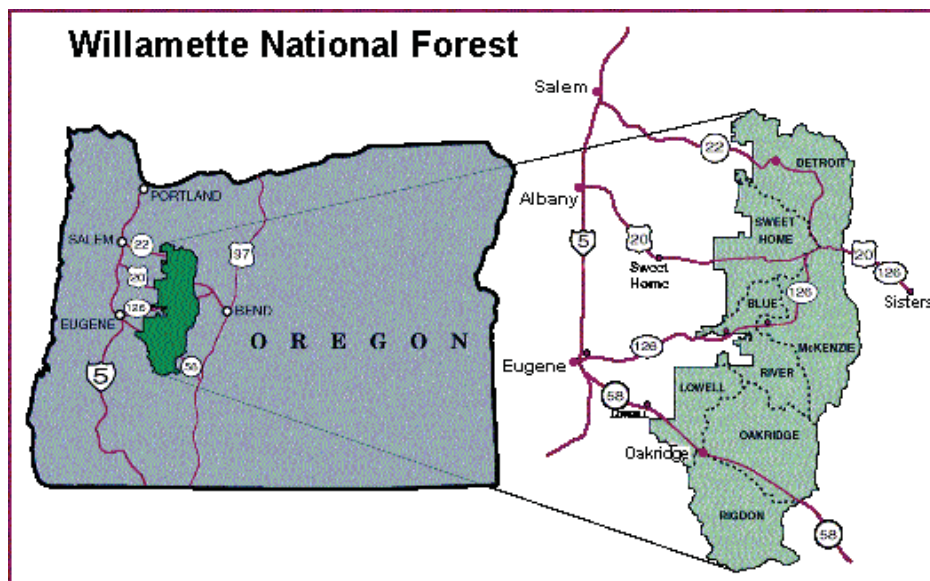


Figure (12): Middle Santiam Wilderness, USA,

Source: <http://www.naturenw.org/wild-middle-santiam.htm>

2-6-1-3 Category II: National Park: protected area managed mainly for ecosystem protection and recreation. (See appendix 3)

Definition: Natural area of land and/or sea, designated to:

(a) Protect the ecological integrity of one or more ecosystems for present and future generations.

(b) Exclude exploitation or occupation inimical to the purposes of designation of the area.

(c) Provide a foundation for spiritual, scientific, educational, and recreational and visitor opportunities, all of which must be environmentally and culturally compatible. (IUCN and WCU, 1994) figure. (13)

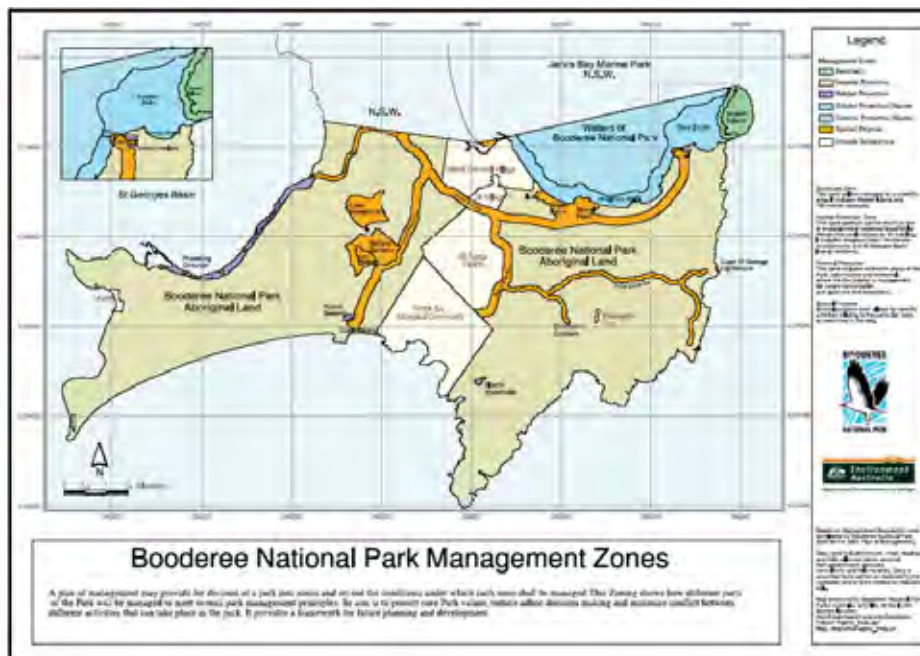


Figure (13): Booderee National Park,

Source: <http://www.deh.gov.au/parks/booderee/index.html>

2-6-1-4 Category III: Natural Monument: protected area managed mainly for conservation of specific natural features. (*IUCN and WCU, 1994*)

Definition: Area containing one, or more, specific natural or natural/cultural feature which is of outstanding or unique value because of its inherent rarity, representative or aesthetic qualities or cultural significance. (See appendix 3)

An area of land and/or sea containing a natural feature is a prerequisite for this category. Cultural features associated with natural features or demonstrating a particular interaction with a natural feature may also be included. The term ‘monument’ reflects international usage and is less



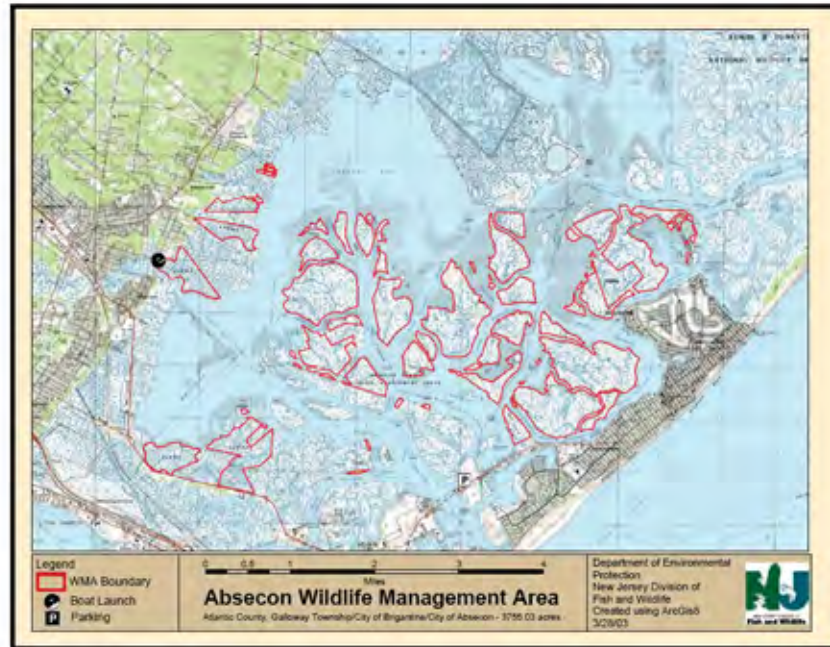
relevant to Australia where that term is more often applied to man-made features in urban landscapes. (*IUCN and WCU, 1994*) photo. (5)

Photo (5): the Petrified Forest, USA

(Source:

http://www.americansouthwest.net/arizona/petrified_forest/photographs.html)

2-6-1-5 Category IV: Habitat/Species Management Area: protected area managed mainly for conservation through management intervention.



.Figure (14): Absecon Wildlife Management Area, USA

Source: <http://www.state.nj.us/dep/fgw/wmaland.htm>

Definition: Area of land and/or sea subject to active intervention for management purposes so as to ensure the maintenance of habitats and/or to meet the requirements of specific species. (*IUCN and WCU, 1998*)

The level of active intervention applied, where it is required to favor a specific species or habitat, is a distinguishing feature between Category IV and Category Ia. Normal management activities such as control of wildlife, feral animals and weeds do not constitute active intervention as their intent is not to alter the natural systems of an area. (See appendix 3) figure.(14)

2-6-1-6 Category V: Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation and recreation

Definition: Area of land, with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, ecological and/or cultural value, and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance and evolution of such an area. (See appendix 3) figure.(15)



Figure (15): San Dieguito Lagoon, USA protected landscape.
Source: www.surfermag.com/features/oneworld/dieguito

2-6-1-7 Category VI: Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural ecosystems. (IUCN and WCU, 1994)

Definition: Area containing predominantly unmodified natural systems, managed to ensure long term protection and maintenance of biological diversity, while providing at the same time a sustainable flow of natural products and services to meet community needs. (See appendix 3) figure.(16)



Figure (16): Abu Galum Managed Resource Protected Area, Egypt
Source: (EEAA, 2000)

Category	Definition	Objective of management	Guidance of selection:
Category IA: Strict Nature Reserve	Area of land representative ecosystems, geological and species, available primarily for scientific research and environmental monitoring.	<ul style="list-style-type: none"> • preserve habitats, ecosystems and species • secure examples of the natural environment for scientific studies, environmental monitoring and education • Safeguard structural landscape features or rock exposures. • Minimize disturbance by careful planning and execution of research and other approved activities. 	<ul style="list-style-type: none"> • The area should be large enough to ensure integrity of its ecosystems • The area should be significantly free of direct human intervention and capable of remaining so. • The conservation of an area's biodiversity should be achievable through protection and not require substantial active management or habitat manipulation.
Category IB: Wilderness Area	Large area of unmodified or slightly modified land, retaining its natural character and influence, without permanent or significant habitation, which is protected and managed so as to preserve its natural condition.	<ul style="list-style-type: none"> • Ensure that future generations have the opportunity to experience understanding and enjoyment of areas that have been largely undisturbed by human action. • Maintain the essential natural attributes and qualities of the environment over the long term. • Provide for public access at levels and of a type which will serve best the physical and spiritual well-being of visitors. 	<ul style="list-style-type: none"> • The area should possess high natural quality, and be likely to continue to display those attributes if managed as proposed. • The areas should contain significant ecological, geological, physico-geographic. • The area should offer outstanding opportunities for solitude, non-polluting and non-intrusive means of travel
Category II: National Park	Natural area of land and/or sea, designated to: (a) Protect the ecological integrity of one or more ecosystems for present and future generations (b) Exclude exploitation or occupation inimical to the purposes of designation of the area. (c) Provide a foundation for spiritual, scientific, educational, and recreational and visitor opportunities, all of which must be environmentally and culturally compatible.	<ul style="list-style-type: none"> • To protect natural and scenic areas of national and international significance for spiritual, scientific, educational, and recreational or tourist purposes. • To manage visitor use for inspirational, educational, cultural and recreational purposes. • To take into account the needs of Indigenous people, including subsistence resource use. 	<ul style="list-style-type: none"> • The area should contain a representative sample of major natural regions, features or scenery, where plant and animal species, habitats and geomorphologic sites. • The area should be large enough to contain one or more entire ecosystems not materially altered by current human occupation or exploitation.
Category III: Natural Monument	Area containing one or more, specific natural or natural/cultural feature which is of outstanding or unique value because of its inherent rarity, representative or aesthetic qualities or cultural significance.	<ul style="list-style-type: none"> • Protect or preserve in perpetuity specific outstanding natural features because of their natural significance, and/or spiritual connotations. • An extent consistent with the forgoing objective, to provide opportunities for research, education, interpretation and public appreciation. • Eliminate and thereafter prevent exploitation or occupation inimical to the purpose of designation. 	<ul style="list-style-type: none"> • The area should contain one or more natural features of outstanding significance • The area should be large enough to protect the integrity of the feature and its immediately related surroundings.
Category IV: Habitat/Species Management Area	Area of land and/or sea subject to active intervention for management purposes so as to ensure the maintenance of habitats and/or to meet the requirements of specific species	<ul style="list-style-type: none"> • Secure and maintain habitat conditions necessary to protect significant or physical features of the environment where these require specific human manipulation. • Facilitate scientific research and environmental. • Develop limited areas for public education and appreciation of the characteristics of the habitats concerned. • Eliminate and thereafter prevent exploitation or occupation inimical to the purposes of designation. 	<ul style="list-style-type: none"> • The area should play an important role in the protection of nature and the survival of species. • The area should be one where the protection of habitat is essential to the well being of nationally or locally important flora, or to resident or migratory fauna. • The size of the area should depend upon the habitat requirements of the species to be protected and may range from relatively small to very extensive.
Category V: Protected Landscape/Seascape	Area of land, with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, ecological and/or cultural value, and often with high biological diversity.	<ul style="list-style-type: none"> • Maintain the harmonious interaction of nature and culture through the protection of landscape and the continuation of traditional land uses. • Support lifestyles and economic activities which are in harmony with nature and the preservation of the social and cultural fabric. • Maintain the diversity of landscape and habitat, and of associated species and ecosystems. 	<ul style="list-style-type: none"> • The area should possess a landscape of high scenic quality, with diverse associated habitats, flora and fauna along with manifestations of unique or traditional land-use patterns and social. • The area should provide opportunities for public enjoyment through recreation and tourism within its normal lifestyle and economic activities.
Category VI: Managed Resource Protected Area	Area containing predominantly unmodified natural systems, managed to ensure long term protection and maintenance of biological diversity, while providing at the same time a sustainable flow of natural products and services to meet community needs.	<ul style="list-style-type: none"> • To protect and maintain the biological diversity and other natural values of the area on the long term. • To promote sound management practices for sustainable production purposes. • To protect the natural resource base from being alienated for other land-use purposes that would be detrimental to the area's biological diversity. • To contribute to regional and national development. 	<ul style="list-style-type: none"> ○ The area should be at least in two-thirds natural condition, although it may also contain limited areas of modified ecosystems; large commercial plantations would not be appropriate for inclusion. ○ The area should be large enough to absorb sustainable resource uses without detriment to its overall long-term natural values.

Table (7): Comparison between Categories of Protected Areas. Source: Researcher

2-6-2 Biosphere Reserve

Definition: Area containing predominantly unmodified natural systems, managed to ensure long life protection to the preserved area's components.

2-6-2-1 Biosphere Reserve Zones

In dividing the biosphere reserve into three different zones the various protection and development objectives are to be harmonized within a spatially differentiated management plan on the basis of the natural site qualities.

The Core zone

The core area should develop without any human interference into primarily natural ecosystems. Primarily near-natural deciduous forests and bogs were selected which are distributed among the different site types of the reserve. Areas which are of high interest to science for comparative purposes are thus available in a landscape which is hardly influenced by man and is integrated into a world-wide network.

The small percentage of the core area demonstrates that this aspect



Figure (17): A Turkish biosphere reserve
<http://www.biosphaerenreservat-rhoen.de/englisch/nature/zon.html>

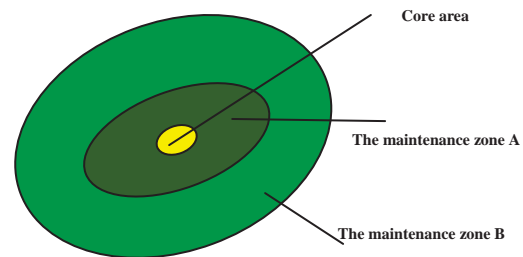


Figure (18): The zonation of biosphere reserve

Source: (Bovy & Lawson, 1998)

does not play a central role in the management plan defining the objectives.

The centre of the framework management plan is rather the issue of further conservation and maintenance of valuable open landscapes.

The maintenance zone A: comprises those areas which are of particular importance to the character and peculiarity of the reserve landscape.

These are large coherent near-natural areas with an agricultural landscape, rich in species and structures together with near-natural forests. The continuation of traditional land use is thus of highest importance in this area.

Maintenance zone B includes the remaining and specially characterizing cultivated areas typical for the natural and living area which supplements and connects the conservation area with maintenance Zone A. Larger landscape complexes were delimited as far as possible. Maintenance zone B should contribute to the alleviation of the burden for maintenance zone A and measures implemented there should focus on recreational use compatible with the landscape and the environment. No settlements or commercial activities should be developed in this area.

Source: <http://www.biosphaerenreservat-rhoen.de/englisch/nature/zon.html>

2-6-3 World Heritage Sites:

The World Heritage Convention (the convention concerning the protection of the World Cultural and Natural Heritage) became operational in 1978 and has over 110 countries which are States parties to it. It aims to identify, list and protect natural and cultural properties of outstanding universal value for the benefit of all people. (*Lucas, 1992*)

2-6-4 The Order of Categories does not constitute a Hierarchy

The order of categories does not constitute a hierarchy but reflects, in ascending order, the degree of human use acceptable in each case.

Consequently, Category I, the scientific or strict nature reserve, has the specific purpose of protecting nature and natural processes as undisturbed as possible. This contrasts with the protected area categories at the human use end of the spectrum.

Because the protected area is generally extensive in area it may incorporate, within its overall boundaries, other categories such as scientific or strict nature reserves (Category 1), natural monuments or landmarks (Category III) and managed nature reserves or wildlife sanctuaries (Category IV). It may even have a core national park (Category 11) or serve as a buffer to an adjoining national park, reflecting the balance of people and nature in the protected landscape and the dominance of nature in the adjoining national park.

The range of categories reflects too, the varied ways of maintaining the world's living resources for their intrinsic value, for their biological diversity, and as the basis for sustainable management to meet human needs (*IUCN, 2002*).

2-6-5 Size of Protected Areas:

The size of an area should reflect the extent of land or water needed to achieve the purposes of management. For example, for a Category I area, the size should be that needed to ensure the integrity of the area to achieve the management objective of strict protection, either as a baseline area or research site, or for wilderness protection. For a Category II area, the boundaries should be drawn sufficiently widely that they contain one,

or more, entire ecosystems which are not subject to material modification by human exploitation or occupation (www.unep-wcmc.org/protected_areas/pavl/define.htm).

2-7 Number and Extent of the World's Protected Areas

The 2003 UN List contains 102,102 protected areas covering more than 18.8 million km². This figure is equivalent to 12.65% of the Earth's land surface, or an area greater than the combined land area of China, South Asia and Southeast Asia. If marine protected areas are excluded from these calculations the terrestrial extent of protected areas is some 17.1 million km² (11.5% of the land surface). This is almost the same area as the entire continent of South America. The total number and extent of protected areas presents the current global overview of the status of protection. However, it is the classification of protected areas into IUCN Management Categories that enables a distinction to be made on the basis of management objectives that countries are applying to their conservation estate, ranging from sites that are strictly protected through to those under sustainable use. The overview of global statistics indicates that 67% of the world's protected areas have been assigned an IUCN management category, covering 81% of the total area protected. Among the categorized sites, the largest number lies within Category IV (Habitat/Species Management Area) and Category III (Natural Monument). Together they comprise almost 47% of all protected areas. This is not surprising, since protected areas assigned to these categories often cover small geographic areas; especially in the case of Category III.

Many of these small protected areas have been excluded in previous UN Lists because their areas are less than 10km². (Chape et al, 2003)

Figure 1. Global protected area number and extent 2003

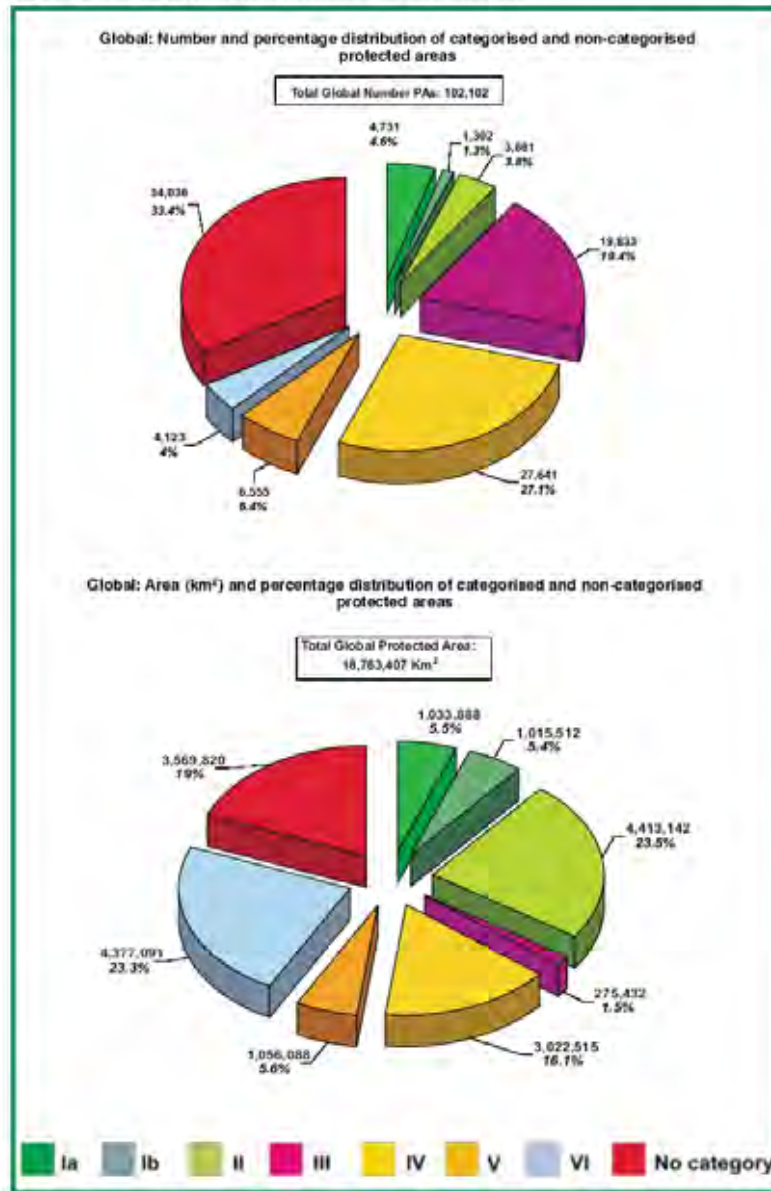


Chart (1): Number and extent of the world’s protected areas. Source: (Chape et al, 2003)

2-7-1 Growth of the World's Protected Areas:

Since the establishment of Yellowstone National Park; protected areas all over the world is growing rapidly to reach 102,102 protected areas. The next figure and table are showing the growth of the world's protected areas.

Table (8): Growth of the world's Protected Areas. *source: (Chape et al, 2003)*

Year	Number	Area
1962	9,214	2.4 million km ²
1972	16,394	4.1 million km ²
1982	27,794	8.8 million km ²
1992	48,388	12.3 million km ²
2003	102,102	18.8 million km ²

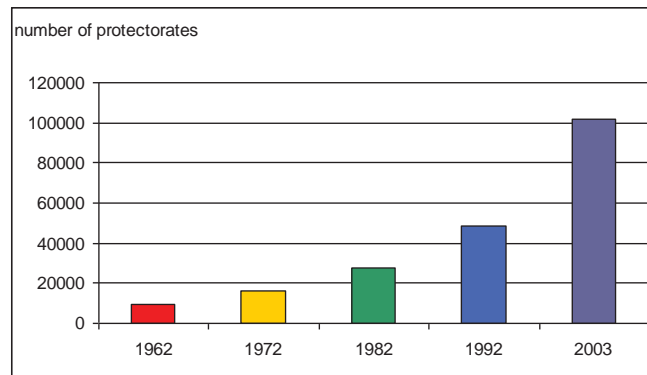


Chart (2): Growth of the world's Protected Areas, *source: (Researcher) adopted from (Chape et al., 2003)*

2-8 Protected Areas and Development:

Protected areas can be especially important for development when the

- Conserve soil and water in zones that are highly erodible if the original vegetation is removed, notably the steep slopes of upper catchments and river banks.

- Regulate and purify water flow, notably by protecting wetlands and forests.
- Shield people from natural disasters, such as floods and storm surges, notably by protecting watershed forests, riverine wetlands, coral reefs, and mangroves. Maintain important natural vegetation on soils of inherently low productivity that would, if transformed, yield little of value to human communities.
- Maintain wild genetic resources or species important in medicine.
- Protect species and populations that are highly sensitive to human disturbance.
- Provide habitat that is critical to harvested, migratory or threatened species for breeding, feeding, or resting.
- Provide income and employment, notably from tourism.

(IUCN et al, 1991)

2-9 Protected Areas & Sustainability:

The world conservation strategy, prepared in 1990 under this title jointly by IUCN, United Nations Environment Program (UNEP) and the world wide fund for nature (WWF) reinforces the role of protected areas in the context of sustainability.

One of its nine principles for sustainable living is to "conserve the Earth's vitality and diversity" which requires a commitment to:

- **Conserve life-support systems:** These are the ecological processes that keep the planet fit for life. They shape climate, cleanse air and water, regulate water flow, recycle essential elements, create and regenerate soil, and enable ecosystem to renew themselves.

- **Conserve biodiversity:** This includes not only all species of plants, animals and other organisms, but also the range of genetic stocks within each species and the variety of ecosystems.
- **Ensure that uses of renewable resources are sustainable:** Renewable resources include soil, wild and domesticated organisms, forests and the marine and freshwater ecosystems.

2-10 Areas around Protected Areas:

Protected areas are not isolated units. Ecologically, economically, politically and culturally, they are linked to the areas around them. For that reason, the planning and management of protected areas must be incorporated within regional planning, and supported by the policies adopted for wider areas. For the purposes of the application of the categories system, however, where one area is used to 'buffer' or surround another, both their categories should be separately identified and recorded.

2-10-1 Compatible and Incompatible Activities around Protected Area:

As PAs is a practical application of sustainability, any building around it must achieve the goals of sustainability. Generally it must respect the following factors:










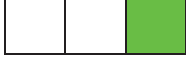
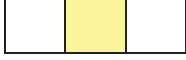
- Maximize use of renewable resources (in both of building and maintenance processes).
- Minimize waste (recycle is a basic demand her).
- Respect the environment (Natural or urban environment).

- Prevent any water, air or any other pollution.

It is too hard to measure wither the surrounding activities of the PA's land are compatible or not. As some activities are compatible to PA's type and can be incompatible to another PA's type. The research suppose that the most incompatible activity around PA's land is industrial activity (As it causes air and water pollution). According to that, we can measure all other urban activities.

But we must mention some important points:

- Residential areas are differ in densities, luxury residential areas are supposed to be compatible to PAs, and the low-income residential areas are supposed to be incompatible and the moderate – high residential areas are in between. (Sometimes the residential use doesn't affect the protectorate components, but it has a damage impacts in geological protectorates as sewage can affect the soil layers).
- Commercial, administrational, and recreational areas need big parking plots. Those areas may have some impacts on protected areas.
- Educational areas are suitable for the strict nature reserve, and protected area managed mainly for science and research. (geological protected areas)

Activities around the PAs system		
Activity	Impacts	Degree of compatibility
Industrial	Generally most of industrial buildings have impacts on environment. It can cause environment pollution especially on developing countries.	
Residential	Main impacts came from the resident's behavior, and sometimes human domestic sewages can affect the environment. (specially geographical PAs)	
	Luxury residential areas have small impacts on the PAs.	
Recreational	Generally it is the most compatible activity, especially for PAs which have a tourist value.	
Commercial	Its impacts depend on the human behavior.(need big parking plots)	
Educational	Most of it compatible when the PA is dedicated for science and research purpose.(strict reserve)	
Administration	Big parking plots may have some impacts on PAs.	
Other activities	Oil stations, oil-burning power stations, cement factories, waste recycling factories and etc.	
Activities inside the PAs system		
Tourism (Camping – picnicking ...)	Environmental damage, Pollution (such as noise, litter and exhaust fumes).	
	Ecotourism are a managed tourism inside the PAs.	
Recreational	Take up space and destroy the countryside by creating new infrastructures and buildings. (Acceptable in specific areas)	



 Incompatible Moderate compatible

Table (9): Compatible and incompatible activities in & out the PA boundaries.

Source: (Researcher)

2-11 Environmental impacts from tourism on PAs:

Unlike most other export-earning industries, tourism is invasive the consumers purchase opportunities to visit and experience attractions, amenities and other benefits offered by a destination. These grow some environmental tourism Impacts; vary in both scale and intensity from place to another.

Negative	Positive
Natural environment	
<ul style="list-style-type: none"> -Modification of ecosystem -Urbanization, degradation of countryside -Sea pollution -Coastal erosion -Deforestation -Air pollution, litter -Excessive water consumption -Pollution of groundwater 	<ul style="list-style-type: none"> -Actions for environmental conservation, such as creation of parks... -Initiatives to provide treatment and purification system for its impacts.
Socio – cultural environment	
<ul style="list-style-type: none"> -Loss of identity and traditional culture -Rapid – wealth creation -Immigration of marginal strata with illegal or semi – legal or criminal activities 	<ul style="list-style-type: none"> -Rise in available income -opportunities for work and business -contact with other cultures -improvement in cultural and educational standards
Urban environment	
<ul style="list-style-type: none"> -Over-intensive urbanization -Uniformity / anonymity of areas of mass tourism -Overburdening the resort's capacities -Illegal building -Degradation of urban environment -Noise and air pollution -Negative aesthetic changes 	<ul style="list-style-type: none"> -Provision of public and private services. -Improvement of communication and transport networks. -Concern for urban appearance. -Making the most of local architecture, features, and identities of decayed buildings.

Table (10): Environment impacts from tourism in PAs. *Source: (Bovey and Lawson, 1998)*

2-11-1 Alternative forms of tourism:

Definitions of sustainable tourism are many and varied; this overall definition is consisting of more specific definitions:

- **Green tourism:** is an attitude or philosophy of a kind of tourism which is sustainable and which has regard for and respects the landscape, the wildlife, the existing infrastructure and cultural heritage of tourism destinations.
- **Alternative tourism:** has been described as approaches which promote a just form of travel between members of different communities.
- **Ecotourism:** generally refers to travel to relatively undisturbed or uncontaminated natural areas with the specific objective of studying and enjoying the scenery. (*Bovey and Lawson, 1998*)

Table (10)

1-11-2 Principles of Sustainable Tourism Development

- Uphold reasonable ethical standards of operation and minimize adverse social impacts.
- Enhance social equity.
- Operate in an environmentally and culturally sensitive manner, aimed at promoting conservation of the site and area.
- Seek to minimize the use of non-renewable resources.
- Recognize the capacities of its environment, utilize that environment sensitively, and monitor it effectively 6. Directly and indirectly change the attitudes of individuals and other businesses toward planning and management of its environment. (*Eagles et al, 2001*)

2-11-3 Goals of tourism in protected areas:

Effective tourism management will enable protected areas and surrounding communities to attain positive impacts and reduce negative impacts of tourism.

The goals of sustainable tourism in protected areas are:

- To provide people with the ability to learn, experience and appreciate the natural and cultural heritage of the site.
- To ensure that the natural and cultural heritage of the site is managed appropriately and effectively over the long term.
- To manage tourism in parks for minimum negative social, cultural, economic and ecological impact (*Eagles et al, 2001*).

2-12 Environmental impacts from Human on PAs:

Through time humanity has used natural resource, both animate and inanimate, for its survival, consumption and enjoyment. Only recently has there been a reversal of traditional destructive consumption that natural resources are essential to the survival of humanity and that these should be cared for and protected in their own right.

The presence of humans in protected areas impacts on its compounds, tourism and other activities may in fact be the most damaging factors.

Damages to these natural treasures are due to actions that may appear to be perfectly normal, but in fact can have serious consequences.

(*EEAA, 2000*)

2-12-1 Examples for Environmental impacts from Human on PAs:

In wetlands protected areas, some impacts from human activities are expected; like:

- A swimmer, diver or snorkeller is resting, standing or walking on a coral surface of the coral animal. The coral is then open to bacteria attack and diseases, and will not recover from these impacts.
- Photographers often damage large reef areas in the pursuit of a single image. They have been seen break coral in some areas and rearrange it to improve the composition of the image.
- Boats anchoring on reef areas will destroy 4-6m² of reef surface each time they drop an anchor.



Photo (6): Activities that damage coral reef area can be avoided if park regulations are followed.

Source: (EEAA, 2000)

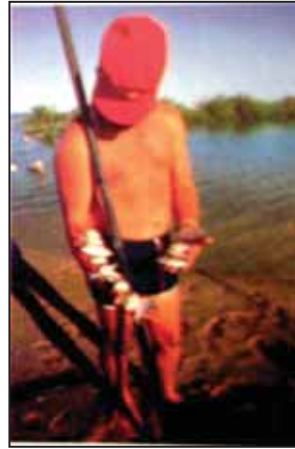


Photo (7): Fishing of juveniles reduces fish stocks, affecting both the reef and the livelihoods of fishermen

Source: (EEAA, 2000)

- Multiple diving vessels on a given mooring increase the density of divers at that particular dive site. Increased diver density reduces the attractiveness of the site and results in increased damage to reef surfaces.
- Vehicles driving on beaches will compact sand, destroying important burrowing invertebrate species. These animals are essential to normal beach processes in that they keep deeper sand layer oxygenated, as well as turning over and sifting sand. Compacted beaches have higher rates of erosion than non compacted beaches.
- Vehicles driving off tracks in the desert damage fragile plant life destroy seeds lying dormant in the sand pending sufficient moisture to trigger their eventual germination, displace rare wildlife.

- Off track driving also destroys sand dunes and increases wind and water erosion of desert surfaces.

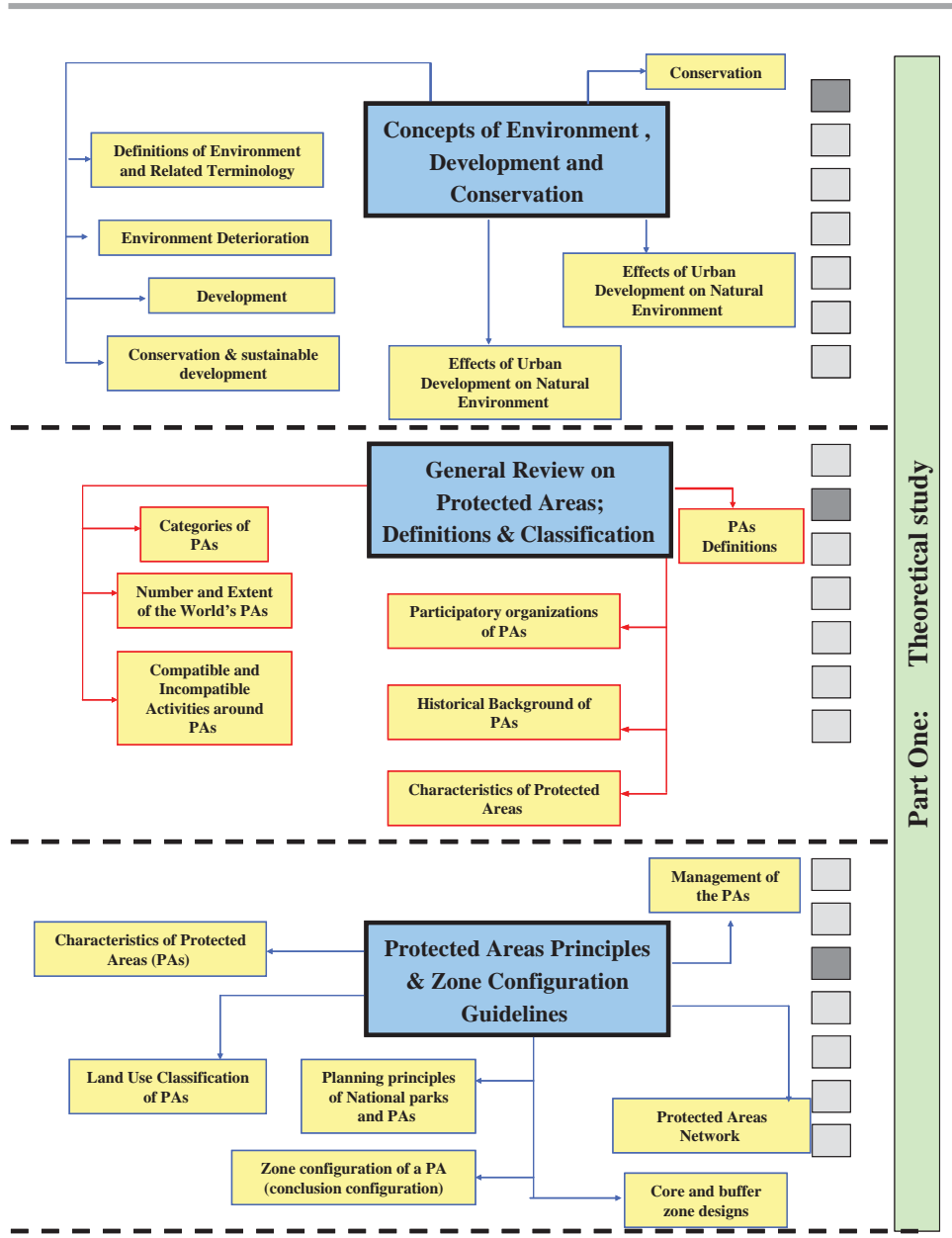
2-13 Summary of Chapter two (General Review on Protected Areas; Definitions & Classification):

- As a result of the rapid deterioration of the global environment, protected areas are becoming an important and rapidly expanding attitude.
- Protected Areas: **"An area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means."**
- The United States was the first country that announced a national park in 1872 (The Yellow Stone Park) as a preserved natural park.
- Any protected areas must have a classification according to IUCN categories system for protected areas.
- Now the world is growing rapidly to reach 102,102 protected areas.
- Protected areas are not isolated units. Ecologically, economically, politically and culturally, they are linked to the areas around them. For that reason, the surrounding areas must be compatible to the presence of protected area.
- Generally we can say that the surrounding urban uses must achieve the goals of sustainability. But actually there is no accurate major tool to judge this relationship, so we will take the industrial use as a guide for the urban use. The industrial use is the most pollutant urban use.

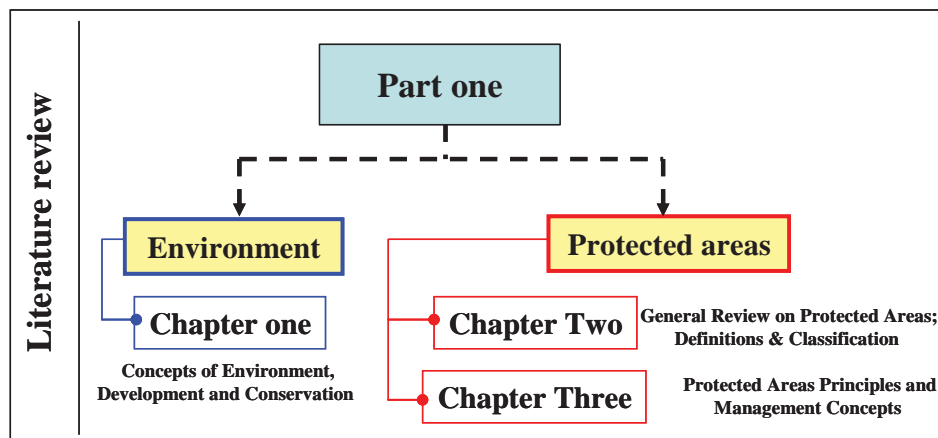
Chapter three
Protected Areas Principles & Management
Concepts

Part I

Literature Review (Theoretical Study)



Chapter three
**Protected Areas Principles & Management
Concepts**



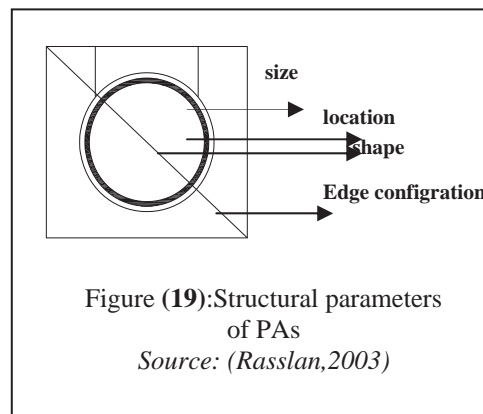
3-1 Introduction:

Good management of a protected area is an essential element in the success of the PA. In addition to, and partly consequence of, changing aims and definitions, there have been some major changes in their management. New approaches are being developed and some traditional designations are being reconsidered. In this chapter we will study some protected areas principles, to put some guideline on dealing with protected areas, and to apply these rules and principles in our protected areas, in order to formulate an analytical study tool to apply on the chosen case study

3-2 Characteristics of Environmentally Preserved or Protected Areas (PAs):

3-2-1 Structure of Protected Areas (PAs):

The analysis of the existing layout or proposed design of any area primarily allocated for ecological functions involve the physical aspects that characterize it. As in any urban planning application, the layout or design of an PA should ideally fulfill specific criteria that pertain to a particular utilization plan.



Structural parameters are the physical factors that describe protected areas as a physical entity. These parameters namely; size, location, shape

and edge configuration and their relationship to an area are displayed in the opposite figure.

3-2-1-1 Size

Size is a parameter that refer to physical extents and is one generally determined and affected by natural factors .When human intervention is sought in establishment, designation or even territorial determination, basic rules and criteria derived from experience and employed.

a-Nature of Surrounding Landscape

The size of the landscape, which contains PAs is a major factor in size determination. Apart from framing area and form, both should exhibit a symbiotic relationship, where the sustainability of each relies on the other. This ideally reflects as a proportionate ratio between the size of the PAs and that of the landscape that contains and supports its vital functions.

b-Volume of Protected Species

Sufficiency of spatial extent has been found to be essential in supporting viability of environmental processes and/or species, populations and communities of an area. Size should directly correlate to this major conservation objective.

c-Size/species indicators formulated to equate the previous relationship include:

- **Minimum reserve area (MRA):** this is the size of an area "above which species richness is not distinguishable from that in non-fragmented habitat of the same size". (less than 500 km²)

- **Focal Species, minimum Viable Population and Minimum Critical Area:** (more than 500 km²)
 - **Umbrella:** Species that cover large, diverse areas. Protection of their habitat maintains a viable population that provides resources to other species more restricted in range.
 - **Key stone:** Species that enrich ecosystem function through their activities.
 - **Habitat Quality Indicators:** Species that require habitats of high ecological integrity and provide an early warning system due to their sensitivity to changes.
 - **Wilderness quality indicators:** Species that are sensitive or vulnerable to human disturbance and the required remote, wilderness habitat. (*Raslan, 2003*)

3-2-1-2 Location

Location is largely determined by natural factors, however, when designating a new area or assessing the potentials of one that exists, location is vital in maintaining the viability of an PAs. Location extensively affects other parameters by the determination of the physical surroundings of an area. Occasionally, location is dictated by factors that have little to do with protection, hence a mismatch between allocation and utilization occurs.

The following factors are to be taken into account in assessment:

-The occurrence, extent of species concentration and extent of diversity of habitat types.

- The existence of rare habitat types or species within the proximity of a site.(location within natural areas)
- The proximity of human settlements, activity zones and environmentally hazardous activities. (location within urban context)
- The proximity of protected areas and network layout.

3-2-1-3 Edge Configuration

Edge is a concept that pertains to the outer boundary. It can define as either the conspicuous boundaries between the natural habitats (interior edges) or the defining boundary between the natural area and all that lays beyond (exterior edges).

Theoretically there are two types of edges:

- **Inherent /Natural:** the extent area determined by natural feature lends to be stable, relatively permanent, soft and inhabited by species.
- **Induced/ Generated:** the tangible boundary that reflects results from natural or human disturbances tend to be abrupt and "high contrast". If external forces (urban influences) acting on the area are greater than internal forces (conservation management), the generated edge may move into the area.

When either edge is exaggerated adverse effects, referred to as edge effects, may arise; interior habitat area is reduced by fragmentation, the process whereby large, continuous areas of habitat are both reduced in area and divided into fragments forming gaps. The less "thick" or more irregular a patch of conserved land is, the more "edge" habitat is created, and the less balanced an ecosystem becomes. Consequently, reduction of edge provides a more balanced unit by increasing the biodiversity of an

area, increasing the chances that the unit will persist. Additionally, the more regular and greater area of the "core" of undistributed land, the better it will function as a habitat to a wide diversity of species. (Raslan,2003)

3-2-1-4Shape Configuration

Shape is the physical parameter that defines the form an area adopts. Biogeographical considerations are only some of the factors needed to determine the appropriate shape of protected areas.

The following conclusions are derived from existing cases:

- The boundaries of areas are of higher efficiency when they follow natural divisions, such as watershed boundaries and integrate this feature within them.
- The boundaries follow urban divisions, Generally, rounded shapes minimize edge effects by allowing for the center to be located farther from the edge than other shapes, thus providing greater degree of protection. Long linear shaps have the most edge and straight lines generally do a poor job of capturing full ecosystem.

Structural Parameters	Description	Controlled Factors	Parameter's Classification
Size	Refer to physical extents and is one generally determined and affected by natural factors.	Nature of surrounding landscape	Minimum reserve area (MRA)
		Volume of protected species	Focal Species, & Minimum Critical Area
			Wilderness quality indicator
			Key stone
			Umbrella
Habitat Quality Indicator			
Location	largely determined by natural factors, it extensively affects other parameters	<ul style="list-style-type: none"> -The occurrence and extent of species. -The existence of rare habitat types or species. -The proximity of human settlements, activity zones and environmentally hazardous activities. -The proximity of protected areas and network layout. 	
Edge configuration	It is the outer boundary. Or the conspicuous boundaries between the natural habitats		Induced/Generated The tangible boundary that reflects results from natural or human disturbances tend to be abrupt and "high contrast".
			Inherent /Natural The extent area determined by natural feature lends to be stable, relatively permanents, and "soft" and inhabited by species
Shape configuration	It is the physical parameter that defines the form an area adopts. One of the needed factors is Biogeographically considerations		

Table (11): comparison of the structural parameters of protected area PA.

Source: (Researcher)

3-3 Planning Principles of Protected areas & National Parks

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 a 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. (Bovey and Lawson, 1998)

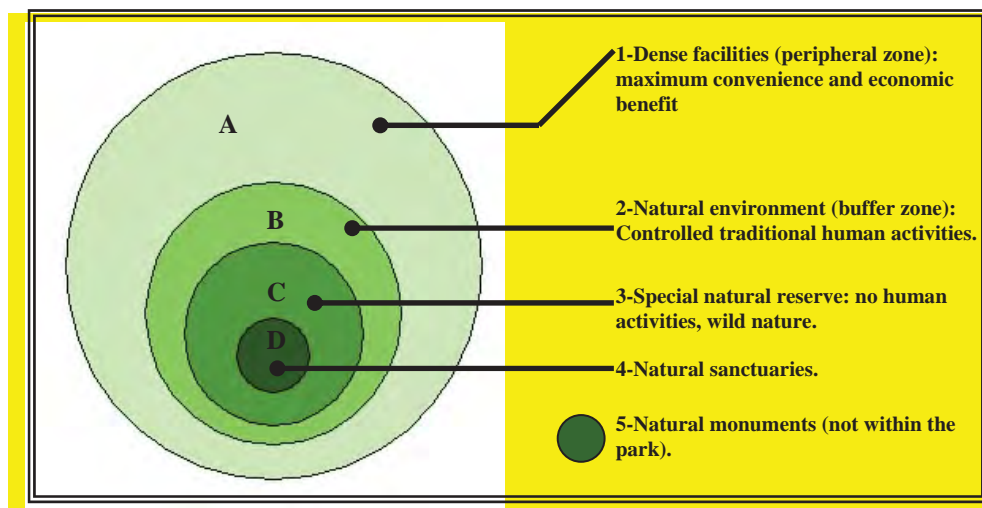


Figure (20): The principle of concentric zoning

(Bovey and Lawson, 1998) edited by the Researcher

According to the circumstances, one or more of these zones may or may not be represented and the peripheral zone need not extend all around the

park boundaries. A methodological approach for planning national and regional parks is provided.

The four zones of national park land use are:

3-3-1 Peripheral Zones (Dense Facilities):

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

3-3-2 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. Eco-lodges or natural based lodges are; (Tourist lodges that meet the philosophy and principles of ecotourism carefully integrated into their environment, offer an educational and participatory experience through nature interpretation, trail hiking, wild life tours, bird watching, and river trips. Of limited capacity, usually 25 to 80 beds with catering and bar, they are built with natural materials reflecting local traditions and building methods and operated in an environmentally sensitive manner).
(*Bovey and Lawson, 1998*)

Museums of natural history, park information centre 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).

3-3-3 Special Natural Reserve

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

3-3-4 Natural Sanctuaries (No access, no facilities)

National parks necessitate public ownership (or at least public control through lease, purchase or other form of acquisition). They may represent appreciable of foreign exchange and important assets in tourism promotion and attraction.

Zone	location		Description	Nature Resources				Allowed Activities						Erection of buildings			Level of Protection				Accessibility				Management plan			
	Area			Limited	Buffer	Special	Natural Heritage	Camping	Visitor's facilities	Eco-lodges	picnicking	Watching	Research	Acceptable	Limited	Forbidden	Strict	maximum	moderate	Less	Cars	on feet	Roads	Trails	Economic benefits	Tourism	Research	Control activities
Zone A	Around zone	B	Dense facilities zone, including: accommodating- catering- sport	*				*	*	*			*						*	*	*	*	*	*	*			
Zone B	Around zone	C	Buffer zones – camping or eco-lodges		*			*	*	*			*					*			*	*	*	*	*			
Zone C	Around zone	D	No roads, organised circuits for nature interpretation, no facilities.			*																*				*		
Zone D	Core zone		No access, no facilities. Public control through lease.				*																			*		
	Depends on the protected zone																									*		

Table (12): Planning Principles of National Park (Source: Researcher) based on (Bovey and Lawson, 1998)

3-4 Land Use Classification of PAs:

3-4-1 Canadian System of PA's Land Use Classification:

3-4-1-1 Special Area

Those areas are full of unique nature; there are two types of it:

- **Natural Area:** those areas contain different kinds of flora and fauna, which deserve special conservation.

Car accesses are forbidden there, no facilities other than rudimentary camping sites and shelters for mountaineering.

- **Cultural Area :** Areas contain cultural and historic sites which have Unique historic heritage. (*Abd El Hamid, 1996*)

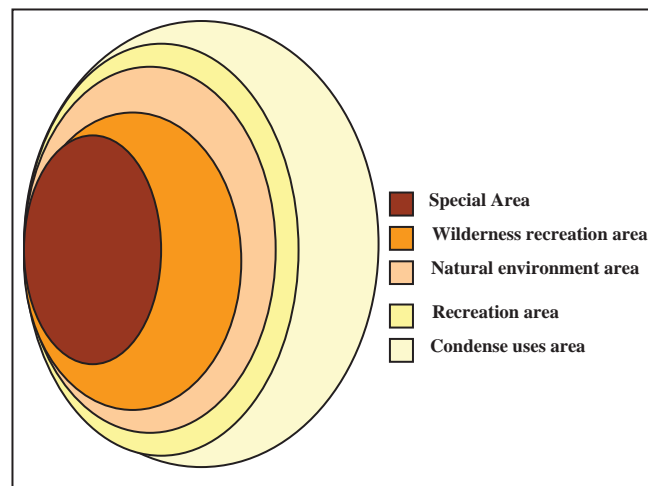


Figure (21): Zoning of the Canadian system land use classification.

Source: Researcher adopted from (*Abd El Hamid, 1996*)

3-4-1-2 Wilderness Recreation Areas

Wilderness is land that has not been significantly modified by direct or indirect human activity. Biosphere scientists and landscape ecologists

consider wilderness areas to be an integral part of the self-sustaining natural system of the Earth.

3-4-1-3 Natural Environment

It is act as an edge between natural area and areas support recreational facilities. It is too hard to define this areas; as some consider it as a strict protected area because it located close to the special protected zone, other add it to the first and second area.

3-4-1-4 Recreation Area

It includes visitors facilities; catering, light sport facilities, camping, eco-lodges, trail hiking, park information center and parking zones.

3-4-1-5 Condense Uses Area

This area located in large protected areas, it contains some visitor facilities (information center – museum of natural history). (Tolba, 2003)

3-4-2 American System of PA's Land Use Classification:

3-4-2-1 Condense Multiple Use Zone:

Area contains visitors facilities and services, it has a direct access to all part of the protected area. Erection of buildigs are accepted in this zone.

3-4-2-2 Recreational Area

It is located around the main paths of the protected area, part of it inside the protected area and the rest part may be in or out the protected area. It contains some visitors facilities; like camping, visitors center.

3-4-2-3 Natural Area

It is a big zone act as buffer zone to the protected area's natural compounds. It contains some protected area's facilities and research services.

3-4-2-4 Special Natural Area

Area contains unique natural features and resources, it needs a high level of protection. Errection of structures is limited in this area (trails – watching areas- picknig and camping area). (Tolba, 2003)



Figure (22): Zoning of the American system land use classification

Source: (Abd El Hamid, 1998) edited by the Reseacher

3-4-2-5 No Access Natural Area

It is natural area with the first level of protection. Errection of structure and buildings are forbbiden in it. Access on this area only on foot.

3-4-3 IUCN System of PA's Land Use Classification:

3-4-3-1 Natural Area:

Established and managed principally to sustain the protected area's natural biological communities, habitats, ecosystems and processes, and the

ecological services, uses and values they provide to this and future generations.

- Strict natural area
- Managed natural areas
- Wilderness areas
- Natural environment recreation areas.

a- Strict Natural Area:

Protected area managed mainly for science. This area represents ecosystems, geological or physiological features and/or species, available primarily for scientific research and/or environmental monitoring.

b-Managed Natural Areas

This area is necessary to protect nationally significant species, group of species, biotic communities, or physical features of the environment, where these require specific human manipulation for their perpetuation.

c-Wilderness Areas

protected area managed mainly for wilderness protection. It is a Large area of unmodified or slightly modified land, and/or sea, retaining its natural character and influence, without permanent or significant habitation, which is protected and managed so as to preserve its natural condition.

d-Natural Environment Recreation Areas.

A large area inside the protected area contains the recreational facilities, visitors activities, road network, parking zone and any other visitor's facilities. It also contains places for camping, sport, and Picnicing.

3-4-3-2 Cultural Area:

Established and managed principally to protect, understand and interpret submerged cultural resources that reflect the nation's history. (Tolba, 2003)

3-4-4 The Concentric Zone Concept:

It divides protected area into two zones:

3-4-4-1 Natural Area:

Area should develop without any human interference into primarily natural ecosystems. Areas which are of high interest to science for comparative purposes are thus available in a land-scape which is hardly influenced by man and is

integrated into a world-wide network. Erection of buildings is forbidden in this zone. Access only on feet, cars and roads not allowed there. Usually it is located in the core of the protected area.



Figure (23): The concentric zone concept.

Source: Researcher based on (Abd El Hamid, 1998)

3-4-4-2 Recreational Area

Area is dedicated to serve visitors needs, it contains all visitors facilities and services. A research centre or scientific museum can be built in this area. It contains car roads and trails. Usually it is located around the natural area. (Tolba, 2003)

3-4-5 The Classic Three Zones Configuration:

It divides protected area to three zones:

3-4-5-1 Core Zone:

The core area, the backbone of the zoned system, can be defined as a legally constituted nucleus that represents a strictly protected area, of the highest protective priority, devoted to long term protection. According to the conservation objectives of core areas, they should be of sufficient size and should be under strict legal protection allowing them to meet these objectives.

3-4-5-2 Protected Area Zone

This area locates between buffer zone area and core zone area. There are no facilities other than rudimentary camping sites and shelters for mountaineering.

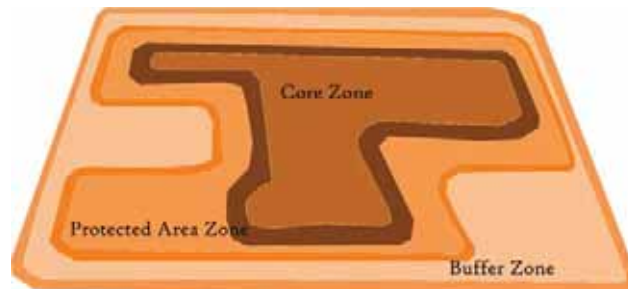


Figure (24): The classic three zones configuration. *Source: Researcher based on (Tolba, 2003)*

3-4-5-3 Buffer Zone

A buffer zone is a clearly identified area, surrounding or contiguous to the core area or areas, and is considered the interface between a core protected area and alternative land use activities and associated settlement surrounding it. Buffer zones, like core areas, are established by law, but are only usually

under partial protection that is mainly aimed to serve as protection for areas covered by the core zone, limiting threats caused by human activities.

(Tolba, 2003)

3-4-6 Nodes and Linkages:

This system applied in protected areas with area more than 100 km², in it all visitors facilities is located inside the protected area. All services and facilities are collected in nodes, this nodes are connected by paths (linkages), these linkages is located out side the special natural area zone (most protective zone). This system divide the protected area into:



Figure (25): Nodes and Linkages.

Source: Researcher adopted from (Abd El Hamid, 1998)

3-4-6-1 External Zone : (Special Natural Area)

Any type of development are not accepted in this zone. It contains all natural features and beauty.

3-4-6-2 Internal Zone : (Nodes and linkages)

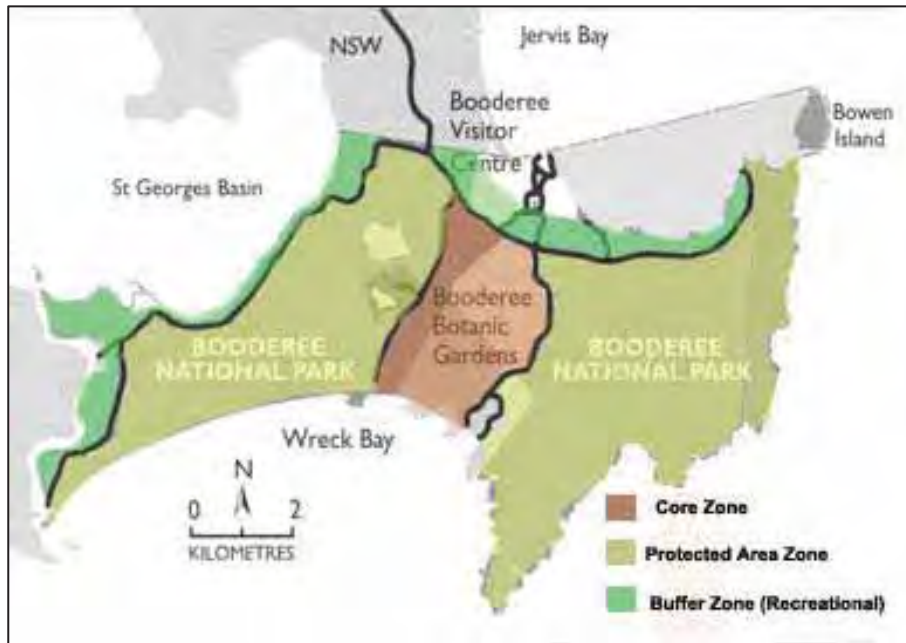
This area contain nodes (visitor's facilities & services), and linkages (paths that connect this nodes to each other).

3-4-6-3 Transition Zone:

This area act as a buffer zone between internal and external zone. It contains some visitor's services (camping zone).

3-4-7 Example of Protected Area, its area less than 100km²:

Figure (26): Booderee national park. Source: (www.booderee.com)



3-4-8 Example of Protected Area, its area more than 100km² (Nodes and linkages) :

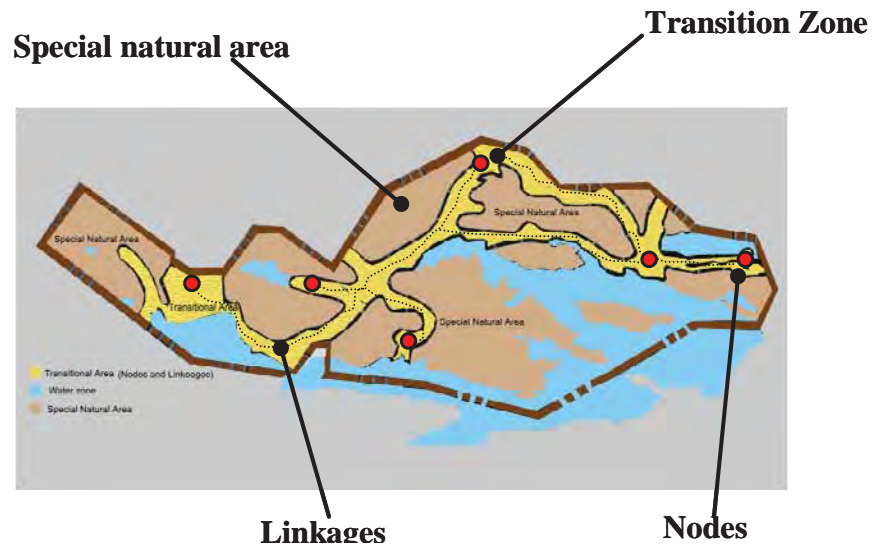
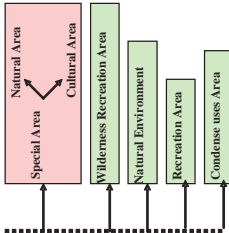
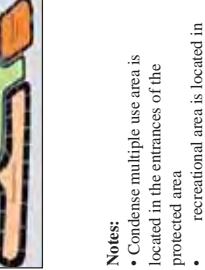
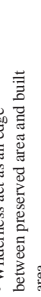

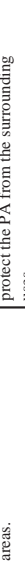


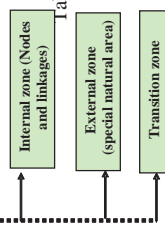

Figure (27): Teranova national park in Kanda. Source: (Abd El Hamid, 1998), Edit by the Researcher

Land Use Classification of PAs

Protected areas with areas less than 100 km²

<p>Canadian system of PA's land use classification</p> 	<p>American system of PA's Land Use Classification</p> 	<p>IUCN system of PA's land use Classification</p> 	<p>The Concentric zone concept</p> 	<p>The Classic Three Zones Configuration</p> 
<p>Notes:</p> <ul style="list-style-type: none"> • Visitors facilities and services are located outside the protected area (condense multiple use area) • Most sensitive area is a special area. • Natural environment is a buffer zone between protected areas and services). 	<p>Notes:</p> <ul style="list-style-type: none"> • visitors facilities and services is located outside the protected area (Natural environment recreation area) • Most sensitive area is Strict natural area (no access – no road). • Wilderness act as an edge between preserved area and built area. 	<p>Notes:</p> <ul style="list-style-type: none"> • Erection of buildings is forbidden in the natural area zone. • All buildings and facilities locate outside the PA in the recreation zone. • there is no buffer zone between this two areas. 	<p>Notes:</p> <ul style="list-style-type: none"> • The core area, the backbone of the zoned system, it represents a strictly protected area • Camping and picnicking is located in the protected area zone. • buffer zone locates outside PA to contain services & facilities and to protect the PA from the surrounding uses. 	<p>Notes:</p> <ul style="list-style-type: none"> • The core area, the backbone of the zoned system, it represents a strictly protected area • Camping and picnicking is located in the protected area zone. • buffer zone locates outside PA to contain services & facilities and to protect the PA from the surrounding uses.

Protected Areas with areas more than 100 km²

<p>Nodes and linkages concept</p> 	<p>Table (13): The diagram</p> 	<p>Notes:</p> <ul style="list-style-type: none"> • All services and facilities locate inside the PA. • Nodes are the areas that contain this facilities. • nodes and linkages are located in a bigger area called transition area, it transit the internal zone (nodes and linkages) to the external zone (special natural-area)
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3-5 Zone Configuration of a Protected Area PA (Conclusion Configuration):

3-5-1 Importance of the Zone Configuration:

The physical configuration of a PAs dose not consist of a single undefined expanse, rather a group of associated areas which perform specific functions within the entire system, existing as physical layers, adjacent to or within each other. UNESCO international practice standards specify that defining a configuration or zoning plan is an essential part of all natural area management plans, the main function of which is to define, justify and map different levels and different forms of protection, management and utilization and to separate potentially conflicting human activities. By distinguishing physical layers, a zoned management scheme provides for a gradation of restriction and is therefore easier to establish and police.

For areas generally specified as protected areas, any or all of the following zones can be typically found. No definitive list of zones and what they may or may not achieve exists; rather the particular mix of zones appropriate for a given reserve varies. However, the area as a whole segment forming the different management zones should have compatible legal status.

3-5-1-1 Core Area:

The core area, the backbone of the zoned system, can be defined as a legally constituted nucleus that represents a strictly protected area, of the highest protective priority, devoted to long term protection. According to the conservation objectives of core areas, they should be of sufficient size and should be under strict legal protection allowing them to meet these objectives. In the hierarchy of the zoned system, core areas lie within less restrictive buffer

zones in which they may exist alone or may be linked with corridors to other core areas. These perform such functions as:

- Sanctuary / preservation: protecting ecosystems, species, and genetic diversity.
- Research / Education: permitting ecologically sound research and education activities.
- Cultural: where cultural activities or monuments are preserved.

3-5-1-2 Buffer Zones:

A buffer zone is a clearly identified area, surrounding or contiguous to the core area or areas, and is considered the interface between a core protected area and alternative land use activities and associated settlement surrounding it. Buffer zones, like core areas, are established by law, but are only usually under partial protection that is mainly aimed to serve as protection for areas covered by the core zone, limiting threats caused by human activities. Temporary restriction can be applied within buffer zones with the intent to provide protection beyond general laws of application and as a complement to full restrictions found in core areas.

Buffer zones achieve conservation objectives by providing complementary but less restrictive land management measures to areas surrounding core representative areas and should be treated as integral part of management planning by acting effectively as multiple-use zones, providing a social fence to prevent encroachment into the core area by outsiders. Management measures should focus on activities associated with a reduction in pressure in core area. The identification of buffer zones is not only critical to the survival of those areas but also serves to define rights of access for people who live in the area

immediately adjacent to the protected area and who have till recently enjoyed access to their resources.

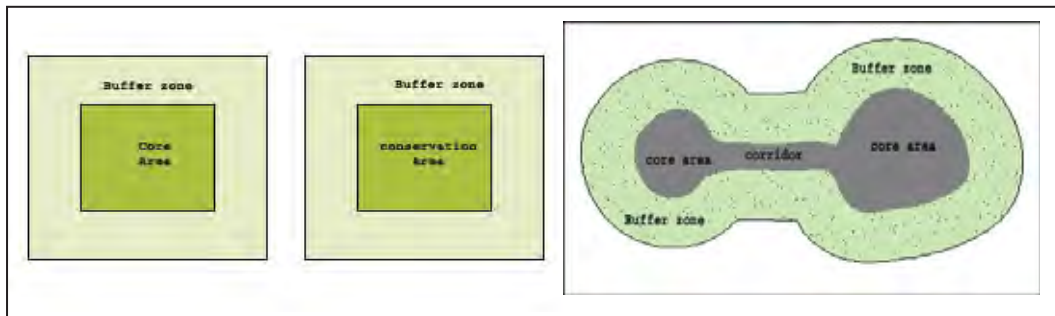


Figure (28): Buffer Zone Situations

Figure(39): Core Areas connected by corridors

Source: Recherche adopted from (Raslan,2003)

3-5-1-3 Corridors:

Corridors are linear buffer zones that link two or more core representative areas. Effective natural corridors are intended to provide relatively undisturbed movement for wildlife species that have large home ranges, or that move between areas at different periods in their life cycle. Corridors provide protection without the restrictive level of core representative areas figure (28) .

3-5-1-4 Transition Area:

A transition area is located beyond buffer zones, representing the territory where conservation blends into the general socio-economic development of the region. The only criterion of which is that sustainable resource management practices should be promoted and developed. This objective reduces negative human impact, allowing for sustainable development and matching economic and environment aims figure (29).

3-5-1-5 Areas Beyond Reserve Boundaries:

Areas outside protected areas are sometimes referred to as "matrix". These areas are critical if genetic exchange between protected areas is expected.

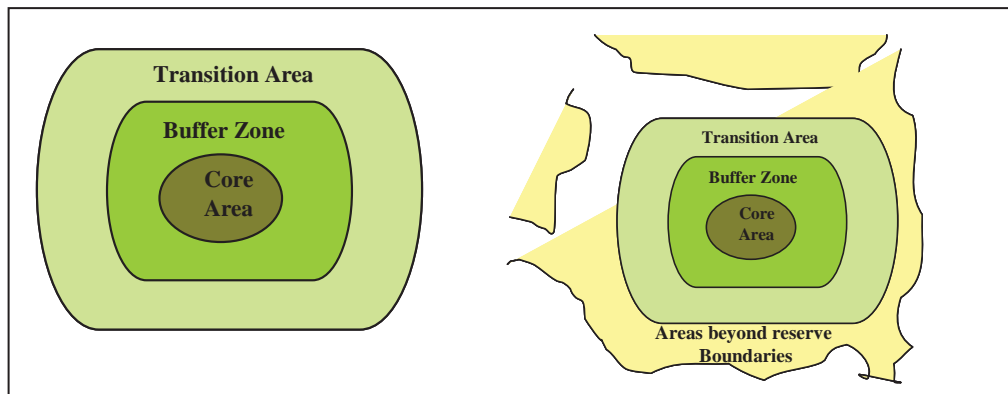


Figure (29): Buffer Zone Situations

Figure(41): Core Areas connected by corridors

Source: Researcher adopted from (Raslan, 2003)

3-5-1-6 Other Zones Types:

- **Special Use Zones:** Areas containing existing installations of national significance such as telecommunication facilities. These may be retained subject to mutual agreements among concerned parties, provided they not violate zoning prohibitions.
- **Restoration Zone:** Areas of degraded habitat where the long-term goal is to restore natural habitat with its associated biodiversity and to rezone the area to a more strict protection level. Initially, natural regeneration is assisted through human intervention and existing construction and agricultural developments are allowed to remain initially but are phased out eventually.
- **Multiple-Use Zones:** Areas where settlement, traditional and/or sustainable land use, including agriculture, extraction activities and other income generating or livelihood activities, may be granted to tenured residents, whether indigenous cultural community members or migrants.

It is viable to envisage a relationship between the previous zones where the gradient represents one of increasing management intensity away from the core. The extent of represents one of increasing management intensity away from the core. The extent of the gradient is ultimately determined by the ensuing degree of protection.

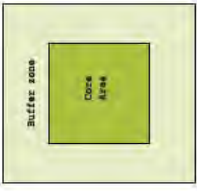
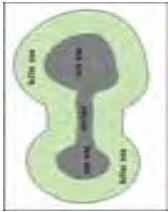
Zone	location	Description		Allowed Activities	Erection of buildings	Level of Protection	Accessibility	Management plan
		Types						
Core area	 <p>The centre of the PA</p>	<p>The backbone of the zoned system.</p>	Cultural	<p>Research</p> <p>Watching</p> <p>picnicking</p> <p>Eco-lodges</p> <p>Visitor's facilities</p> <p>Camping</p>	<p>Forbidden</p> <p>Limited</p> <p>Acceptable</p>	<p>Less</p> <p>Partial</p> <p>Maximum</p> <p>Strict</p>	<p>Trails</p> <p>Roads on feet</p> <p>Cars</p>	<p>Control activities</p> <p>Research</p> <p>Tourism</p> <p>Economic benefits</p>
			Research					
			Sanctuary					
Buffer zone	<p>Surrounding or contiguous with the Core area.</p>							
Corridors	<p>Connection between core areas</p> 							

Table (14): Comparison of the Zone configurations of PAs (Source: Researcher). Gathered from different sources

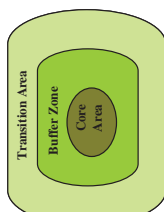
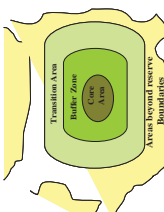
Zone	location	Description	Allowed Activities	Erection of buildings	Level of Protection	Accessibility	Management plan
Transition zone	beyond zone 	Socio-economic development of the region. Sustainability is an essential demand.	Research Watching picnicking Eco-lodges Visitor's facilities Camping	Forbidden Limited Acceptable	Less Partial Maximum Strict	Trails Roads on feet Cars	Control activities Research Tourism Economic benefits
	Areas outside Protected Area. 	These Areas are sometimes referred to as Matrix. These areas are critical if genetic exchange between PA is expected.	Research Watching picnicking Eco-lodges Visitor's facilities Camping	Forbidden Limited Acceptable	Less Partial Maximum Strict	Trails Roads on feet Cars	Control activities Research Tourism Economic benefits



Table (14): Comparison of the Zone configurations of PAs (Source: Researcher)

3-6 Protected Areas Network:

PAs are considered a key part of conservation under the convention on Biological Diversity. Under a bioregional approach to conservation, PAs are planned and managed as part of a mosaic of land uses that together seeks to satisfy environmental and social needs. The design of an area system therefore has to take account of a range of interrelated social and biophysical factors, both inside and outside the areas themselves.

3-6-1 Need of Network:

Protected areas should be designated within the framework of a larger protected areas system or network. Networks provide the possibility of a more dynamic management, including the potential for evolution and the movement of ecosystems and their components. Networks have particular importance during periods of climate change.

Possible component factors in the design of a reserves network include, for example:

- Corridors connecting protected areas, allowing migration of wild plant and animal species.
- Protection of transit sites for migratory birds.
- Establishment of a network of old-growth forest in fire refuge (stream sides, ridges and marshy areas) in commercially managed boreal forests; etc.

3-6-2 Network Shapes::

3-6-2-1 Networks:

Networks are groups of areas that are linked together on a physical and management level. The network should incorporate physical inter-linking, as far as possible, of proximal areas through "gene corridors" as ordained by the conservation goals. A terrestrial network should be biogeographically

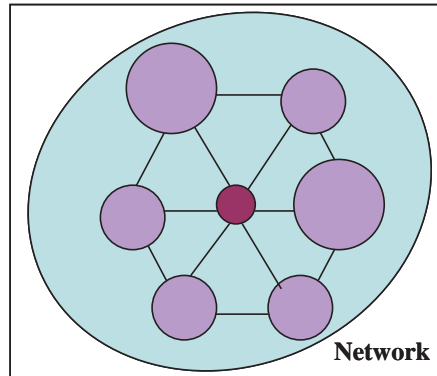


Figure (30): The network Shape.
Source: Researcher based on
(Tolba, 2003)

representative of a nation's state diversity and similarly, a marine protected areas network should be bio-geographically representative for each ocean in association with the coastal and territorial waters of the rime states with conservation mechanisms for inter-territorial oceanic spaces. The main considerations for the selection of sites should be the conservation of overall biodiversity, the security of the biodiversity hot spots and the critical habitats for the endangered species / communities. (Tolba, 2003)

3-6-2-2 Corridors:

Corridors are generally linear areas of land, originally corridors were designed to provide connectivity among habitat patches, but occasionally, when certain constraints are present, habitats take on a linear form. Within Europe, as part of the Pan-European Biological Diversity and

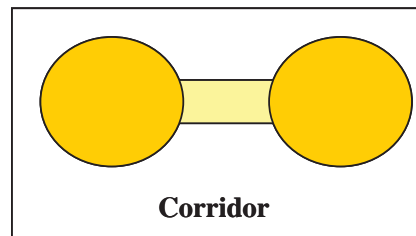


Figure (31): Corridor Shape
Source: Researcher based on
(Tolba, 2003)

Landscape Strategy, it is planned to establish a network (ECONET) of core areas, corridors or stepping stones, buffer zones and restoration areas.

3-6-2-3 Clusters:

Clusters are areas that lie in close proximity to one another and can therefore be considered a naturally occurring network. Clusters must have a systematic scientific management plan encompassing protection, management and local people related eco-development provisions. The plan should be prepared based on reliable scientific and socio-economic information and other resource information gathered in participation with the local people and the various other stakeholders.

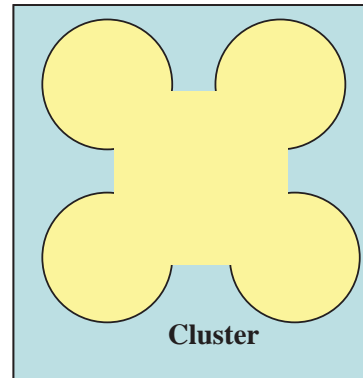


Figure (32): Cluster Shape
Source: Researcher based on (Tolba, 2003)

3-6-2-4 Transfrontier areas:

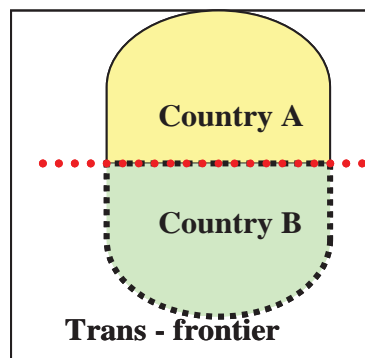


Figure (33): Trans frontier Shape
Source: Researcher Based on (Tolba, 2003)

Transfrontier areas are known to contribute significantly to linking areas across international borders. A recent global study shows that there are 136 known transfrontier area complexes,

PA 's Network Shapes	Description	Figure
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comprising a total of 406 adjacent PAs. While collaborative management has yet to be established in most of these complexes, the physical link between areas either side of borders represents a vitally important contribution to global networking.

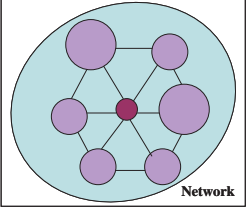
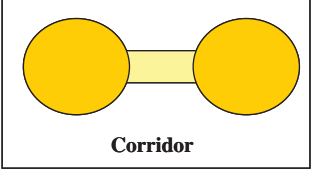
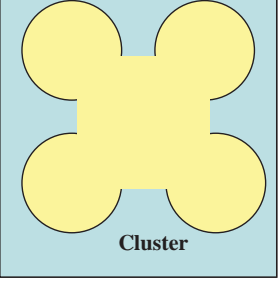
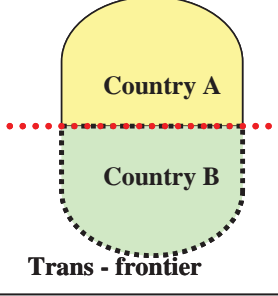
<p>Network</p>	<ul style="list-style-type: none"> • Networks are groups of areas that are linked together on a physical and management level. • The network should incorporate physical inter-linking, as far as possible. • A terrestrial network should be biogeographically representative of a nation's state 	
<p>Corridors</p>	<ul style="list-style-type: none"> • Corridors are generally linear areas of land. • Corridors were designed to provide connectivity among habitat patches. 	
<p>Clusters</p>	<ul style="list-style-type: none"> • Clusters are areas that lie in close proximity to one another and can therefore be considered a naturally occurring network. • Clusters must have a systematic scientific management plan encompassing protection, management and local people related eco-development provisions 	
<p>Transfrontier Area</p>	<ul style="list-style-type: none"> • Transfrontier areas are known to contribute significantly to linking areas across international borders. • A recent global study shows that there are 136 known transfrontier area complexes, comprising a total of 406 adjacent PAs 	

Table (15): Comparison between the different shapes of network

(Source: Researcher) Gathered from different sources.

3-7 Core and Buffer Zone Designs:

Classifying protected areas into zones helps in control its activities and its uses. There are different types of core and buffer zone design like:

3-7-1 Homogenous Protected Area:

This area dose not have a core area. (like coral reefs zones) and it dose not have a specific areas for researches, education and recreation. It is managed as an isolated unit dedicate to protection or public facilities services. (*Abd El Hamid, 1995*)

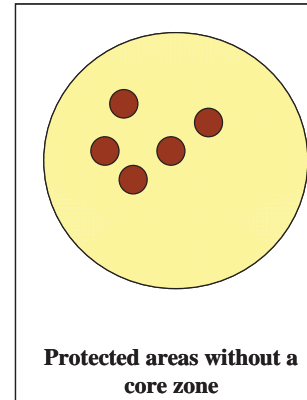


Figure (34): Homogenous protected area
Source: Researcher
Adopted from (*Abd El Hamid, 1995*)

3-7-2 Protected Area with a Central Core Zone:

This area has a central core area, it contains unique natural features and heritage. Access and erection of structures are forbidden in the core area, in order to preserve the natural beauty.

In the buffer zone it is allowed to erection structures to supply visitors facilities. This protected area is classified into three zones:

- **Central Core Area:** (areas required to maintain scenic beauty unspoilt).
- **Natural Sanctuaries Zone:** areas surrounding core zone and required to conserve scenery as buffer zones in a sense.
- **Buffer Zone:** area surrounding ordinary

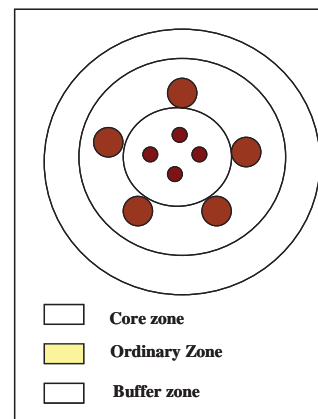


Figure (35): Protected Area with a central core zone
(Source: Researcher)
Adopted from (*Abd El Hamid, 1995*)

zone, facilities and services are accepted in this area.

3-7-3 Protected Area with a Different Special Zones:

This area has a different special zones, this zones are important to conserve the present scenic beauty as far as possible. Those zones are separated but close to each other as far as possible. There is an ordinary zone (buffer zone) connect them. A big buffer zone is surrounding the ordinary zone. This protected area is classified into two zones:

- **Natural Sanctuaries Zone:** area dedicates to research and science activities.
- **Buffer Zone:** area surrounding natural sanctuaries zone. Visitor's facilities and services are accepted in this area.

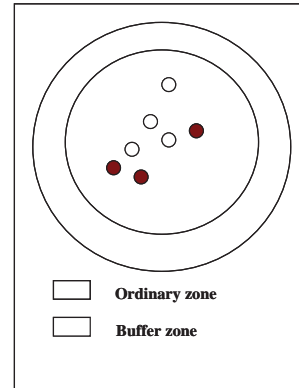


Figure (36): Protected area with a different special zones
Source: Researcher adopted from (Abd El Hamid, 1995)

3-7-4 Protected Area with a Central and Secondary Core Zones.:

This area consist of the following zones:

- **Central Core Area:** area required to conserve natural beauty.
- **Primary Buffer Zone:** area dedicates to research and science activities.
- **Secondary Core Areas:** those areas supply recreational – educational – research activities.

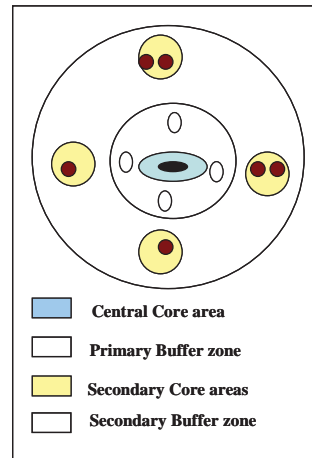


Figure (37): Protected area with a different special zones
Source: Researcher adopted from (Abd El Hamid, 1995)

- **Secondary Buffer Zone:** establishment of facilities are acceptable in this areas.

3-7-5 Protected Area with a Seasonal Core Zones.:

This protected area have a core area seasonally, depends on the season of the year, as some plants appear in spring and winter to form a core area of the PA. This core area become a habitat for birds and some wild life part of the year.

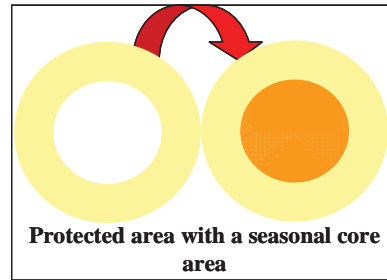


Figure (38): Protected area with a seasonal core zones

Source: Researcher adopted from (Abd El Hamid, 1995)

3-7-6 Protected Area with a Changeable Core Zones.:

This protected area has a core areas change from time to another, it depends on the climate change, resources change, or bird immigration from place to another.

(Tolba, 2003)

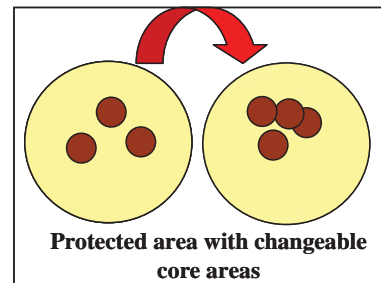


Figure (39): Protected area with a changeable core zones

Source: Researcher adopted on (Abd El Hamid, 1995)

Table (16): Comparison between the different types of Core and buffer zone designs
 (Source: (Researcher) based on (Tolba, 2003) & (Abd El Hamid, 1995).

Design type	Description	Classification zones					Comments
		central Core zone	central Buffer zone	secondary Core zone	Secondary Buffer zone	Natural Sanctuaries zone	
Homogenous protected area	 Protected areas without a core zone						This area does not have a core area. All the area of the PA suppose to be a protected zone.
Protected area with a central core area	 Legend: Core zone (yellow), Ordinary Zone (white), Buffer zone (white)	✘	✘			✘	This area has a central core area, consist of unique natural features and heritage.
Protected area with a different special zones	 Legend: Ordinary zone (white), Buffer zone (white)	✘				✘	Consist of special natural zones connected to each other by a buffer zone.
Protected area with a central and secondary core zones	 Legend: Central Core area (yellow), Primary Buffer zone (white), Secondary Core areas (yellow), Secondary Buffer zone (white)	✘	✘	✘	✘		Because of the riches in natural sources, there are central and secondary buffer zones.
Protected area with a seasonal core zones	 Protected area with a seasonal core area	✘	✘				This protected area have a core area seasonally, depends on the season of the year
Protected area with a changeable core zones	 Protected area with changeable core areas	✘	✘				The core areas are changeable according to the time and natural life.

3-8 Management of the PAs:

Since PAs were recognized as areas of both environmental and economic value, several management plans that aim to explore their development potentials while conserving their ecological integrity have been formulated. Most plans are developed and endorsed by international organizations involved in conservation and development activities as well as local NGOs operating in similar fields. The IUCN management classification system, is the most comprehensive system, as it is applicable to any habitat type and is the most widely ratified.

Protected areas should not be island in a sea of development, but must be part of every country's strategy for sustainable management and the wise use of its natural resources, set in a regional planning context.

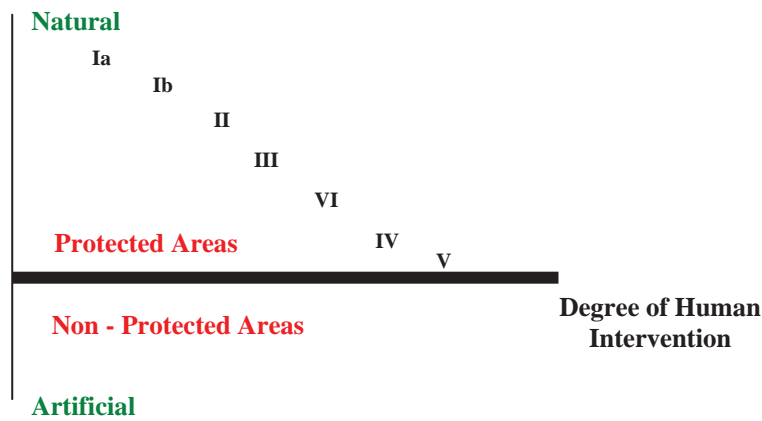
According to IUCN categorization, protection has become as much about the protection of processes, as about the conservation of species. Areas can in theory cover land used for almost everything except industrial-scale activity such as intensive farming, mining or large settlements. A wider definition may be seen as less treating because it does not necessarily mean a complete block on human activity. Some activities are allowed and other not. Generally level of human intervention depends on the category of the PAs. (IUCN, 1994)

Management Objective	Ia	Ib	II	III	IV	V	VI
Scientific research	1	3	2	2	2	2	2
Wilderness protection	2	1	2	3	3	-	2
Species / genetic diversity	1	2	1	1	1	2	1
Environment services	2	1	1	-	1	2	1
Natural / cultural features	-	-	2	1	3	1	3
Tourism / recreation	-	2	1	1	3	1	3
Education	-	-	2	2	2	2	3
Sustainable use	-	3	3	-	2	2	1
Cultural attributes	-	-	-	-	-	1	2

1	Primary objective	3	potentially applicable objective
2	Secondary objective	-	Not applicable

Table (17): Matrix of management objectives and IUCN categories.

Source: (IUCN, 1994) edited by the Researcher



IUCN management category

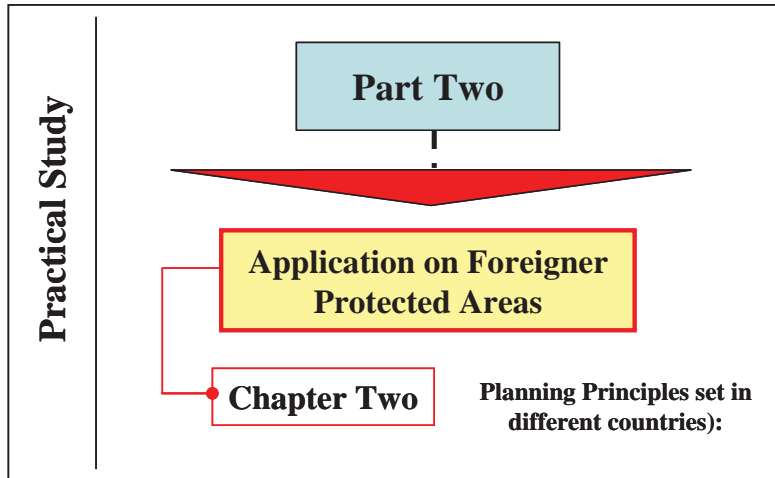
Figure (40): Idealized representation between IUCN management category and the degree of human intervention. Source: (IUCN, 1994)

3-9 Summary of Chapter Three: (Protected Areas Principles & Management Concepts):

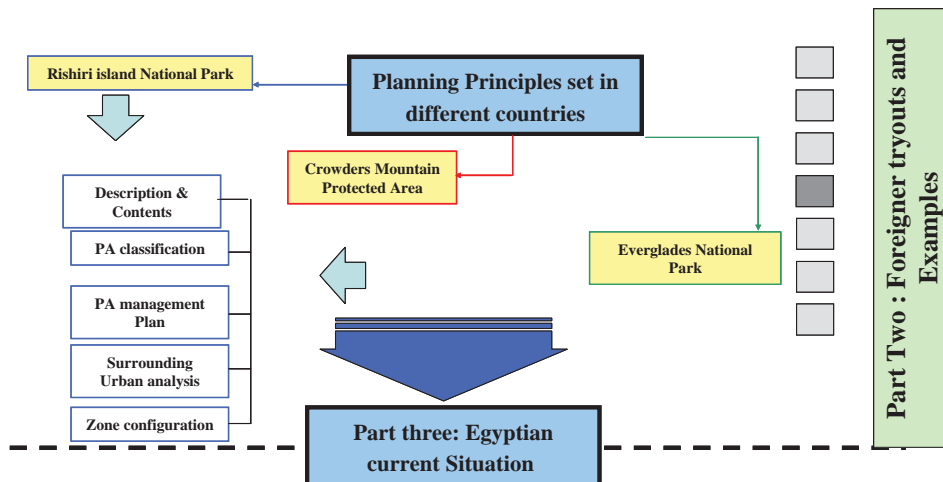
- Good management is an essential element in the success of a protected area. Many theories and principles are put in this field.
- As protected areas are not isolated islands; there must be integration between those significant areas and other urban uses, in order to achieve an ideal relationship.
- The degree of human intervention in protected areas is varied from type to another. It is for example to limited in type I; Strict science one.
- The management objectives in PAs varied from type to another, these management objectives govern the type of uses in or around the Pas.
- The zone configuration of the PAs presents the acceptable activities in every part of the protected area, and also around the specific protected zone.
- There are many systems of this zone configuration, but the common configuration divide the PA's zone to protected area and recreational area (contains all other urban uses).
- PAs are planned and managed as part of a mosaic of land uses that together seeks to satisfy environmental and social needs.
- protected areas should be designated within the framework of a larger protected areas system or network.

Chapter Four
**"Planning Principles set in Different
Countries"**

Part II
Foreigner experiences (Practical Study)



Chapter Four
Planning Principles set in Different Countries



Introduction

After studying the principles of natural protected areas in the previous chapters, the research will study some foreigner examples in this chapter to ascertain the extent of implementation of these guidelines and principles.

In order to access the criterion for assessing reserves in general and to applicat that in nature reserves in Egypt, especially the The reserves which is located within urban context.

4-1 The Japanese "Rishiri island National Park"

4-1-1 Location of the National Park:

Rishiri Island is a remote, small island about 200 kilometers square, with a circumference of about 60 kilometers. Mount Rishiri is a dormant volcano, at its center. It is one of the small japaness islands.

Rishiri Island is about 20 kilometers off the northern tip of Hokkaido (a north island in japan).

Rishiri island located west from Wakkanai. It has circular coast line and characterized by Mt. Rishiridake, which a mountain centered on the island. The name of Rishiri origins a native's word which means higher mountain. We can see a peak from west shore of Wakkanai city and may feel as a mountain floats on the sea. People also call this peak Rishiri Fuji after conic shape shown as the highest mountain of Japan.

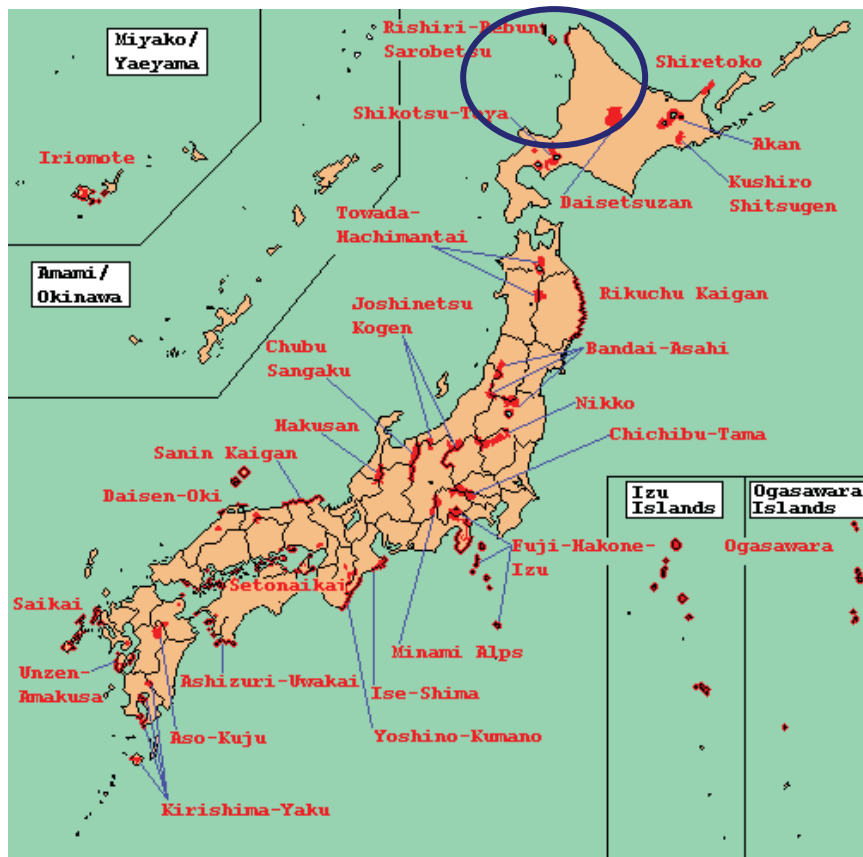


Figure (41): Map of Japan shows the location of rishiri island in the north east of japan



Figure (42): The location of Rishiri national park **Source:** http://www.alternativetourism.com/Japan/Tourism/Natural_places/Hokkaido/Dohoku/Rishiri_eng.html

4-1-2 Rishiri and Rebun island:

Together with neighboring Rebun Island, Rishiri belongs to the Rishiri-Rebun-Sarobetsu National Park. Many of the island's 6000 inhabitants are making a living from tourism and fishing.

Rishiri is a round island with the 1721 meter tall Mount Rishiri at its center. Due to its appearance, the dormant volcano is also known as Rishiri-Fuji. Rebun is longer and flatter than Rishiri and most famous for its wealth of alpine flowers found at sea level due to the harsh climate

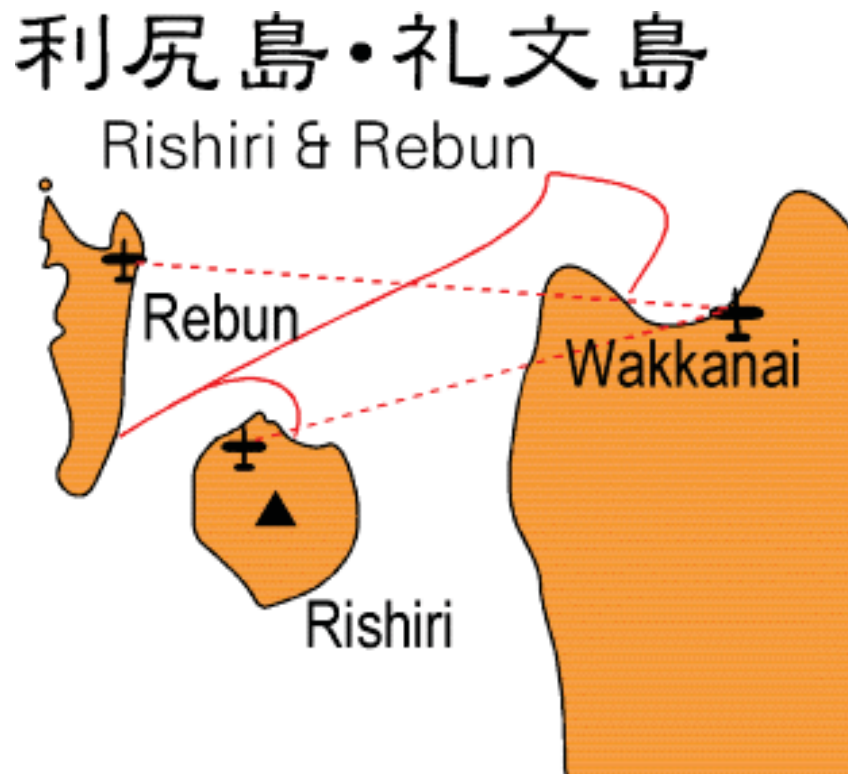


Figure (43): The two islands Rishiri and Rebun belong to the Rishiri-Rebun-Sarobetsu National Park. *Source:www.Rishiri.com*

4-1-3 Land use of the island:

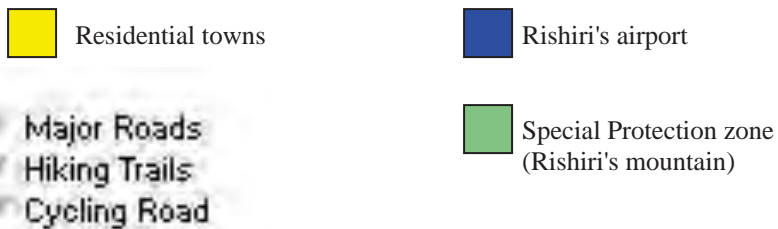
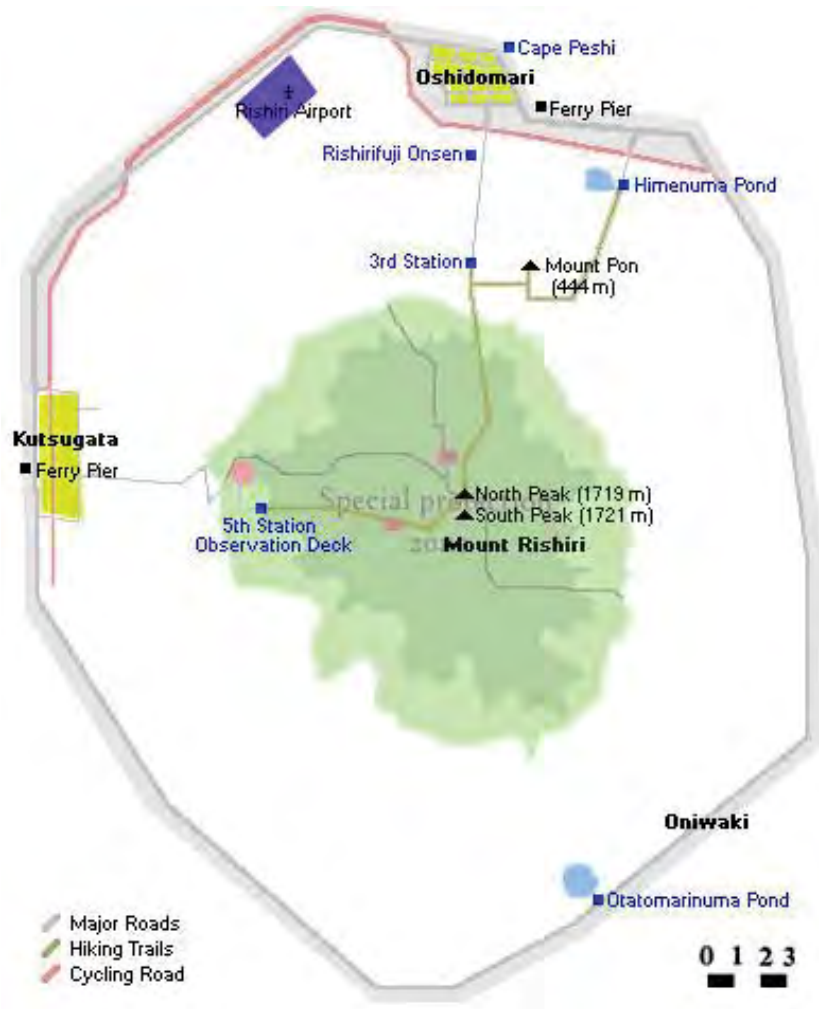


Figure (44): Land use of Rishiri's island. Source: Researcher based on: <http://www.japan-guide.com/e/e6876.html>

<p><u>Rishiri Airport:</u></p> <p>Rishiri airport is located in the north side of the island, and it is the connection between this island and other parts of Japan.</p>	
<p><u>Kutsugata town:</u></p> <p>Kutsugata is a town located on the west side of the island. This town developed from fishermen.</p>	
<p><u>Rishiri Mountain:</u></p> <p>Mount Rishiri, commonly referred to as Rishiri-Fuji, is a 1721-meter tall dormant volcano in the center of Rishiri. Cars can proceed as far as the 3rd Station on the Oshidomari side and as far as the 5th Station on the Kutsugata side.</p>	
<p><u>Oshidomari Town:</u></p> <p>Oshidomari town is the center of the island. Many public facilities are centralized here.</p> <p><u>Cape Peshi:</u></p> <p>Cape Peshi is located just next to the port of Oshidomari, Rishiri's largest town. There is a walking trail up to the top (5-10 minutes), from where nice views of Oshidomari and Mount Rishiri can be enjoyed.</p>	
<p><u>Rishirifuji Onsen:</u></p> <p>Rishirifuji Onsen is a hot spring with indoor and outdoor baths. It is located at the southern end of the town of Oshidomari.</p>	
<p><u>Cycling Road :</u></p> <p>A road for exclusive use by bicycles follows the northern coast of Rishiri from Hime Pond to Kutsugata for about 20 kilometers. Bicycles are provided by many of the island's accommodations and some rental shops.</p>	
<p><u>Fishing Villages</u></p> <p>Small fishing villages can be found along the whole coast of Rishiri Island. Rishiri is particularly famous for its sea urchins (uni) and konbu seaweed.</p>	

Table (18): land uses of Rishiri island. Source: <http://www.japan-guide.com/e/e6876.html>

4-1-4 Activities in the Park:

Rishiri Island offers various hiking and walking opportunities. The climb to the top of Mount Rishiri takes a full day and is quite challenging. There is also a cycling road along the island's northern coast.

A visit to Rishiri Island is most attractive during the summer months (June to August), when the island's alpine flora is in bloom. Not many tourists visit the island during the long and harsh winters.

4-1-5 Zone configuration of the 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.

The Rishiri island national park is divided into 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 I and II, and where there is little fear of afflicting the maintenance of scenic beauty in principle even though ordinary activities take place.

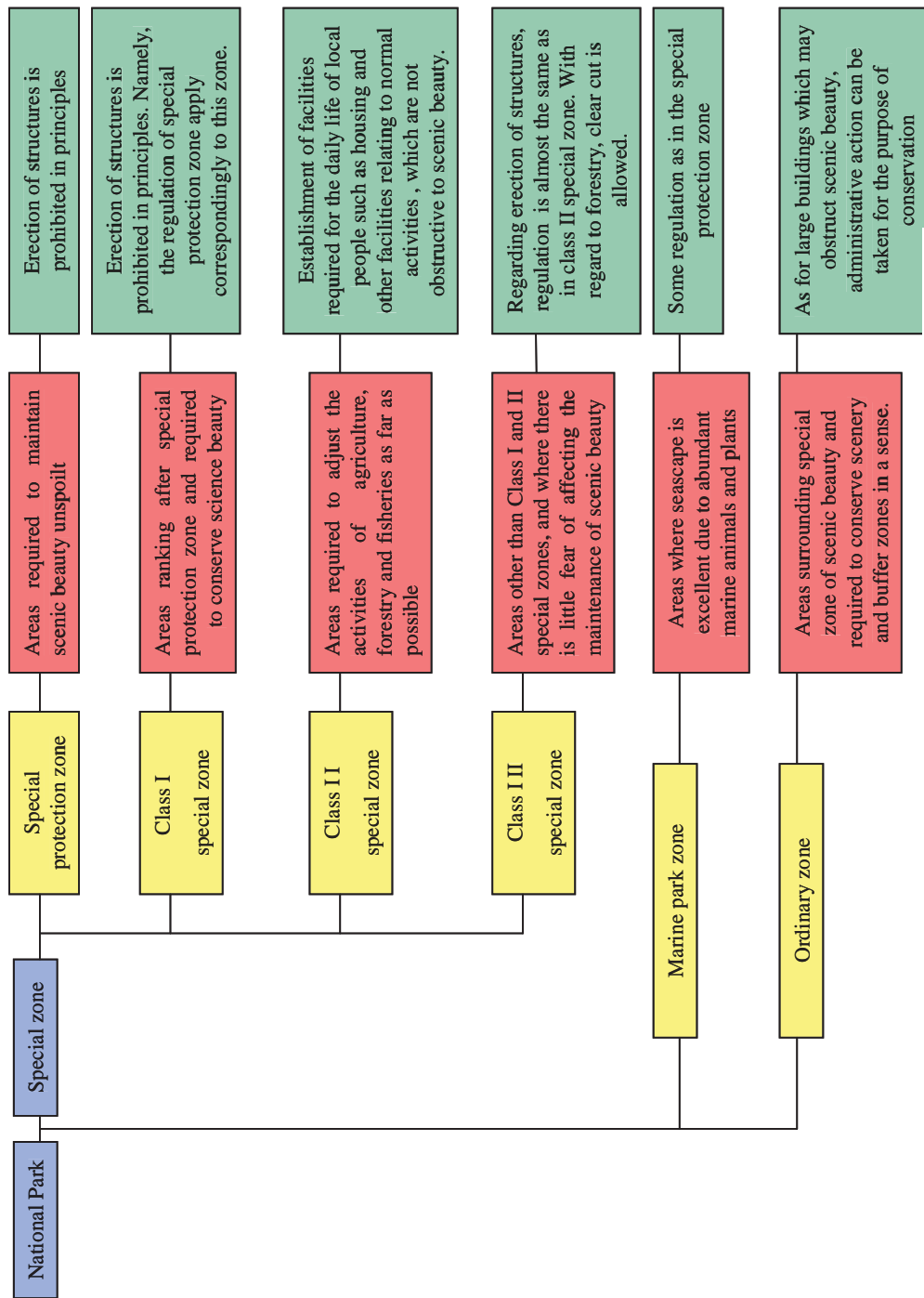


Figure (45): Zones classification of Rishiri park. Source: (Bovey and Lawson, 1998)

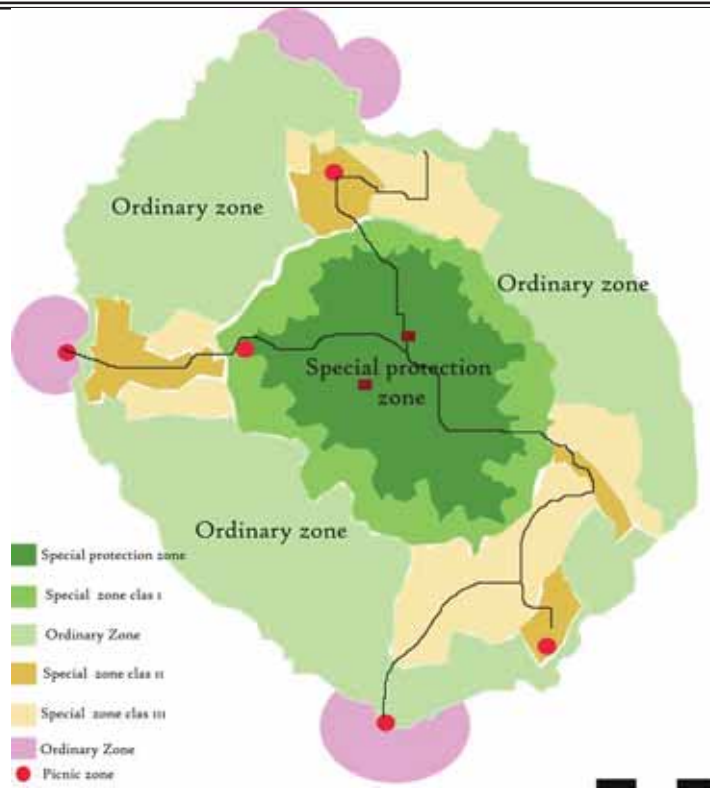
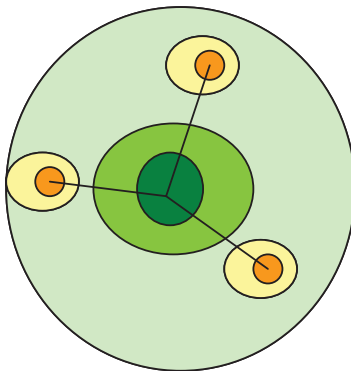


Figure (46): Map of Rishiri National Park, and analysis of its zone configuration. Source: (Bovey, B. and Lawson, F.1998) edit by the researcher.



Multiple Core zones:

- Central core Area (special protection zone)
- Central Buffer Zone (special zone Class 1)
- Secondary core Area (special zone Class 11)
- Secondary Buffer Zone (special zone Class 111)
- Ordinary zone (services and facilities)
- Paths (trails)

Figure (47): The multiple core zones zone configuration. Source: Researcher

4-1-6 Current Situation of the Rishiri National Park:

From the map of the park we can analyse the following:

- Zone configuration of the park is a multiple core zones system, which consists of central core zone and a secondary zones.
- Special protection zone is the main core zone, the protection of this zone is very strict.
- Ordinary zones are the area which supply all the recreational facilities.
- Around the main core zone, there is a primarily buffer zone. This zone need less protection than the strict protection of the core zones.
- The secondary core zones are surrounded by another buffer zones, this buffer zones separate the secondary zones from the ordinary zones.
- There are main pedestrian paths go through the core zones, and supply a network of paths without damage any other areas of the PA.
- In this example, there is no urbane uses inside the PA, some urban uses situated around it like:
 - airport: to connect this island to other parts of Japan.
 - Fishing villages: very small villages situated along the beach, there inhabitants live from tourism and fishing.
 - Two cities in the north and the east: they contains two marinas, and mainly it develops from fishermen.
- There are another ordinary zones, a marine zones which contains marine facilities and services (located in the cities).

4-1-7 Analysis of Rishiri's National Park (According to the principles gathered in the Previous chapters)

Structural Parameters	"Rishiri island National Park"				Comments
	Less than 50 km ² (MRA)	From 50 too 100 km ²	More than 100 km ²		
Size					
			✘		The total area of Rishiri island National Park 200 km ²
Location	Within Urban Context (humman settlements, activity zones)	The proximity of protected areas and network layouts	Within natural areas . (Deserts, oceans, wetlands.etc)		
			✘		Rishiri national park is an island surrounded by wet areas.
Edge Configuration	Inherent/ Natural	Induced / Generated			
	✘				
Shape Configuration	The boundries follow natural divisions	The boundries follow urban divisions			comments
	✘	Rounded Shape	Long Linear Shape	Follow urban ellement (roads)	
		✘		✘	

Table (19): The structural parameters of "Rishiri island National Park". *Source: Researcher*

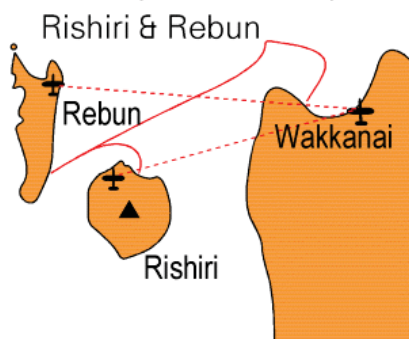


"Rishiri island National Park"		
Description		Comments
Location	<ul style="list-style-type: none"> • In the northern side of Jaban. • Rishiri Island is about 20 kilometers off the northern tip of Hokkaido (a north island in Japan).  <p>The map shows the northern part of Hokkaido, Japan. Three islands are highlighted in orange: Rishiri (a small circular island with a triangle marker), Rebun (a larger island with a cross marker), and Wakkanai (a large landmass with a cross marker). Red dashed lines connect the markers to their respective labels. A red line also connects the 'Rishiri & Rebun' label to the two islands.</p>	
Description & contents	<ul style="list-style-type: none"> ▪ One of the small japaness islands. ▪ It has circular coast line and characterized by Mt. Rishiridake which a mountain centered on the island. ▪ It contains the highest mountain of Japan.  <p>Photo (1): the Rishiri's mountain. Source: http://www.japan-guide.com</p>	
Natural life		Comments
Flora	In August, the island's alpine flora is in bloom.	
Fauna	Marine life, birds and insects.	
Geological features	mountain centered on the island.	
	 <p>Source: http://www.japan-guide.com</p>	

Table (20): Analysis of the current condition of "Rishiri island National Park" (Part 1).
 Source: Researcher gathered from different sources.

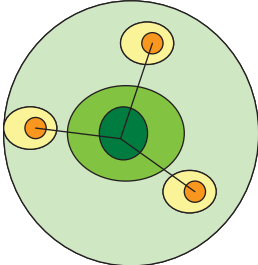
Management				
Category of the PA according to the IUCN management category system	The PA has a category	The PA don't have a define category	Category	Comments
	✘		Category II National Park	
Management objectives	<ul style="list-style-type: none"> ▪ Tourism & Recreation ▪ Species / genetic diversity ▪ Environment services 			
Management plan	<p>- The management plan divide the park into three main zones:</p> <ul style="list-style-type: none"> ▪ Special zone ▪ Marine park zone ▪ Ordinary zone <p>- tourism & recreation is the most Management objective.</p>			
Zone configuration				
Type of uses inside the PA's land	- inside the PA's land, the major land use is the protected land and the scenic beauty zone.			
Type of land use configuration	<p>The zone configuration is a Multiple core zones system. It divides the protected area to central core area and buffer and secondary core and buffer areas.</p>  <p>Multiple Core zones:</p> <ul style="list-style-type: none"> Central core Area (special protection zone) Central Buffer Zone (special zone Class 1) Secondary core Area (special zone Class 11) Secondary Buffer Zone (special zone Class 111) Ordinary zone (services and facilities) Paths (trails) 			

Table (21): Analysis of the current condition of "Rishiri island National Park" (Part 2).

Source: Researcher gathered from different sources.

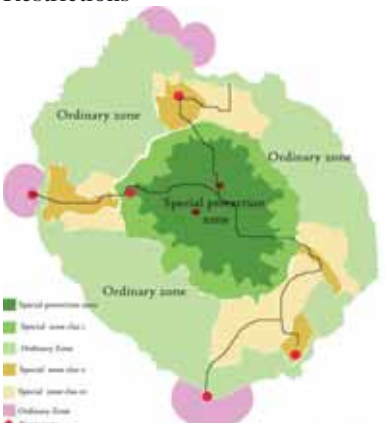


Zone configuration					
Restrictions					
	Natural Resources	Allowed activities	Erection of buildings	Level of protection	Accessibility
Special protection zone	Strict nature heritage	Research Watching	forbidden	strict	On feet
Special zone class I	Scenic beauty	Watching Picnic	forbidden	Special protection	trails
Special zone class II	Nature resources	Watching Picnic Ec lodges camping	Special restrictions	moderate	Trails & bicycles
Special zone class III	Buffer zones	Visitor Facilities	limited	less	Cars & trails
Ordinary zone	Limited	Other services & urban uses	acceptable	Limited protection	Cars
Urban Uses inside the PA's land					
	use	Location	Degree of compatibility		
	Car road	Ordinary zone	compatible		
	Observation deck	Special zone I	compatible		
	Visitors' center	Special zone III	compatible		
	Rishirifuji Onsen is a hot spring	Ordinary zone	compatible		
	Cycling road	Ordinary zone	compatible		
	Trails	Special protection zones	compatible		
Tourist services and facilities	Ordinary zone	compatible			

Table (22): Analysis of the current condition of "Rishiri island National Park". (Part 3)
 Source: Researcher gathered from different sources.

Table (23): Analysis of the current condition of "Rishiri island National Park" (Part 4).

Source: Researcher gathered from different sources.

Areas beyond PA's land (surrounding uses)			
Type of surrounding uses	Urban use	Degree of compatability	Comment
	-Rishiri's Airport	Compatible	<ul style="list-style-type: none"> - density of this villages and towns are two small, the overall inhabitants are 6000 person. - All the resedints are working in fishing our tourism. - The resedintial areas are loocated outside the border of the PA. - Airport plays a great role in the transportation to and from the island.
	Kutsugata town:	Compatible	
	Oshidomari Town:	Compatible	
	Fishing villages	Compatible	

4-2 Crowders Mountaine:

Crowders Mountain became a state park in 1973 as the result of a citizens movement in Gaston County. A group of local citizens formed the Gaston County Conservation Society in response to a threat to mine the mountain. This group of concerned citizens were able to convince their friends and neighbors of the importance of preserving this unique natural resource and, with their support, were able to convince state officials of this need.

4-2-1 Location & Description:

Crowders mountain is located in north Carolina, USA.

The mountain and adjacent Kings Pinnacle rise 800 feet above the surrounding countryside, offering captivating views of Gaston County.

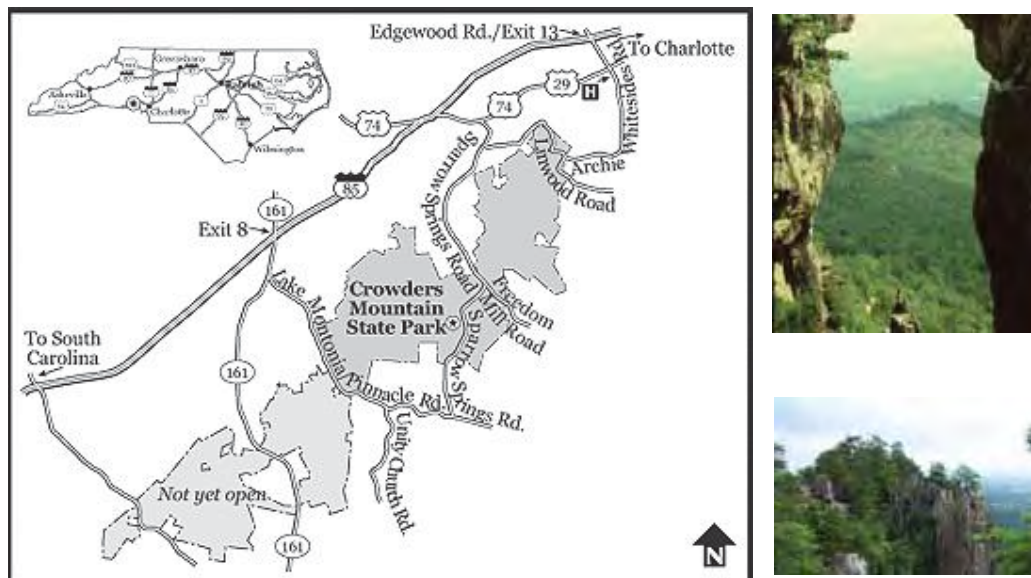


Figure (48): The location of Crowders Mountain protected area in North Carolina.

Photo (8): Crowders mountain. Source: www.crowdersmountain.com

4-2-2 Natural Life:

More than 160 species of birds, including waterfowl, wading birds, hawks, owls and woodpeckers have been recorded in the park. Black and turkey vultures are permanent residents, roosting in the isolated rock outcrops near the mountain peaks.

4-2-3 Landuse of the Crowder Mountain Protected Area:

4-2-3-1 Surrounding Uses:

There are no adherence urban uses to the protected area. The nearest uses is three cities lay about 20 km far from the protected area. The cities are:

- Crowders mountain township
- Bessemer city
- Gastonia city

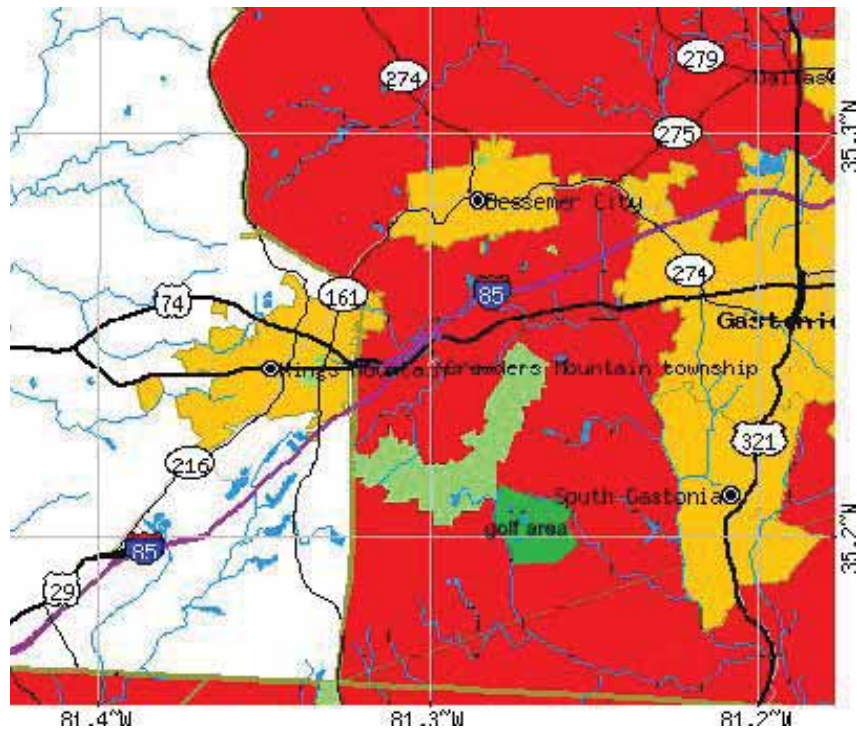


Figure (49): The Citie around Crowders Mountain protected area . *Source:www.cnn.com*

4-2-3-2 Uses Inside the Protected Area's Border:

- Inside the protected area borders, there are no urban uses except some tourist facilities and services like:

Hiking trails:

There are Eight trails at Crowders Mountain State Park provide access to 12 miles of hiking and nature trails. One of them is steepest trail to the top.



Photo (9):The steepest trail in the Crowder Mountain. Source: www.crowdersmountain.com

- Near to the protected area's boundaries, there are a golf area as a recreational use to the tourists and visitors.



Photo (10):The golf area near to Crowders Mountain. Source: <http://www.golfholes.com/nc/crowders-mountain.htm>

4-2-3 Activities:**4-2-3-1 Out Door Activities:****1-Camping**

Backcountry camping is permitted in two secluded areas located about one mile from the park office. Both campgrounds are reached by trail.

2-Hiking

Nearly 13 miles of hiking trails range from easy promenades through pastoral surroundings to strenuous hikes to the Crowder summit. A gravel trail makes a loop around the park's nine-acre lake, and work is under way to

make portions of it wheelchair-accessible. The eight trails vary in length from .3 miles to three miles.

3-Rock climbing

Climbing is permitted in designated areas only and all climbers must register before beginning a climb. Basic rock climbing safety equipment and techniques must be used at all times. Pitons, bolts or similar devices that may damage cliff faces are not allowed.



Photo (11): Climbing sport in Crowders mountain
http://hikingthecarolinas.com/crowder_photos.php

4-2-3-2Water Activities:

Fishing & Water sport (canoeling):

Fishing are allowable in the lake but with some resrtictions. Also canoes can be rented in the park.



Photo (12): Coneling sport in Crowders mountain's park
http://hikingthecarolinas.com/crowder_photos.php

4-2-4 Zone Configuration:

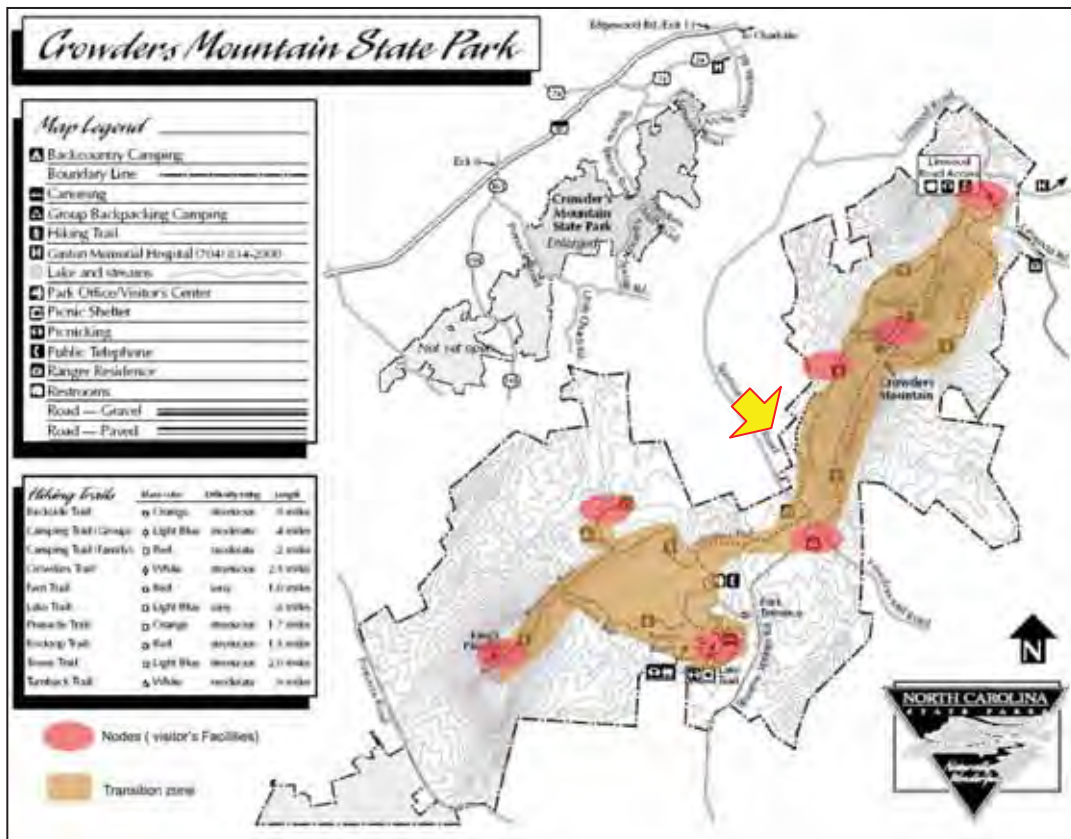


Figure (50): Map of the Crowders Mountain protected area ..
Photo (13): Crowders mountain. Source: www.crowdersmountain.com

4-2-4-1 Nodes and Linkages System

This system applied in protected areas with area more than 100 km², in it all visitors facilities is located inside the protected area. All services and facilities are collected in nodes, this nodes are connected by paths (linkages), these linkages is located outside the special natural area zone (most protective zone). This system is applied in this protected area.



Figure (51): Nodes and linkage Zone Configuration. Source: Researcher



Figure (52): Zone Configuration of Crowders mountain
 Source: www.crowdersmountain.com, edited by the Researcher.

4-2-5 Current Situation of Crowders Mountain Protected Area:

From the map of the park we can analyse the following:

- Zone configuration of the park is nodes and linkages system.
- The park consists of two mountains and the area between them is the linkage zone. (main path)
- Along this path, there are the tourist facilities and recreational facilities. (Nodes)
- There are a main entrance to the park came from the highway to the centre of the park.
- The main path (linkage) is a trail for hiking through the PA.

4-2-6 Analysis of Crowders Mountain Protected Area**(According to the Principles Gathered in Previous Chapters)**

Structural Parameters	Crowders Mountain protected area				
	Size	Less than 50 km² (MRA)	From 50 too 100 km²	More than 100 km²	Comments
			×	The total area of the protected area 120 km ²	
Location	Within Urban Context (humman settlements, activity zones)	The proximity of protected areas and network layouts	Within natural areas . (Deserts, oceans, wetlands.etc)	Comments	
			×	Crowders protected area is a mountain surrounde by geographical features and plants.	
Edge Configuration	Inherent/ Natural	Induced / Generated		Comments	
	×				
Shape Configuration	The boundries follow natural divisions	The boundries follow urban divisions			comments
	×	Rounded Shape	Long Linear Shape	Follow urban ellement (roads)	

Table (24): The structural parameters of "Crowders mountain protected area".

Source: Researcher

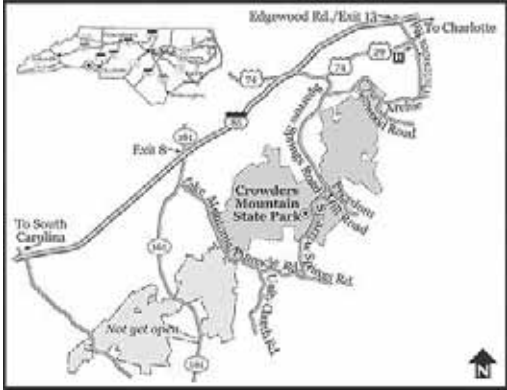

Crowders Mountain protected area		
Description		Comments
Location	<ul style="list-style-type: none"> Crowders mountain is located in north Carolina, USA.  <p>Location of Crowders Mountain in North Carolina state.</p>	
Description & contents	<ul style="list-style-type: none"> Crowders Mountain rises 800 feet above the surrounding countryside.  <p>Photo (1): Crowders Mountain. Source: http://www.southeastclimbing.com</p>	
Natural life		Comments
Flora, Fauna, & Geological features	<ul style="list-style-type: none"> More than 160 species of birds, including waterfowl, wading birds, hawks, owls, and woodpeckers have been recorded in the park. 	

Table (25): Analysis of the current condition of "Crowders Mountain National Park" (Part 1). Source: Researcher gathered from different sources.


Management				
Category of the PA according to the IUCN management category system	The PA has a category	The PA don't have a define category	Category	Comments
	✘		Category III <u>Natural monument</u>	Crowders mountain is a natural monument and also a state park.
Management objectives	<ul style="list-style-type: none"> ▪ Tourism & Recreation ▪ Wilderness protection. ▪ Environment services 			
Management plan	<ul style="list-style-type: none"> - The management plan deal with the protected area as one entity, all part of it is in the same priority of protection. - tourist services and facilities are located along the trails which going through the PA's land. 			
Zone configuration				Comments
Type of uses inside the PA's land	<ul style="list-style-type: none"> - Inside the PA's land, there is no unsuitable use inside the protected area's land. - Some buildings are situated in the protected area to supply the tourist facilities and services. . 			All facilities and light buildings are located along the the nodes and linkeages zone
Type of land use configuration	<p>The zone configuration is node and linkeage system.</p>  <p style="text-align: center;">Nodes and linkseage zone configuration</p>			No services or facilities are located in the special natural area.

Table (26): Analysis of the current condition of "Crowders mountain national park" (Part 1). Source: Researcher gathered from different sources.


Zone configuration					
Restrictions					
	Natural Resources	Allowed activities	Erection of buildings	Level of protection	Accessibility
Special protection zone (mountain tip)	Strict nature heritage	Research Watching	forbidden	strict	On feet
Special natural area	Scenic beauty	Watching Picnic	forbidden	Special protection	trails
Nodes and linkage (trails & facilities)	Nature resources	Watching Picnic Ecolodges camping	Acceptable	moderate	Trails
Urban Uses inside the PA's land					
	use	Location	Degree of compatability		
	Car road	Natural area	incompatible		
	Camping area	Nodes and linkage zone	compatible		
	Visitors' center	Nodes and linkage zone	compatible		
	Rest rooms	Nodes and linkage zone	compatible		
	Picnic shelters	Nodes and linkage zone	compatible		
	Trails	Nodes and linkage zone	compatible		
	Tourist services and facilities	Nodes and linkage zone	compatible		

Table (27): Analysis of the current condition of "Crowders mountain national park" (Part 1). Source: Researcher gathered from different sources.

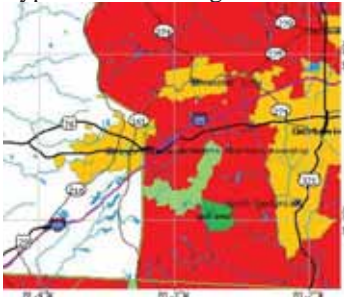
Areas beyond PA's land (surrounding uses)			
Type of surrounding use	Urban use	Degree of compatability	Comment
	-Golf area	Compatible	<ul style="list-style-type: none"> - All this cities are located in the same state but are not adjacent to the protected area. - Natural areas separating protected from the surrounding towns The resedintial areas are located outside. - Golf area are located near to the mountain as a recreational use to the visitors.
	Crowders mountain township	Compatible	
	Bessemer city	Compatible	
	Gastonia city	Compatible	

Table (28): Analysis of the current condition of "Crowders mountain national park" (Part 1). Source: Researcher gathered from different sources.

4-3 Everglades Protected Area:

Everglades is the third-largest national park in the contiguous United States, after Death Valley and Yellowstone. Of course, Everglades does have more water and waterways. For this reason the longest "trails" in the park are designed for boat and canoe travel

4-3-1 Location & Description:

At the end of the nineteenth century the south Florida coast was still largely wilderness, one of the last coastal regions east of the Mississippi to be settled. Only three small communities, Chokoloskee, Cape Sable and Flamingo, existed along the coast of what is now Everglades National Park.



Figure (53) Location of Everglades National Park.

Source: <http://www.cnn.com/EARTH/9805/14/obit.douglas/florida.everglades.lg.jpg>

The landscapes we see today in South Florida area direct result of geologic events of the past. There is no place better to see this than in South Florida's National Parks. Here the geologic record is still fairly intact. Although the activities of humans have altered the landscape somewhat, the overall picture can still be seen. (www.everglades.com)

4-3-2 History of the Protected Area:

Everglades National Park declared as:

- 1947 (declared as a national park)
- 1976 (International Biosphere Reserves)
- 1979 (World Heritage Site)
- 1987 (Ramsar Wetland of International Importance)

4-3-3 Natural life:

4-3-3-1 Flora and Fauna

1-A Sanctuary for Birds

The Everglades provide a sanctuary, as well as a breeding and feeding ground, for many species of wading birds that depend on the climate's wet and dry cycle in order to reproduce. The great egret, snowy egret and roseate spoonbill live relatively undisturbed in the Everglades with other rare and unique birds.



Photo (13) Great Egret –
Everglades

Source:
www.ucmp.berkeley.edu

2-Flora

For years, botanists from around the world have marveled at the more than 2,000 species of plants - both tropical and temperate, living side by side in southern Florida. Palms and other tropical trees such as the gumbo-limbo and mahogany grow in jumbled harmony alongside willows, pines and oaks.

3-Freshwater Marsh

Saw grass/freshwater marsh covers approximately 572,200 acres of open, flat prairie. This member of the sedge family is the most dominant plant, flowing through the park as a broad, sweeping river of grass.

4-Pinelands

Another unique environment occasionally disrupts the saw grass plains. The rough and rocky pinelands that remain after widespread logging are located on Long Pine Key and in nearby eastern sections of the Everglades.

4-3-3-2Endangered Species

- 1-American crocodile
- 2-Florida manatee
- 3-Sea turtles



Photos (14): Florida manatee, american crocodile and sea turtle.

Source: www.everglades_nationalpark.com

- 4-Cape Sable seaside sparrow
- 5-Florida panther
- 6-Snail kite

4-3-4 Activities in the protected area:

1-Bicycling

Bicycling is a popular activity in Everglades National Park. Bicycles can be rented year-round at the Flamingo Marina and the Shark Valley Visitor Plaza.

2-Fishing

Fishing in the inland and coastal waters of the Everglades is excellent and can be enjoyed year-round. Snapper, sea trout, redfish, bass, bluegill, tarpon and snook are plentiful. Saltwater fishing areas include Florida Bay, Ten Thousand Islands and elsewhere in the park's coastal zone.



Photo (15): ten thousands islands in the park coastal zone.
Source: www.florida-everglades.com

3-Wildlife Observation

Wildlife observation in the Everglades is very rewarding. Hundreds of egrets, herons, wood storks and other water birds feed here. Some species that are uncommon or endangered throughout other parts of the world are relatively common here.

4-Guided Tours, Boats, and Charters

Guided hiking, canoeing and swamp tromps are offered by park rangers. Numerous tours are available on a year-round basis at Everglades National Park, but schedules are limited in the summer months.

5-Canoeing

Canoeing is an excellent way to explore the area, because more than one-third of the park is comprised of marine areas and estuaries under shallow water. Water birds, sea turtles, a variety of fish and endangered manatees live in the park's waterways where food is plentiful.

4-3-5 Size & Visitation

Boundary changes since 1947 have substantially increased the size of the park from the original 460,000 acres (186,159 hectares). In 1950, the Secretary of the Interior increased the size of the park to 1,228,500 acres (497,167 hectares), including the former wildlife refuge. Two additional boundary changes increased the park to 1,400,533 acres (566,788 hectares) by 1958. In 1989, Congress passed legislation that expanded the eastern boundary of the national park by 109,000 acres (44,112 hectares), primarily for the purposes of ecosystem restoration and protection. (*www.everglades.com*)

4-3-6 Landuse of the protected area:

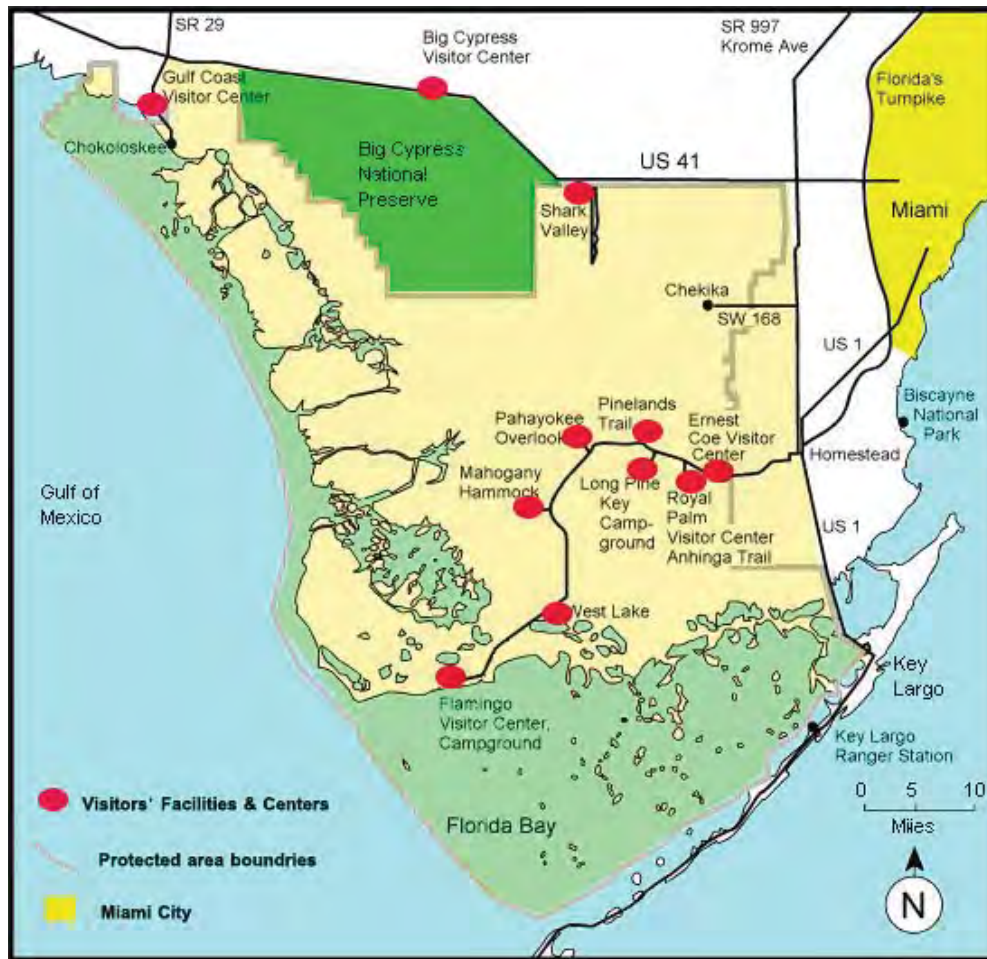


Figure (54): Landuse of Everglades national park

Source: http://www.tigerhomes.org/animal/images/map-florida-everglades_clip_image002.gif

4-3-6-1 Surrounding uses:

Miami city & beach:

In the east corner of Everglades protected area, Miami city is located.



Photo (16): Miami beach.
Source: www.miamicity.org

4-3-6-2 uses inside the protected area's border:

1-Nature Trails

Everglades is the third-largest national park in the contiguous United States. because more than one-third of the park is comprised of marine areas. For this reason the longest "trails" in the park are designed for boat and canoe travel.



Photo (17): Water trail in everglades national park.

Source:
www.everglades.national-

2- Visitors facilities

There are five visitor centers located in the park. Each area of the park has its own attractions, and features a different set of plant and animal life. All visitor centers are wheelchair accessible.



Photo (18): Flamingo Visitor center. Source:

<http://www.nps.gov/ever/visit/vc.htm>

3- The Flamingo Lodge, restaurant, and café

The Flamingo Lodge is the only lodging available in the park, it is situated in the south part of the national park near to the flamingo visitors' center.

4-3-7Zone Configuration:

The zone configuration of the everglades national park mixed system of:



Figure (55): Nodes and linkage Zone Configuration. Source:
Researcher

Nodes and linkage system: It is suitable here, because the area of the national park is more than 100 km² (1,509,000 acres, 6337.8km²), in it all facilities and services are located. It acts as an ordinary zone.

Concentric three zones configuration: this system divides the park according to the protection level.

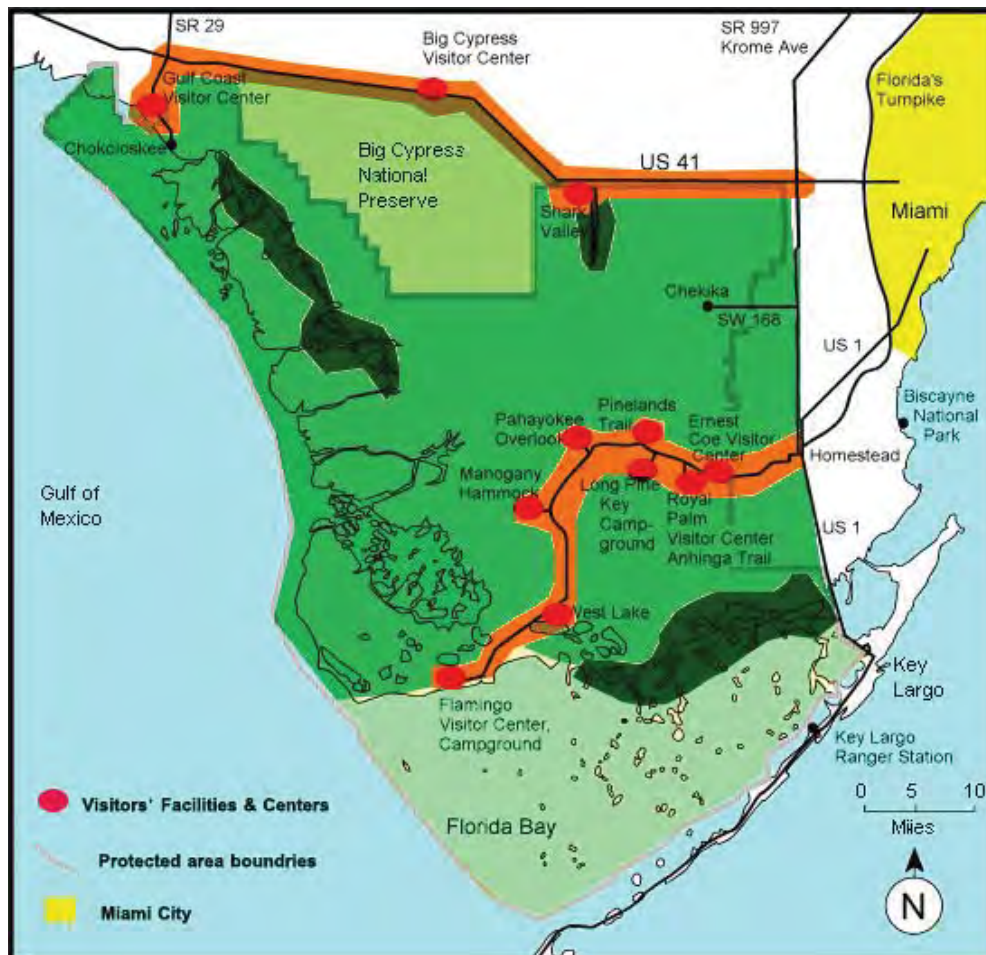


Figure (56): Everglades protected area zone configuration. *Source: Researcher based on (www.everglades.com)*

4-3-8 Current situation of Everglades Protected Area:

From the map of the park we can analyse the following:

- Zone configuration of the park is nodes and linkages system.
- The park is full of unique natural flora and fauna. Because of that it is declared as a Ramsar Wetland of International Importance.
- Tourist facilities, camping areas and picnicking areas are situated along the main path in PA (linkage), they are located in a centres (Nodes).
- There are many activities in the park; hiking, camping, watching and marine activities.
- Inside the PAs there are a strict protection zones, which dedicated only for research and science.
- Area consist of wetlands, rivers and natural lands. This make a diversity in species and plantation of the PA.

4-3-9 Analysis of Everglades National Park (According to the principles gathered in the previous chapters)

Structural Parameters	"Rishiri island National Park"				Comments
	Less than 50 km ² (MRA)	From 50 to 100 km ²	More than 100 km ²		
Size			✘		The total area of Rishiri island National Park 6337.8 km ²
Location	Within Urban Context (human settlements, activity zones)	The proximity of protected areas and network layouts	Within natural areas . (Deserts, oceans, wetlands.etc)		Comments
			✘	Everglades is located in the southern coast of florida.	
Edge Configuration	Inherent/ Natural	Induced / Generated			Comments
	✘				
Shape Configuration	The boundries follow natural divisions	The boundries follow urban divisions			comments
	✘	Rounded Shape	Long Linear Shape	Follow urban element (roads)	

Table (29): The structural parameters of "Rishiri island National Park". *Source: Researcher*



"Rishiri island National Park"		
Description		Comments
Location	<p>- Everglades National Park is located in the southern tip of Florida, just west of the city of Miami</p> 	<p>- Everglades is the third-largest national park in the contiguous United States, after Death Valley and Yellowstone.</p>
Description & contents	<ul style="list-style-type: none"> The national park consist of three main natural area: <ul style="list-style-type: none"> Freshwater Marsh : covers approximately 572,200 acres of open, flat prairie Beaches: cover all the protected area's boudries. Lands: Cover big part of the protected areas land, in it tourist facilities are located.  <p>Photo (1): Everglades freshwater marsh. Source: http://www.everglades_nationalpark.com</p>	<p>- The park contains the longest trail in all the state's park. =This rail is a water trail.</p>
Natural life		Comments
Flora	2,000 species of plants - both tropical and temperate	
Birds	Many types of wading birds are living the park.	
Endangered species	<ol style="list-style-type: none"> 1-American crocodile 2-Florida manatee 3-Sea turtles 4-Cape Sable seaside sparrow 5-Florida panther 6-Snail kite 	

Table (30): Analysis of the current condition of "Everglades National Park". (Part 1)
Source: Researcher gathered from different sources.

Management				
Category of the PA according to the IUCN management category system	The PA has a category	The PA don't have a define category	Category	Comments
	×		Category II <u>National Park</u> - Biosphere reserve. - world Heritage site - Ramsar wetland	Because of its unique features and compounds, it take four classification.
Management objectives	<ul style="list-style-type: none"> ▪ Tourism & Recreation ▪ Species / genetic diversity ▪ Environment services ▪ Wilderness protection. ▪ Scientific research. 			
Management plan	<p>- The management plan divide the park into three main zones:</p> <ul style="list-style-type: none"> ▪ Strict protection zone ▪ Natural protected zone ▪ Nodes and linkeage zone. (ordinary zone) <p>- Tourism & recreation is the most Management objective.</p>			
Zone configuration				
Type of uses inside the PA's land	- inside the PA's land, the major land use is the protected land and some tourist services and facilities.			
Type of land use configuration	<p>There are two types of the zone configuration here:</p> <ol style="list-style-type: none"> 1- Nodes and linkeages system: it is used here because of the large area of the park and it is used to locate the services and facilities along it. 2- Classic three zone configuration: which is used to separate the strict protection zones from other zones. 			

Table (31): Analysis of the current condition of "Rishiri island National Park". (Part 2)

Source: Researcher gathered from different sources.



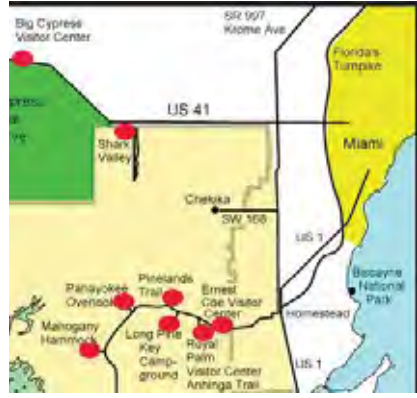
Zone configuration					
Restrictions	Natural Resources	Allowed activities	Erection of buildings	Level of protection	Accessibility
					
Special protection zone	Strict nature heritage	Research Watching	forbidden	strict	On feet
Special zone class 1	Scenic beauty	Watching	forbidden	Special protection	trails
Ordinary zone (nodes and linkages zone)	Nature resources	Watching Picnic Ecolodges camping	Special restrictions	moderate	Trails, bicycles & canoes
Urban Uses inside the PA's land					
	use	Location	Degree of compatability		
	Car road	Boundry of the park	compatible		
	Visitors' center	Ordinary zone (nodes zone)	compatible		
	Flamingo lodge	Ordinary zone (nodes zone)	compatible		
	Watertrail	All over the park parts.	compatible		
	Trails	Ordinary zone (nodes zone)	compatible		
	Tourist services and facilities	Ordinary zone (nodes zone)	compatible		

Table (32): Analysis of the current condition of "Rishiri island National Park". (Part 3)

Source: Researcher gathered from different sources.

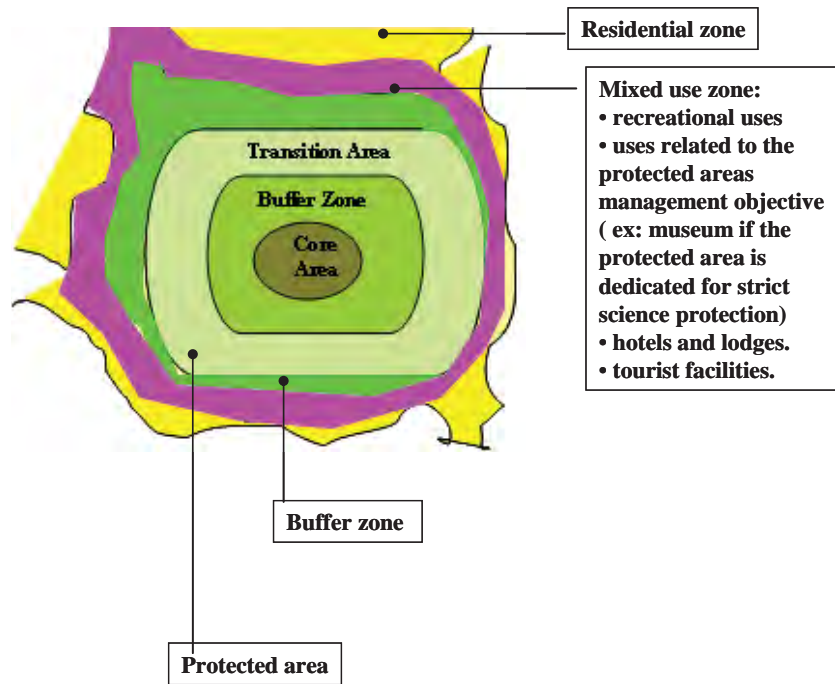
Table (33): Analysis of the current condition of "Everglades National Park". (part 4)
 Source: Researcher gathered from different sources.

Areas beyond PA's land (surrounding uses)			
Type of surrounding uses	Urban use	Degree of compatability	Comment
 <p>The map shows the Everglades National Park area with various visitor centers and trails. Key locations include Big Cypress Visitor Center, Shark Valley, Pinyon Oak Overlook, Malogary Hammock, Long Pine Key Camp-ground, Royal Palm Visitor Center, Anninga Trail, Ernest Coe Visitor Center, Homestead, and Biscayne National Park. Major roads shown are US 41, US 1, and SR 1127/Krome Ave. The Florida Turnpike is also visible.</p>	-Miami city	Compatible	<ul style="list-style-type: none"> - Miami city contains many tourist and recreational facilities along its beach. - Also it contains hotels and lodges for the visitors of the park.

4-4 Conclusion of chapter three:

After studying the three foreigner example we can conclude the following:

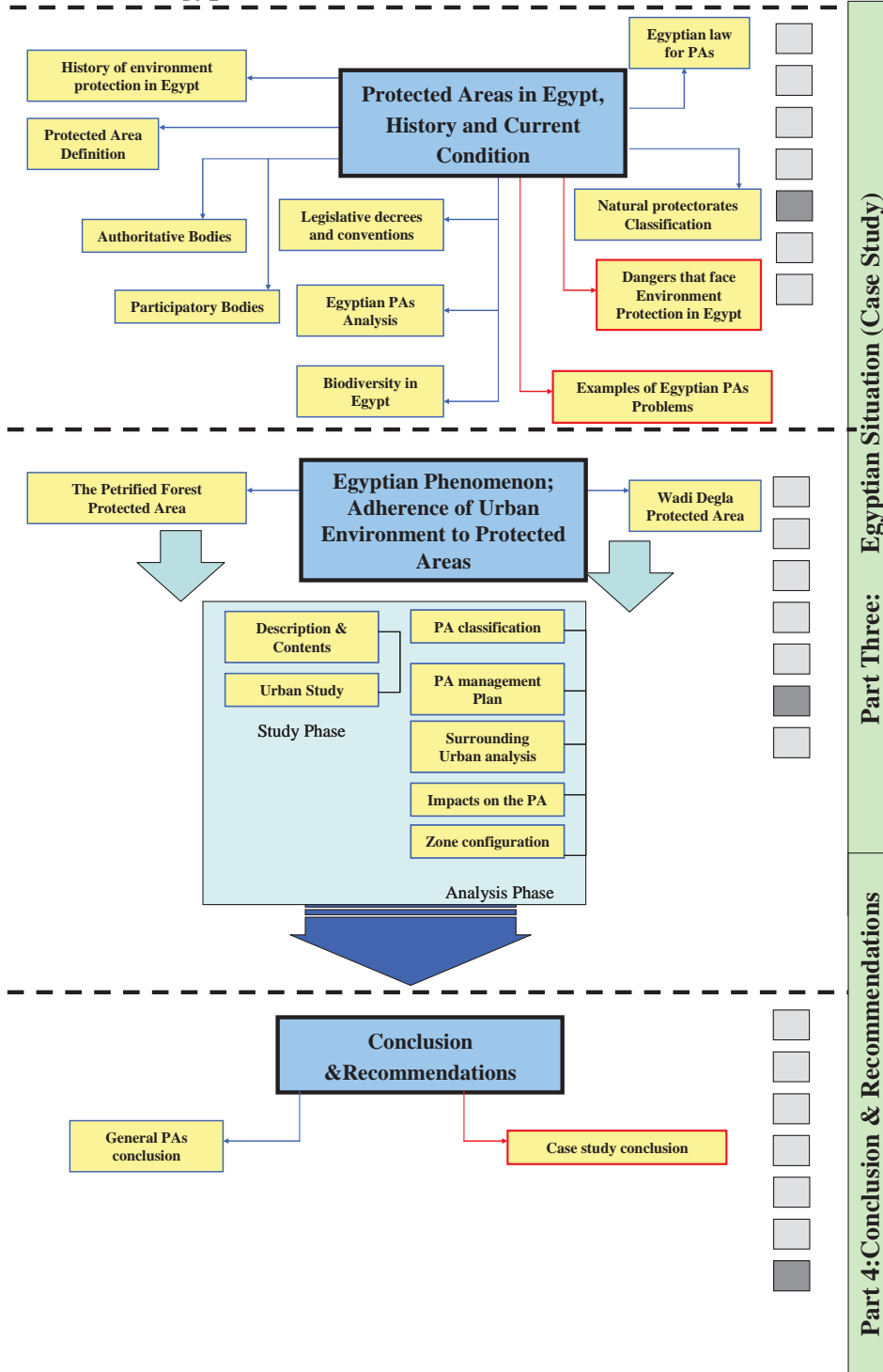
- All this protected areas have a specific land use zone configuration.
- All of them have a defined category in the IUCN management category system.
- There are no urban expansions or violations on the protected areas' land.
- Generally the adherence urban uses to protected areas contain; recreational areas and facilities related to the protected area (hotels, lodges, airport....)
- All the urban uses in or out the protected area are compatible uses.
- Urban uses inside the protected area are in specific zone; ordinary zone, buffer zone, and nodes and linkages zone.
- There are no residential area adjacent to any of this protected area, even local citizens are live in area separate by buffer zones from the special protected zones.



Chapter Five
**"Protected Areas in Egypt, History and
Current Condition"**

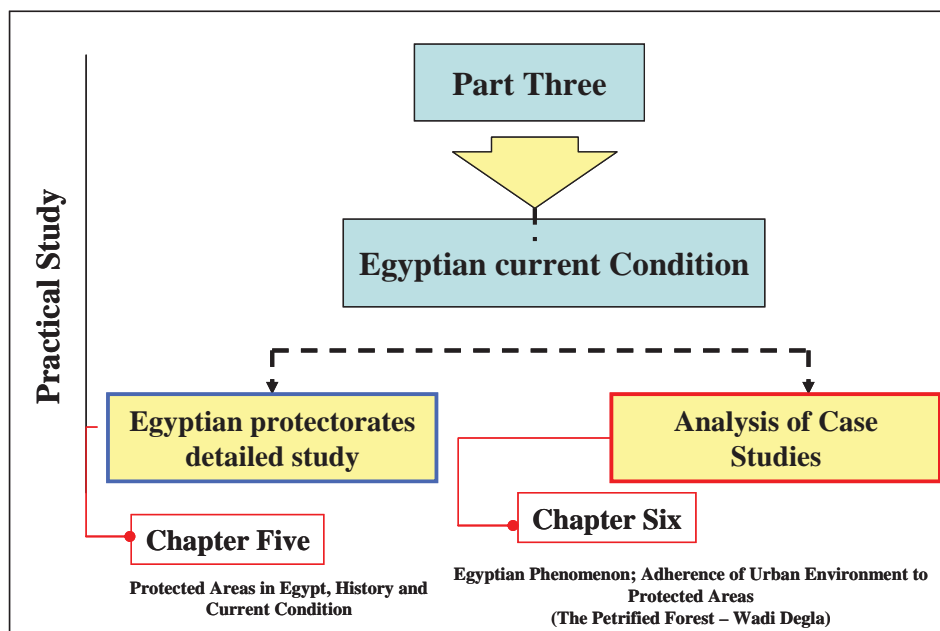
Part Three

Egyptian Protected Areas Current Condition



Chapter Five

Protected Areas in Egypt, History and Current Condition



5-1 Introduction:

The environment has long been a subject of interest in Egyptian culture; ancient inscriptions such as those depicting the journeys of Queen Hatshepsut (1450BC) illustrate the wildlife expedition to the land of Punt. These, among others suggest that a form of nature protection exist in a very early age in Egyptian history and include basic management principles.

In this chapter we will study the Egyptian tryouts in the field of protection, which start from 1980 until now. Recently, conservation movement in Egypt faces many dangers and conflicts; in this chapter we will discuss the obstacles that face the protection process in Egypt.

5-2 History of Environment Protection in Egypt:

The first conservation legislation this century came into being with the creation of the Royal hunting reserve at Wadi Rishrash in 1900. Current interest by the authorities in nature conservation was initiated when a delegation attended the 1955 Unesco meeting on nature protection in Beirut. The first protected site was established at El Omayed and was acquired by the University of Alexandria in 1974.

The Presidential Decree of 5 March 1980, expressed concern for environmental matters established a mechanism for identifying and protecting threatened areas and species through cooperation between provincial governors; the Academy of Scientific Research and the Ministry of Agriculture. Subsequently, Ministerial Decree No. 472 of 5 May 1982 ensured the prohibition of hunting all birds and animals in a number of sites in Sinai. Eventually the promulgation of Law No. 102/83, which was passed by the People's Assembly on 20 July 1983,

provided for the legal framework upon which the government could establish protected areas throughout Egypt.

The sole category referred to in the Law No. 102/83 is the natural protectorate. Article 1 defines the natural protectorate, its designation and delineation by individual Prime Ministerial decrees, under the recommendation of the Egyptian Environmental Affairs Agency (EEAA). Sub-categories covered under the Prime Ministerial decrees include scientific area, national Marine Park, conservation area, natural area and protected area.

The EEAA is the main administrative body responsible for the enforcement of environmental protection and conservation, and was established under Decree No. 631 of 1982. In 1983 a presidential directive established EEAA offices within each of the Governorate of Egypt. In 1979, the Egyptian Wildlife Service (EWS) was established under the authority of the Ministry of Agriculture Decree No. 349, with responsibility for management of natural protectorates and wildlife research. In 1991 the Minister of Cabinet Affairs and Minister of State for Administrative Development, and the Minister in charge of Environment issued Decree No. 30 for the reorganization of the EEAA.

(www.Egypt.com)

5-2-1 International Activities

Egypt has entered a number of cooperative agreements and legal obligations. The International Plant Protection Convention was signed in 1953. The African Convention on the Conservation of Nature and Natural Resources was accepted in Algeria in 1968. Egypt is party to the Convention concerning the Protection of the World Cultural and Natural Heritage (World Heritage Convention), which was ratified on 7 February

1974. No natural sites have been inscribed to date. Egypt acceded to the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention) on 9 September 1988, at which time two sites were designated under the terms of the Convention. Egypt participates in the Unesco Man and the Biosphere Program and by 1991 had listed one site as a biosphere reserve (*www.egypt.com*)

5-3 Protected Area (PA) Definition (Egyptian Definition):

The law No. 102/1983, issued on July 31, 1983 defined a natural reserved area as:

Protected Area (PA) is: An area of land, or coastal or inland water, characterized by its flora, fauna and natural feature having cultural, scientific tourist or aesthetic value.

These areas will be designate and delineated by Decrees of the Prime Minister under the recommendation of the Egyptian Environmental affaires agency (EEAA.).

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.

Law 102 of 1983 empowered the Prime Minister to designate certain areas to be declared as protectorates. A Prime Minister's decree defines the limits of each protected area and sets the basic principles for its management and for the preservation of its resources. Till now 24 protectorates are declared. (*EEAA, 2000*)

In Egypt, protected areas is called protectorates, it is a different title to the same identity and characteristics.

5-3-1 The Designation and Establishment of PAs in Egypt:

During the first 10 years of current presidential rule (M. Hosny Mubarak), which spanned the period from 1982 to 1992, 18 nature reserves were designated and established, collectively covering a total area of 7.5% of Egypt's territorial space. With recent additions, this number has increased to 24 protected areas. Future plans outlined in envisage the increase of the total area of legislatively protected areas (PAs) to take 15% of Egypt's area by the year 2017, and to reach 28 protected areas. (EEAA, 1998)

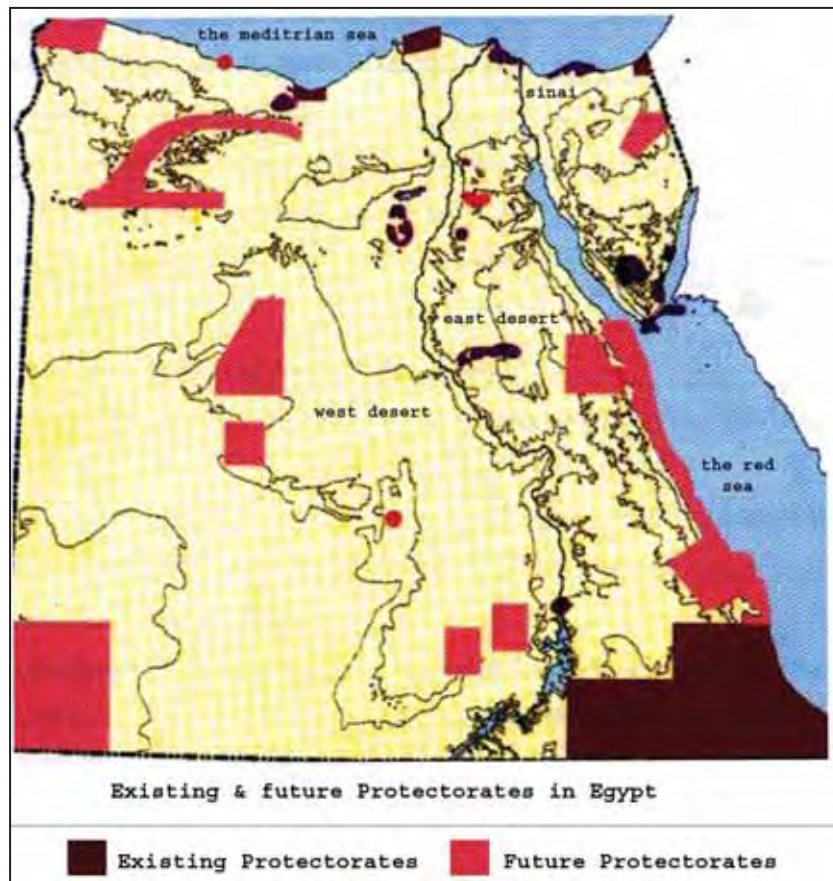


Figure (58): The existing and the expected Egyptian Protectorates.
Source : (Ministry of Housing, Public Utilities, and urban Communities, 2000)

5-3-1-1 Protectorates Declared in the Framework of Law 102 of Year 1983:

The next table shows the Egyptian protectorates declared in the frame work of law 102 of year 1983.

No.	Protectorates Names	Declaration Date	Area Km2	Governorate	Prime Ministerial Decree
1.	Ras Mohamed National Park	1983	850	South Sinai	Decrees 1068/1983 and 2035/1996
2.	Zaranik Protectorate	1985	230	North Sinai	Decrees 1429/1985 and 3379/1996
3.	Ahrash Protectorate	1985	8	North Sinai	Decrees 1429/1985 and 3379/1996
4.	El Omayed Protectorate	1986	700	Matrouh	Decrees 671/1986 and 3276/1996
5.	Elba National Park	1986	35600	Red Sea	Decrees 450/1986 and 642/1995
6.	Saluga and Ghazal Protectorate	1986	0.5	Aswan	Decree 928/1986
7.	St. Katherine National Park	1988	5750	South Sinai	Decrees 613/1988 and 940/1996
8.	Ashtum El Gamil Protectorate	1988	180	Port Said	Decrees 459/1988 and 2780/1998
9.	Lake Qarun Protectorate	1989	250	El Fayoum	Decrees 943/1989 and 2954/1997
10.	Wadi El Rayan Protectorate	1989	1225	El Fayoum	Decrees 943/1989 and 2954/1997
11.	Wadi Alaqi Protectorate	1989	30000	Aswan	Decrees 945/1989 and 2378/1996
12.	Wadi El Assuti Protectorate	1989	35	Assuit	Decrees 942/1989 and 710/1997
13.	El Hassana Dome Protectorate	1989	1	Giza	Decree 946/1989
14.	Petrified Forest Protectorate	1989	7	Cairo	Decree 944/1989
15.	Sannur Cave Protectorate	1992	12	Beni Suef	Decrees 1204/1992 and 709/1997
16.	Nabaq Protectorate	1992	600	South Sinai	Decrees 1511/1992 and 33/1996
17.	Abu Galum Protectorate	1992	500	South Sinai	Decrees 1511/1992 and 33/1996
18.	Taba Protectorate	1998	3595	South Sinai	Decree 316/1998
19.	Lake Burullus Protectorate	1998	460	Kafr El Sheikh	Decree 1444/1998
20.	Nile Islands Protectorates	1998	160	All Governorates on the Nile	Decree 1969/1998
21.	Wadi Digla Protectorate	1999	60	Cairo	Decrees 47/1999 and 3057/1999
22.	Siwa	2002	7800	Matrouh	Decree 1219/2002
23.	White Desert	2002	3010	El Wady EL Gedid	Decree 1220/2002
24.	Wadi El Gemal - Hamata	2003	7450	Red Sea	Decree 143/2003

Table (35): Protectorates declared in the Framework of Law 102 of Year 1983. (Source: EEAA, 1998)

5-4 Authoritative Bodies:

There are many Governmental bodies and non governmental bodies take the responsibility of protectorates.

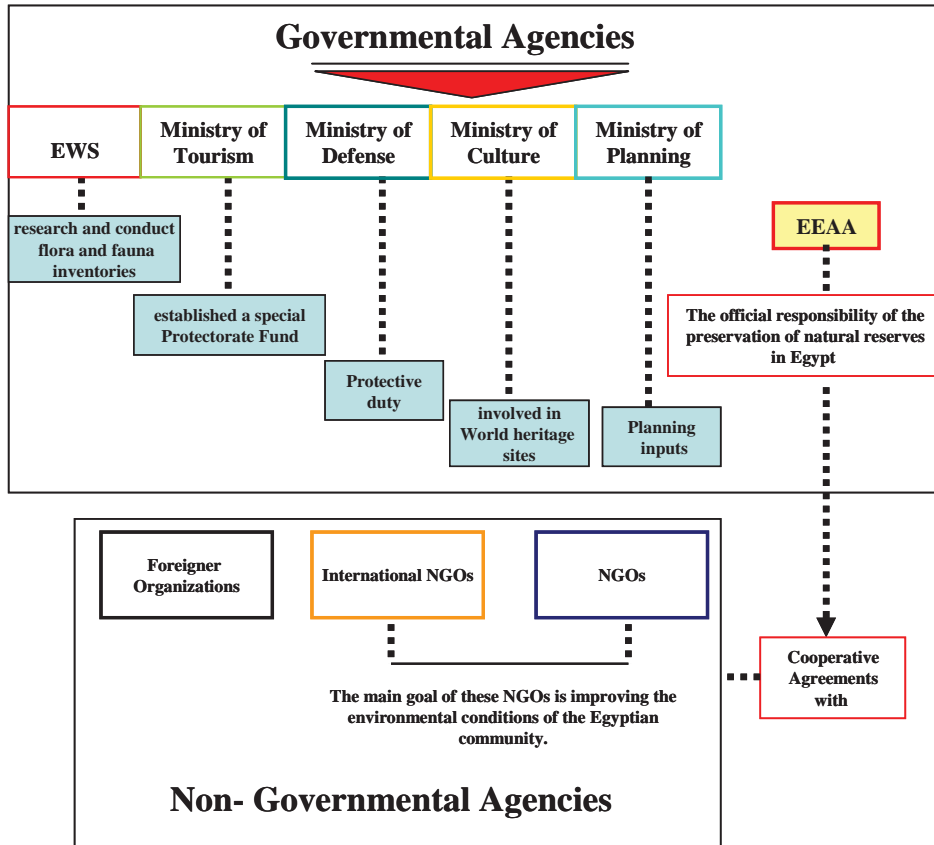


Figure (59): Governmental and non governmental bodies take the responsibility of protectorates.(Source: Researcher) based on different sources.

5-4-1 Governmental Agencies:

Various governmental agencies operating at different levels, these include:

5-4-1-1 The Egyptian Wildlife Service (EWS)

The Egyptian wildlife service was established in 1979 under the authority of the ministry of Agriculture Decree No. 349, with responsibility for management of natural protectorates and wildlife research. The EWS's current mandate is to undertake wildlife management research and conduct flora and fauna inventories. It was initially staffed by 25 full-time scientists and over 20 rangers who had attended courses run by the US-Fish and Wildlife Service. By 1985, there was less than 10 full-time staff. In 1987, the EWS was formally separated from the Giza Zoo and six departments created, including those of wildlife programs and management, research and data, bird migration, wildlife experimentation, licensing and administration. (*JICA, 2002*)

5-4-1-2 Egyptian Environment Affairs Agency (EEAA):

In June 1997, the responsibility of Egypt's first full time Minister of State for Environmental Affairs was assigned as stated in the Presidential Decree no.275/1997. From thereon, the new ministry has focused, in close collaboration with the national and international development partners, on defining environmental policies, setting priorities and implementing initiatives within a context of sustainable development. According to the Law 4/1994 for the Protection of the Environment, the Egyptian Environmental Affairs Agency (EEAA) was restructured with the new mandate to substitute the institution initially established in 1982. At the central level, EEAA represents the executive arm of the Ministry

Principle functions of the agency include:

- Formulating environmental policies.
- Preparing the necessary plans for Environmental protection and Environmental development projects, following up their implementation, and undertaking Pilot Projects.
- The Agency is the National Authority in charge of promoting environmental relations between Egypt and other States, as well as Regional and International Organizations. (See appendix 3)

5-4-1-3The Ministry of Tourism

The ministry of tourism through its Tourism Development Unit is concerned with the environment and protected areas. It has been involved in instigating a series of environmental assessments in and around natural protectorates in Sinai and elsewhere. The ministry has, under Article 6 of Law 102/1983, established a special fund entitled "Natural Protectorate Fund", to be used as a means of supplementing the budget of the administration bodies responsible for implementing Law No.102. The fund aimed at environmental research and law enforcement. (*JICA, 2002*)

5-4-1-4The Ministry of Defense

The ministry of defense plays an active role in guarding protectorates against poaching, in addition to have the authority to issue permits for wildlife hunting in desert areas. Water police (Ministry of Defense) of Lake Qaroun are entitled to arrest violators of Prime Minister Decree No.943/89 pertaining to natural protectorates. (Raslan, 20030)

5-4-1-5 The Ministry of Planning

The ministry of planning can be thought of as being the governmental unit responsible for overseeing the planning process in all fields of development and integrating them into a common policy. In this sense, it becomes one of the most effective bodies participating in the management process and is party to most decrees and polices issued on this behalf.

5-4-1-6 Ministry of Housing, Public Utilities, and urban Communities

The agency responsible for urban planning and development, within this ministry is the General Agency for Urban Planning (GAUP). The Urban Planning Law No.3/1982 states That GAUP is the responsible agency for drawing general planning polices and providing urban development plans. This law also states that the general plan determines the different land uses which are suited for a particular area, its character (of the city), its conditions, and its inhabitant's needs. (*JICA, 2002*)

5-4-1-7 Ministry of Culture

Natural areas are categorized as sites of both cultural and natural heritage.

Although the EEAA took the official responsibility of the preservation of natural reserves in Egypt, the ministry of Culture is actively involved in many of as a relevant decision-making body in these areas, especially those that contain UNESCO world heritage convention sites such as St. Catherine's. The ministry of Culture and EEAA also collaborate in projects undertake by "the National Center for Documentation of

Cultural and Natural Heritage" and on the coastal management project in Alexandria.

5-4-1-8 Governorates and Local-Level Governing Bodies

The Egyptian administrative system is one that can be characterized as essentially being central and thus local governments, represented by governorates and city councils, have yet to establish the importance of their authoritative role and contributory role in the planning and management process. (Raslan, 2003)

Authoritative Bodies		
Agency	Main Task	Responsibility toward protectorates
The Egyptian Wildlife Service (EWS)	- Established in 1979, under the authority of the ministry of Agriculture Decree No. 349 to undertake wildlife management research and conduct flora and fauna inventories	responsibility for management of natural protectorates and wildlife research
Egyptian Environment Affairs Agency (EEAA)	- Established in June 1997 -Defining environmental policies, setting priorities and implementing initiatives within a context of sustainable development. -Protection of the Environment	The Agency is the National Authority in charge of promoting environmental relations between Egypt and other States
The Ministry of Tourism	-The ministry has, under Article 6 of Law 102/1983, established a special fund entitled "Natural Protectorate Fund"	Concerned in protectorates in Sinai, touristic protectorates. Like: Ras Mohammed, and Siwa protectorate.
The Ministry of Defense	- Active role in guarding protectorates against poaching - It has the authority to issue permits for wildlife hunting in desert areas	Water police (Ministry of Defense) of Lake Qaroun are entitled to arrest violators of Prime Minister Decree No.943/89 pertaining to natural protectorates.
The Ministry of Planning	- The governmental unit responsible for overseeing the planning process in all fields of development and integrating them into a common policy	It becomes on of the most effective bodies participating in the management process and is party to most decrees and polices issued on this behalf.
Ministry of Housing, Public Utilities, and urban Communities	- Within this ministry is the General Agency for Urban Planning - GAUP is the responsible agency for drawing general planning polices and providing urban development plans.	- It Determines the different land uses which are suited for a particular area, its character (of the city), its conditions, and its inhabitant's needs. It deals with protectorates as a land use not as environmental significant areas.

Authoritative Bodies		
Agency	Main Task	Responsibility toward protectorates
Ministry of Culture	-It is actively involved in many of as a relevant decision-making body in these areas, especially those that contain UNESCO world heritage convention sites such as St. Catherine's.	The ministry of Culture and EEAA also collaborate in projects undertake by "the National Center for Documentation of Cultural and Natural Heritage" and on the coastal management project in Alexandria.
Governorates and Local-Level Governing Bodies	- The Egyptian administrative system can be characterized as essentially being a central and thus local government, represented by governorates and city councils have yet to establish the importance of their authoritative role and contributory role in the planning and management process.	Involved in take decisions, especially when this areas present a financial potential. (There is a fight between new communities agency and EEAA about the land of the petrified forest, the agency wants to take the land for the extension of new Cairo city)

Table (36): Governmental bodies and non governmental bodies take the responsibility of protectorates. *Source: Researcher gathered from different sources.*

5-4-2 Non Governmental Agencies (Participatory Organization):

Participatory bodies are those that contribute to the authoritative process in a variety of ways or by a variety of means while not officially being part of governmental institutional hierarchy.

5-4-2-1 Foreign Non Governmental Organizations

Cooperative agreements between the wildlife management authorities and foreign agencies or organizations are extensive. The World Bank, through its Mediterranean program, has been funding environmental impact assessments in protectorates, such as Lake Burullus. The international council for bird preservation has been running conservation projects in Egypt since 1987, and has been instrumental in establishing a Central Conservation Education Center, which operates from Giza Zoo.

(JICA, 2002)

5-4-2-2 NGOs

Non-Governmental Organizations (NGOs) in Egypt have an important role to play in contributing to the country's social, economic, and democratic development. In this respect, the Egyptian government has been encouraging and supporting the establishment of various NGOs, especially those working in the fields of environmental awareness and protection. Currently, there are more than 2,000 environmental NGOs in Egypt, some of them are more active than others, but collectively they play an indispensable role in raising public awareness towards environmental issues, and in conducting environmental protection and conservation activities. (*www.Egypttoday.com*)

5-4-2-3 International NGOs

There are also international NGOs working in the field of the environment in Egypt, most of which work concurrently in other fields. The main goal of these NGOs is improving the social, economical and environmental conditions of the Egyptian community.

5-5 Legislative Decrees and Conventions:

5-5-1 National Legislative Protection

The first legislation came into being with the creation of the royal hunting reserve Wade Rishrash in 1900. Interest was re-initiated with the 1955 UNESCO convention. Since that, a number of laws concerning the environment have been introduced.

Title	Year	Action
a- president decrees and laws		
President decree (march,1980)	1980	Establishment of a mechanism for: identifying / protecting areas / species through cooperation between provincial governors and ministry of agriculture
President law no.101/1985	1985	Provides financial assistance for population prevention and nature conservation in Egypt, as the "Tourism and environment fund"
b- ministered decrees and laws		
ministered decree 28 of 1967	1967	Specification of wild and animal species under protection covered by article 117 of law 53 of 1966
ministered decrees 349 of 1979	1979	Establishment of the Egyptian wild life service as the first governmental authority concerned with the protection of the wild life in the country
ministered decree no. 472/ 5 may 1982	1982	Following presidential decree (1980), this ensured prohibition of hunting of birds and animals in various Sinai sites.

Table (37): National laws and decrees of protection in Egypt. *Source (Raslan, 2003)*

Title	Year	Action
c- Decrees and laws		
Law 53 of 1966 (agriculture law)	1966	Among its article 117 prohibits hunting of species useful to agriculture, 118 prohibits cultivation of plants harmful to these species.
Law 72 of 1968	1968	Concern prevention of pollution of sea water through oil spills
Law 48 of 1982	1982	Protection of the Nile River and watercourses against pollution
Law No.102/83	1983	Provision for the legal framework for governmental establishment of PAs.
Decree No. 1611 1989	1989	Issued by ministry of justice granting police power to the manager of EEAA governorate branch, the protectorate manager, and second protectorate researcher.
Law 4 of 1994	1994	Defines scope and responsibilities of EEAA, establish EPF, the setting up of environment incentives system.

Table (38): National laws and decrees of protection in Egypt
Source (Rraslan, 2003)

From the last table we recognize the following:

- From 1966 until 1980 there was no laws specialized in PAs.
- There are no new laws established since 1994.
- There is no specific laws define the punishment of destroy or damage any part of the PA (Fauna, flora or geographical compounds).

5-5-2 International Activities, Conventions and Agreements

Since 1936, Egypt has acted party to a large number of regional and international conventions and agreements dealing with the conservation of nature in general and biodiversity in particular. The next table is based on the UNEP Egypt profile.

Convention (place and date Ratified)	Authority Egypt
African convention on the conservation of nature and national resources (Algeria,1968)	----- -
Convention on Wetlands of International Importance especially as Waterfowl habitat (Ramsar, 1971)	EEAA
Convention on international trade in Endangered species of wild fauna and flora (Washington, 1973)	EEAA
Convention for the protection of Mediterranean sea against pollution (Barcelona,1976)	EEAA
Convention on the conservation of the migratory species of wild animal (bonn,1979)	EEAA
Protocol concerning Mediterranean specially protected areas (Geneva,1982)	EEAA
Regional convention for the conservation	-----
Convention on the conservation of the migratory species of wild animal (bonn,1979)	EEAA

Table (39): Main international convention signed by Egypt for the protection of nature
Source: UNCED, 1992

5-6 Egyptian Protectorates Classification:

Now in Egypt there are **24** protectorates take almost **8%** from the whole area of the country, which are planned to reach **48** protectorates by **2017** take almost **17%** from the whole area of the country.

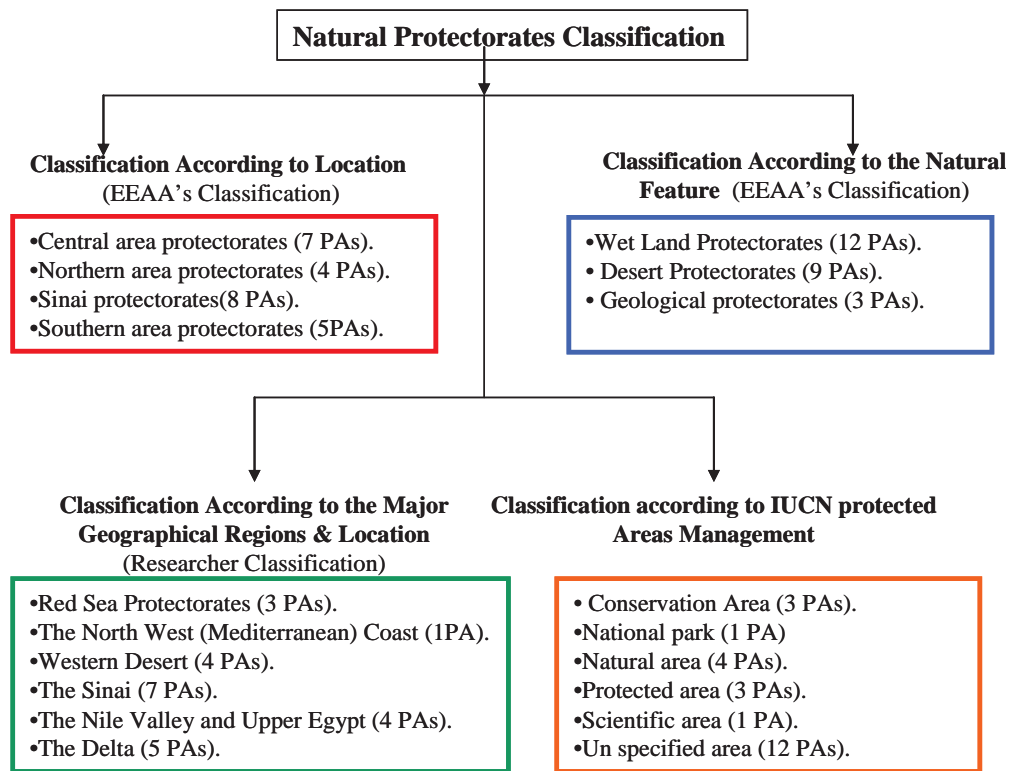


Figure (60): Natural protectorate classification.
Source : (Researcher 2005) based on different sources

5-6-1 Classification According to Location (EEAA's Classification):

Egyptian protectorates are classified according to the location to four groups:

- Central area protectorates. Sinai protectorates.
- Northern area protectorates. Southern area protectorates.

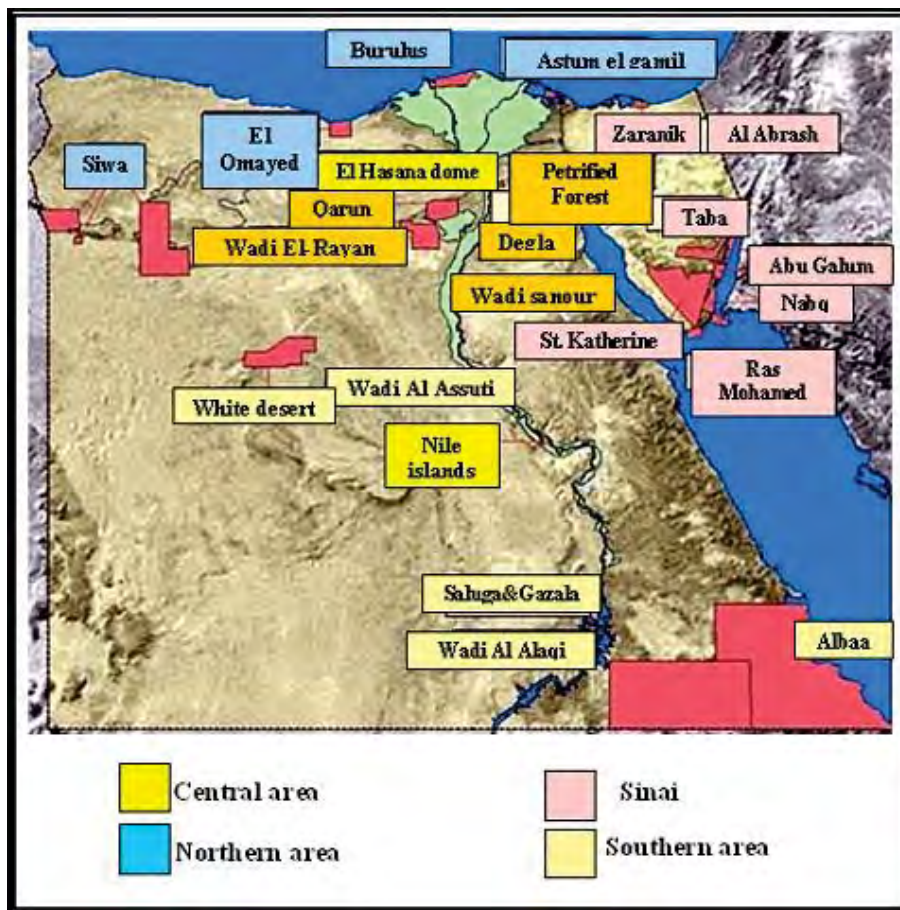


Figure (61): The Egyptian protectorates which classified according to the location.
(Source: Egyptian Environmental affairs agency (E.E.A.A.), 2000)

No.	Protectorate Name	Protected Area Classification
1	Lake Qarun Protectorate	Central Area
2	Wadi El Rayan Protectorate	
3	El Hassana Dome Protectorate	
4	Petrified Forest Protectorate	
5	Sannur Cave Protectorate	
6	Nile Islands Protectorates	
7	Wadi Degla Protectorate	
8	El Omayed Protectorate	Northern Area
9	Ashtoom El Gameel	
10	El Borolos Protected Area	
11	Natural Siwa Protectorate	
12	Ras Mohamed National Park	Sinai
13	Zaranik Protectorate	
14	Nabaq Protectorate	
15	Abu Galum Protectorate	
16	Taba Protectorate	
17	St. Katherine National Park	
18	Ahrash Protectorate	
19	Wadi El Gameel	
20	Elba Protected Area	Southern Area
21	Wadi El Asioti	
22	Saloga & Gazale Protectorate	
23	Natural White Desert Protectorate	
24	Wadi El Alaqi	

Table (40): The Egyptian protectorates which classified according to the location.
(Source: Researcher according to: Egyptian Environmental affairs agency (E.E.A.A.),, 2000)

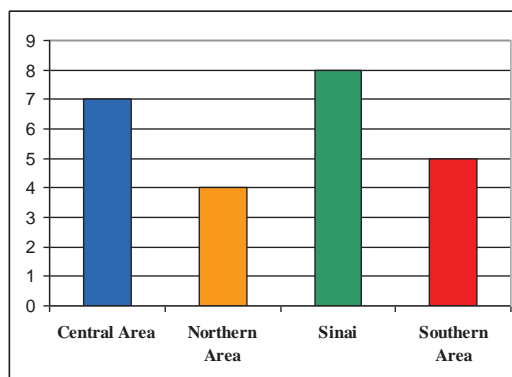


Chart (3): Egyptian protectorates which classified according to location
Source: (Researcher) according to the previous table.

5-6-1-1 Central Area Protectorates:



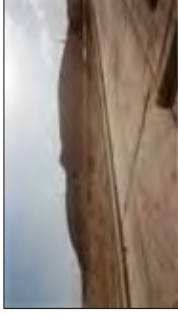




<p>1-The Petrified Forest Area in Maadi - Cairo Date of Announcement: 1989. Area: 7 Km². Type: Geological protected Area and a national heritage. Distance from Cairo: 30 km.</p>	 <p>Photo (8): The Petrified Forest <i>source: (EEAA, 2005)</i></p>	<p>5- Wadi El Rayan protected Area in Fayoum Governorate Date of Announcement: 1989. Area: 1759 km². Type: Developing Management resources protected Area and a natural national heritage. Distance from Cairo: 150 km.</p>	 <p>Photo (12): Wadi El Rayan <i>Source: (EEAA, 2003)</i></p>
<p>2- El Hassana Dome protected Area in Giza Governorate Date of Announcement: 1989. Area: 1 km². Type: Geological protected area. Distance from Cairo: 23 km.</p>	 <p>Photo (9): El-Hassana Dome <i>Source: (Researcher)</i></p>	<p>6- Quaron Lake protected Area in El-Fayoum Governorate Date of Announcement: 1989. Area: 1385 km². Type: Wetlands. Distance from Cairo: 90 km.</p>	 <p>Figure (23): Quaron Lake <i>Source: (EEAA, 2003)</i></p>
<p>3- Wadi Sanor Cave protected Area in Beni Sueif Governorate Date of Announcement: 1992. Area: 12 km². Type: Geological protected Area and national heritage. Distance from Cairo: 200 km.</p>	 <p>Photo (10): Wadi Sanor <i>Source: (EEAA, 2003)</i></p>	<p>7-Nile river Islands Protected Area in Different Governorate Date of Announcement: 1998. Area: 160 km². Type: Wet lands protected area. Distance from Cairo: 144 islands in different Governorate.</p>	 <p>Photo (13): Nile River Islands <i>Source: (EEAA, 2003)</i></p>
<p>4- Wadi Degla Protected Area in Cairo Governorate Date of Announcement: 1999. Area: 60 km². Type: Desert lands protected area. Distance from Cairo: 10 km._</p>	 <p>Photo (11): Wadi Degla <i>Source: (Researcher)</i></p>		

Table (41): Northern Protectorates in Egypt. *Source: Researcher based on varied sources.*

5-6-1-2 Northern Area Protectorates:

Northern protectorates locate in the north side of Egypt, along the Mediterranean Sea. It contains four protectorates. (See Appendix5)





<p><u>8-Elomayed Natural protected Area in Matrouh Governorate</u> Date of Announcement: 1986. Area: 700 Km2. Type: Desert Area and vital peripheral. Distance from Cairo: 300 km..</p>	 <p>Photo (14): El Omayed Protectorate Source: (EEAA, 2003)</p>
<p><u>9- Ashtoom El-gamil and Tenis Island protected Area in Port Said Governorate</u> Date of Announcement: 1988. Area: 180 km2. Type: Wetlands and Natural restricted Area for birds. Distance from Cairo: 200 km.</p>	 <p>Photo (15): Ashtoom El-gamil Source: (EEAA,2003)</p>
<p><u>10- El-Brolus Protected Area in Kafr El-Sheikh Governorate</u> Date of announcement: 1998. Area: 460 km2. Type: wetlands protected area. Distance from Cairo: 300 km.</p>	 <p>Photo (16): El Brolos Protectorate Source: (EEAA, 2003)</p>
<p><u>11- Natural Siwa Protected Area in Matrouh Governorate</u> Date of Announcement: 2002. Area: 7800 km2. Type: Desert and cultural protected area. Distance from Cairo: 800 km.</p>	 <p>Photo (17): Siwa Protectorate Source: (Researcher)</p>

Table (42): Northern Area Protectorates in Egypt. Source: Researcher based on different sources

5-6-1-3 Sinai Protectorates









<p><u>12- Ras Mohamed Protected Area and Tyran as well as Sanafir in South Sinai Governorate</u> Date of Announcement: 1983. Area: 850 km2. Type: National parks Distance from Cairo: 446 Km.</p>	 <p>Figure (24): Ras Mohammed map Source : (www . Diving . com)</p>	<p><u>16- Nabq protected Area in South Sinai Governorate</u> Date of Announcement: 1992. Area: 600 km2. Type: Multipurpose protected area. Distance from Cairo: 500 km.</p>	 <p>Photo (21): Nabq Protectorate Source: (EEAA, 2003)</p>
<p><u>13- Zaranig protected Area and El Bardwaeel Marsh in the North Sinai Governorate</u> Date of Announcement: 1985. Area: 230 km2. Type: Wetland protected Area and a natural restricted Area for birds. Distance from Cairo: 300 km.</p>	 <p>Photo (18): Zaranig protectorates (EEAA, 2003)</p>	<p><u>17- Abu Gallum protected area in South Sinai Governorate</u> Date of announcement: 1992. Area: 500 Km2. Type: landscape protected area. Distance from Cairo: 600 km.</p>	 <p>Photo (22): Abu Gallum protected area Source: (EEAA, 2003)</p>
<p><u>14- Coast marshes Area in Rafah North Sinai Governorate (Ahrash Protectorate)</u> Date of Announcement: 1985. Area: 8 km2. Type: Developing resources protected Area. Distance from Cairo: 370 km.</p>	 <p>Photo (19): Ahrash Protectorate (EEAA, 2003)</p>	<p><u>18- Taba protected Area in South Sinai Governorate</u> Date of announcement: 1998. Area: 3595 km2. Type: Desert and natural heritage protected area. Distance from Cairo: 550 km.</p>	 <p>Photo (23): Taba Protectorate Source: (EEAA, 2003)</p>
<p><u>15- Saint Catherine protected Area in South Sinai</u> Date of Announcement: 1988 Area: 5750 Km2 Type: World cultural and Natural heritage protected area Distance from Cairo: 550 Km.</p>	 <p>Photo (20): Saint Catherine PA (EEAA, 2003)</p>	<p><u>19- Wadi El Gemal - Hamata Protected Area</u> Date of Announcement: 2003. Area: 7450 km2. Type: Desert protected area. Distance from Cairo: 850 km.</p>	 <p>Photo (24): Wadi El Gemal PA www .EEAA. com</p>

Table (43): Northern Protectorates in Egypt. Source: Researcher compiled from varied sources.

5-6-1-4 Southern Area Protectorates:

Southern Area protectorates locate in the southern side of Egypt. It contains five protectorates; Elba Protectorate, Saloga & Gazal protectorate, White Desert protectorate, Wadi El Alaqi Protectorate, and Wadi El Asioty Protectorate. (See Appendix 5)




<p><u>20- Elba Natural protected Area in the Red Sea Governorate</u> Date of Announcement: 1986. Area: 35600 km². Type: National Park Protected Area. Distance from Cairo: 1300 Km.</p>	 <p>Photo (25): Elba Protectorate Source: (EEAA, 2003)</p>
<p><u>21- Saloga, Ghazal and the small Islands in between (First waterfall) in Aswan Governorate</u> Date of Announcement: 1986. Area: 0.5 km². Type: Wetlands and landscape. Distance from Cairo: 700 km.</p>	 <p>Photo (26): Saloga & Ghazal PA Source: (EEAA, 2003)</p>
<p><u>22- Natural white Desert Protected Area in El Wady EL Gedid</u> Date of Announcement: 2002. Area: 3010 km². Type: Desert and landscape protected area. Distance from Cairo: 570 km.</p>	 <p>Photo (27): White Desert PA. Source: (EEAA, 2003)</p>

Table (44): Southern Area Protectorates in Egypt. *Source: Researcher gathered from different sources.*



<p><u>23- Wadi Al- Alaqi in Aswan Governorate</u> Date of Announcement: 1989. Area: 30000 Km2. Type: Desert protected Area and Biosphere Reserve. Distance from Cairo: 950 Km.</p>	 <p>Photo (28): Wadi El- Alaqi Source: (EEAA, 2003)</p>
<p><u>24- Wadi Al-Asioutty protected Area in Asiot Governorate</u> Date of Announcement: 1989. Area: 35 km2. Type: Captive and multipurpose protected Area. Distance from Cairo: 400 Km.</p>	 <p>Photo (29): Wadi Al- Asioutty PA Source: (EEAA, 2002)</p>

Table (45): Southern Area Protectorates in Egypt. *Source: Researcher gathered from different sources.*

5-6-2 Classification According to the Natural Feature (EEAA's Classification):

Egyptian protectorates are classified according to the natural feature into:

- Wet Land Protectorates.
- Desert Protectorates.
- Geological protectorates.

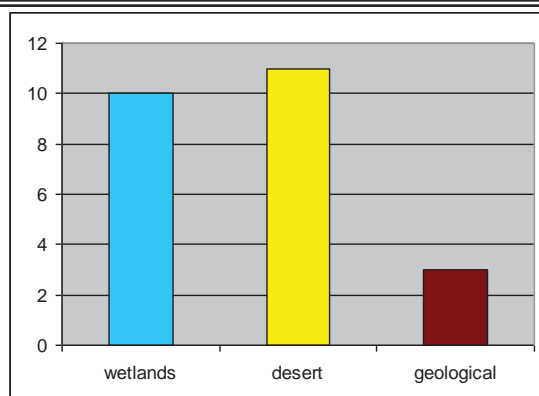


Chart (4) the three classifications of protectorates according to the natural feature
 Source: Researcher based on gathered data from EEAA

No.	Protectorates Names	Protected area classification
1.	Ras Mohamed National Park	Wetlands
2.	Zaranik Protectorate	Wetlands
3.	Ahrash Protectorate	Wetlands
4.	El Omayed Protectorate	Desert Area
5.	Elba National Park	Desert Area
6.	Saluga and Ghazal Protectorate	Wetlands
7.	St. Katherine National Park	Desert land
8.	Ashtum El Gamil Protectorate	Wetlands
9.	Lake Qarun Protectorate	Wetlands
10.	Wadi El Rayan Protectorate	Wetlands
11.	Wadi Alaqi Protectorate	Desert land
12.	Wadi El Assuti Protectorate	Desert land
13.	El Hassana Dome Protectorate	Geological protectorates
14.	Petrified Forest Protectorate	Geological protectorates
15.	Sannur Cave Protectorate	Geological protectorates
16.	Nabaq Protectorate	Wetlands
17.	Abu Galum Protectorate	Wetlands
18.	Taba Protectorate	Desert land
19.	Lake Burullus Protectorate	Wetlands
20.	Nile Islands Protectorates	Wetlands
21.	Wadi Degla Protectorate	Desert land
22.	Siwa	Desert land
23.	White Desert	Desert land
24.	Wadi El Gemal - Hamata	Wetlands

Table (46): shows the protectorates classified according to the natural feature
 Source :(EEAA 2003)

5-6-2-1 The Wet Land Protectorates:

Wetlands are low-lying marshy areas that connect inland waterways to the sea. Wetlands are saturated or covered by water at least part of the year, and have hydraulic soils. Hydraulic soils are saturated with water. Oxygen diffuses about four times more slowly in water than in air, so hydraulic soils have very little or no oxygen.

5-6-2-2 The Desert Protectorates:

Desert PAs are located in the desert, far away from any rivers, lakes or seas. These PAs are covered with seasonal plantation. (Depend on rains and any other source of water).

5-6-2-3 The Geological Protectorates:

Geological PAs are protectorates which contain unique geological features. Part of the PA's area or the total area is located in a geological form.

5-6-3 Classification According to the Major Geographical Regions (Researcher's Classification):

Egyptian protectorates are classified according to the major geographical regions:

- 1-Eastern Desert.
- 2-The North West (Mediterranean) Coast.
- 3-Western Desert.
- 4-Central Cairo Protectorate.
- 5-The Nile Valley and Upper Egypt.
- 6-Sinai & Red Sea.

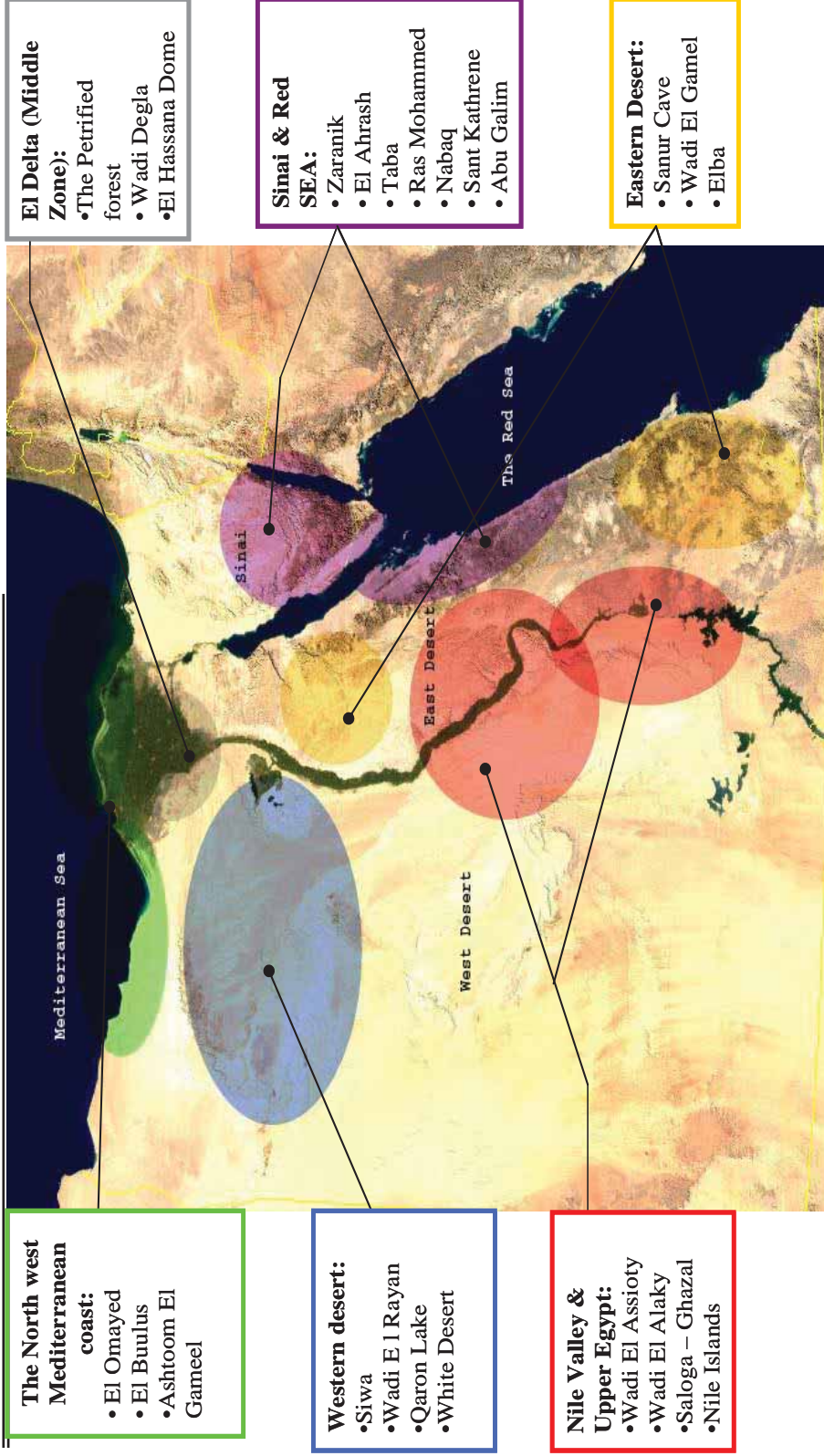


Figure (62): The Egyptian protectorates which classified according to Geographical Region

(Source: www.googleearth.com) Edited by the Researcher

No.	Protectorate Name	Protected Area Classification
1	Elba Protectorate	Eastern Desert
2	Sanour Cave Protectorate	
3	Wadi El Gameel	
4	El Omead Protectorate	Northern Mediterranean Sea
5	El Borolos Lake	
6	Ashtoom El Gameel	
7	Siwa Protectorate	Western Desert
8	Wadi El Rayan Protectorate	
9	Qaroun Lake	
10	White Desert Protectorate	
11	Wadi El Asiouti Protectorate	Nile Valley & Upper Egypt
12	Wadi El Alaqi Protectorate	
13	Nile Islands Protectorate	
14	Saloga & Gazal Protectorate	
15	Wadi Degla Protectorate	Central Cairo Protectorates
16	The Petrified Forest Protectorate	
17	El Hassana dome Protectorate	
18	Nabaq Protectorate	Sinai & Red Sea
19	Taba Protectorate	
20	El Ahrash Protectorate	
21	Zaranik Protectorate	
22	Ras Mohammed Protectorate	
23	St Cathrene Protectorate	
24	Abu Galum Protectorate	

Table (47): The Egyptian protectorates which classified according to the location.
(Source: Researcher)

5-6-3-1 Eastern Desert:

The Eastern Desert is dominated by Granite Mountains dissected by numerous vegetated wadi (dry river beds). Along the red sea there is a coastal plain that is fringed in the south with mangroves. Near the boarder with Sudan there is Elba Mountain, the northern most extension of the Ethiopian Highlands. The mountain has high precipitation which

gives rise to a rich biodiversity with plants and animals found no where else in the country.

5-6- 3-2 The North West (Mediterranean) Coast:

While the Mediterranean Sea is lower in biodiversity than the red sea, it has unique marine life and is home to multitude of species. The Mediterranean coastal plain of the Western Desert is a hot spot for biodiversity with some of the highest precipitation in the country giving rise to a diverse flora and fauna.

5-6-3-3 Western Desert:

Although, most of the west desert of the Nile is Devoid of live, this region has spectacular geological formations and scenery, including the White Desert and Libyan sand sea. There are several large depressions in the Western Desert where oases with saline lakes are found, including Siwa oasis. Other depression close to the Delta region formed lakes such as Quroun Lake.

5-6-3-4 The Nile Valley and Upper Egypt:

The Nile Valley is comprised of the Nile, and a thin band of cultivation along its banks. The river, associated islands, and wetlands are home to multitude of plant and animal life. Geographical formations are also scattered along the uncultivated regions in this area.

5-6-3-5 Central Cairo Protectorates:

It contains the suburban Protectorates (protected areas situated within urban context). As in Egypt, a strange phenomenon appears; adherence of urban environment to protected Areas. This appear obviously in three

Egyptian Protectorates; Wadi Degla, the Petrified Forest, and Wadi Degla (we will study this phenomenon in details in chapter four). The three protectorates situated in Big Cairo City; The Petrified Forest is located in New Cairo City, Wadi Degla is located in Maadi, and El Hassana Dome on Alexandria-Cairo road.

5-6-3-6 Sinai & Red Sea Protectorates:

Sinai desert is a region largely dominated by sand dunes and gravel plains with several mountain outcrops. There are two lagoons along the Sinai Mediterranean coast: Bardawil Lake and El Malaha. South Sinai, in contrast is largely mountainous, with some of the highest peaks in the country. The mountains around St. Cathrine with their high precipitation are a biodiversity hot spot home to a multitude of plants and animals, some of which are endemic.

The Red Sea includes a variety of rich marine ecosystems, which are on of the highest in biodiversity. Coral reefs constitute the majority of these ecosystems playing host a number of unique aquatic species as well as having economic importance for the tourist industry and fisheries. These are therefore considered as priority areas for protection. Mangroves, particularly encountered in the southern part of the region, are also highly productive ecosystems, supporting a large number of species. The coastal plains of the Gulf of Suez and Elba Mountain are fringed by species rich coral reefs and by the most northerly mangroves in the world.

5-6-4 Classification According to IUCN Categories System:

The following table lists areas in Egypt that have qualified as such and have therefore been included under the UN list category (The 1997 list with information revision).

1997 UN list of protected areas in Egypt				Notes
Designation	Site	IUCN	Year	
Conservation Area	Wadi El Rayan Protectorate	IV	1986	- These are management based designations given by the UNEP & differ from national designations that are based on habitat type & include; wetland protectorates, desert protectorates, geological protectorates - Egypt first national report to the convention on biological diversity, Dec.1997. - Abu- Galum, Nabaq, Taba Protectorates are integrated with Ras Mohammed into the South Sinai Sector National Park Program - Wadi El Hetan in Wadi El Rayan PA is declared as a world heritage protected area in 2004.
	Wadi Alaqi Protectorate	IV	1993	
	Elba	IV	1986	
National Park	Ras Mohamed	II	1983	
Natural Area	Siwa	IV	1988	
	Zaranik Protectorate	IV	1985	
	St. Katherine	IV	1988	
	Ashtum El Gamil	IV	1988	
Protected Area	Lake Qarun Protectorate	I	1989	
	Wadi El Assuti Protectorate	IV	1989	
	Saluga and Ghazal	I	1986	
Scientific Reserve	El Omayed Protectorate	I	1986	
Unspecified Area	El Hassana Dome	-		
	Petrified Forest	-	1989	
	Sannur Cave Protectorate	-	1997	
	Nabaq Protectorate	-		
	Abu Galum Protectorate	-		
	Taba Protectorate	-		
	Lake Burullus Protectorate	-	1998	
	Nile Islands Protectorates	-	1998	
	Wadi Degla Protectorate	-	1999	
	Ahrash Protectorate	-		
	White Desert	-		
Wadi El Gemal - Hamata	-	2003		

Table (48): The 1997 UN list of protected areas in Egypt
(source: UNEP-WCMC(1997) Egypt Country Database revised with MSEA nature conservation list(2002)

5-7 Egyptian Protectorates Analysis:

- The first protectorate in Egypt was Ras Mohammed protectorate, it was declared in 1983. Wadi El Gamal is declared in 2003, it is the latest protectorate in Egypt.
- Egyptian protectorates are located in 12 governorates, except Nile river island protectorate which locate in 16 governorates.

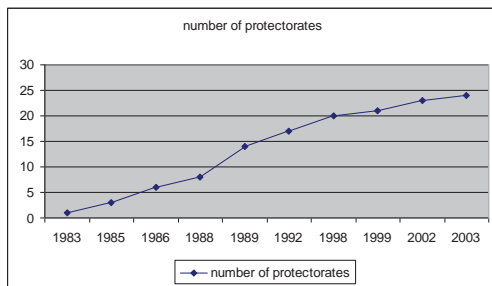


Chart (5): Growth of protected areas in Egypt from 1983 until 2003 source: Researcher

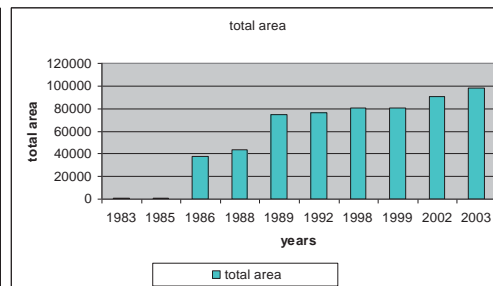


Chart (6): Growth in the total area of Egyptian protectorates. Source: Researcher

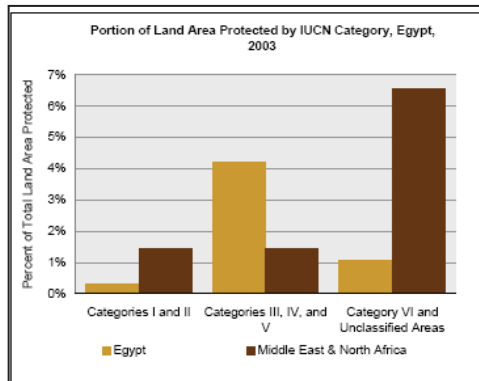


Chart (7): Comparison between area of protected areas in Egypt and Middle East –North Africa. Source (IUCN, 2002)

- Current Egyptian protectorates are 24 PAs, take almost 7.5% of Egypt's total area. This number is planned to reach 48 and take almost 15% from Egypt's total area by 2017.

- Almost 50% of the Egyptian PAs are unspecified in the IUCN categories system

5-8 Biodiversity in Egypt:

Egypt lies at the northeast corner of Africa at the junction of four biogeographically regions, Irano-Turanian, Mediterranean, Saharo-Sindian and Afrotropical. At the same time it is at the center of the great Saharo-sindian desert belt that runs from Maorocco on the northwest corner of Africa to the high, cold deserts of central Asia. This unique position is enhanced by the circumstance that it is divided by the Nile, the longest river in the world. Most of Egypt is either arid or hyper arid. however, due to its very varied eco-zones, the country is home to a diversity of terrestrial habitats and a fauna and flora, which although low in species numbers and with few endemic species, is extremely varied in composition. Egypt is bounded on its north and east by two largely enclosed seas, the Mediterranean Sea and Red Sea. The Red Sea is rich in species and nurtures reef systems that are among the richest in the world as will as stands of mangroves that play vital role in the health of the sea. The reefs and the mangroves of the red sea are arguably among the most important vehicles of biodiversity in the world. However, the fauna and flora of the Red Sea is essentially a modified version of threat of the Indo-Pacific and it also has relatively few endemic species. Ecosystems and habitats must be maintained to safeguard species. Species must be protected in order to conserve ecosystems and habitats. In Egypt, the lack of species abundance and the relatively large number of eco-zones and habitats makes the preservation of both especially important.

National Status		Information Relevant to Conservation		
Indicator	Figure	Indicator	Figure	
Biodiversity	-Flora	3059	Endangered Species	32
	-fauna			
	• Invertebrates	1422		202 rare species
	• Insects	10,000	Endangered Species	Unknown
	• Fish	755		70 rare species
	• Birds	450	Endangered Species	16 globally threaten species
	• Mammals	100	Endangered Species	26 rare/9 endangered species
• Reptiles	100	Endangered Species	15 endangered species	
PAs / land coverage	Approx .No .of PAs UNEP. Class. 2002	12	Number of areas with managed plans	7 (1997)
	No of protected areas	24		
	Total area-% of land coverage	75.000km2 -7.5% of TA.	Deforestation rate	20 km2/annually (1985)
	Agriculture land as % of total land area	2.6% (1990)	Desertification rate	-
	Urban land area as % of total land area	4% (2002)	Average projected Growth Rate	10174 km2/ annually (85-2005)
Human Indicators	Total Population in Egypt	67,922,000 (2001)	Total population living on / in the vicinity of PAs	Sinai Bedouins 7000 Desert Governorates: 550000
	Natural Increase	Total= 2, 15%	Natural increase	sinai total increase=93%
	Distribution	46% cities/ 99% in urban land mass (42000m2)	Distribution	1% in 96% of land mass of which over 15% is PAs
	Population density in urban land mass	1170/km2	Population density	Total land= 0.625/km2
	Scientists, engineers technicians engaged in research/ experimental development	46.022(1991)	Visitors / tourism in PAs Classified Areas	Ras Mohammed= 60.000(89) St Catherine's= 30.000(1989)
Financial Indicators	Total Expenditure on Environmental Protection, Management Plans.....etc	-5 yr plan= 4,168,042,000L.E (1997) -External donor funding=902,153,727 L.E (1996)	Total Financial Revenues of PAs Classified Areas	-Wadi El Rayan= 85,000 LE Ras Mohammed= 2.000.000LE

Table (49): Indicators of the status of biodiversity and PAs in Egypt
Source (Researcher) compiled from varied sources: UNECED, 1992 –IUCN, 1992

5-9 Egyptian Law for Protectorates:

5-9-1 Law No 102 of 1983 for Nature Protectorates

Article	Main Issue	Notes
Article (1)	Defines Protectorate definition, and the authorities responsible of them. (See Appendix 6)	PAs are designated by Decree of the Prime Minister under the recommendation of EEAA
Article (2)	Mention the forbidden actions in protectorates	Mainly it is forbidden to: destroy damage, remove, pollute any part of the PA, introduce new species inside its border, and erect any building inside it.
Article (3)	Forbidden to make activities around the PAs may affect on it.	Urban environment around PAs may impact on it, this article doesn't mention that.
Article (4)	Define the administrative body responsible on enforcement this law.	Until now this offices didn't make their duty as expected, no one control this process. It usually takes the responsibility of fund & natural monitoring without enforcement the law.
Article (5)	Any laws and decrees must promulgated in accordance with national legislation	
Article (6)	A fund will be established from deferent resources.	The article did not mention the fields the funds will be used in.
Article (7)	The punishment of contravenes article 2 & 3.)	There are two punishments; paying fines& going to prison for a period not less than year.
Article (8)	The fines will be collected from a specific administration body.	The collection procedure will be done without any delay.
Article (9)	Competent officials of the concerned responsible for enforcing this Law	
Article(10)	This Law is to be published in the Official Gazette and will be enacted within three months	

Table (50): Articles of law102 of 1983 for nature protectorate. *Source: (Researcher adopted from EEAA,1998), for further details see Appendix (6)*

From the analysis of the Egyptian law of nature protectorates we can conclude the following points:

- **Article 2** discusses the forbidden action inside the border of the protectorates.
- **Article 3** discusses the forbidden activities around protectorates (without specify the forbidden or acceptable uses)
- **Article 7** mentions the punishments of contravenes article 2 and 3.
- **Article 4** discusses the authority or administrative body responsible for the enforcement of the banishment law.
- This means that articles 2, 3, 4 and 7 concerned with the forbidden actions in and out the protectorates and authoritative body concerned of enforcement the law and its punishments.
- Articles 5, 6, and 8 talk about the fund established for protectorates and its resources (fees, fines, donations, agreements, and grants).
- The main problem faces this law is the weakness in application, especially the punishment part.
- There is a misunderstanding in administrative body responsible for collecting fines; if it the administrative office inside every protectorate, or it is an office in the EEAA.

5-10 Environmental Impacts Assessment (EIA):

The purpose of EIA is to ensure the protection and conservation of the environment and natural resources including human health aspects against uncontrolled development. The long-term objective is to ensure a sustainable economic development that meets present needs without compromising future generations' ability to meet their own needs. EIA is an important tool in the integrated environmental management approach. EIA must be performed for new establishments or projects and for expansions or renovations of existing establishments according to the Law for the Environment (Law no. 4 of 1994). (www.EEAA.com)

There are two types of the assessment; environmental screening form A, and form B.

Form A discusses the following:

- Description to the project
- Wastes resulting from the activity during the operation stage and treatment methods. (See Appendix7)

Form b discusses the following:

- Description to the project
- Wastes resulting from construction, control and disposal methods.
- Wastes, treatment methods and ways of disposal.
- Preliminary analysis of environmental impacts during operation and methods of mitigation. (See Appendix4)

5-10-1Relation between EIA and protectorates:

As protectorates are significant areas must be treated in a special way, the surrounding areas must be compatible and suitable to those areas. EIA is a guide toll to select the surrounding urban uses, but until now there is no

specific item in the assessment related to protectorates, and whether this project is near to protected area, and how far between them.

5-11 Dangers that Face Environment Protection in Egypt:

There are many challenges and dangers that face environment protection in Egypt.

5-11-1 Conflicts in the PAs Management:

Many of the problems affecting PAs in Egypt are a direct result of the lack of sustainable, effective system to address management issues. Conservation activities and efforts promoting PAs management and the sustainable use of natural resources are largely isolated from the conception phase through to implementation, resulting in a deficit in the capacity in the field of conservation. This occurs due to the following:

- The lack of an organizational framework that specifies the responsibilities and duties of involved authorities and participants.
- The indefinite nature of the status of ownership and authority within PAs.
- Communication deficiencies between involved parties and un-coordinated development strategies between government agencies and the duplication of roles.

Conflicts can be defined by the level at which they occur, and parties involved:

- **Inter – governmental:** these occur when the activities of government agencies within PAs, are inconsistent or uncoordinated in their aims.
- **Governmental/External Institutions:** these occur when governmental actions are conflict with the activities, opinions or efforts of concerned NGOs, academic institutions or international organizations.
- **Governmental/Legislative:** Legislative non-compliance of government agency involving its activities within PAs.
- **Governmental/Stakeholder:** The conflict of actions of the government with those of private owners/ local communities.

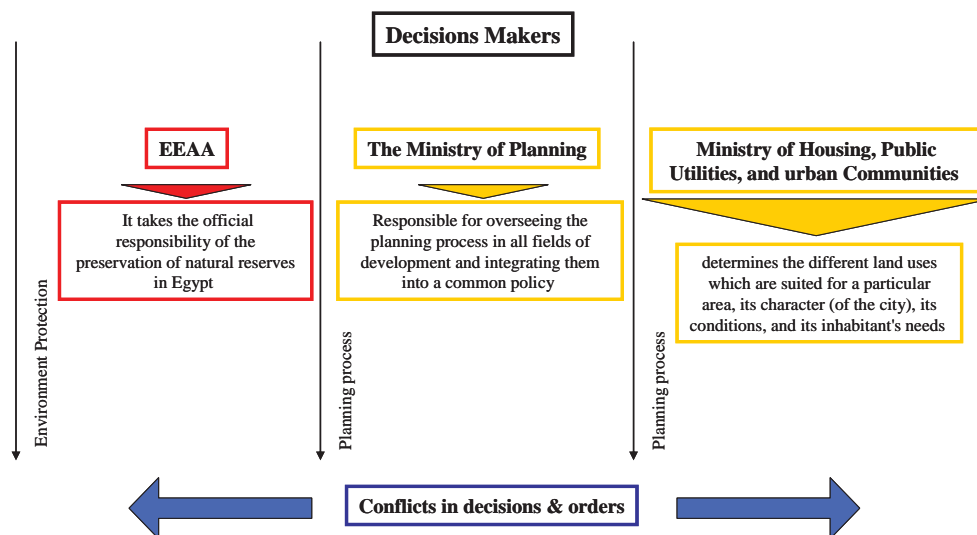


Figure (63): Conflicts in governmental decisions makers in protectorates. Source: (Researcher)

5-11-2 Conflicts in the PAs Definitions and Classifications:

Protected areas in Egypt have a local name; protectorate. This terminology rarely used in any other country. This may make a confusion or misunderstanding to the tourists or nature lovers. Also classification of PAs in Egypt is managed by two systems:

- **Local Classification:** this classification is submitted by EEAA, and it is the official classification in our country. It is classified PAs according to location (This type classifies PAs into 4 sectors), or according to natural feature (This type classifies PAs into 3 sectors).
- **International Classification:** the IUCN protected areas categories is the worldwide classification. Here in Egypt Only 50% of the Egyptian PAs are classified in this system and the other PAs are unspecified in this classification.

5-11-3 Conflict in Aims

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

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 aesthetic standards within the reserved area. (*EEAA- Department of Nature Protectorates, 1989*)

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

This conflict appears in many of Egyptian protectorates between some legislative bodies like; EEAA and Ministry of New Communities in new Cairo city (a fight on the land of the Petrified Forest)

5-11-4 Shortage in the Publication of the PAs:

One of the most important problems that face Egyptian PAs is shortage in the publication. Sinai's PAs is known to the public, but other PAs suffer from neglecting from the government's publication. Only residents of the adherence area of PAs know that there is a protected area. But they

may not know what is a protected area is. This situation put PAs in crisis, because of the damage and violation which may happen to the PA's compounds.

5-11-5 Shortage in the Financial Support of PAs:

Non-Governmental Organizations (NGOs) in Egypt have an important role to play in the financial support of PAs. In this respect, the Egyptian government has been encouraging and supporting the establishment of various NGOs, especially those working in the fields of environmental awareness and protection. Most of the financial support of PAs came from international conventions, as EEAA suffers from the shortage of the PAs budget from government. (Sinai protectorates are financially managed from the European Union).

The Last Problems Threat the Safety of the Protectorates and cause the Following PAs Problems:

5-12 Some examples of Egyptian protectorates problems:

5-12-1 Wadi Degla:

The lack of coordination between various government bodies has resulted in the glaringly evident failure to actually protect the status of the wadi degla ravine. An unannounced decision by the Cairo government, the local authoritative body governing the Wadi, has given permission to set up a large garbage dump in the area slicing two kilometers off the east end, known as Wadi-El Murr, to operate it. Accordingly, over the past few months, the protectorate's boundaries have been redrawn several

times in an attempt to reduce the polluted area. Other activities permitted by the Cairo Governorate include a seven kilometer asphalt road into the protectorate, the use of dynamite in mining and a spare part store for the Cairo Bus Transport Authority, (This problems will be discussed in chapter six in details). Also Shak El Taban area which specialized in marble production is considered as a pollution source to the protectorate.

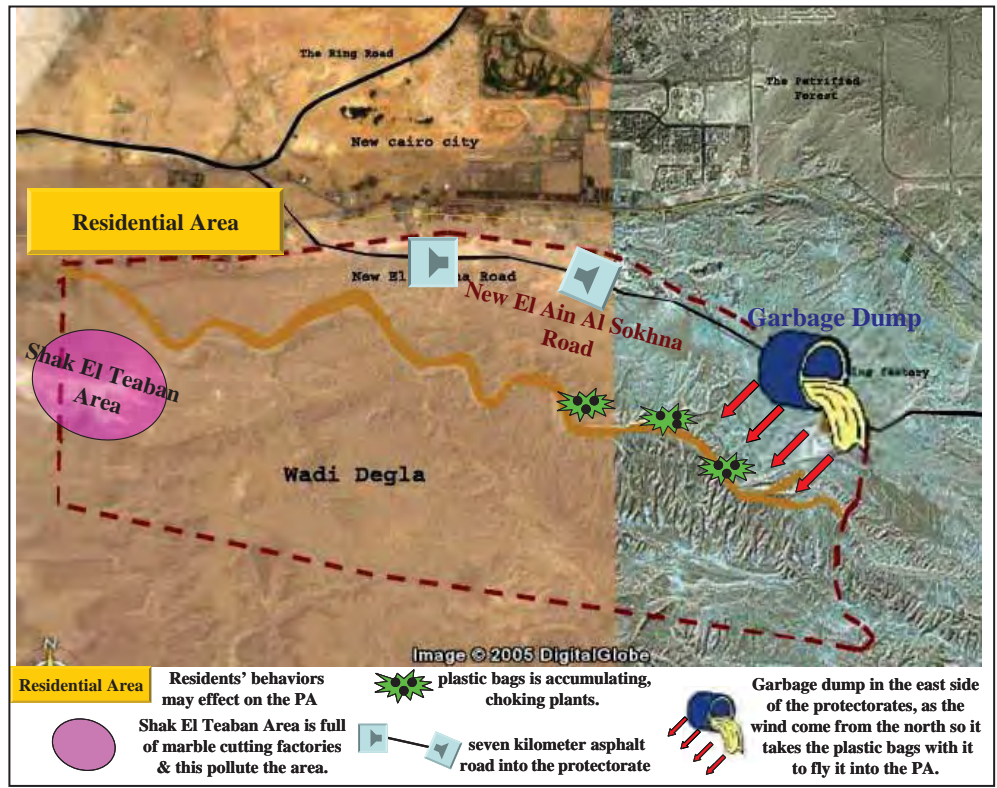


Figure (64): The impacts on Wadi Degla protectorate from the surrounding urban uses.

(Source: www.googleearth.com –edited by the researcher)

5-12-2 Ras Mohammed and the Gulf of Aqaba:

Tourist-related construction in the Sinai progressed rapidly between the years 1988 and 1995 and ultimately weighed down on the region's natural terrestrial and marine resources. The government realized that the great tourism potential of South Sinai could be threatened by exploitation

of the very resources that deemed it an attractive tourism destination. Therefore with assistance from the European Union established the Ras Mohammed National as well as two parks on the Gulf of Aqaba. However, the national policy in specific connection with the tourism sector still remains unclear in most cases. In conflict with environmental laws many protected areas have been exploited in the name of touristic development. Such examples include St Catherine's Natural Protectorate Wilderness that is under potential threat due to plans made by the Ministry of Housing to add, hotels and 500 villas in the area. The Suez Canal Authority has also contributed to the problem by failing to regulate environmental standards for the tankers passing through it. Tanker fuel pollution, petroleum spills and vessel collisions affect marine ecosystems that lie on the transportation routes.



Photo (30): Impacts of tourist activities in Ras Mohammed protectorates.

Source :(www.rasmohamed.com)

We can say that:

- The coastline of the Red Sea attracts thousands of visitors every year. The Red Sea reefs support up to 1,000 species of fish of which ten percent are to be found nowhere else in the world. Divers and snorkelers come to marvel at this underwater world. But tourists are fast destroying the very wonders they come to see.

- Corals are fragile by nature and sensitive to changes in their surroundings, making them vulnerable to many forms of damage.
- Resorts such as Ain Suhkna, Quseir and Marsa Alaam have some of the richest colonies to be found anywhere. The construction of hotels and holiday villages breaks up and destroys the reef terraces. Silt from the debris floats away to smother reefs elsewhere. At Hurghada development is so intense that the coral has been completely destroyed.
- There are other problems. The physical action of shore-divers is gradually abrading the coral terraces. People interested in colorful souvenirs are openly gathering specimens to take home. The anchors of off-shore diving boats rip and scour away at coral colonies and other marine organisms before taking hold.
- The marine national park of Ras Mohamed is a protected and relatively unaffected area, but the number of divers has increased dramatically over the last couple of years. Although dive boats now have fixed moorings, there is little enforcement and the diving fraternity continually disturbs and plunders this diverse ecosystem.
- The Gulf of Aqaba to the north of Ras Mohamed may run the same gauntlet soon. Giant projects in Taba and Nuweiba are being planned.

Government actions towards these problems:

In 1994 Egypt brought out a law forbidding building works within 200 meters of any shoreline. But by then sites up and down the west coast had already been sold off. The prospects for effective control to minimize damage now look bleak.

Since 1990 the Egyptian Government has invested vast amounts of money to develop its coastal resorts. An income of \$750 million is hoped

for from the extra accommodation. Because of recent attacks on tourists in the trouble-spots of the country's interior the Government is promoting the Red Sea as an alternative.

Egypt has a coral paradise that it can ill afford to lose. A rigorous code of conduct is now required for both developers and tourists. If lessons can be learnt from the mistakes of the past, then the future of those places that have not been destroyed or over-exploited will be secured for thousands of people to enjoy.

Clearly, there are still many problems to be addressed, and the balance between environmental protection and tourism development is one of the great challenges that Egypt currently faces. The Ministry of Tourism has publicly stated that it aims to attract 16 million tourists annually by 2017, with 300,000 hotel rooms along the Red Sea coast alone.

5-12-3 El Burullos and El Bardaouil Wetlands:

The Burullos and Bardaouil Wetland (which contain El Zarznik PA) are administrated by the EWs, Giza Zoo and designated as an international RAMSAR sites, are at the present time threatened by various activities involving government agencies and stakeholders. The Ministry of Water Resources is currently executing the Salam Peace Canal, on the west bank of the Suez Canal. Upon its completion, the canal will form the core of North Sinai Agriculture Development Project (NSADP), irrigating 0.25 million Acres in North Sinai. The construction process as well as the further extension of pipelines will seriously damage the PAs and the surrounding natural habitats.

Urban and tourist development activities on the shores of the wetlands are set to be executed by the ministry of housing and ministry of Tourism and land reclamation activities carried out by the ministry of agriculture

are currently underway. All the previous activities disregard both national legislation and the standards set at the RAMSAR convention which was ratified by Egypt in 1971, and whose compliance is administrated by the EEAA. The local fishing communities, as active stakeholders, also practice activities that are ecologically detrimental, thus illegal, including excessive fishing and poaching.

Main Involved Bodies	Type	Responsibility & activities
EEAA	Government agency	Takes the official responsibility of the preservation of the protectorate
Ministry of Housing	Government agencies	Urban and tourist development activities on the shores of the wetlands
Local fishing Communities	Stakeholders	practice activities that are ecologically detrimental, thus illegal, including excessive fishing and poaching
Ministry of Water resource	Government agency	Is currently executing the Salam Peace Canal, on the west bank of the Suez Canal. Upon its completion, the canal will form the core of North Sinai Agriculture. The construction process as well as the further extension of pipelines will seriously damage the PAs and the surrounding natural habitats.
Ministry of Tourism	Government agency	Urban and tourist development activities on the shores of the wetlands
Hotels owners	Stakeholders	Urban and tourist development activities on the shores of the wetlands

Table (51): Different agencies and stakeholders involved in El Zarznik PA

Source: (Researcher) compiled from varied sources.

5-12-4 The Western Desert Oases:

Due to relocation strategies, such as the New Valley Project, developed by the government in the 1960's to alleviate population pressure in the Nile Valley region, the Western Desert and its oases (including Siwa Oases) has been overcome by an influx of migrant workers. Farmers are using traditional flood irrigation techniques to irrigate heavily water-dependant drops (especially in Baharia Oasis) drilling wells, forcing excessive water to the surface and draining the very same aquifers which are the focal point of the Ministry of Tourism's efforts to promote the area as a site of a number of industrial projects, brought on by the governmental offered to investors by the central government and the local governorate. Resulting industrial wastes, however threaten, pollute the oases aquifers and harm the sensitive desert ecosystem.

5-12-5 Wadi El Rayan and Lake Qarun:

Despite the PA status of Wadi El Rayan, the Tourist Promotion Authority (TPA) which operates under the Ministry of Tourism participated in supervisory capacity in organizing the Egyptian leg of the Paris-Dakar Rally jointly with a private investor. The TPA gave permission for the trail to run through the most fragile part of the Wadi, Gabal Al Medawwara, and failed to coordinate the event with the EEAA and officials in the Wadi El Rayan PA. In doing so, the TPA violated national legislation concerning the restriction of activities within PAs and disregarded the authoritative role of EEAA with the Wadi. Other potential problems and concerns include Lake Qarun, where the Ministry of Tourism has approved the construction of a tourist project on the area's eastern core zone, foregoing environmental impact studies, standards and procedures set by the EEAA.

In Fayoum, there is an ongoing war between environmentalists and hunters, especially hunters coming from over the Mediterranean in the past the Maltese and the Italians have been the main culprits to shoot endangered species inside the protected area. Fayoum is also under pressure from tourist development, with the latest battle being waged over the construction of a road to service tourist sites on the so far unspoiled northern shore of Lake Qarun, a protected area since 1989.

5-12-6 The Petrified Forest:

The declared area of the Petrified Forest is almost 6 km² but the fossilized tree trunks is covered a bigger area, almost 1000 km². This is meaning that the current preserved area is only 0.06% from the real area. The petrified forest suffers this days from another urban violation; as ministry of population and new communities wants to take 2/3 from its area (4km²) to make new extension for the new Cairo city.

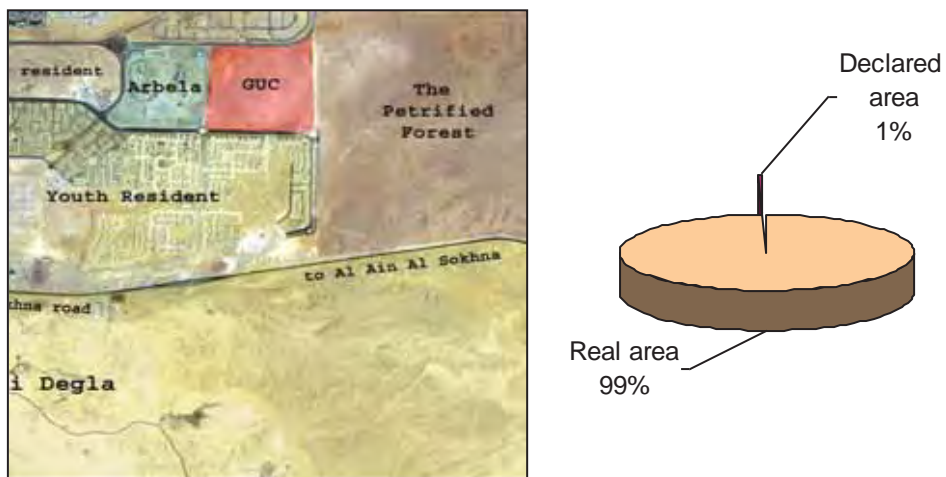


Figure (65): The Petrified Forest situated in new Cairo city

Source: www.googleearth.com

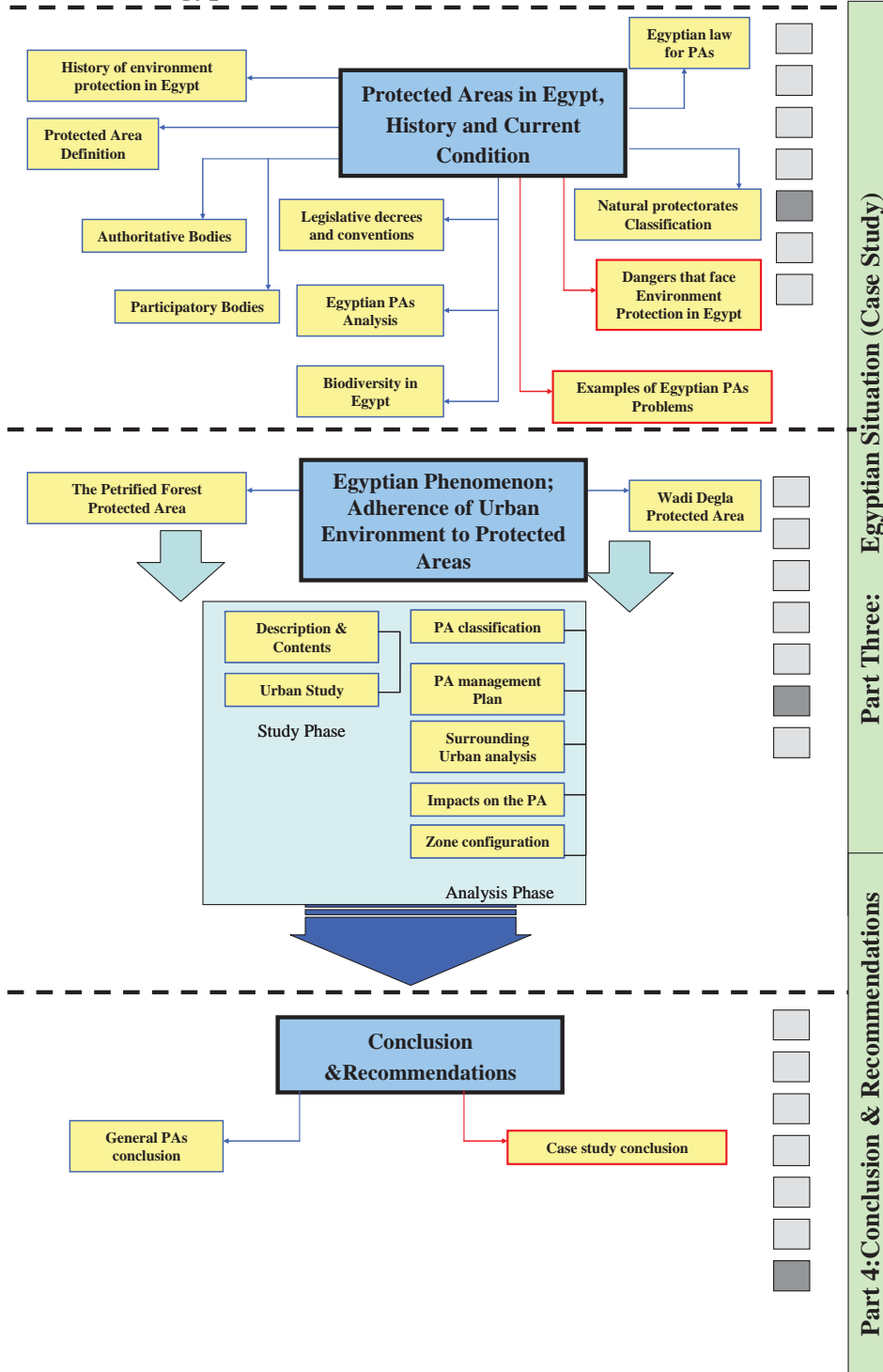
5-13 Summary of Chapter five: (Protected Areas in Egypt; History and Current Condition)

- Environment protection has long been an important part of Egyptian culture and heritage, but despite governmental involvement, the designation and management of PAs in Egypt can be considered as largely unexplored concepts.
- There is a current problem in the compliance to the national legislation concerning environment protection.
- Many of the problems affecting PAs in Egypt are a direct result of the lack of a sustainable, effective system to address management issues.
- Despite efforts, Egypt lacks an effective system to address management issues and has a defect in the management of the PAs, as many agencies and bodies are responsible for protectorates in Egypt. This conflict represents a huge problem in the protection process in Egypt.
- Egyptian protectorates are classified according to national measures. And almost 50% of these protectorates don't have a classification in the IUCN management system.
- Protection process in Egypt faces many obstacles; one of this is the conflict in national plans and conflicts in responsibilities.
- As a result of all the obstacles that face protection movement in Egypt, there are many problems are threatening the Safety of this Protectorates and cause different Problems.

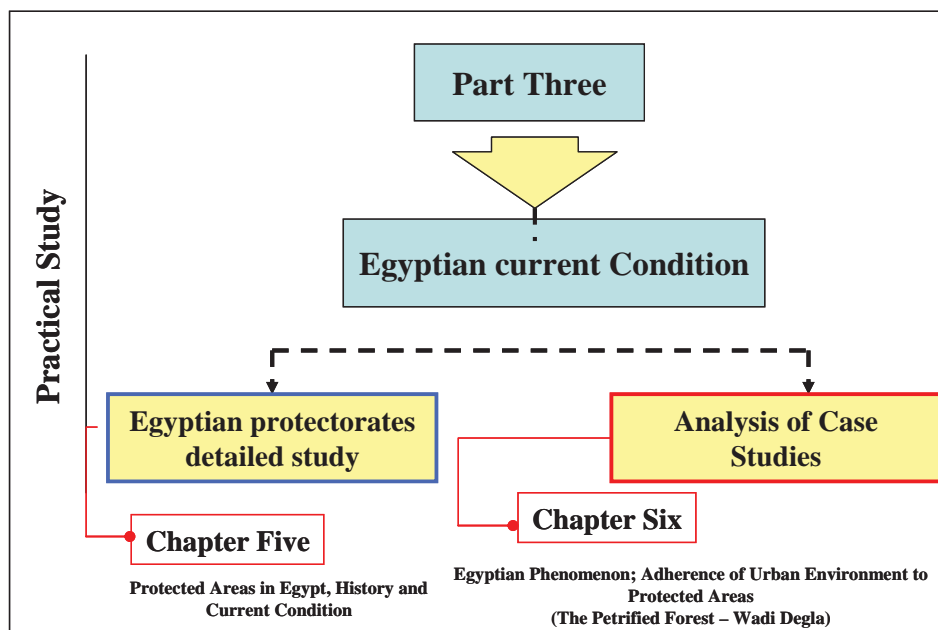
Chapter Six
Egyptian Phenomenon; Adherence of Urban
Environment to Protected Areas.
(The Petrified Forest & Wadi Degla)

Part Three

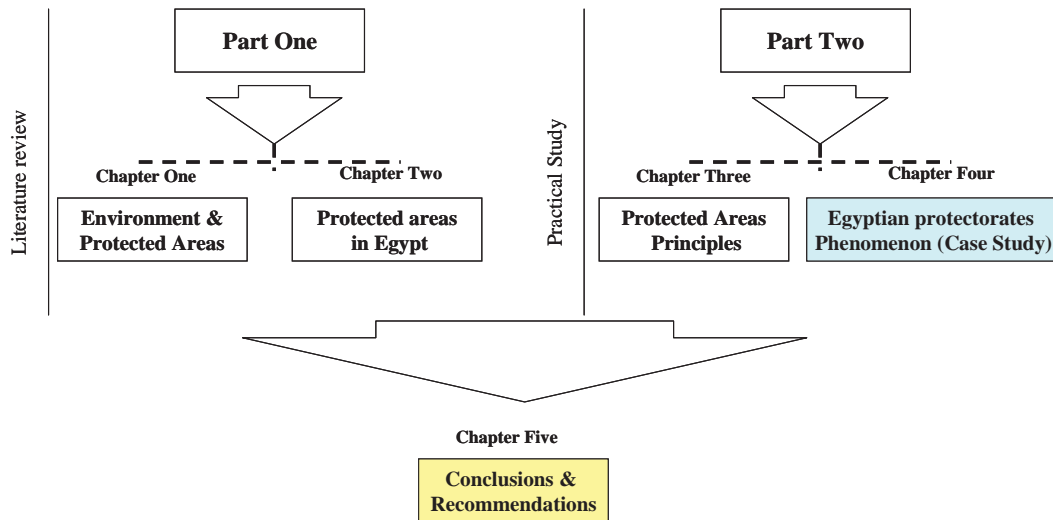
Egyptian Protected Areas Current Condition



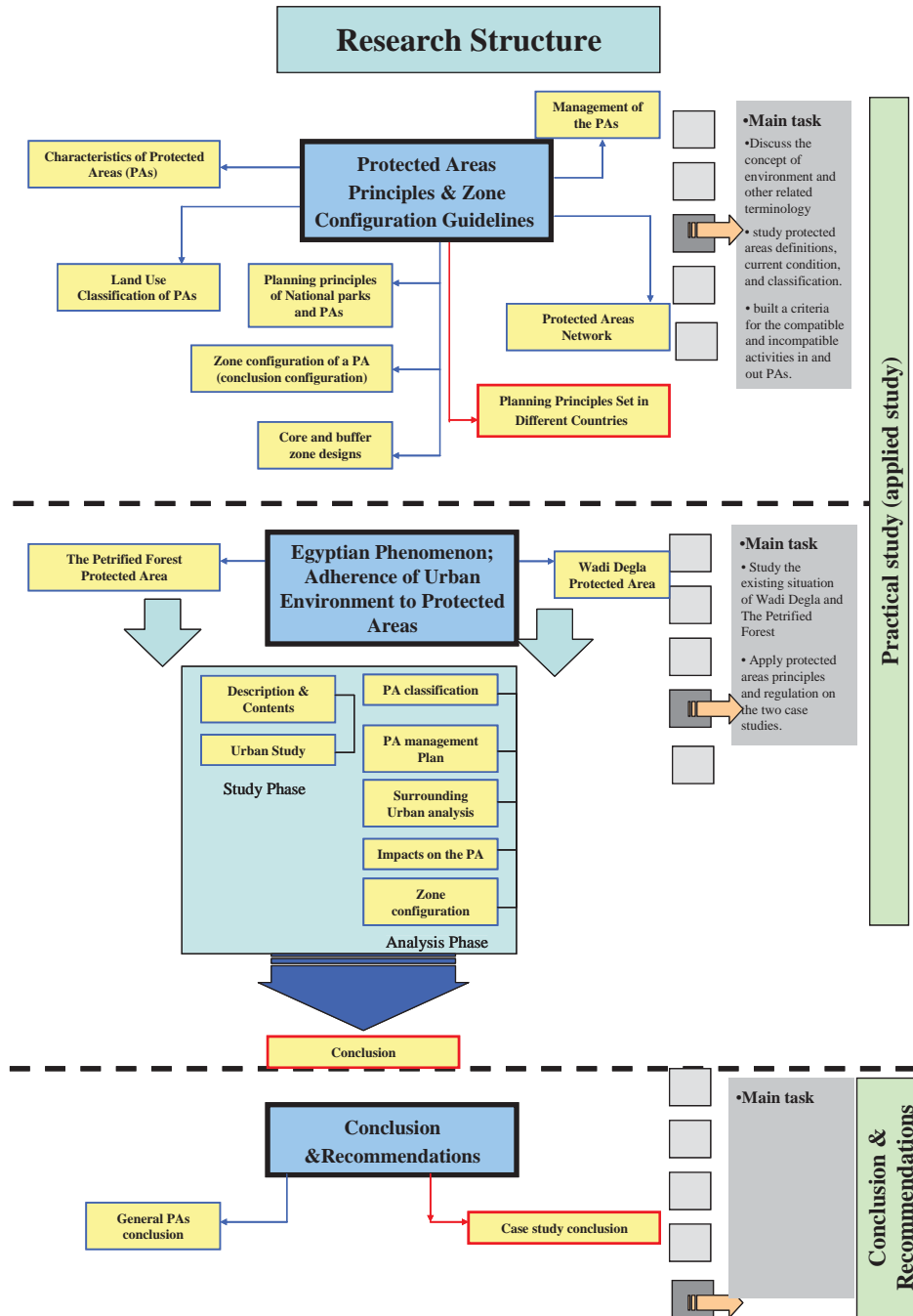
Chapter Six
Egyptian Phenomenon; Adherence of Urban Environment to Protected Areas.
(The Petrified Forest & Wadi Degla)



Chapter Four
Egyptian Phenomenon; Adherence of Urban
Environment to Protected Areas
(The Petrified Forest – Wadi Degla)



Part II
Practical study (Applied Study)



6-1 Introduction:

Protected Areas not an isolated islands, isolated from the surrounding areas; but it is a part of the urban and natural environment around it. These natural preserved areas are supposed to play an importance role in both of national and local levels. Its importance is not only due to its ecological or visual values, but it can be a base of several urban activities. Here in Egypt Protectorates suffer from the neglecting of national plans to its presence. This conflict in laws and planning concepts make what we call a special Egyptian phenomenon; adherence of urban environment to protected areas. This obviously appears in three Egyptian Protectorates; Wadi Degla, El Hassana Dome and The Petrified Forest.

6-2 Define Egyptian Problem:

Natural environment in Egypt has become subject to many shapes of deteriorations caused by man, as protectorates areas suffer from many phenomenon that threaten its safety, such as the presence of preserved natural area within urban context, this was as a result of the unplanned urban activities and its close adherence to these preserved areas, this hazardous situation threatens the safety of preserved areas, and could lead to the loss of an environmental and geological heritage.

In addition, those preserved areas have been neglected in the planning process, as urban planning in Egypt usually neglects importance and affect of those areas on the main development plan of any city.

Accordingly, the urban planning authorities have encouraged urban expansions to surround some protected areas such as, The Petrified Forest.

Also some of our protected areas suffer from conflicts in responsibilities between relevant agencies, causing deterioration of some of those areas (Wadi-Degla).

6-3 Focus of the Study:

In this chapter we will focus on the Egyptian's protectorates that are situated within the urban context. Here in Egypt there are three protectorates situated within or, near to urban context; the Petrified Forest protectorate, Wadi Degla Protectorate, and El Hassana Dome Protectorate. We will focus in The Petrified Forest and Wadi Degla protectorates in our study.

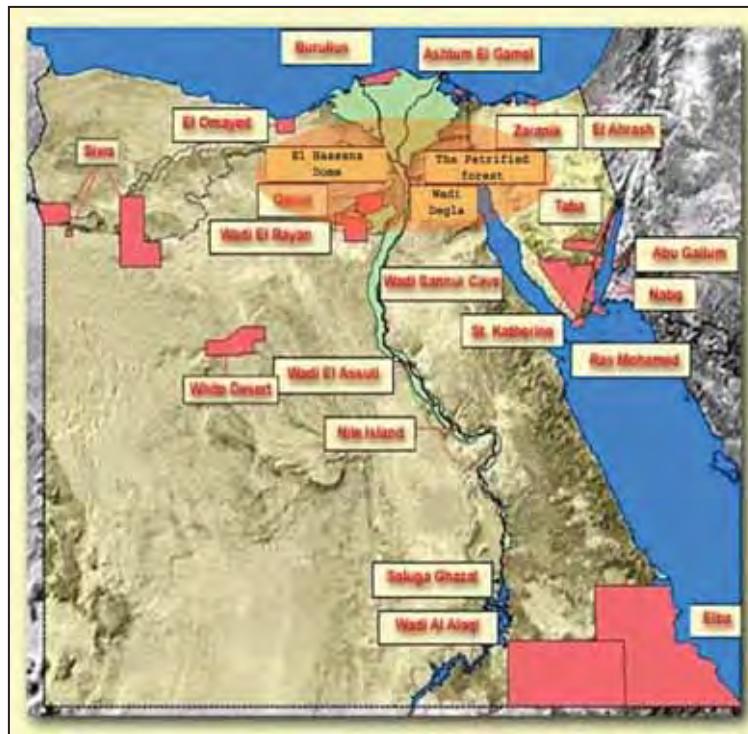


Figure (66): The Protectorates which are situated within urban context.

Source :(EEAA, 2000)

6-4 The Petrified Forest Protected Area in Maadi – Cairo

The study of this PA includes two phases, shown in the next figure:

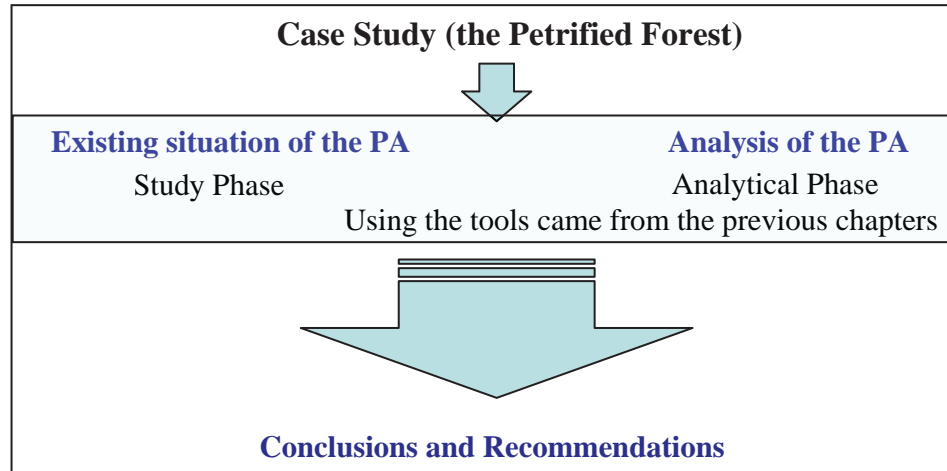


Figure (67): Sequence of studying the case study; *source (Researcher)*.

6-4-A The Existing Situation of The PA: (Study Phase)

Date of Announcement: 1989

Area: 6 Km²

Type: Geological protected Area and a national heritage

Distance from Cairo: 30 km

The Petrified Forest area, Cairo governorate, was declared as a natural protectorate area by the degree 944/1989.

6-4-1 Description and Contents

6-4-1-1 Location of the Petrified Forest:

This natural protectorate area is located at about 18 km from Al Maadi city, Cairo governorate, north of Al Qattamia – Al Sokhna high way.

The area extends for 2 km along the main road, with a depth of 3 km to the north; covering, therefore, an area of 6 km² between long 30° 31' 27"N 30° 31' 28"N.

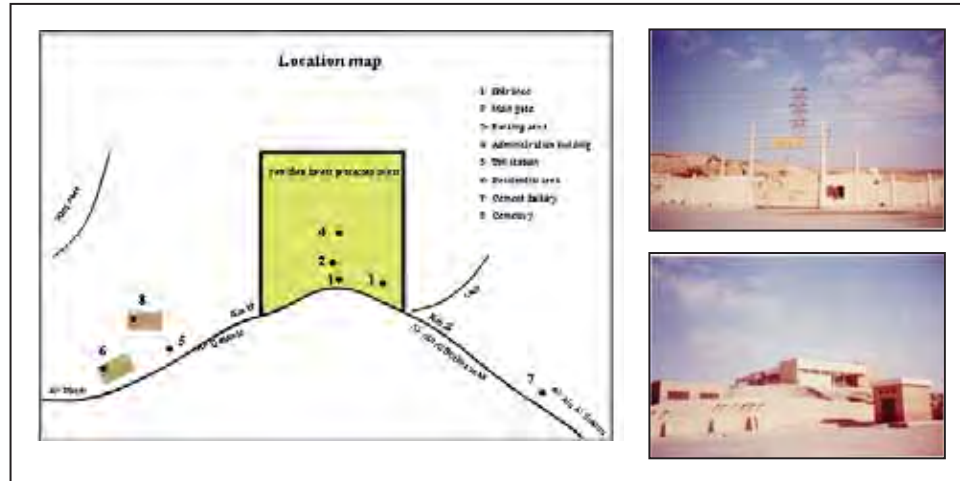


Figure (68): The location of the Petrified Forest; *source (EEAA, 2000) edited by the Researcher*

Photo (31): The entrance gate and administration building of the PA. *Source: Researcher*

The Petrified Forest is situated in the north-eastern corner of Egypt at the borders gate with the dunes expansion that rises up to 60 meters above sea level.

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 its location inside new Cairo city.

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

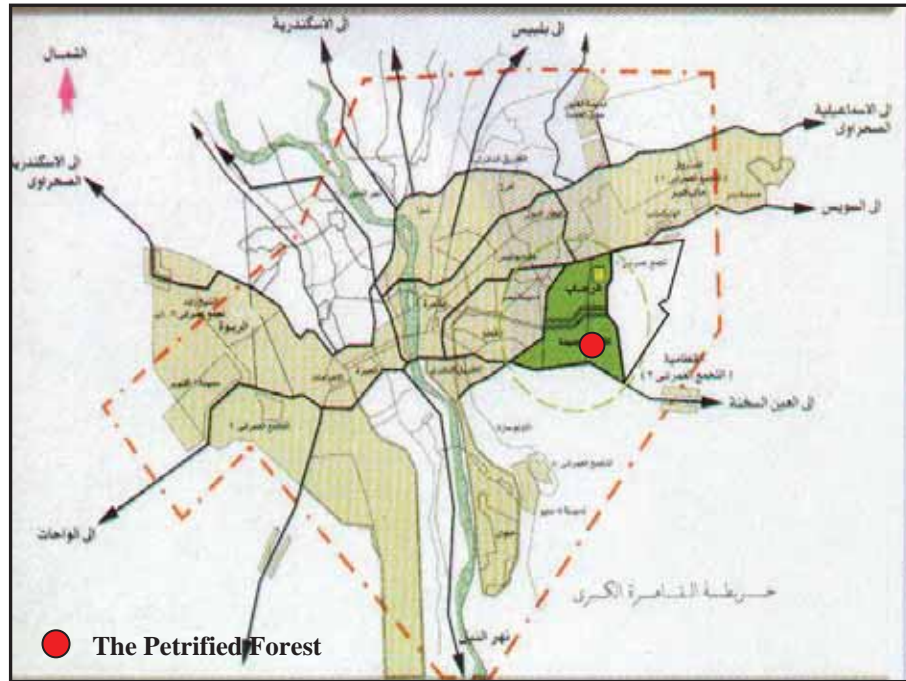


Figure (69): The location of the Petrified Forest in New Cairo city
 Source (Ministry of Planning and new communities, 1996)

6-4-1-2 Announcement of the Petrified Forest:

Petrified Forest Area was declared a natural reserved area in 1989. The area which is under protection now is 6 km², but we must mention that the fossilized tree trunks is covered a bigger area. We can almost say that this part of the New Cairo city is built on a big natural museum. But the laws define a smaller

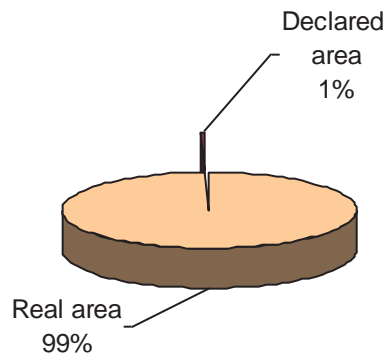


Chart (8): The declared area of the Petrified Forest comparing with the real area. Source: Researcher

area. The total area is called Gabal El Khashab, it was filled of fossilized tree trunks some on the surface and other deep inside the land.

The total area was 1000 km² and the current area that was announced by the EEAA was 6 km², that means that the current area is almost 0.06% from the real area.

6-4-1-3 Importance of the Petrified Forest, Cairo governorate:

The Petrified Forest area which has taken millions of years to form dates back to Oligocene age (35million years ago).It is a part of the geological history of Egypt and represents an area of interest for the visitors and scientists of the world. Some scientific references refer to this forest as the wood mountain, "Gabal El kashab". (EEAA, 2000)



Photo (32): The Old wood in The Petrified Forest,
Source (Researcher).

6-4-1-4Origin of the Petrified Forest:

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 old branches of the river Nile 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



Photo (33): of the Old wood in The Petrified Forest
Source: Researcher

dissolved silica brought by the ground water of this area. The reaction was very slow and took place by molecular exchange, and as a result all the structures of the wood are preserved. The complete absence of any

leaves or fruits and the horizontal orientation of trunks give evidence that these were transported from another place.

6-4-1-5 Contents of the Petrified Forest Area:

It is heavily covered by high density of acacia trees, bushes and pastoral plants that all work for fixation of the dunes to conserve important environmental feature of the Mediterranean coast which was exposed to developmental projects that transfigured its natural components.

The acacia high density helps increase water in the soil that preserves the subterranean water and its natural qualities. It also forms a sort of tourist attraction activity in the region due to its natural resources. The site is one of the sources that the state aims at its conservation and protection for its significance and richness in the wildlife, animal and plant domains. The area is densely filled with fossilized tree trunks dating back to the Oligocene. The surface area 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.



Photo (34): Contents of the Petrified Forest area.
Source: Researcher

It is to be noted that the tree trunks are aligned almost parallel to the trends of the main fractures in the area, which are thought to be the outlets that facilitate the rise of ascending silica solutions accompanying the volcanic during the late Oligocene. (EEAA, 2000)

6-4-1-6 Ecosystem in the Petrified Forest:

Plantation:

In spring, after the winter rains, the Petrified Forest land is carpeted with patches of annuals while a number of hardy perennials bloom throughout the year.



Photo (35): Seasonal patches appears in the PA
Source :(EEAA, 2000)

6-4-1-7 Financial value of the Protected Area:

The fossilized tree trunks are a real treasure. It supposed to be a national and international heritage. In USA, the trunks with diameter one meter are selling in 10,000 dollars. In Egypt thousands of these woods are separated around the PA's land and inside it. And many of them are destroyed because of the shortage in awareness between residents. As they don't know the value of these wood pieces.

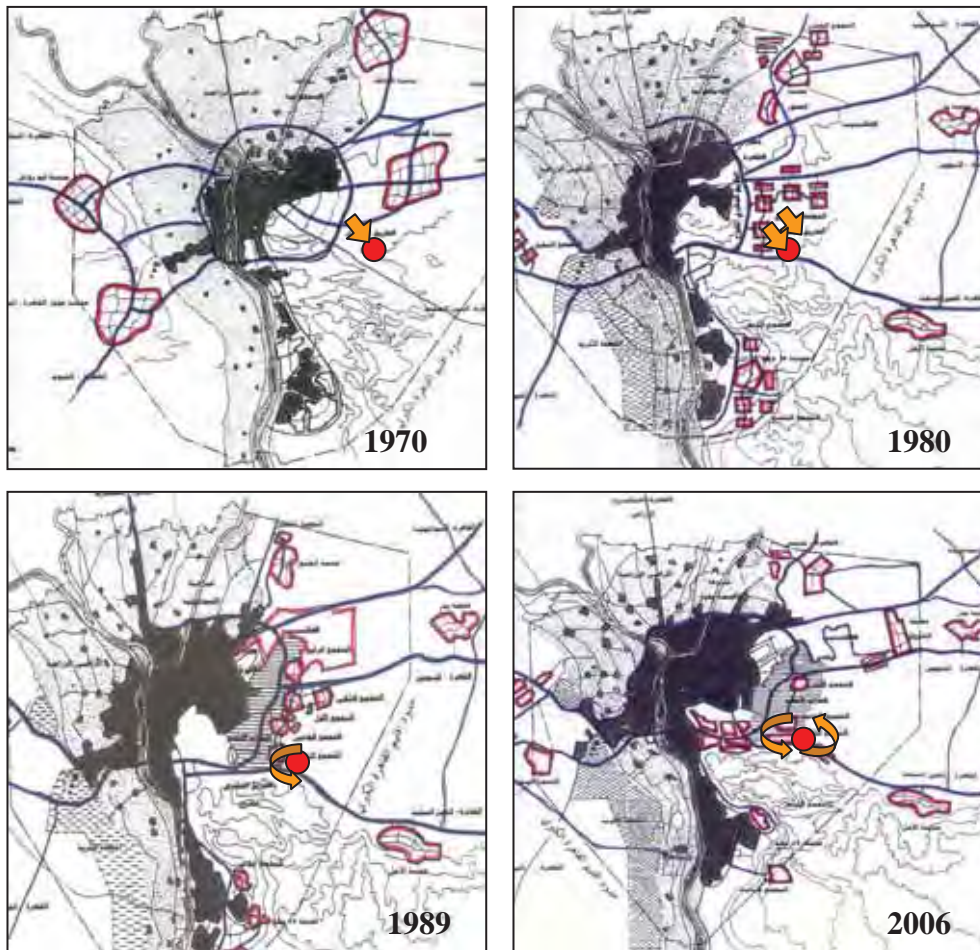
6-4-2Urban Study:**6-4-2-1The Petrified Forest and the Urban Growth:**

As mentioned before, 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 the next figure, the urban mass of greater Cairo faced from 1970 to 1991 four phases of growth, which followed four different development plans.

It is acknowledged 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 expanded closer to the preserved area. At present the Petrified Forest Area is a part of the New Cairo urban context.

Figure: (70): the Petrified Forest area and the urban growth, source (Salama, 1999)



We must mention that the Petrified Forest PA is declared a protected area in 1989, before and after this date it was out of governmental plans. As urban expansion takes a lot of Gabal El Khashab area, and the PA becomes part of new Cairo city.

6-4-2-2 Master Plan of New Cairo City and the Location of the Petrified Forest in it:

The Petrified Forest Area is located in the south of the extension of the new Cairo city. It is situated along Al Qattamyia-Al Ain El 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 **Wadi Degla Protected Area**.

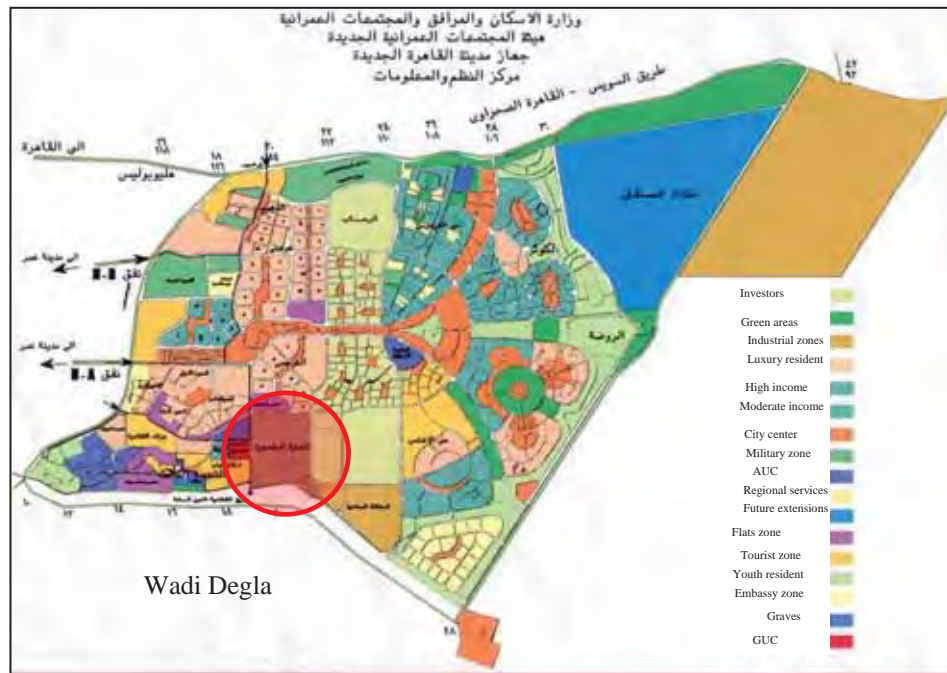


Figure (71): Map of the new Cairo city shows the location of the Petrified Forest and the surrounding uses (source: ministry of population and new communities, 2000)

The succession of several regional planning concepts that define the urban Growth of the Greater Cairo and its expansion, as shown in last 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 centre 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 are some petroleum stores and tanks near of the site.

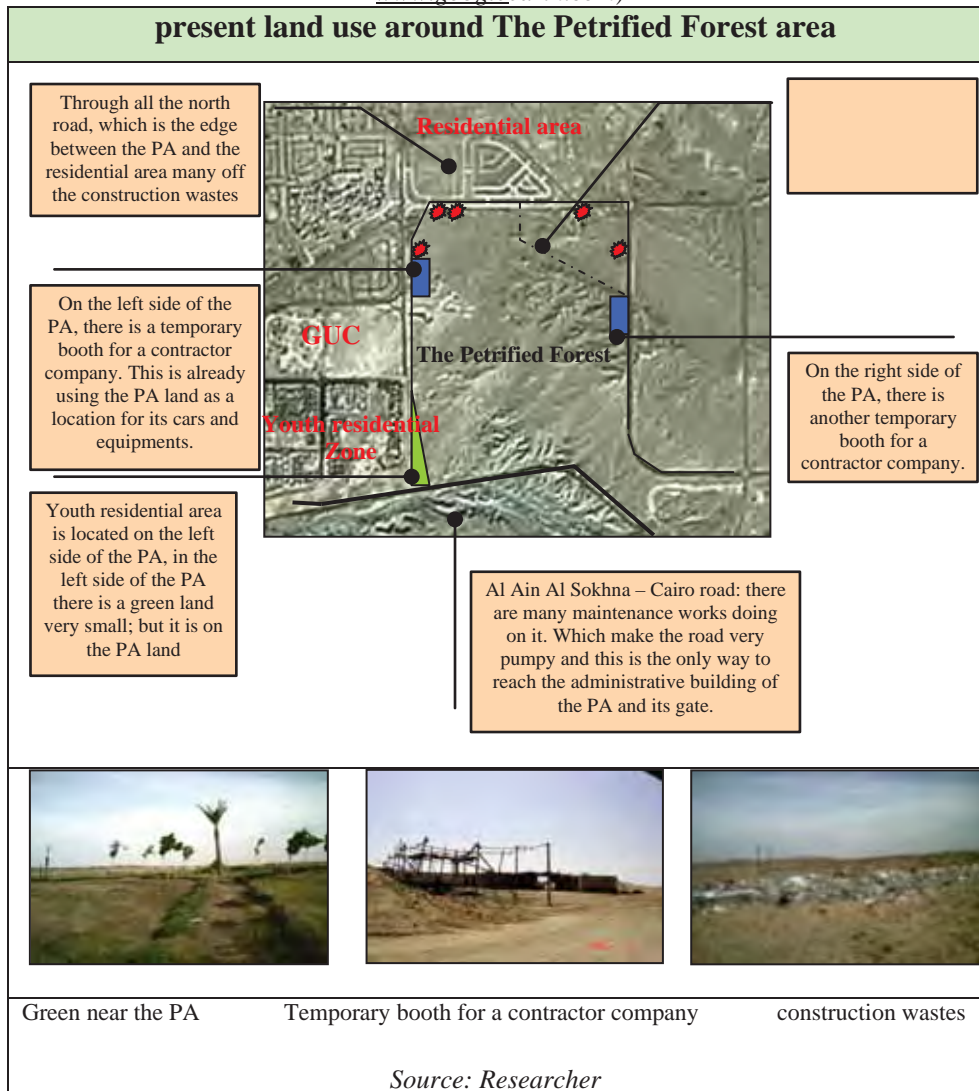


Figure (72): Analysis of the new Cairo city planning and its relation with the Petrified Forest (source: Researcher)

6-4-2-4 Present Land Use around The Petrified Forest Area:

The next figure shows the present uses around the PA:

Table (52): Current land use around the petrified forest PA (source: www.googleearth.com)



6-4-2-5 Urban Development of the Surrounding Areas to the PA:

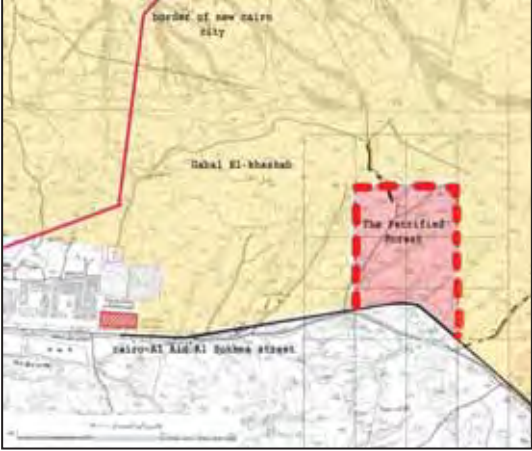
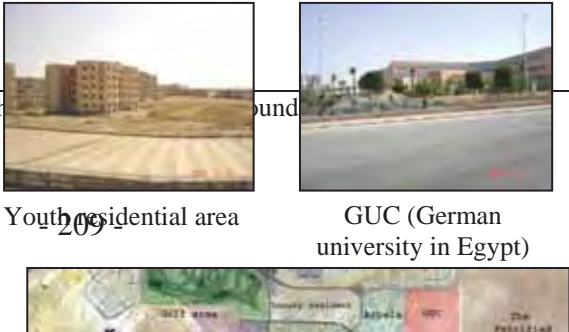
<p>Year 1989</p>	 <p>Figure (74): The Petrified Forest located in Gabal El Khasab area. (Source: military survey, 1989)</p>
<p>- The surrounded areas were totally undeveloped. - The protected area situated in Gabal El Khashab area, which full of many trees trunks. Current declared area= 6 km² Real natural area that full of fossilized tree (Gabal El Kashab) = 1000 km²</p>	
<p>Year 2006</p>	
<p>The surrounded areas were developed, as part of the new Cairo city take the place of Gabal El Khashab. The petrified forest becomes part of the surrounding urban context. Current declared area= 6 km² Real natural area that full of fossilized tree = 0km² Future protectorate's area= 2 km²</p>	 <p>Youth residential area GUC (German university in Egypt)</p>

Table (53): Urban development of the surrounding areas to the PA

6-4-B Analysis of the Petrified Forest Condition: (Second phase)

6-4-3 Protected Area's Classification:

- According to the EEAA, the Petrified Forest is classified according to the natural feature: Geological protected Area.
- According to the location: Central area protectorates.
- According to the IUCN management classification: unspecified in this classification.

That is means: the Petrified Forest has no specific classification, especially an international one. According to the nature of the Petrified Forest, we can classify it as: **Natural Monument** (protected area managed mainly for conservation of specific natural feature).

As the Petrified Forest in USA, is classified as a Natural Monument.

6-4-4 Management Plan of the Petrified Forest:

Currently, there is no specific management plan for the PA. Recent buildings are; an administration building is located in the PA gate, and PA's gate.



Photo (36): Administration building of the PA
Source: Researcher



Photo (37): Entrance gate of the PA
Source: Researcher

Managed plan for the PA should enhance the following objectives:

(Natural Monument)

Management Objective	III
Scientific research	2
Wilderness protection	3
Species / genetic diversity	1
Environment services	-
Natural / cultural features	1
Tourism / recreation	1
Education	2
Sustainable use	-
Cultural attributes	-

1: Primary objective 2: secondary objective
 3: potentially applicable -: not applicable

Table (54): Management objectives of the Petrified Forest (Natural monument)

6-4-5: Analysis of the Surrounding Uses:

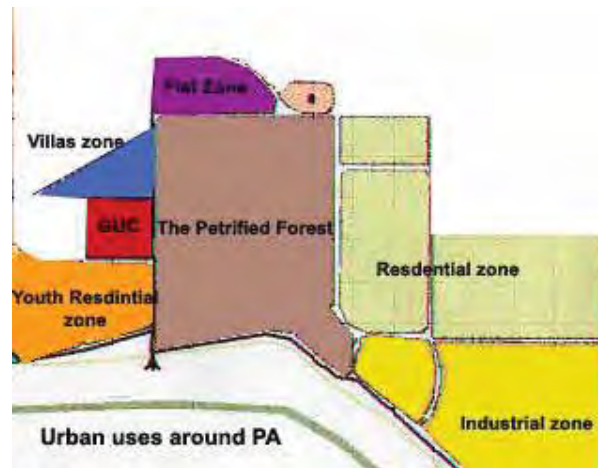




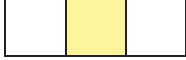



Figure (76): Surrounding uses of the petrified forest PA, Source: Researcher

Activities around the PAs system		
Activity	Impacts	Degree of compatibility
GUC	compatible when the college is dedicated for science and research purpose, but students' attitudes can damage the PA.	
Youth Residential zone	Main impacts came from the resident's behavior, and some times human domestic sewages can affect the environment.	
Flats zone	Main impacts came from the resident's behavior, and some times human domestic sewages can affect the environment. The construction wastes can damage the PA	
Industrial zone	Generally most of industrial buildings have impacts on environment. It can cause environment pollution especially on development countries.	
Villas zone	Human domestic sewages can affect the environment.	
Other activities	Oil stations, oil-burning power stations, cement factories, waste recycling factories and etc.	



Incompatible Moderate compatible

Table (55): Analysis of the surrounding activities of the PA. *Source: (Researcher)*

We can conclude the followings:

All urban activities around the PA are incompatible activities, except the GUC which can play a role in the scientific research of the PA.

The adherence activities have impacts on the Petrified Forest compounds. The most danger effect came from the human sewage, because it can increase the ground water, deform the layers of the soil, and damage the fossilized tree trunks.

6-4-6 Factors that Affect the Petrified Forest PA:

- Internal factor (factors inside the border of the PA)
- External factor (factors outside the border of the PA)

Internal factors: —————→

- Trail which is going inside the PA
- Construction wastes
- Green area on the left side
- Temporary buildings and booth for construction companies



- Surrounding urban uses which conflict with the presence of the PA
Youth residential area – flat zones – industrial zone

External factors:

Existence of the residential zone around the PA cause the presence of many construction wastes in the PA land, and also two construction companies use the PA's land to store its equipments. There is no sign on the land of the Petrified Forest to announce the ownership of this land (except the administration building of the PA which by the way located far from the surrounding uses). No one of the residents of the flat zone or the youth zone aware of the presence of the PA (many of the owners of the flat zone confirm that while they were digging there land, they found some tree trunks but they don't know that they built on a large natural museum, as the declared area of the PA is almost 0.06% from the real area.(Gabal El Khasab)

That is mean that the PA suffers from the neglecting of the government levels in both of national plan and micro plan:

Micro plan:

- Until now there is no obvious management plan govern the PA.
- There is no publication to this protected area; as many residents of new Cairo city don't know that there is PA there.

National plan:

The national plan neglects the presence of the PA. The surrounding uses doesn't match the presence of the Petrified Forest.

6-4-7 Urban Growth on the Petrified Forest Land:

- Protection in Egypt fights many obstacles concerning announcement and protection of protectorates through years. The Petrified Forest declared area is almost 6 km², but the fossilized tree trunks cover a bigger area, almost 1000 km². That means that the current preserved area is only 0.06% of the real area. We can almost say that this part of the New Cairo city is built on a big natural museum. But the laws define a smaller area. The total area is called Gabal El Khashab, it was filled with fossilized tree trunks some on the surface and other deep inside the land.
- The Petrified Forest suffers these days another urban assault; the ministry of population and new communities wants to take 2/3 of its area (4km²) to make new extensions to the new Cairo city.

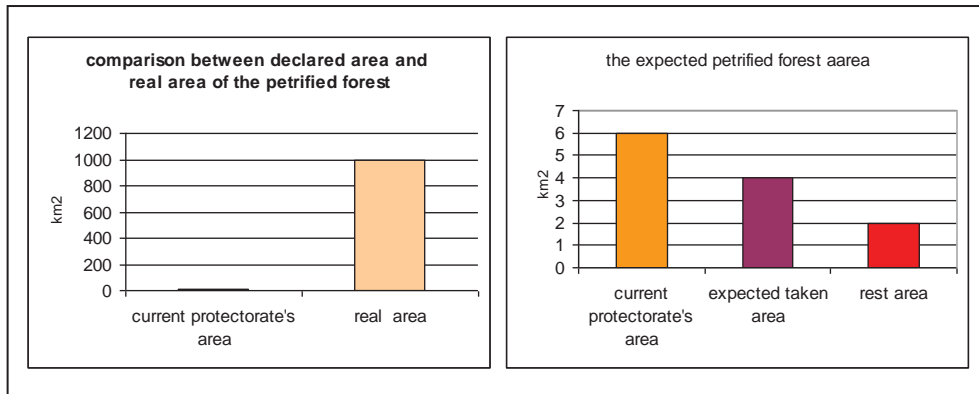


Figure (69): Two charts comprise the current area of the Petrified Forest and the declared area, *Source: (Researcher)*



Figure (77): Page from El Ahram daily newspaper shows that the PA is suffering from the neglecting of the governmental plans (*Al Ahram, 2005*)

6-4-8 Problems that Face the Petrified Forest Protectorates:

Impact categories:

Often the immediate and long run impacts caused by man made environment (construction) are on surrounding natural environment. Natural environment are impacted from the projects near to it, it is

sometimes difficult to identify the direct impacts caused by a particular project.

As protected areas are sensitive parts of natural environment; man made environment affect it. But it is a fact that there are other impacts that affect environment e.g.

- Resource depletion
- Impacts on ecosystems
- Physical features distortion
- Social and culture effects

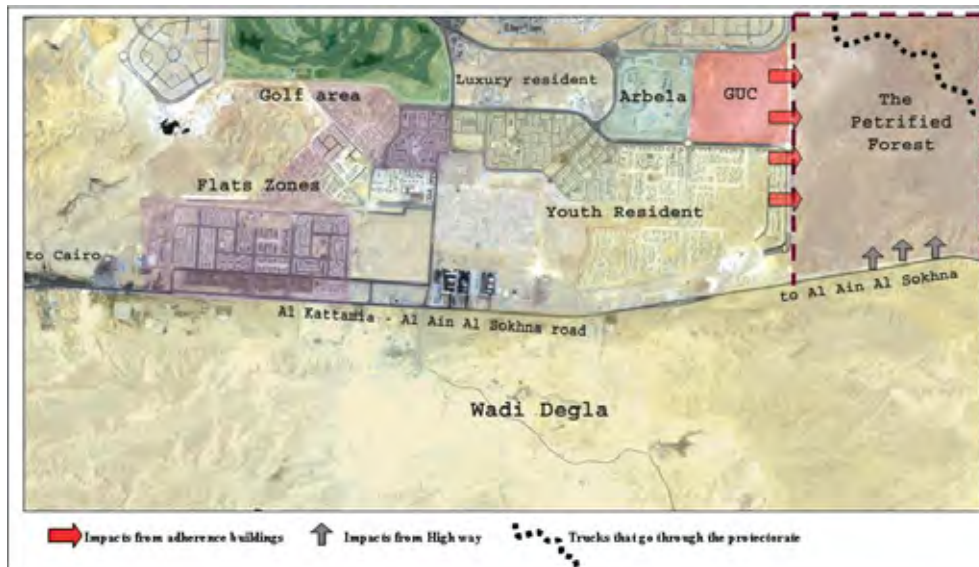


Figure (78): shows conflicting uses around the protectorate
6-4-8-1 Conflicts in the Situation

The conservation strategies and aims of the Petrified Forest area have faced different conflicts in this case. This area faces many obstacles to accomplish the needed, efficient conservation, maintenance, and management on one hand. On the other hand, the presence of a natural reserved area within the urban context might have impacts on the main Development Plan of the city, which is not actually considered.

6-4-8-2 Conflict in Aim

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

The conservation strategy does not aim to commit actions deeds or carry out activities which would lead to the destruction or deterioration of the natural environment or which would lessen the aesthetic 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 realizes the two different aims.

6-4-8-3 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) have not benefited the adequate profit from that important area:

Also the presence of the petroleum tanks and the industrial zones on the south-eastern 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 addition, there are no regulations 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. (Farouk, 2002)

6-4-8-4 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 networks, and the distribution of activities.

The actual plan of the surrounded area doesn't reflect any importance of the presence of the Petrified Forest area. . (Farouk, 2002)

The next figure shows the current situation of the Petrified Forest PA.

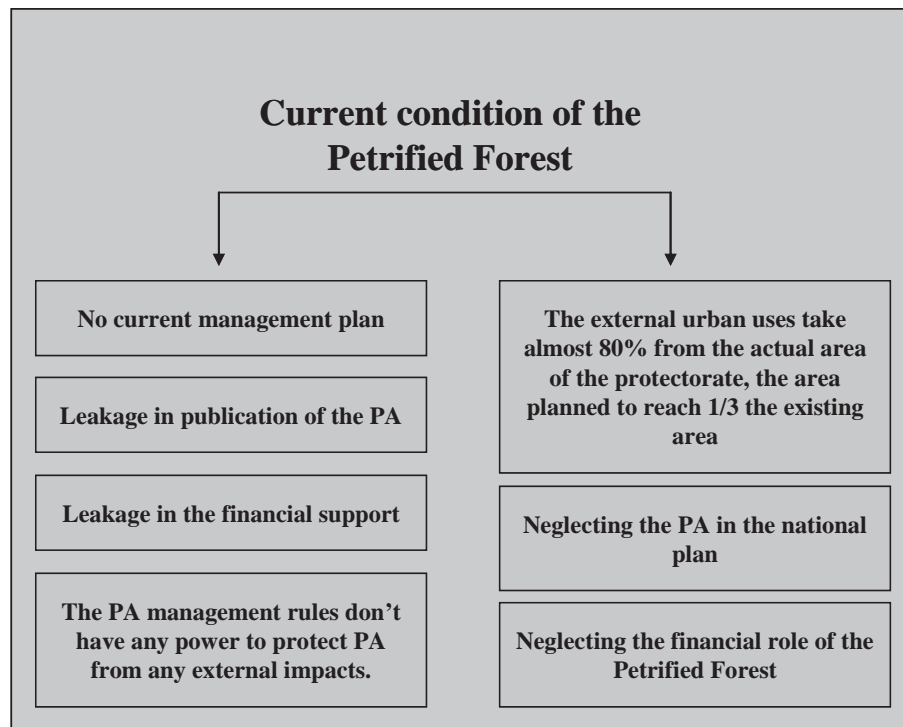


Figure (79): The current situation of the Petrified Forest PA, (Source: Researcher)

6-4-9 The Main Participants in the Petrified Forest PA:

As we mention before, the protectorate is located in new Cairo city. It is under the authority of EEAA, and Ministry of Housing & new communities.

Main participants	Type	Responsibility & activities
EEAA	Governmental agency	Takes the official responsibility of the preservation of the protectorate
Ministry of Housing & new communities	Governmental agencies	Responsible of new Cairo city, the protected area suppose to be a land use for the ministry. There is a conflict between the EEAA & the ministry of population on the protectorate's land. The land for the ministry is a part of new Cairo city and a potential to make extensions to new Cairo city.
Private luxury housing compounds	Stakeholders	The owners of these compounds want to use the land in making luxury housing. They want to buy the protectorate's land.
Residents of the new Cairo city	Stakeholders	Most of them look to this land as a wasted land, they are ignorant of its importance as an asset upgrading their own lands.

Table (56): The main participants in the Petrified Forest PA *Source: (Questionnaires with the participants)*

6-4-10 Zone Configuration

Analysis:

At present, there is no obvious zone configuration to the Petrified Forest, but generally the PA is classified to two zones:

Protected area zone: all the area of the Petrified Forest

Protectorate's facilities: administration building, small museum are located in the entrance of the PA.

The most related zone configuration to the Petrified Forest PA is concentric zone concept.

Application of the concentric zone concept:



Figure (80): The concentric zone concept.

Source: Researcher

<p>Natural Area</p>	<p>Area should develop without any human interference into primarily natural ecosystems. Areas which are of high interest to science for comparative purposes are thus available in a landscape which is hardly influenced by man and is integrated into a world-wide network. Erection of buildings is forbidden in this zone. Access only on feet, cars and roads not allowed there. Usually it is located in the core of the protected area.</p>
<p>Recreational Area (Include buffer zone)</p>	<p>Area is dedicated to serve visitors needs, it contains all visitors facilities and services. A research centre or scientific museum can be built in this area. It contains car roads and trails. Usually it is located around the natural area.</p>

Table (57): The concept of the concentric zone configuration Source: (Questionnaires with the participants)

6-4-C Conclusion:

Structural Parameters	"The Petrified Forest Protectorate"			
Size	Less than 50 km² (MRA)	From 50 too 100 km²	More than 100 km²	Comments
	✘			The total area of the protectorate 6 km ²
Location	Within Urban Context (human settlements, activity zones)	The proximity of protected areas and network layouts	Within natural areas. (Deserts, oceans, wetlands...etc)	Comments
	✘			The petrified forest is surrounded by Urban areas..
Edge Configuration	Inherent/ Natural	Induced / Generated		Comments
		✘		
Shape Configuration	The boundaries follow natural divisions	The boundaries follow urban divisions		Comments
		Rounded Shape	Long Linear Shape	Follow urban element (roads)
				✘

Table (58): The structural parameters of "The Petrified Forest Protectorat". *Source: Researcher*



"The Petrified Forest Protectorate"		
Description		Comments
Location	<p>This natural protectorate area is located at about 18 km from Al Maadi city, Cairo governorate. It is located in New Cairo City.</p> 	
Description & contents	<ul style="list-style-type: none"> • It is a part of the geological history of Egypt. • The fossilized tree trunks covers the land of the protectorate.. 	
Natural life		Comments
Flora	It is heavily covered by high density of acacia trees, bushes and pastoral plants	
Geological features	<p>Contains old wood trunks.</p> 	

Table (59): Analysis of the current condition of "The Petrified Forest" (Part 1). *Source: Researcher gathered from different sources.*

Management				
Category of the PA according to the IUCN management category system	The PA has a category	The PA don't have a define category	Category	Comments
				The PA didn't have a defined category.
Management objectives	Currently there are no management plans or objectives.			
Management plan	There is no management plan.			
Zone configuration				
Type of uses inside the PA's land	- Inside the PA's land, the major land use is the protected land and there are some violations.			
Type of land use configuration	Right now there is no specific zone configuration for the protectorate.			

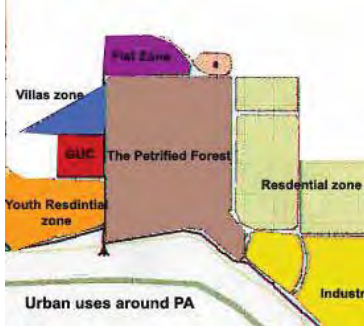
Areas beyond PA's land (surrounding uses)			
Type of surrounding uses	Urban use	Degree of compatibility	Comment
	GUC	Compatible	All the adherence activities are incompatible except the GUC.
	Youth Residential zone	incompatible	
	Flats zone	incompatible	
	Industrial zone	incompatible	
	Villas zone	Moderate	
	Other activities	incompatible	

Table (60): Analysis of the current condition of "The Petrified Forest" (Part 2). *Source: Researcher gathered from different sources*

The previous study can be summarized in the following points:

The Petrified Forest area faces different conflicts, and challenges, like:

- There is no obvious management plan to protect this protectorate.
- There is a conflict between; conservation (protection of the PA), and development (extension of new Cairo city. This terminates all efforts to stop the violations on the protectorates).
- In this protectorate the external forces (urban influences) acting on the area are greater than internal forces (conservation management). As a result, the protected area suffers from violations and neglecting.
- There are many participants involved in the management of the PAs. This hazardous situation causes many conflicts; one of these conflicts is the conflict between aims of conservation and aims of development.
- The presence of the protected area doesn't have any reflect on the urban planning of new Cairo city. In addition, the surrounding uses may threaten the protectorate's safety. (The sewage may increase the water ground, and deform the ground layers, and damage the tree trunks).
- There is an interrelation between Protected Area and urban environment, but this interrelation appears in the Petrified Forest in one way relationship; the impacts of urban environment on the protectorate. The opposite relationship doesn't appear here.

6-5 Wadi Degla Protected Area in Cairo Governorate

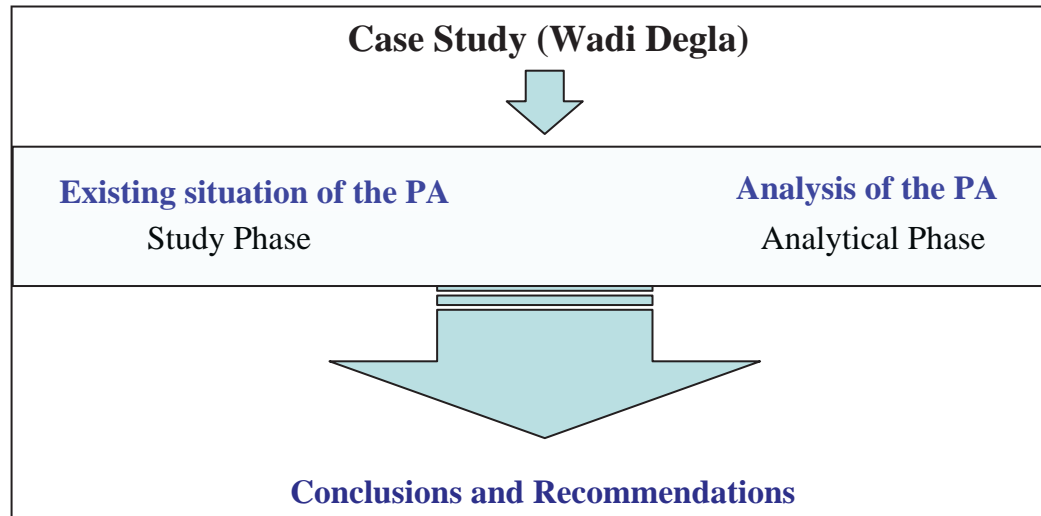


Figure (82): Sequence of studying the case study; *source (Researcher)*.

6-5-A The Existing Situation of The PA: (Phase 1)

Introduction:

Wadi Degla, is millions of years older than the pyramids and the Sphinx. Its natural beauty is just as imposing as that of the man-made temples of Luxor.

The only reminder of the watery days is the shells crunching underfoot and the rock formations carved by the receding waters. Different species of animals have been traced in the Wadi, including the Dorcas gazelle, the Nubian ibex and the red fox. There are 64 different kinds of vegetation, 20 species of reptiles and 12 species of birds, in addition to the endangered Egyptian tortoise.

6-5-1 Description and contents

6-5-1-1 Location of Wadi Degla:

Date of Announcement as a protected area: 1999.

Type: Desert lands protected area.

Distance from Cairo: 10 km.

Location:

Degla valley lies between latitude 56, 29 north and 24, 31 east. It is 30 km long and extends from east to west.



Fig (83): The Location of Degla protected area, source (EEAA, 2005)

Area: The reserve area is about 60 kilometers square.

6-5-1-2 History of the Wadi:

During the upper Eocene period, 50-60 million years ago, Egypt was covered by the ancient Mediterranean Sea. At the same time tectonic movements raised the seabed and created the Moqattam hills. These formed a southward slope that became covered with sedimentary layers rich in marine fossils, notably nummulites. When the sea reached northwards, the whole area with its



Photo (38): Wadi Degla Canyon
Source: (Researcher)

nummulites. When the sea reached northwards, the whole area with its

marine sediments was exposed. During the Pleistocene epoch, extended periods of rain eroded the exposed limestone and formed Wadi Degla. Waterfalls cut into the Wadi at different levels and deep rock pools were created below them. About 10,000 years ago dry periods began to dominate and the lands stabilized. Today winter rains refill the attractive rock pools. On either side of the Wadi, karst caves were created. They form shelters and habitat for wildlife. (EEAA, 2000)

6-5-1-3 Description of the Valley:

Degla valley is considered a part of the northern plateau which is known as a major distinctive geographical environment in Egypt. Degla valley starts in the form of small tributaries where rainfall water pours on hills surrounding the valley.



Photo (39): Wadi degla huge rocks

Source: (Researcher)

Wadi Degla is one of the important valleys which extend from east to west with a length of 30 km. It passes through the limestone rocks that had remained in the marine environment during the Eocene Epoch in the eastern desert (60 million years). Therefore, it is rich with fossils. The height of these rocks alongside the valley is around 50 m. A group of valleys flow into this valley. The valley has a group of animals and full of plantation. (Bahaa El Deen, 1998)

6-5-2 Natural Resources in the Valley:

The remarkable resources in the Degla valley are its general scene which is rich in plant and animal life. The valley is covered with protective permanent plantation layer containing 64 kinds of plants. Traces of Deers

availability were newly recorded in these areas as well as 20 kinds of reptiles that include Egyptian turtles, which are endangered of extinction. There are also 12 kinds of the eastern desert birds, in addition to kinds of migrating and visiting birds in winter as well as the resident and visiting birds in summer, we can explain the wildlife and Plantation as next:

6-5-2-1 Wildlife:

Despite its proximity to Cairo, Wadi Degla is home to a variety of wildlife including such large species as the handsome Nubian Ibex and the Dorcas Gazelle. The Cairo spiny mouse is common, as are the Red Fox and the Cape Hare. The caves are an important hiding place for bats like the lesser Mouse-tailed Bat.

Among the reptiles the Horned Viper is seldom seen due to its remarkable ability to hide itself in

the sand. The Fan-toed Gecko is much more visible as its climbs on rocks. The birds are well represented, not least by the Brown-necked Raven, the mourning wheatear and the majestic Pharaoh's (Eagle) Owl.

The animal life of the Wadi is also unique. A frequent visitor reports having spotted a Dorcas gazelle; some academics claim there is evidence of the Nubian ibex as well.

At least 20 species of reptiles are known in Wadi Degla, including the endangered Egyptian tortoise (located twice in the general vicinity). At least 12 species of birds typical of the Eastern Desert have been found, in addition to, a variety of passage migrants, winter visitors and summer breeding visitors. (*EEAA's Biodiversity Unit, 2004*)



Photo (40): The red fox was seen in Wadi Degla (*EEAA, 2000*)

6-5-2-2 Plantation:

In spring, after the winter rains, the wadi is carpeted with patches of annuals while a number of hardy perennials bloom throughout the year. Over 75 wild flowering plants have been recorded from wadi degla, of which the most notable is the caper (*Capparis*), which largely



Photo (41): Some patches and wild flowers cover the Wadi after raining.
(Researcher)

occupies the rocky slopes and cliffs of the wadi. *Lycium*, *Atriplex*, *Tamarix* and a single patch of the woody climber, *Cocculus* grow on the sides of the Wadi while *Zilla*, *Ochradenus*, *Zygophyllum* and *Deverra* occupy the wadi bed. Among the medicinal plants are *Achillea* and *Pulicaria*.

6-5-3 Activities in the Wadi:

Wadi Degla is a tranquil haven from the frantic pace of life in modern Cairo. It provides a variety of ways to relax including nature trails and bird watching. Biking, mountain climbing, and jogging are available for the more energetic. Camping out on quiet nights or arranging a picnic will sooth the most overstressed among us.

It is an excellent one-day excursion for schools to organize, since it provides an

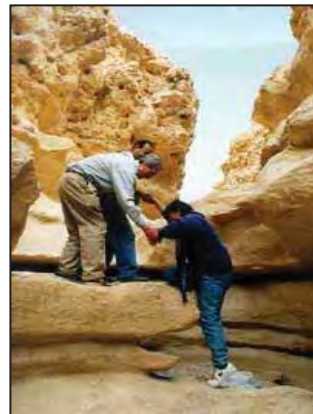


Photo (42): Climbing the rocks is one of the PA's activities. Source:
Researcher

opportunity to educate and enlighten children about nature. In one or two hours, visitors can experience the remoteness and complexity of the desert. The Wadi is also a valuable site for Egyptian universities, which can conduct field research there in botany, zoology, geology and environmental science.

The Wadi (the word refers to a dry, mountain-flanked gulley or valley) is a desert lover's museum. Familiar for decades to Maadi residents, especially foreigners, for most people it is a relatively recent discovery.

6-5-4 Urban Study:

6-5-4-1 Wadi Degla and the Urban Growth:

As we mentioned before, wadi degla was declared as a protected area in 1999. From that date until now many urban expansions have appeared, before and after the declaration of the protectorate.



<p style="text-align: center;">Year 1999</p>	 <p>The map shows the Wadi Degla Protected Area (PA) in 1999. The area is outlined with a dashed red line and filled with a light brown color. The surrounding area is mostly undeveloped, with some roads and buildings visible. A red box in the top right corner indicates the location of the PA within a larger map.</p> <p>Figure (84): Map shows Wadi Degla PA in the year of its declaration. (Source: military survey, 1999)</p>
<p style="text-align: center;">Year 2005</p>	 <p>The satellite image shows the Wadi Degla Protected Area (PA) in 2005. The area is outlined with a dashed red line. The surrounding area has become significantly more developed, with a large area of urban expansion visible. The Al Ain Sokhna road is clearly visible, crossing the PA boundary. The terrain is a mix of brown and green, indicating urban development and some vegetation.</p> <p>Figure (85): Map shows Wadi Degla PA in 2006. (Source: Satellite image, 2005)</p>

Table (61): Urban development of the surrounding areas around the PA from 1999 until now, Source :(Researcher) Gathered from different sources.

6-5-4-2 Present Land Use around Wadi Degla PA:

When we visited the place, construction debris and huge cement blocks were dumped at the entrance to the Wadi. A couple of hundred meters beyond what was once the mouth of the river, flies buzzed about heaps of what appeared to be cattle and poultry offal. Soon, swarms of flies and mosquitoes would have invaded the area. Two kilometers into the Wadi, its rugged natural beauty had become apparent.

Wadi Degla PA is located south of old Ain El Sokhna Road, new Cairo city and the Petrified Forest is located in the north side, some companies and factories are located in the west side and in the east there is rubbish dump and recycling company.

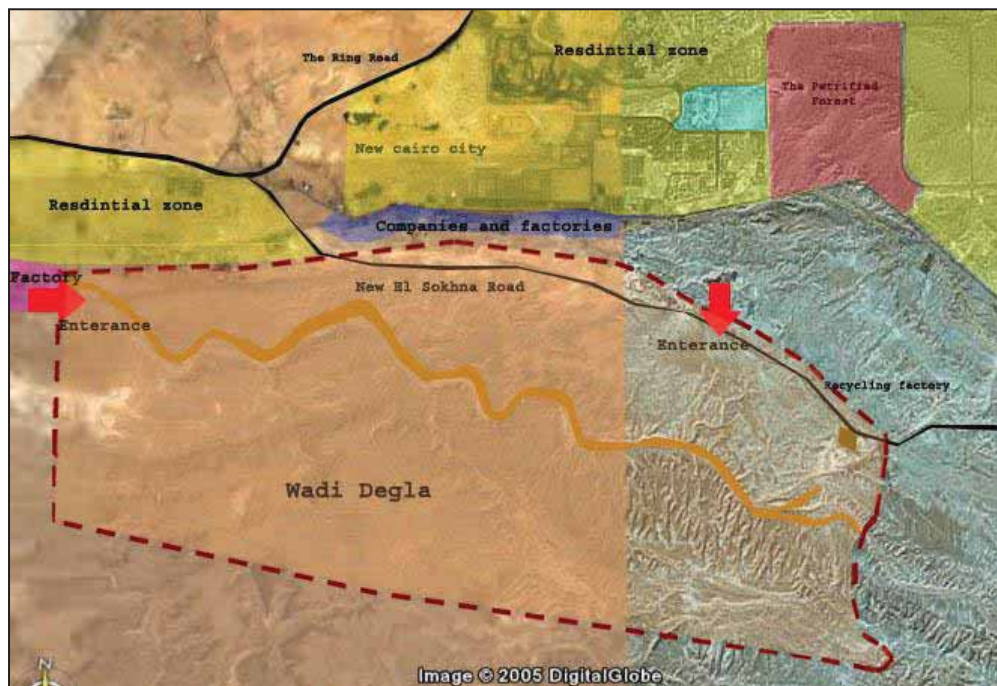


Figure (86): Wadi Degla and the current surrounded uses. (Source: www.googleearth.com)

We can define the uses around the PA as following:

In the West Side:

The west side is rich in uses, but the major use is the residential use. As Zahraa El Maadi is lying to the west side, and there is a residential zone to the north and still under construction. Through the entire trail to Wadi Degla entrance; there are factories and companies. Wadi degla club and some language schools are located between Zahraa El Maadi residential zone and company's zone.

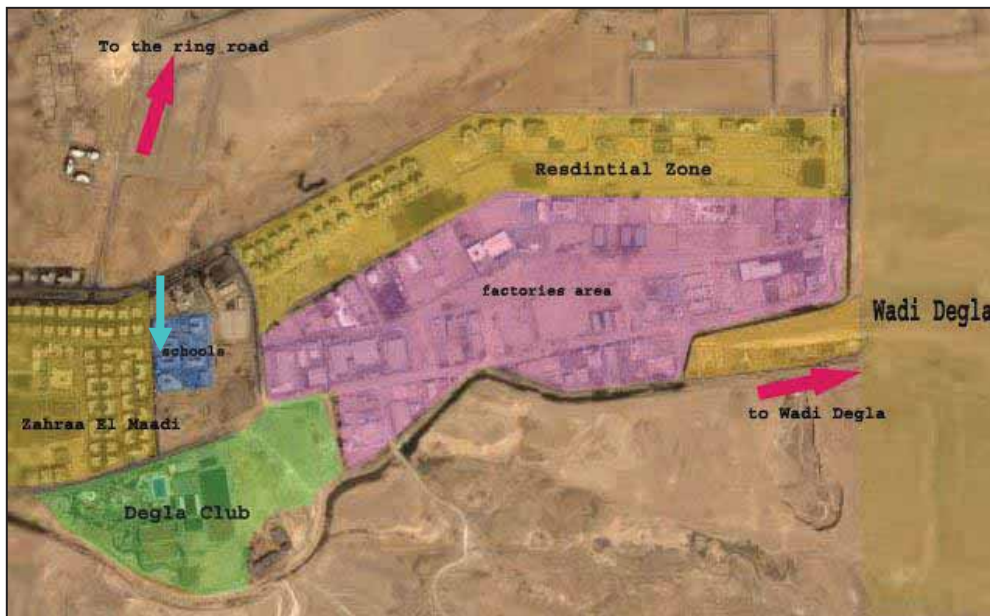


Figure (87): urban uses in the west side of the protected area (Source: www.googleearth.com)

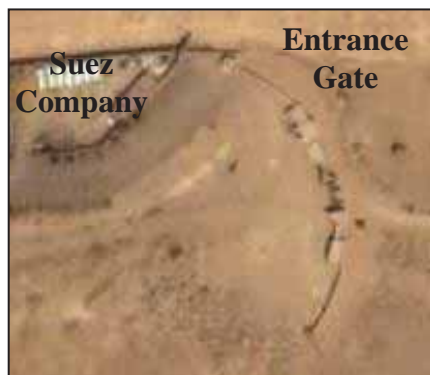


Figure (88): the entrance gate of Wadi Degla protectorate (Source: www.googleearth.com)

In the North side:

New Cairo city is located in the north side separated from the Wadi by the old Ain Al Sokhna –Cairo road, through the entire road there are some factories and companies. The new road of Kattamia – Al Ain Al Sokhna is passing through the north side of the Wadi cutting the upper part of the PA.

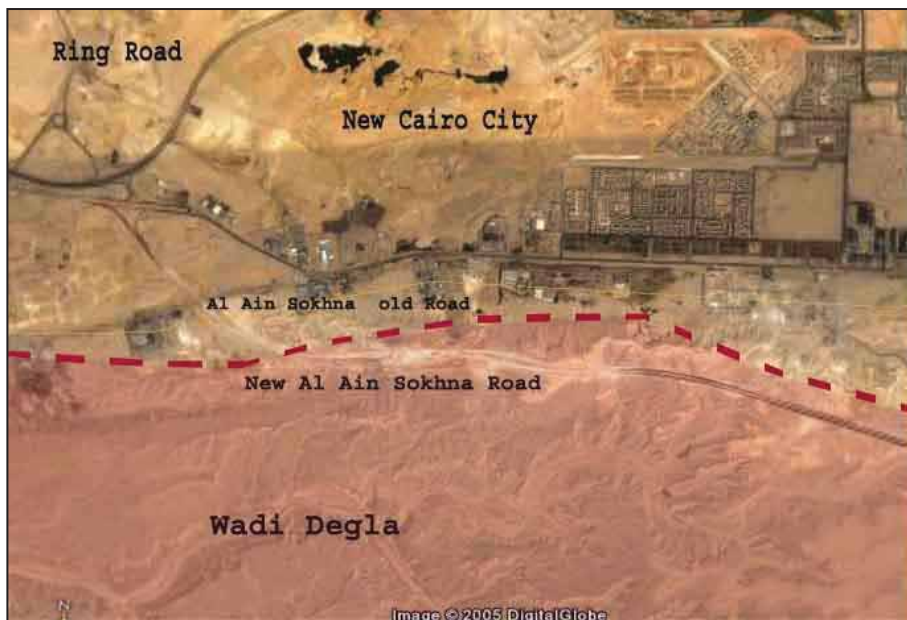


Figure (89): urban uses in the north side of the protected area. (Source: Satellite image, 2005)



Photo (43): Wadi Degla sporting club



Photo (44): Suez Gulf petroleum Company



Photo (45): Marble factory near to the protectorate.



Photo (46): parking area of the Suez Gulf petroleum Company



Photo (47): Toyota client's service center.



Photo (48): Wadi Degla entrance gate.

Source: Researcher

6-5-B Analysis of Wadi Degla Current Condition:

6-5-5 Protected Area's Classification:

- According to the EEAA, the Petrified Forest is classified according to the natural feature: Desert protected Area.
- According to the location: Central area protectorates.
- According to the IUCN management classification: unspecified in this classification.

This means: Wadi Degla has no specific classification, especially an international one. According to the nature of the Petrified Forest, we can classify it as: **National Park** (protected area managed mainly for ecosystem protection and recreation).

As the Grand Canyon in USA, is classified as a National park too.

6-5-6 Management Plan of Wadi Degla:

Currently, there is no specific management plan for the PA. Recent buildings; are visitor's centre & two entrance gates.

Managed plan for the PA should enhance the following objectives:

(National Park)

Management Objective	II	
Scientific research	2	1: Primary objective
Wilderness protection	2	2: secondary objective
Species / genetic diversity	1	3: potentially applicable
Environment services	1	-: not applicable
Natural / cultural features	2	
Tourism / recreation	1	
Education	2	
Sustainable use	3	
Cultural attributes	-	

Table (62): Management objectives of the Petrified Forest (National Park)

6-5-7: Analysis of the Surrounding Uses:

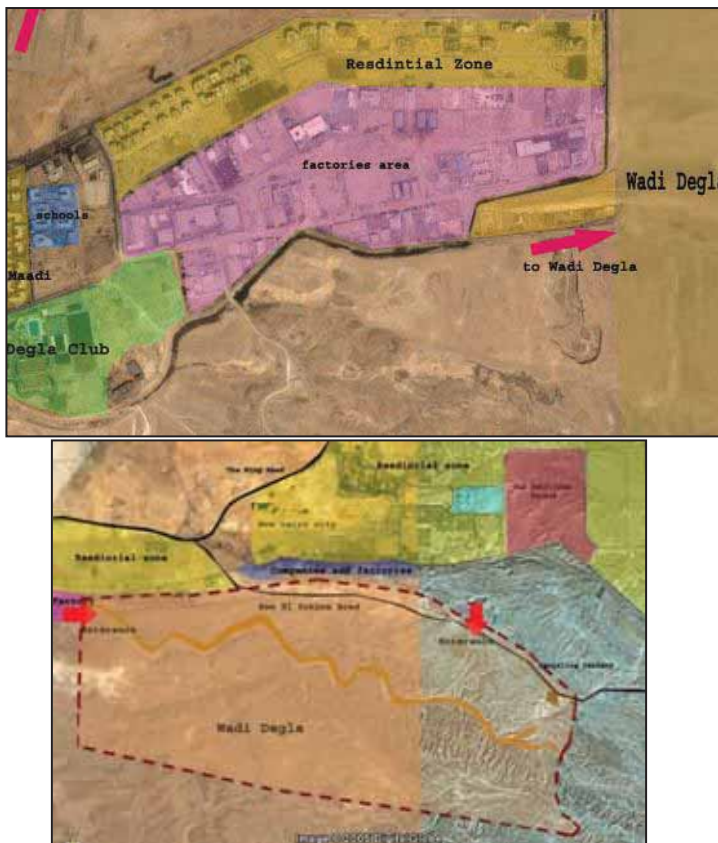


Figure (90): Surrounding uses of the Petrified Forest PA, Source: Researcher adopted from www.googleearth.com







Activities around the PAs system		
Activity	Impacts	Degree of compatibility
Companies area	Most of it compatible for the college is dedicated for science and research purpose, but students' attitudes can damage the PA.	
Residential zone	Main impacts came from the resident's behavior, and some times human domestic sewages can affect the environment.	
Degla sporting club	Main impacts came from the resident's behavior, and some times human domestic sewages can affect the environment. The construction wastes can damage the PA	
Industrial zone & shak El Taban Area	Generally most of industrial buildings have impacts on environment. It can cause environment pollution especially on development countries.	
Rubbish dump	Human domestic sewages can affect the environment.	
Al Ain Al Sokhna road	Oil stations, oil-burning power stations, cement factories, waste recycling factories and etc.	

Table (63): Analysis of the surrounding activities. *Source: Researcher***We can conclude the followings:**

All urban activities around the PA are incompatible activities, except the Degla sporting club which play a recreational role, and participate in the publication of the PA.

6-5-8 the Main Participants in Wadi Degla PA:

As we mentioned before, the protectorate is located in El Maadi. It is under the authority of EEAA, and Cairo Governorate. In addition, some stakeholders are involved like; owners of the rubbish dump, bus station owners, Shak El Teaban marble factories' owners and the Ministry of Traffic and Transportation is responsible for the new Al Ain Al Sokhna road.

Main participants	Type	Responsibility & activities
EEAA	Governmental agency	Takes the official responsibility of the preservation of the protectorate
Ministry of Housing	Governmental agencies	Responsible for urban planning process
The rubbish dump owners	Stakeholders	Responsible for the dump located in, it is officially the owner of the land.
Ministry of traffic and transportation	Governmental agency	Responsible for the Ain El Sokhna Road, despite its being a part of the protected area's land
Shak El Teaban factories owners	Stakeholders	They are the owner of the factories land which is located on the west side of the PA.

Table (64): The main participants in Wadi Degla PA. Source: (Researcher) gathered from different sources.

6-5-9Wadi degla Problems:

6-5-9-1The Recycling Factory in the East:

A rubbish dump is located to the west of the Wadi degla protectorate, since the wind in Egypt blows from the northeast; plastic bags have been accumulating, choking plants. The dump is taking part of the wadi, located in north-east corner.

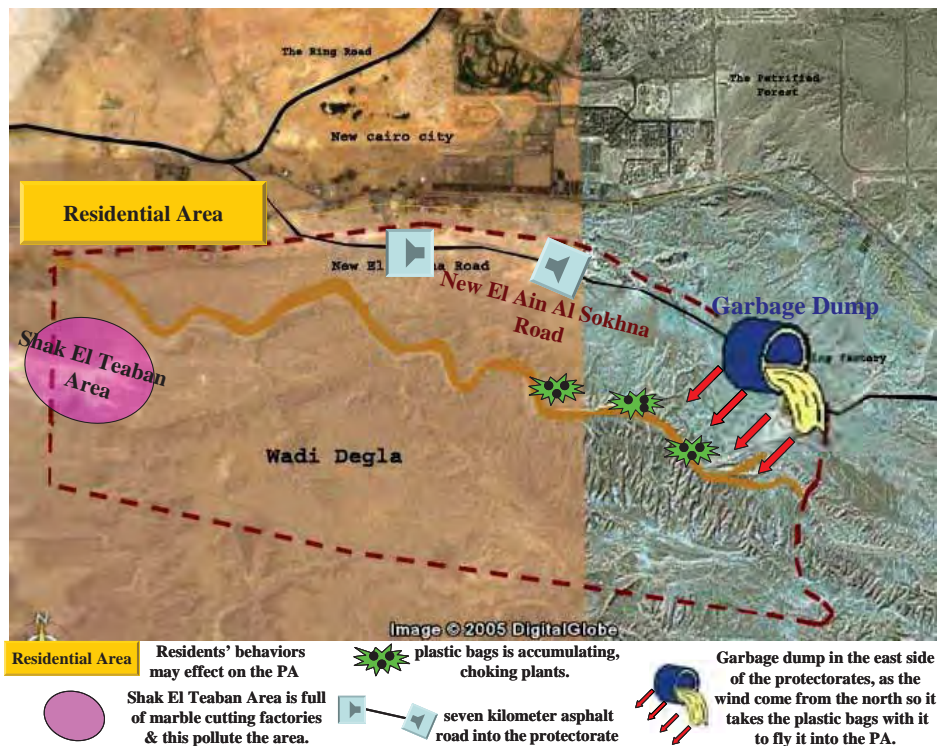


Figure (91): Wadi Degla problems. (Source: Satellite image, 2005

This recycling factory is one of the major problems that face the PA, as the plastic bags are carried by the wind from it and are trapped in the valley choking the vegetation and polluting the surroundings.

The plastic bags fly into the bushes and rocks and disturb the balanced ecosystem endangering the many life forms within.



Photo (49): The Plastic bags cover the patches and the rock in Wadi Degla.

Source: Researcher

6-5-9-2 New El Kattamia Al Ain Al Sokhna Road:

The new Ein El-Sokhna high way passes through the protectorate; it is too close to the wadi. The road is established by the military. This road separates the north part of the protectorate. This may affect the ecosystem of the protectorate.



Figure (92): Page from El Ahram news paper shows the impact of the government's constructing a road in the protected area's land. Source: (AL Ahram, 2000)

- One of the major effects of the creation of the New Al Ain Al Sokhna road is; the gate which came from the old road is closed now, it is the nearest gate to the old waterfalls. It is only connect by a trail with the visitor center.



Figure (93) New Al Ain Al Sokhna Road and its impact on the gate.

Source: (EEAA, 2005) edited by the Researcher.

6-5-9-3 Residential Area in the North – West Zone:

The main impacts may come from the general attitudes toward the protected area compounds. The human sewage also may increase the ground water of the protected area and damage the plantation.

6-5-9-4 Tourism and Recreational Problems:

Some visitors do not care to pick up their garbage and leave the place littered with metal cans, and plastic or glass bottles.

6-5-9-5 Shak El Teaban Area:

The marble factories pollute the air and the land of the protected area.

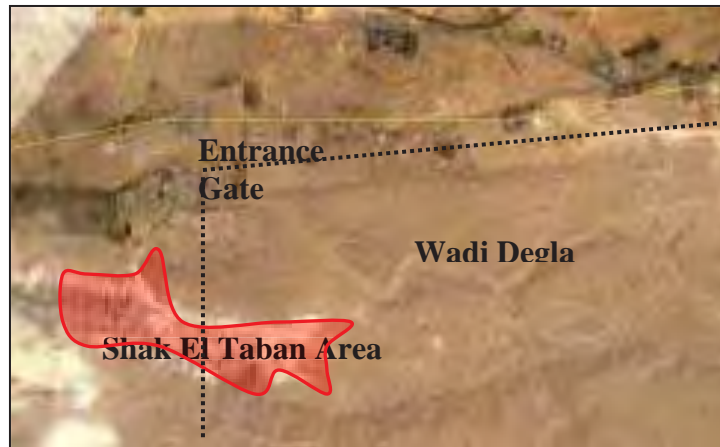


Figure (94): Shak El Taban area in the west side of the PA (inside the PA's land)
(www.googleearth.com)

6-5-10 Zone Configuration Analysis:

At present, there is no obvious zone configuration to the Petrified Forest, but generally the PA classified to three zones:

Core Area: (Ancient waterfalls)

Buffer zone: the rest area of the PA.

Transition area: area beyond protected area
(wadi degla club is located in it)

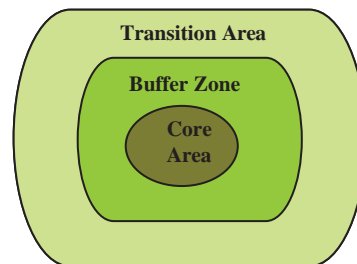


Figure (95): the supposed zone configuration of Wadi Degla

6-5-11 Efforts of Cleaning the Wadi:

6-5-11-1 Governmental Efforts:

Because of the shortage in the financial support; EEAA faces many obstacles in the cleaning process of Wadi Degla. As there is no management plans for the protectorate to supervise this cleaning process

or force this recycling factory to move to another place, away from the Wadi Degla PA.

6-5-11-2 NGO'S Efforts:

Many NGO's make a lot of effort to clean up the PA; the first event was organized by Sahara safaris (electronic group), and the second hold by CARE'S.

1-Sahara Safaris Event:

It was in the earth day, April 2004. more than 200 persons participated in this event. They collect 100 jumbo-sized trash bags. (*The researcher participated in this event*)



Figure (96): A page from El Ahram newspaper talking about the cleaning up event

. Source: (Al Ahram, 2004)

2-Tri-Earthalon Event:

In April, 2005, a CARE International cleanup campaign attracted American School in Cairo students who were already on a field trip to Wadi Degla, a group of students from an all-female public school in Fayoum as well as SSG members and foreign residents of Cairo. Using garbage bags and gloves, the team had managed to clear one entire section of the wadi. "This kind of event aims not just at protecting the environment but, more importantly, raising public awareness of it," according to Louis Alexander, assistant country director of CARE Egypt. It is always important to demonstrate that cleanups are not the work of garbage collectors; they are for people who want to clean up their environment no matter what their position in society. "The ultimate aim is to make a genuine difference."

With more than 100 jumbo-sized trash bags collected, the Tri-Earthalon was able to promote community participation, environmental awareness and Corporate Social Responsibility (CSR) in Egypt, while getting people out of the busy city to rediscover the beauty and value of natural settings like Wadi Degla

CARE Egypt organized the event in partnership with the Egyptian Environmental Affairs Agency (EEAA). Various corporate sponsors sent teams to participate in the clean up and donated generously, including ShopRite chain of grocery stores that donated water and fresh fruits for all the participants, Cadbury donated Moro chocolate bars, and Wadi Degla Sporting Club catered the post event barbecue.

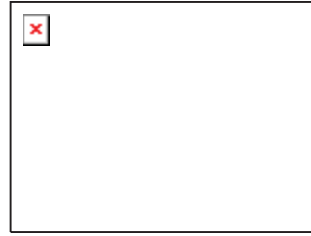


Photo (51): Photos from the CARE'S clean up event. *Source* :(www.care_egypt.com)

Sixty adults and 30 children from different walks of life came together despite sand storms to participate in a clean up of the Wadi Degla Protected Area on Friday, April 8th 2005.

6-5-12 Wadi Degla Sporting Club (One of the most compatible use):

Wadi Degla Sporting Club is located in the fourth division of Zahraa El Maadi, about 3 Km away from Old Maadi and 2 Km from Maadi City Center and Carrefour. The club is connected to most of Cairo's districts through the Ring road and the Autostrade. The club is about 1 Km away from Wadi Degla protectorate, bounded by a chain of mountains, which extend to about 12 Km into the Wadi Degla Canyon, hence the club's name.

The club is situated on an area of about 38 acres of sun baked desert. The conception of this huge project occurred in May 2002 as a direct effect of the Egyptian government's policy to encourage and support free investments and constructive projects that are beneficial to our society.

The project constitutes a full scale privately owned sports club that is operated using the strictest quality control measures and applying the latest techniques and methodologies of modern sports management

with the sole purpose of creating true, internationally competitive athletes that would give Egypt its deserved position on the international sports scene. (www.wadidegla.com)

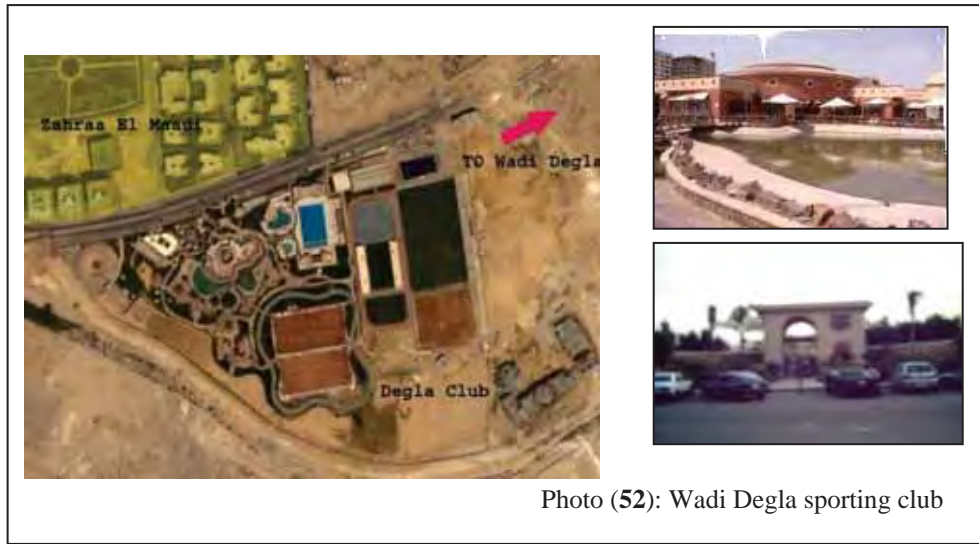


Photo (52): Wadi Degla sporting club

Figure (97): Wadi Degla club in 2005. (Source: www.google.com) – *Photos were taken by the Researcher*

6-5-C Conclusion:

Structural Parameters	"Wadi Degla protected area"			
	Size	Less than 50 km² (MRA)	From 50 too 100 km²	More than 100 km²
		✘		The total area of the protectorate 60 km ²
Location	Within Urban Context (human settlements, activity zones)	The proximity of protected areas and network layouts	Within natural areas. (Deserts, oceans, wet-lands...etc)	Comments
	✘		✘	Part of the PA's land is surrounded by mountains and the other parts are surrounded by urban areas.
Edge Configuration	Inherent/ Natural	Induced / Generated		Comments
	✘	✘		
Shape Configuration	The boundaries follow natural divisions	The boundaries follow urban divisions		Comments
	✘	Rounded Shape	Long Linear Shape	Follow urban element
				✘

Table (65): The structural parameters of "Wadi Degla Protectorat". *Source: Researcher*



"Wadi Degla protected area"		
Description		Comments
Location	<p>It is located south to the old Al Ain Al Sokhna road, in El Maadi, Cairo governorate.</p> 	
Description & contents	<p>Wadi Degla is one of the important valleys which extend from east to west with a length of 30 km. It passes through the limestone rocks that had remained in the marine environment during the Eocene Epoch in the eastern desert (60 million years).</p>	
Natural life		Comments
Flora & Fauna	<ul style="list-style-type: none"> - At least 20 species of reptiles are known in Wadi Degla & 12 species of birds. - Over 75 wild flowering plants have been recorded from wadi degla 	
Geological features	<p>It is rich with fossils. The height of these rocks alongside the valley is around 50 m.</p>	

Table (66): Analysis of the current condition of "Wadi Degla" (Part 1). *Source: Researcher gathered from different sources.*

Management				
Category of the PA according to the IUCN management category system	The PA has a category	The PA don't have a define category	Category	Comments
		✘		The PA didn't have a defined category.
Management objectives	Currently there are no management plans or objectives.			
Management plan	There is no management plan.			
Zone configuration				
Type of uses inside the PA's land	- Inside the PA's land, the major land use is the protected land and there are some violations.			
Type of land use configuration	Right now there is no specific zone configuration for the protectorate.			

Table (67): Analysis of the current condition of "Wadi Degla" (Part 2). *Source: Researcher gathered from different sources*

Areas beyond PA's land (surrounding uses)			
Type of surrounding uses	Urban use	Degree of compatibility	Comment
	Companies area	incompatible	All the adherence activities are incompatible except the Degla club.
	Residential zone	Moderate	
	Degla sporting club	compatible	
	Industrial zone & shak El Taban Area	incompatible	
	Rubbish dump	incompatible	
	Al Ain Al Sokhna road	incompatible	

From the previous study can be summarized in the following points:

- Only a good management plan could boost the status of Wadi Degla. The area requires advertising: "What we can do is to keep cleaning it up and preserving it, but the EEAA has to do the rest, introducing a good marketing campaign to generate resources.
- Over the past few months, the protectorate's boundaries have been redrawn several times in an attempt to reduce the polluted area from the garbage. (In this protectorate also the external forces (urban influences) acting on the area are greater than internal forces (conservation management). As a result, the protected area suffers from violations and neglecting).
- Although the dangerous violations that took place in the national protectorate of Wadi Degla in Maadi (such as constructing a highway through it and the growing amount of garbage surrounding it), there are no officials attitudes towards that excepts the redraw of the boundaries.
- It is necessary to save the protectorate from the severely dangerous violations that it is facing.
- It is necessary to take the necessary measures to stop these violations as promptly as possible.
- Most of the surrounding uses are incompatible use to the protectorate. The most suitable and compatible use is wadi degla club. (as a recreational facility)
- The problem of wadi degla not only the growth of urban expansions, but also the existing land uses. As wadi degla was declared in 1999 and until that date some urban uses were around it.

- There is a main conflict between aims of development and aims of conservation in this protectorate.
- Wadi degla also suffers from the neglect of its presence in national plans.

6-6Relation between the Petrified Forest & Wadi

Degla:

The valley's geological life goes back more than 50 million years to the Eocene epoch. The majestic cliffs to each side of the valley were the river banks, and the valley itself was the river bed. The high cliffs are a powerful natural barrier even now, and have protected the valley's various life forms effectively.

The Petrified Forest nearby is 35 million years old. The geological formations of Wadi Degla are 50-60 million years old; if the Wadi's habitat or local environment is so different from a physiographic point of view, this is because it forms part of the northern Eocene limestone plateau," according to El-Qassass.

Only the Petrified Forest offers such a distinct habitat, although it lacks the richness of plant and animal life one can observe in the Wadi. None of Egypt's 24 other protected areas can boast such exceptional characteristics.

This is why the researcher proposes that it would be wiser to consider the Wadi as a part of the Petrified Forest reserve, rather than declaring it an independent protected area, a network could be made between the two protectorates.

We don't mean here a species network, but it can be a recreational and multi use area.

6-7 Summary of Chapter six:

- Despite protection efforts in Egypt, Egyptian protectorates suffer from many problems e.g:

- The presence of a preserved natural area within the urban context, as a result of unplanned urban activities in close adherence to these preserved areas. This obviously appears in three Egyptian protectorates; El Hassana Dome, The Petrified Forest and Wadi Degla Protectorates.
- The main problem that faces these protectorates is; conflicts between aims of conservation and aims of development.
- Because of this conflicts, urban expansions grows covering almost 99% of the real area of the petrified forest, as the declared area is only 0.06 from the real area of the fossil tree trunks.
- In addition, Wadi Degla and the petrified forest face many conflicts and challenges; such as:

- Conflict in Situation (Those areas face many obstacles to fulfill the needed, efficient conservation, maintenance, and management. the presence of natural reserved area within the urban context might have impacts on the main Development Plan of the city, which is not recognized)

- Conflict in Aim (The main conflict is between aims of conservation and aims of development)

- Conflict in Uses and Activities: (surrounded activities are ignored to the adequate profit derived from this important area)
- There are no regulations controlling types of uses established there; as well as, there are no special regulations controlling densities, heights, ways or materials of constructions around the protectorate.
- Many Governmental Authorities bodies are involved in Wadi Degla and the Petrified Forest Management. In addition, there is no cooperation between this agencies and stakeholders, which causes many problems and challenges in the protection process.

Evaluation of the Efficiency of Protection

It is clear that the Petrified Forest area and Wadi Degla lack efficient protection due to the inadequate uses around its site. Such uses may affect environment and destroy the fossilized tree trunks through polluted air or underground polluted water, and destroy the geological form of Wadi Degla

- 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 the distance to the reserved area.
- The information centre (usually closed) doesn't have staff highly skilled in protection and management
- Actually the external forces (**urban influences**) acting on the area are greater than internal forces (**conservation management**). As a result, the protected area suffers from violations and neglect).

2-5-6-1 Central Area Protectorates:








<p><u>1-The Petrified Forest Area in Maadi - Cairo</u> Date of Announcement: 1989. Area: 7 Km². Type: Geological protected Area and a national heritage. Distance from Cairo: 30 km.</p>	 <p>Photo (8): The Petrified Forest <i>source: (EEAA, 2005)</i></p>	<p><u>5- Wadi El Rayan protected Area in Favoum Governorate</u> Date of Announcement: 1989. Area: 1759 km². Type: Developing Management resources protected Area and a natural national heritage. Distance from Cairo: 150 km.</p>	 <p>Photo (12): Wadi El Rayan <i>Source: (EEAA, 2003)</i></p>
<p><u>2- El Hassana Dome protected Area in Giza Governorate</u> Date of Announcement: 1989. Area: 1 km². Type: Geological protected area. Distance from Cairo: 23 km.</p>	 <p>Photo (9): El-Hassana Dome <i>Source: (Researcher)</i></p>	<p><u>6- Quaron Lake protected Area in El-Fayoum Governorate</u> Date of Announcement: 1989. Area: 1385 km². Type: Wetlands. Distance from Cairo: 90 km.</p>	 <p>Figure (23): Quaron Lake <i>Source: (EEAA, 2003)</i></p>
<p><u>3- Wadi Sanor Cave protected Area in Beni Sueif Governorate</u> Date of Announcement: 1992. Area: 12 km². Type: Geological protected Area and national heritage. Distance from Cairo: 200 km.</p>	 <p>Photo (10): Wadi Sanor <i>Source: (EEAA, 2003)</i></p>	<p><u>7-Nile river Islands Protected Area in Different Governorate</u> Date of Announcement: 1998. Area: 160 km². Type: Wet lands protected area. Distance from Cairo: 144 islands in different Governorate.</p>	 <p>Photo (13): Nile River Islands <i>Source: (EEAA, 2003)</i></p>
<p><u>4- Wadi Degla Protected Area in Cairo Governorate</u> Date of Announcement: 1999. Area: 60 km². Type: Desert lands protected area. Distance from Cairo: 10 km._</p>	 <p>Photo (11): Wadi Degla <i>Source: (Researcher)</i></p>		

Table (16): Northern Protectorates in Egypt. *Source: Researcher*

2-5-1-3 Sinai Protectorates






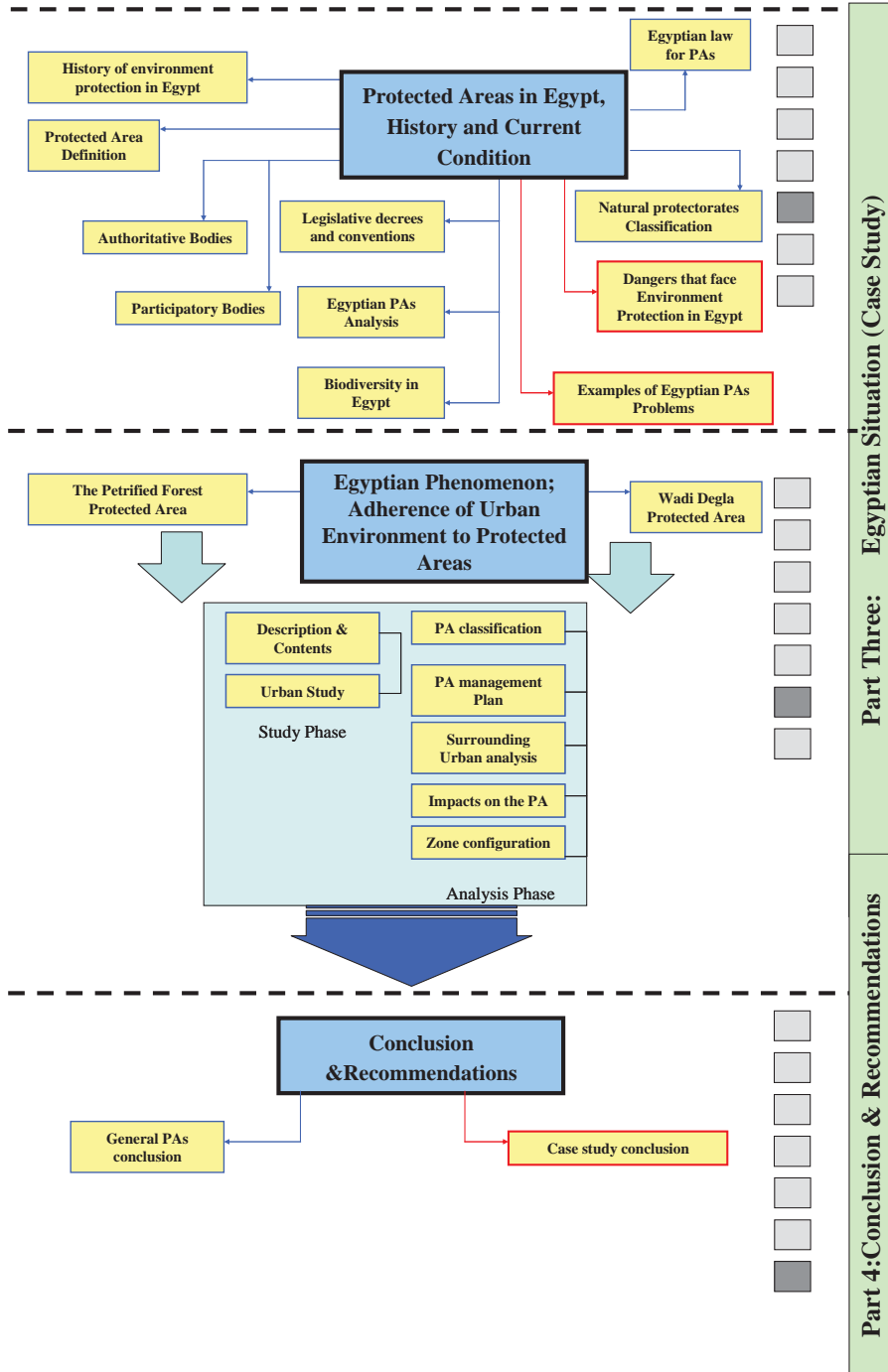
<p><u>12- Ras Mohamed Protected Area and Tyran as well as Sanafir in South Sinai Governorate</u> Date of Announcement: 1983. Area: 850 km². Type: National parks Distance from Cairo: 446 Km.</p>	 <p>Figure (24): Ras Mohammed map Source : (www . Diving .com)</p>	<p><u>16- Nabq protected Area in South Sinai Governorate</u> Date of Announcement: 1992. Area: 600 km². Type: Multipurpose protected area. Distance from Cairo: 500 km.</p>	 <p>Photo (21): Nabq Protectorate Source: (EEAA, 2003)</p>
<p><u>13- Zaranig protected Area and El Bardwael Marsh in the North Sinai Governorate</u> Date of Announcement: 1985. Area: 230 km². Type: Wetland protected Area and a natural restricted Area for birds. Distance from Cairo: 300 km.</p>	 <p>Photo (18): Zaranig protectorates (EEAA, 2003)</p>	<p><u>17- Abu Gallum protected area in South Sinai Governorate</u> Date of announcement: 1992. Area: 500 Km². Type: landscape protected area. Distance from Cairo: 600 km.</p>	 <p>Photo (22): Abu Gallum protected area Source: (EEAA, 2003)</p>
<p><u>14- Coast marshes Area in Rafah North Sinai Governorate (Ahrash Protectorate)</u> Date of Announcement: 1985. Area: 8 km². Type: Developing resources protected Area. Distance from Cairo: 370 km.</p>	 <p>Photo (19): Ahrash Protectorate (EEAA, 2003)</p>	<p><u>18- Taba protected Area in South Sinai Governorate</u> Date of announcement: 1998. Area: 3595 km². Type: Desert and natural heritage protected area. Distance from Cairo: 550 km.</p>	 <p>Photo (23): Taba Protectorate Source: (EEAA, 2003)</p>
<p><u>15- Saint Catherine protected Area in South Sinai</u> Date of Announcement: 1988 Area: 5750 Km² Type: World cultural and Natural heritage protected area Distance from Cairo: 550 Km.</p>	 <p>Photo (20): Saint Catherine PA (EEAA, 2003)</p>	<p><u>19- Wadi El Genal - Hamata Protected Area</u> Date of Announcement: 2003. Area: 7450 km². Type: Desert protected area. Distance from Cairo: 850 km.</p>	 <p>Photo (24): Wadi El Genal PA www .EEAA. com</p>

Table (18): Northern Protectorates in Egypt. Source: Researcher

Part four
Chapter Seven
Conclusions and Recommendations



Conclusions & Recommendations:

Despite protection efforts in Egypt, Egyptian protectorates suffer from many problems:

- The presence of preserved natural area within the urban context, this was as a result of the unplanned urban activities and its close adherence to these preserved areas. This obviously appears in three Egyptian protectorates; El Hassana Dome, The Petrified Forest and Wadi Degla Protectorates.
- The main problem that faces these protectorates is; conflicts between aims of conservation and aims of development.
- Because of this conflicts, urban expansions grows to take almost 99% of the real area of the petrified forest, as the declared area is takes only 0.06 from the real area of the fossil tree trunks.
- Beside that, Wadi Degla and the petrified forest face many conflicts and challenges; like:

- Conflict in Situation (Those areas find 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)

- Conflict in Aim (The main conflict is between aims of conservation and aims of development)

- Conflict in Uses and Activities: (surrounded activities don't realize the adequate profit from that important area)

- There is no regulation or restrictions controlling types of uses established there; as well as, there are no special regulations controlling densities, heights, ways or materials of constructions around the protectorate.
- Many participants are involved in Wadi Degla and the Petrified Forest Management. In addition, there is no cooperation between this agencies and stakeholders, this cause many problems and challenges in the protection process.

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

The study is primarily concerned with the formulation of a methodology by which areas of distinct environmental value can be maintained in today's situation of burgeoning human needs. This is attempted through the integration, of conservation and development by means of management tools.

In discussing and analyzing these tools. The research has provided an understanding of the following concepts:

- The conservation of ecological processes is essential for the sustenance of existence of all life, including human, on earth. Man's responsibilities to maintain the self-renewing capability of these processes and natural environment must be recognized.
- The eco-centric attitude establishes that conservation and development are closely related concepts, whose aims and objectives

can be integrated through the framework offered by management tools.

- Protected areas (PAs) are natural sites that conform to environmental criteria which describe their value as deposits of natural wealth and their important role in maintaining ecological processes. PAs should be conserved through the promotion of their developmental value to insure intergenerational continuity, equity and sustainability. This should be based on a systematic analysis of the area and of its ecological links with its surroundings.
- In Egypt, despite the long history and multi –sectoral involvement in conservation, only 24 protected areas are legally protected. These protected areas cover a diverse range of habitats and contain a significant percentage of the country's natural resources. Additionally, they offer much needed development potentials, which can be sustainable if planned and managed correctly.

Specific recommendations concerning the management of the PAs in Egypt:

The following recommendations, specifically concerning the situation of protected areas and their management, have been deduced taking into account the current degree of development in present in Egypt.

The problem:

- Despite efforts, Egypt lacks a sustainable and effective system to address management issues and has a deficit in national capacity in the field of nature conservation. This is because the conflicts between aim of conservation and aims of development.

- The external forces (**urban influences**) acting on the protected areas are greater than internal forces (**conservation management**). As a result, the protected area suffers from violations and neglecting).

The solution:

- There Must be a coordination between the objectives of preservation of the protected areas and the concept of development.
- Co-operation with different partners responsible for the preserved areas in Egypt.
- Good management of the protected areas and supply financial and publication support.
- The protected area is not a constraint but it can be a potential to develop the surrounded uses.
- Respect restrictions and enforce the law of the protectorates.

Recommended actions:

- ✘ Establish or develop a data collection and inventory program for natural heritage resources.
- ✘ Develop and apply criteria and procedures for selecting, evaluating and designating PAs.
- ✘ Involved agencies should be provided with the necessary tools to obtain process, consult and analyze relevant information.

- ✘ The definition of the overall strategy for conserving the natural environment and PAs system and their inclusion in sectoral policies and strategies.
- ✘ Mechanisms for communication and cooperation between the main authoritative body (EEAA) and other involved agencies (ministries, local government ...etc) should be set up to avoid management conflicts.

Encouraging the involvement of local communities and other social and economic stakeholders in the area. The delegation of supervisory roles and relevant information should be provided to facilitate participation and communication.

Recommendations for the Petrified Forest:

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

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 centres 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 needs 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 threatening activities away from the reserved areas. As well as accomplish as soon as possible the construction of the fence (the fence may be a buffer zone not a built fence) and the controlled entry of the, Petrified Forest Area.
- ✘ Put regulations and restrictions for any new construction around the protected area.
- ✘ 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 centre and information centre, to arrange tours and encourage the related scientific research.
- ✘ Training programs to improve high skilled staff for the nature reserves management.

Recommendations for Wadi Degla:

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

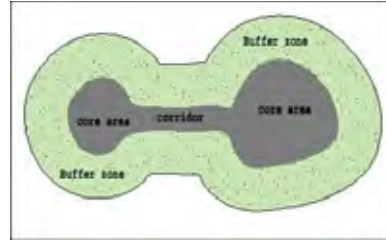
- ✘ Displace all the dangerous and threaten activities away from the reserved areas. (rubbish dump – Shak El Teaban Area)
- ✘ Put regulations and restrictions to any new construction around the protected area.
- ✘ Develop the limits of acceptable use and regulations for all parts in the periphery of 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 tourists' facilities and arrange tours and encourage the related scientific research.

- ✘ Training programs to improve high skilled staff for the nature reserves management.

✘

5-2-2 The relation between Wadi Degla & the Petrified Forest:

On the regional level it is recommended to make link between the Petrified Forest area and the Wadi Degla protectorate by a multi use linkage after the displacement of inadequate activities. The proposed linkage should be the main spine between the two protected areas. This linkage is a recreational and tourist facilities one.



Protected Areas connected by corridors



جامعة عين شمس
كلية الهندسة
قسم التخطيط والتصميم الحضري

العلاقات المتبادلة بين المحميات الطبيعية والبيئة العمرانية

بحث مقدم للحصول علي درجة الماجستير في التخطيط العمراني

مقدم من

م. سماح محمد السيد الخطيب

معيد بقسم التخطيط العمراني, كلية الهندسة, جامعة عين شمس

تحت إشراف

أ.د. محمد تامر الخرزاتي

الأستاذ بقسم التخطيط و التصميم العمراني

كلية الهندسة - جامعة عين شمس

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مقدمة:

البيئة الطبيعية هي كل ما يحيط بالإنسان من غلاف جوي ويابسة, كما تتضمن الحياة البيولوجية بجميع أنواعها من نبات أو حيوان, و هناك الكثير من العلاقات المتبادلة ما بين الإنسان والبيئة بحيث يؤثر فيها وتؤثر فيه.

ونتيجة لأنشطة الإنسان الصناعية و الاجتماعية والترفيهية , وصلت البيئة إلي حدود التدهور البيئي, وظهرت العديد من الأصوات التي تنادي بضرورة الحفاظ علي الموارد الطبيعية والبيئية , والمحافظة علي التوازن البيئي والحد من التدهور.

ويتعرض البحث لأحد القضايا البيئية الهامة والتي تتطلب التدخل السريع للوصول إلي تفهم كامل لأبعادها المختلفة ألا وهي المحميات الطبيعية, والتي جاء إعلانها كرد فعل صحي لما أصبحت عليه البيئة من تدهور, وما تتعرض له من أخطار نتيجة الجور عليها واستنزاف مواردها الطبيعية.

و تعد الولايات المتحدة الأمريكية هي أول من أنشأ محمية طبيعية في العالم و ذلك عام 1890 م, وهي محمية (يلو ستون بارك) و ذلك لحماية الحيوانات النادرة, والتي أصبحت مزارا سياحيا لأكثر من ثلاث ملايين سائح سنويا.

و قد تأخرت مصر بصورة كبيرة في إعلان المحميات الطبيعية , ففي عام 1983 تم اصدار قانون رقم 102 لعام 1983 , وذلك لحماية التراث الطبيعي والثقافي و الذي اعتبر أن المحمية الطبيعية هي (أية مساحة من الأرض أو المياه الساحلية أو الداخلية تتميز بما تتضمنه من كائنات حية – نباتية أو حيوانية , أو أسماك أو ظواهر طبيعية ذات قيمة ثقافية أو علمية أو سياحية أو جمالية , ويصدر بتحديددها قرار من رئيس مجلس الوزراء , و ذلك بناء علي اقتراح جهاز شئون البيئة لمجلس الوزراء).

وقد وصل عدد المحميات الطبيعية في مصر إلي 24 محمية طبيعية تغطي حوالي 8% من اجمالي المساحة السطحية للبلاد ومن المنتظر أن تصل إلي 48 محمية طبيعية لتبلغ هذه المساحة 17% من مساحة مصر بحلول عام 2017.

و تتعرض البيئة الطبيعية في مصر لمعظم أشكال التدهور و الجور بفعل الإنسان وقد امتدت يد هذا التدهور لتصل لهذه المحميات الطبيعية , وتعاني المحميات الطبيعية في مصر من الكثير من الظواهر التي تهدد سلامتها , و تظهر في مصر ظاهرة فريدة من نوعها هي متاخمة العمران للمحميات الطبيعية في مصر , بشكل يهدد سلامتها و يندز بضياح إرث بيئي و جيولوجي لا يقدر بثمن.

فالمحمية الطبيعية يجب النظر إليها بشولية أكثر من كونها مخزن أو مستودع للحيوانات والنباتات , بل إنها عملية تنمية شاملة ترتبط بالإنسان و علاقته بالبيئة التي يعيش فيها , ويتفاعل معها , فالمحمية الطبيعية ليست خريطة لها حدود ترسم , بل هي جزء من حياة الإنسان .

و دخول بعض هذه المحميات الطبيعية داخل حدود الحيز العمراني و متاخمة العمران لها , قد يؤثر علي هذه المحميات الطبيعية , و سوف يهتم البحث بإلقاء الضوء علي هذه التأثيرات المتبادلة ما بين العمران و المحميات الطبيعية و كيف أن كلاهما يؤثر في الآخر و يتأثر به .

المشكلة البحثية:

يقتصر التعامل مع المحميات الطبيعية في مصر علي المحافظة علي المكونات الطبيعية لهذه المحميات , فالجهات الإدارية المختصة بالتعامل مع هذه المحميات تهتم فقط بحدود هذه المحميات و لا تهتم بالبيئة المجاورة لها.

و تواجه المحميات الطبيعية في مصر الكثير من التحديات التي تهدد سلامتها منها الأمتداد العمراني المجاور لها , مما أظهر في مصر ظاهرة فريدة من نوعها هي متاخمة العمران للمحميات الطبيعية , و دخول بعض هذه المحميات لتصبح داخل النسيج العمراني في بعض المناطق (محمية الغابة المتحجرة).

فالمخططات العمرانية علي مستوى الدولة في مصر و خاصة في نطاق القاهرة الكبرى , لا تهتم بهذه المحميات ونطاق تأثيرها ,لذلك ظهرت حول هذه المحميات مجموعة من الأستعمالات العمرانية التي لا تتناسب مع هذه المحميات(محمية الغابة المتحجرة) ,إلي جانب امتداد يد الأهمال لتؤثر بالسلب علي بعض هذه المحميات (محمية وادي دجلة).

كذلك تتجاهل هذه المخططات العمرانية الدور الفعال الذي من الممكن أن تلعبه هذه المحميات كعنصر فعال يؤثر ويتأثر بالبيئة العمرانية و خاصة من الناحية البيئية والأقتصادية.

الفرضية البحثية:

يفترض البحث حدوث تأثيرات سلبية علي مكونات المحميات الطبيعية نتيجة لتجاهل هذه المحميات ,والأهتمام فقط بترسيم خريطة تحدد نطاقها وحدودها, وعدم مراعاة نطاق تأثيرها علي البيئة العمرانية , بشكل أسهم في تشجيع النمو العمراني ليصبح متاخم لهذه المحميات , مع غياب الأشتراطات التخطيطية التي يجب توافرها لهذه المناطق الحساسة,وعدم وجود هيكل إداري سليم يدير هذه المحميات ويحافظ علي مكوناتها ونطاق تأثيرها.

الهدف من البحث:

- إلقاء الضوء على مفاهيم الحماية والمحميات, والعوامل التي تؤثر عليها بالسلب.
- دراسة الوضع الراهن للمحميات الطبيعية في مصر.
- دراسة الظاهرة المصرية الفريدة وهي متاخمة العمران لبعض المحميات الطبيعية في مصر.
- تغيير النظرة إلى المحميات من كونها معوق للتنمية إلى امكانية للتنمية العمرانية.

المنهجية البحثية:

يعتمد منهج العمل في اختبار الفرضية البحثية علي ثلاثة محاور رئيسية:

أولاً: دراسة عامة للمحميات الطبيعية من حيث طبيعتها وأسلوب حمايتها والعوامل التي تؤثر عليها سواء بالسلب أو الإيجاب, ودراسة تفصيلية للمحميات الطبيعية في مصر من حيث الموقع والتصنيف.

ثانياً: دراسة القواعد و الأسس المرتبطة بالمحميات الطبيعية, وتصميم الأستعمالات بها.

ثالثاً: تحليل العلاقات المتبادلة بين بين المحميات الطبيعية والبيئة العمرانية و تأثير المتبدل بينهما (سيتم التركيز علي عدة أمثلة لمحميات طبيعية أصبحت داخل النطاق العمراني مثل محمية الغابة المتحجرة و محمية وادي دجلة).

مكونات البحث :

الباب الأول :

- دراسات نظرية عن البيئة والمحميات الطبيعية .

الفصل الأول :

- مفاهيم البيئة والتنمية والحفاظ على البيئة

يتناول دراسة للتعريف البيئية المختلفة و مفاهيم الحفاظ على البيئة والتنمية والتنمية المستدامة و الأنشطة العمرانية التي تؤثر تأثيرات سلبية على البيئة .

الفصل الثاني :

- تعاريف وتصنيف المحميات الطبيعية .

يقوم بدراسة المحميات الطبيعية من حيث التعاريف المختلفة والجهات المسؤولة عن حمايتها, كذلك يتناول هذا الفصل تصنيف المحميات العالمي وبعد ذلك يتعرض للأنشطة حول و داخل المحميات ومدى ملائمة أو عدم ملائمة هذه الأنشطة لوجود المحمية الطبيعية .

الفصل الثالث :

- قواعد المحميات و أسس إدارتها .

يقوم بدراسة المحميات الطبيعية من حيث القواعد و الأسس الخاصة بتوزيع الأنشطة حول و داخل المحمية , والتقسيم العمراني والإداري للمحمية , و قواعد التخطيط والتصميم الخاصة بجميع أجزاء المحمية الطبيعية.

الباب الثاني :

التجارب العالمية في مجال حماية البيئة والمحميات الطبيعية .

الفصل الرابع :

- تحليل بعض الأمثلة العالمية لبعض المحميات العالمية .

يقوم بعرض بعض النماذج العالمية وتحليلها باستخدام القواعد و الأسس الذي تم تجميعها والتعرض إليها في فصول الباب السابق من أجل الوصول إلى معايير يمكن على أساسها اختبار الحالة الدراسية المصرية (متاخمة العمران لبعض المحميات الطبيعية) .

الباب الثالث :

تحليل التجربة المصرية في مجال المحميات الطبيعية

الفصل الخامس :

- المحميات الطبيعية في مصر (تاريخها و حالتها الحالية)

يقوم بعرض المحميات الطبيعية في مصر و دراستها التاريخية و دراسة حالتها الآن و أبرز المشكلات والعوائق التي تواجه عملية الحماية البيئية في مصر و المشكلات التي تهدد سلامة بعض هذه المحميات.

الفصل السادس :

- تحليل الحالة الدراسية المصرية (متاخمة العمران لبعض المحميات الطبيعية في مصر مثل وادي دجلة والغابة المتحجرة) .

يقوم هذا الجزء بتحليل حالتين دراسيتين مصريتين يظهر فيهم بوضوح متاخمة وملاصقة العمران لمكونات المحمية وهما محميتي وادي دجلة والغابة المتحجرة, حيث يتم الإستفادة من المعايير التي تم الوصول إليها في الباب الثاني (المعايير و القواعد العالمية) لتحليل و دراسة هاتين المحميتين.

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Appendix 1:

1- Biological Diversity:

'Biological diversity', (often shortened to biodiversity') is The Variety of living organisms considered at all levels of organization, including the genetic species and higher taxonomic levels. Biological diversity also includes the variety of habitats, ecosystems, and natural process occurring therein. In another word biodiversity encompasses all species of planet, animals, and microorganisms and the ecosystems and ecological processes of which they are parts. It is an umbrella term for the degree of nature's variety, including both the number and frequency of ecosystems, species, or genes in a given assemblage. It is usually considered at three different levels: genetic diversity, species diversity, and ecosystem diversity. Genetic diversity is the sum of genetic information, contained in the genes of individuals of plants, animals, and microorganisms that inhabit the earth. Species diversity refers to the variety of living organisms on earth. Ecosystems relates to the variety of habitats, biotic communities, and ecological processes in the biosphere, as well as the tremendous diversity within ecosystem in terms of habitat

differences and the variety of ecological processes. (Langston C and Ding G, 2001)

Biodiversity is important for life on earth because it:

- Represents accumulated genetic history and evolution.
- Contributes to the resilience of ecosystems.
- Supports cultural and technical advances derived from nature.
- Contributes to human inspiration and peace.

2- Species:

Group of organisms formally recognized as distinct from other groups, species richness is the absolute number of species in a given area. (*Asem Abdel Hamid, 1995*)

3- Habitat:

The locality, site and particular type of local environment occupied by an organism, habitat fragmentation is the process of dividing a continuous habitat into non-continuous, smaller sub-units.

4- Ecosystems:

Ecosystems are referring to the dynamic and interrelating complex of plant and animal communities and their associated non-living environment.

The ecosystem concept helps to define the order of the natural world. An ecosystem refers to its biotic organisms (plants, animals, fungi, etc.) and interactions among those organisms, as well as the A-biotic physical processes of the system (climate, topography, geology, etc.). Ecosystems are chock-full of lessons in biology, physical sciences, history and other disciplines.

Ecosystem is the natural stock of ecological resources, such as soil, ground and surface water, land biomass and water biomass. (*Peter Graham, 2003*)

Ecosystems play a vital life-support function and should be protected.

Ecosystem consists of:

a- Biotic:

Biotic refers to the living components of a system; it is classified into three objects:

- Producers
- Consumers
- Decomposers

1-Producers:

Organisms that obtain energy from a physical or chemical source, Plants are producers; they convert the sun's energy into sugars and carbohydrates. Bacterial microorganisms called cyan bacteria, which live in the ocean depths, create their food from chemical compounds. (*Asem Abdel Hamid, 1995*)

2-Consumers:

Organisms that; obtain their energy or food from producers; plants or other consumers.

3-Decomposers:

Living organisms that; obtain their food from decomposed organic material.

The most important types are bacteria and fungi. They play essential role in decomposition of living organisms after their death.

b- A- biotic:

A biotic refers to the non-living components of a system (climate,

topography, geology, etc.)

5- Natural Resources:

Natural resources are the compounds of environment from air, water, plants, etc. It is classified according to the condition, and according to the ownership.

a- Classification of Natural Resources According to Condition:

This kind classifies natural resources into two groups:

- Renewable resources.
- Nonrenewable resources.

1-Renewable Resources:

Resources such as trees, fish, oxygen, and fresh water are generally considered to be renewable resources as they can be continually reproduced. Fresh water comes out from the Earth's recycling process, fresh air from the oxygen produced by plants and trees, and trees and fish which can reproduce them.

Renewable is defined as:

Capable of being replaced by natural ecological cycles or sound management practices. (*Abdel Hamid, 1995*)

2-Non Renewable Resources:

Such things as fossil fuels (oil, coal, gas) and minerals that cannot be reproduced and therefore can be vanish. These are called non-renewable resources.

Humans are using up natural resources at a great rate and at a great cost to the health of the natural environment and life on Earth.

How can natural resources affect our environment unnaturally?

It is not the natural resources by themselves that harm the Earth's environment; it is what humans do with the natural resources that cause the problems to the environment and to the health of living organisms, including other human beings.

The burning of fossil fuels in factories in order to make products and power, and the fuels used by trucks, automobiles and jet planes have caused acid rain and a great increase in carbon dioxide and pollution in the atmosphere. Moreover forests which are used to absorb carbon dioxide have been destroyed causing traps heat in our atmosphere.

Scientists believe those human activities have led to global warming. Global warming (worldwide increased temperature) is causing glaciers to melt, seas to raise, climates to change, violent weather, destruction of coral reef ecosystems, crops to die, famine, floods, topsoil to wash away, droughts, and the loss of plants and animals.

b- Classification of Natural Resources According to Ownership:

This kind classifies natural resources into two groups:

- Moving or un-owned resources.
- Owned resources.

1-Moving or Un-Owned Resources:

Resources are not lying under ownership of any government or any specific region. We cannot govern it under a physical border, like fishing outside regional water.

2-Owned Resources:

Resources are lying under the authority of a government or a regi

Appendix 2:

The Brundtland Report and Sustainable Development:

The Brundtland Report is considered to be anthropogenic, or human-centered, which means that it is primarily concerned with human welfare through meeting needs and ensuring quality of life over and above protection of the environment (Kirby et al., 1995). The Brundtland Report does not guarantee the needs or quality of life of animals or other living organisms, except in so much as this will benefit humankind. However, to ecologists, living organisms have a right to exist regardless of whether they are beneficial or valuable to humans. (*Langston and Ding, 2001*)

The Brundtland Report suggests that equity can be used to overcome environment problems. This means that inequality between the developed and developing countries has to be dealt with by raising the living conditions in the developing countries that are generally impoverished.

The Brundtland Report suggests seven strategies to sustainable development:

- 1- Reviving growth.
- 2- Changing the quality of growth.
- 3- Meeting essential needs for jobs, food, energy, water and sanitation.
- 4- Ensuring a sustainable level of population.
- 5- Conserving and enhancing the resource base.
- 6- Reorienting technology and managing risks.

- 7- Merging the environment and the economy in decision-making.

Appendix 3:

1- Protected Area Categories and Management Objectives

A protected area is defined as: “**An area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means**” (IUCN, 1994).

The above definition does not mean that no use will be permitted within protected areas. In fact, the most wide spread use of protected areas is for recreation.

a- Group A

Those categories for which CNPPA and WCMC take responsibility to monitor the status of each conservation area and for which CNPPA takes a responsibility to provide technical advice as requested.

Category I: Scientific Reserve / Strict Nature Reserve

To protect nature and maintain natural processes in an undistributed state in order to have ecologically representative examples of the natural environment available for scientific study, environmental monitoring, education, and for the maintenance of genetic resources in a dynamic and evolutionary state.

Category II: National Park

Protect natural and scenic areas of national or international significance for scientific, educational, and recreational uses.

Category III: Natural Monument/ natural land mark

Protect and preserve nationally significant natural features because of their special interest or unique characteristics.

Category IV: Nature Conservation Reserve/ Management Nature Reserve/ Wild life sanctuary

To assure the natural conditions necessary to protect nationally significant species, group of species, biotic communities, or physical features of the environment, where these require specific human manipulation for their perpetuation.

Category V: Protected Landscape/Seascape

To maintain nationally significant natural landscape which are characteristic of the harmonious interaction of people and land, while providing opportunities for public enjoyment through recreation and tourism within the normal lifestyle and economic activity of these areas.

b- Group B

Those categories important to IUCN as a whole and generally found in most nations, but not be considered exclusively within the scope of CNPPA.

Category VI: Resource Reserve – Interim Conservation Unit

To protect the natural resources of the area for future use, and prevent or contain development activities that could affect the resource pending the establishment of objectives which are based on appropriate knowledge and planning.

Category VII: Natural Biotic Area – Anthropological Reserve

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To allow the way of life of (human) and societies live in harmony with the environment to continue undisturbed by modern technology.

Category VIII: Multiple-Use Management Area / Managed Resource Area

To provide for the sustained production of water, timber, wildlife, pasture, and outdoor recreation, with the conservation of nature primarily oriented to the support of economic activities (although specific zones may also be designed within these areas to achieve specific conservation objectives). (UN, 1994)

2-The current IUCN WCPA categories (IUCN 1994) are as follows:

- I.** Strict protection
 - Ia.** Strict Nature Reserve
 - Ib.** Wilderness Area
- II.** Ecosystem conservation and recreation (National Park)
- III.** Conservation of natural features (Natural Monument)
- IV.** Conservation through active management (Habitat/Species Management Area)
- V.** Landscape/seascape conservation and recreation (Protected Landscape/ seascape)
- VI.** Sustainable use of natural ecosystems (Managed Resource Protected Area)

Category Ia - Strict Nature Reserve: protected area managed mainly for science

Definition: Area of land and/or sea possessing some outstanding or representative ecosystems, geological or physiological features and/or species, available primarily for scientific research and/or environmental monitoring

Objectives of management:

- To preserve habitats, ecosystems and species in as undisturbed a state as possible.
- To maintain genetic resources in a dynamic and evolutionary state.
- to maintain established ecological processes.
- To safeguard structural landscape features or rock exposures.
- To secure examples of the natural environment for scientific studies, environmental monitoring and education, including baseline areas from which all avoidable access is excluded.
- To minimize disturbance by careful planning and execution of research and other approved activities.
- To limit public access.

Guidance for selection:

- The area should be large enough to ensure the integrity of its ecosystems and to accomplish the management objectives for which it is protected.
- The area should be significantly free of direct human intervention and capable of remaining so.

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- The conservation of the area's biodiversity should be achievable through protection and not require substantial active management or habitat manipulation (c.f. Category IV).

Category Ib - Wilderness Area: protected area managed mainly for wilderness protection

Definition: Large area of unmodified or slightly modified land, and/or sea, retaining its natural character and influence, without permanent or significant habitation, which is protected and managed so as to preserve its natural condition.

Objectives of management:

- To ensure that future generations have the opportunity to experience understanding and enjoyment of areas that have been largely undisturbed by human action over a long period of time.
- To maintain the essential natural attributes and qualities of the environment over the long-term.
- To provide for public access at levels and of a type which will serve best the physical and spiritual well-being of visitors and maintain the wilderness qualities of the area for present and future generations.
- To enable indigenous human communities living at low density and in balance with the available resources to maintain their lifestyle.

Guidance for selection:

- The area should possess high natural quality, be governed primarily by the forces of nature, with human disturbance

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substantially absent, and be likely to continue to display those attributes if managed as proposed.

- The area should contain significant ecological, geological, physiogeographic, or other features of scientific, educational, scenic or historic value.
- The area should offer outstanding opportunities for solitude, enjoyed once the area has been reached, by simple, quiet, non-polluting and non-intrusive means of travel (i.e. non-motorised).
- The area should be of sufficient size to make practical such preservation and use.

Category II - National Park: protected area managed mainly for ecosystem protection and tourism

Definition: Natural area of land and/or sea, designated to (a) protect the ecological integrity of one or more ecosystems for present and future generations, (b) exclude exploitation or occupation inimical to the purposes of designation of the area, and (c) provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible.

Objectives of management:

- To protect natural and scenic areas of national and international significance for spiritual, scientific, educational, recreational or tourist purposes.
- To perpetuate, in as natural a state as possible, representative examples of physiographic regions, biotic communities, genetic

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resources, and species, to provide ecological stability and diversity.

- To manage visitor use for inspirational, educational, cultural and recreational purposes at a level which will maintain the area in a natural or near natural state.
- To eliminate and thereafter prevent exploitation or occupation inimical to the purposes of designation.
- To maintain respect for the ecological, geomorphologic, sacred or aesthetic attributes which warranted designation.
- To take into account the needs of indigenous people, including subsistence resource use, in so far as these will not adversely affect the other objectives of management.

Guidance for selection:

- The area should contain a representative sample of major natural regions, features or scenery, where plant and animal species, habitats and geomorphologic sites are of special spiritual, scientific, educational, recreational and tourist significance.
- The area should be large enough to contain one or more entire ecosystems not materially altered by current human occupation or exploitation.

Category III - Natural Monument: protected area managed mainly for conservation of specific natural features

Definition: Area containing one, or more, specific natural or natural/cultural feature which is of outstanding or unique value because

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of its inherent rarity, representative or aesthetic qualities or cultural significance.

Objectives of management:

- To protect or preserve in perpetuity specific outstanding natural features because of their natural significance, unique or representational quality, and/or spiritual connotations.
- To an extent consistent with the foregoing objective, to provide opportunities for research, education, interpretation and public appreciation.
- To eliminate and thereafter prevent exploitation or occupation inimical to the purpose of designation.
- To deliver to any resident population such benefits as are consistent with the other objectives of management.

Guidance for selection:

- The area should contain one or more features of outstanding significance (appropriate natural features include spectacular waterfalls, caves, craters, fossil beds, sand dunes and marine features, along with unique or representative fauna and flora; associated cultural features might include cave dwellings, cliff-top forts, archaeological sites, or natural sites which have heritage significance to indigenous peoples).
- The area should be large enough to protect the integrity of the feature and its immediately related surroundings.

Category IV - Habitat/Species Management Area: protected area managed mainly for conservation through management intervention

Definition: Area of land and/or sea subject to active intervention for management purposes so as to ensure the maintenance of habitats and/or to meet the requirements of specific species.

Objectives of management:

- To secure and maintain the habitat conditions necessary to protect significant species, groups of species, biotic communities or physical features of the environment where these require specific human manipulation for optimum management.
- To facilitate scientific research and environmental monitoring as primary activities associated with sustainable resource management;
- To develop limited areas for public education and appreciation of the characteristics of the habitats concerned and of the work of wildlife management.
- To eliminate and thereafter prevent exploitation or occupation inimical to the purpose of designation.
- To deliver such benefits to people living within the designated area as are consistent with the other objectives of management.

Guidance for selection:

- The area should play an important role in the protection of nature and the survival of species ('incorporating, as appropriate,

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breeding areas, wetlands, coral reefs, estuaries, grasslands, forests or spawning areas, including marine feeding beds).

- The area should be one where the protection of the habitat is essential to the well-being of nationally or locally-important flora, or to resident or migratory fauna.
- Conservation of these habitats and species should depend upon active intervention by the management authority, if necessary through habitat manipulation (c.f. Category Ia).
- The size of the area should depend on the habitat requirements of the species to be protected and may range from relatively small to very extensive.

Category V - Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation and recreation

Definition: Area of land, with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinctive character with significant aesthetic, ecological and/or cultural value, and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance and evolution of such an area.

Objectives of management:

- To maintain the harmonious interaction of nature and culture through the protection of landscape and/or seascape and the continuation of traditional land uses, building practices and social and cultural manifestations.

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- To support lifestyles and economic activities which are in harmony with nature and the preservation of the social and cultural fabric of the communities concerned.
- To maintain the diversity of landscape and habitat, and of associated species and ecosystems.
- To eliminate where necessary, and thereafter prevent, land uses and activities which are inappropriate in scale and/or character.
- To provide opportunities for public enjoyment through recreation and tourism appropriate in type and scale to the essential qualities of the areas.
- To encourage scientific and educational activities which will contribute to the long term well-being of resident populations and to the development of public support for the environmental protection of such areas.
- To bring benefits to, and to contribute to the welfare of, the local community through the provision of natural products (such as forest and fisheries products) and services (such as clean water or income derived from sustainable forms of tourism).

Guidance for selection:

- The area should possess a landscape and/or coastal and island seascape of high scenic quality, with diverse associated habitats, flora and fauna along with manifestations of unique or traditional land-use patterns and social organizations as evidenced in human settlements and local customs, livelihoods, and beliefs.

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- The area should provide opportunities for public enjoyment through recreation and tourism within its normal lifestyle and economic activities.

Category VI - Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural ecosystems

Definition: Area containing predominantly unmodified natural systems, managed to ensure long term protection and maintenance of biological diversity, while providing at the same time a sustainable flow of natural products and services to meet community needs. The area must also fit the overall definition of a protected area.

Objectives of management:

- To protect and maintain the biological diversity and other natural values of the area in the long term.
- To promote sound management practices for sustainable production purposes.
- To protect the natural resource base from being alienated for other land use purposes that would be detrimental to the area's biological diversity;
- To contribute to regional and national development.

Guidance for selection:

- At least two-thirds of the area should be in, and is planned to remain in, a natural condition, although it may also contain limited areas of modified ecosystems; large commercial plantations are not to be included.

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- The area should be large enough to absorb sustainable resource uses without detriment to its overall long-term natural values.
- A management authority must be in place

Appendix 4:

Egyptian Environmental Affairs Agency: EEAA

EEAA was first established in 1982 as the authority responsible for promoting and protecting the environment in Egypt. In 1994, EEAA was re-established in accordance to Law 4/1994 for the Environment, and was restructured with a new mandate to substitute the initially established Agency. Based on Law 4/1994, EEAA has a public juridical personality and is to be affiliated with the competent Minister for Environmental Affairs, who heads EEAA's governing board.

The overall objectives of EEAA are to protect the environment and promote the different environmental activities. These objectives are realized by integrating environmental issues into all national policies, plans and programs.

The specific activities and functions of EEAA, necessary to fulfill these objectives, are clearly defined within Law 4/1994 for the Environment. One of the most significant activities of EEAA is the enforcement of Law 4/1994 and its executive regulations. Moreover, EEAA together with the Ministry of Foreign Affairs plays an important role in coordinating and fostering the environmental partnerships at bilateral, regional and international levels. **Other activities for EEAA according to Law 4/1994 for the environment include:**

Preparation of draft legislation and decrees relevant to the protection of the environment.

Preparation of studies related to the state of the environment of the country, and formulation of the national plan for the protection of the environment.

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Establishment of standards and conditions that project owners and establishments must comply with before construction begins, and during the operation of these projects.

Collection and publication of national and international information related to the environment on a periodical basis, in cooperation with information centers of other agencies.

Preparation of a plan for environmental training, and supervision of its implementation.

Implementation of pilot projects for the preservation of natural resources, and for the protection of the environment from pollution.

At the regional level, EEAA is currently establishing 8 Regional Branch Offices (RBOs). Each of the RBOs is to provide support to 3-4 governorates in their environmental management efforts. According to decree number 56/2000 issued by the Minister of State for Environmental Affairs, **the mandates of the RBOs include:**

Preparing studies which address the environmental status of the governorates within the region, and providing EEAA with environmental maps and information to use in the formulation of the National Environmental Action Plan (NEAP).

Formulating regional plans for environmental protection.

Establishing coordination links between the Ministry of Environment and EEAA, and the governorates in order to achieve EEAA objectives for environmental protection.

Supervising environmental monitoring networks at the governorate level, and reporting to the EEAAhead office.

Spreading environmental awareness in the governorates and coordinating with the respective local agencies. (*JICA, 2002*)

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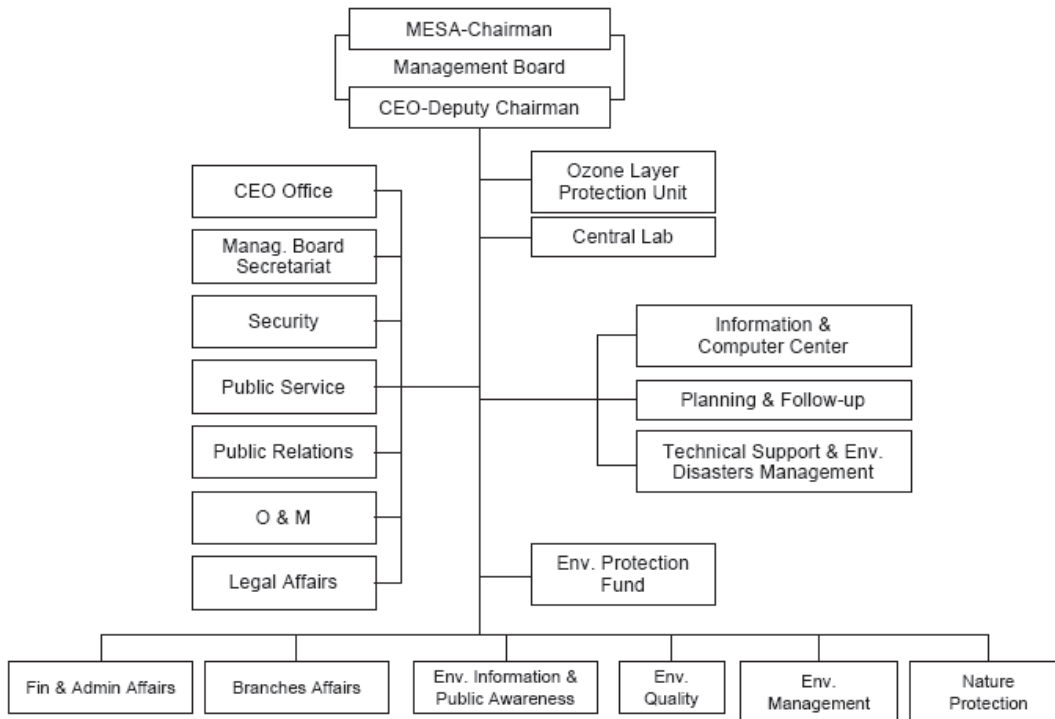


Figure Organization Structure of EEAA

Appendix 5:

1- The Petrified Forest Area in Maadi - Cairo

Date of Announcement: 1989.

Area: 7 Km².

Type: Geological protected Area and a national heritage.

Distance from Cairo: 30 km.

The Rocky wood Area is abundant of dense rocky stems of trees in the formation of the wood mountain that belongs to the Oligocene epoch. It consists of layers of sand, gravel, mud and rocky wood with a thickness of 70-100 meters. It is significantly rich with remains and stems of large rocky trees, taking the shape of rocks with cylindrical sections varying in dimension from a few centimeters up to several meters. Thus, the formation of the rocky wood in Maadi is most probably attributed to one of the ancient branches of the River Nile from ancient geological era. It carried those trees along and threw them in that place where they were buried and changed into rocks.

2- El Hassana Dome protected Area in Giza Governorate

Date of Announcement: 1989.

Area: 1 km².

Type: Geological protected area.

Distance from Cairo: 23 km.

Hassana Dome protected Area is a museum and specialized scientific institute that helps in studying geology and different geological formations like folds, Foults, also they can be compared with similar formations in other places. The existence of fossils gathering in perfect reserved colonies makes Hassana Dome a perfect area for studying fossils science or the science of paleo life and also the features of the

ancient environment and the extent of climate change which took place in the Area.

3- Wadi Sanor Cave protected Area in Beni Suef Governorate

Date of Announcement: 1992.

Area: 12 km².

Type: Geological protected Area and national heritage.

Distance from Cairo: 200 km.

The protected area contains geological formations known as stalactites and stalagmites in a perfect beautiful way that formed through million years. Its formation dates back to the middle Eocene period about 60 million years. As a result of the leakage of calcium carbonate saturated water solutions through the roof of the cave, and then evaporated leaving behind those minerals that accumulated taking the shape of stalactites and stalagmites. The cave extends for 700m. It is 15m wide and 15 m deep. The importance of this cave is attributed to the rarity of these natural formations in the Egypt.

4- Wadi Degla Protected Area in Cairo Governorate

Date of Announcement: 1999.

Area: 60 km².

Type: Desert lands protected area.

Distance from Cairo: 10 km.

Wadi Degla is one of the important valleys which extend from east to west with a length of 30 km. It passes through the limestone rocks that had remained in the marine environment during the Eocene Epoch in the eastern desert (60 million years). Therefore, it is rich with fossils. The height of these rocks alongside the valley is around 50 m. A group of valleys flow into this valley. The valley has a group of animals including mammals like deer, taital , mountain rabbits , red fox , feather tailed rat , oviparous , barbed rat, little tailed bat and others. Among the insects

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there are and many others. 18 species of reptiles have been recorded. The rain water dropping from the waterfalls affected the limestone rocks along the years and formed the so called canyon Degla, which resembles the Grand Canyon in the U.S.

5- Wadi El Rayan protected Area in Fayoum Governorate

Date of Announcement: 1989.

Area: 1759 km².

Type: Developing Management resources protected Area and a natural national heritage.

Distance from Cairo: 150 km.

Wadi El -Rayan area is characterized by its integrated desert environment, consisting of sand dunes, natural springs, large water bodies and a different botanical life, different wild animals and important and various sea fossils. The area of El-Rayan Lake is a calm natural environment and free of pollution.

Wadi El- Rayan consists of the following important areas:

1-Waterfall Area

2-The Area of El -Rayan Mountain El -Mashgaeega Mountain

3-Wadi Al-Hitan

6- Quaron Lake protected Area in El-Fayoum Governorate

Date of Announcement: 1989.

Area: 1385 km².

Type: Wetlands.

Distance from Cairo: 90 km.

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It is one of the ancient natural lakes in the world. It is the remaining part of the ancient Morris Lake. It is globally renowned for the abundance of sea, river, continent fossils which date back to 40 million years like El-Fayoum Giant animal which resembles rhinoceros. There was a huge river mouth that had sedimentary cycles upon which the ancient elephants ancestors, sea horse and dolphins, also sharks and birds ancestors which live in Africa. In this Area, there is a large variety of kinds of reptiles, amphibians and mammals that have a great importance in the environmental system of the protected area. The existence of a lot of historical monuments "North Qaroon Lake represents cultural heritage that is utilized in Tourism. They date back to the Roman and Pharanoic Period, Qaret Al-Rusas Area in the North East of the Lake, the area of churches and Abu Lifa Monastery.

7- Nile river Islands Protected Area in Different Governorate

Date of Announcement: 1998.

Area: 160 km².

Type: Wet lands protected area.

Distance from Cairo: 144 islands in different Governorate.

The Nile River islands are natural protected areas amounting to 144 islands in different Governorates in Egypt. Alongside the main stream from Aswan until the Barrages, there are 95 Islands within area of 32500 Feddans. In Rasheed branch there are 30 islands within an area of 3400 Feddans, in Damietta Branch there are 19 islands within and area of 1250 Feddans. The total area of all the Nile River islands is 37150 Faddan.

8-Elomayed Natural protected Area in Matrouh Governorate

Date of Announcement: 1986.

Area: 700 Km².

Type: Desert Area and vital peripheral.

Distance from Cairo: 300 km.

There are around 170 species of wild plants growing in different ecosystem, be they sand dunes or internal hills. Studies showed that this wild plants have economic and medical benefits since there are about 70 species that can used for medical and thera peutical purposes like squall, wormwood, plantain, wood, sorrel.

9- Ashtoom El-gamil and Tennis Island protected Area in Port Said

Governorate

Date of Announcement: 1988.

Area: 180 km².

Type: Wetlands and Natural restricted Area for birds.

Distance from Cairo: 200 km.

The protected Area includes the bays of El Gamil and Ashtoon El Gamil and Al Manzala lagoon. Tennis Island is located in El Manzala lagoon, the largest among Delta lagoons with various environmental systems. El Manzala lagoon Area was a rich agricultural land that fell down due to an earthquake that occurred in the late sixth century; the sea water overflowed the sand dunes which used to separate the sea from the agricultural land.

10- El-Brolus Protected Area in Kafr El-Sheikh Governorate

Date of announcement: 1998.

Area: 460 km².

Type: wetlands protected area.

Distance from Cairo: 300 km.

El-Brolus Lake is the second largest natural lagoon in Egypt. It has a number of environments including saline and cane swamps as well as sand plains. On the Lagoon shores there are high sand dunes. Each of these environments has its own soil characteristics. This reflects on the importance of these environments as a natural place for almost 135 amphibious plant species. The wetland environments have a significant role in receiving immigrating wild birds.

11- Natural Siwa Protected Area in Matrouh Governorate

Date of Announcement: 2002.

Area: 7800 km².

Type: Desert and cultural protected area.

Distance from Cairo: 800 km.

Siwa Oasis is one of the areas rich with distinguished tourist's attractions including monuments tourism, therapeutic tourism, safari tourism and desert tourism, due to its distinctive monuments area such as Amoun temple as well as the scriptures and paintings of kings offering sacrifice to Gods. The hall of crowning Alexander the Great and the Dead Mountain in Aldakroun area, which has some ancient mummeries and tombs from the Roman age, having a group of coins and old jewelry. The biological variety of Siwa is characterized by the existence of more than

40 species of wild plants including medical, pastoral and other plants that help stabilize sand.

12- Ras Mohamed Protected Area and Tyran as well as Sanafir in South Sinai Governorate

Date of Announcement: 1983.

Area: 850 km².

Type: National parks

Distance from Cairo: 446 Km.

This protected Area is located at the meeting point of the Gulf of Suez and Aqaba Gulf. The Eastern border of Ras Mohamed Protected Area is a rocky wall with the gulf water where there are coral reefs. There is also the Mangrove channel which separates Ras Mohamed Peninsula from Elbayra Island at a length of approximately 250m. Ras Mohamed Area is characterized by the coral shores existing in the depth of the water peripheral of Ras Mohamed and the extinction able colored fish and Sea turtles as well as rare Sea Animals. The Coral reefs surround Ras Mohamed from all its sea sides. The Area is also a habitat for many important birds such as herons and seagulls.

a- Tyran Island:

It is about 6 km far from the eastern coast of Sinai. It is a floating coral reef Island. It consists of ancient granite basis rocks under a cover of sedimentary rocks.

b-Sanafir Island:

It is located west of Tyran Island at a distance of 2.5Km. There is an open bay that is suitable as a vessel yard in case of emergency.

13- Zaraniq protected Area and El Bardwael Marsh in the North Sinai Governorate

Date of Announcement: 1985.

Area: 230 km².

Type: Wetland protected Area and a natural restricted Area for birds.

Distance from Cairo: 300 km.

Zaraniq protected Area and El Bardaweel Marsh are key points for bird migration in the world since it is the first stop for the birds to have comfort and food after the trouble of the migration trip from Europe and Asia during the fall heading from African. Some birds take this Area as a permanent habitat for living and reproduction. Over 270 species of birds have been recorded in the area. .

14- Coast marshes Area in Rafah North Sinai Governorate (Ahrash Protectorate)

Date of Announcement: 1985.

Area: 8 km².

Type: Developing resources protected Area.

Distance from Cairo: 370 km.

Ahrash protected Area is characterized by the sand dunes, whose height is approximately is 60 m of the sea level. They are covered by a high density of acacia trees, some tomorx trees, camphor trees, bushes, grass, pastoral and fodder plants, which make the Area a good resource of pastures, timber, and a shelter for animals and wild birds.

15- Saint Catherine protected Area in South Sinai

Date of Announcement: 1988

Area: 5750 Km²

Type: World cultural and Natural heritage protected area

Distance from Cairo: 550 Km.

The Area is characterized by the highest mountain tops in Egypt. These tops were the result of that great tectonic movement called the Great African Rift that occurred 24 Million years ago and led to the creation of the Red Sea and the Aqaba Gulf, which became the attraction of tourists from all over the world.

16- Nabq protected Area in South Sinai Governorate

Date of Announcement: 1992.

Area: 600 km².

Type: Multipurpose protected area.

Distance from Cairo: 500 km.

Nabq protected Area is characterized by a number of important environmental systems like: coral reefs, sea and land creatures, large dense mangrove woods. It includes environmental systems of desert, mountain and valleys, and animals like deer, mountain goat, hyena, reptiles and a lot of migrating and resident birds beside invertebrates. Some nomad tribes live in this area. The area is a center of tourist attraction for amateurs of diving, safari and bird watching.

17- Abu Gallum protected area in South Sinai Governorate

Date of announcement: 1992.

Area: 500 Km².

Type: landscape protected area.

Distance from Cairo: 600 km.

The importance of Abu-Gallum area is represented in the existence of a special Topography. The mountains are near the beaches and include various environmental systems of coral reefs, sea creatures, sea herbs,

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lagoons, mountain and desert environment systems. The mountains and valleys are abundant of wild animals, birds and plants, which make the area a tourist attraction for the amateurs of diving, safari as well as bird and animal watching. The area comprises around 165 species of plants including 44 that only exist in this area.

18- Taba protected Area in South Sinai Governorate

Date of announcement: 1998.

Area: 3595 km².

Type: Desert and natural heritage protected area.

Distance from Cairo: 550 km.

The area is characterized by its distinguished Geological formations and monument sites that date back to 5000 years ago, as well the rare wild life and nice scenery and traditional heritage of nomads: Some of these valleys are significant as a support for wild life like deer, large birds including bustard. These valleys have important plant communities like acacia. 72 species of plants have been recorded in water valley including Ba'ataran, Ratam and Rimth. In the adjacent areas there is a big group of plants amounting to 480 species.

19- Wadi El Gemal - Hamata Protected Area

Date of Announcement: 2003.

Area: 7450 km².

Type: Desert protected area.

Distance from Cairo: 850 km.

The Protected Area encompasses the segment of the Red Sea coastal plain and mountains extending roughly between 24°51'N in the north and 24°06'N in the south; and between the Red Sea shoreline in the east to

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about 34°28'E in the west (the Sheikh Shazli road). The protected area also encompasses a section of the marine environment including the islands of Hamata and Wadi El Gemal Island.

2-6-1-4 Southern Area Protectorates:

20- Elba Natural protected Area in the Red Sea Governorate

Date of Announcement: 1986.

Area: 35600 km².

Type: National Park Protected Area.

Distance from Cairo: 1300 Km.

Elba natural protected Area is located in the southern eastern part of the eastern desert. Its mountains are located on the joint borders of Egypt and the Sudan on the Red Sea. Elba Area has the following distinguished Ecosystem models:

- 1-Alshura and Qandeel Mangrove woods on the Coastal zones.
- 2-Limited areas of Coastal sand dunes covered with grass.
- 3-With grass sphere of coastal saline land "Coastal Marshes"
- 4-Desert Coastal plains.
- 5- Coastal mountains and their surrounding hills where there are mist oasis.

21- Saloga, Ghazal and the small Islands in between (First waterfall) in Aswan Governorate

Date of Announcement: 1986.

Area: 0.5 km².

Type: Wetlands and landscape.

Distance from Cairo: 700 km.

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The Area is characterized by the sovereignty of some types of trees like acacia. The greenery in the Area includes about 94 different species of plants including those that solely grow in these islands, especially alongside the Nile Valley. The distinguished natural conditions provided for these islands life opportunity for resident and migrating birds. More than 60 species of birds were recorded, including rare and extinction able birds on the international level, including species that have lived and reproduced on those islands since the Ancient Egyptian times, they are recorded in their scriptures and remnants, such as bittern, hoopoe and Egyptian geese.

22- Natural white Desert Protected Area in El Wady EL Gedid

Date of Announcement: 2002.

Area: 3010 km².

Type: Desert and landscape protected area.

Distance from Cairo: 570 km.

The importance of the white desert area is attributed to the fact that it is a unique model of the Karst phenomenon. It is an open museum for studying desert environments, geographical phenomena, fossils and wild life. It has relics and tombs that date back to prehistory and include a group of rare tombs and caves remains of ancient mummies and carvings. The area is distinguished with the beauty of the sand dunes.

23- Wadi Al- Alaqi in Aswan Governorate

Date of Announcement: 1989.

Area: 30000 Km².

Type: Desert protected Area and Biosphere Reserve.

Distance from Cairo: 950 Km.

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This Wadi is a large dry river that used to rise from the Red Sea hills especially Elba mountain. After the construction of the High Dam and filling Lake Naser with water, the water flowed into Wadi Al -Alaqi and it became part of the Lake. Since the water level became low in the lake, the water has gone down off a great part of the Wadi and accordingly it became uncovered with water.

24- Wadi Al-Asioutty protected Area in Asiout Governorate

Date of Announcement: 1989.

Area: 35 km².

Type: Captive and multipurpose protected Area.

Distance from Cairo: 400 Km.

The protected Area is divided into two major sections:

a- Captive and Breeding wild animals: There are possibilities of captive and breeding Egyptian deer, mountain goats, bighorn, ostrich, zebra and some reptiles.

b- Captive and plant genes: Since there is a need to collect plant genes threatened with extinction, especially palm trees, some types of trees, bushes, plantations, cactus, juicy plants and medical and aromatic plants that are genes of important economic crops, several types of them have been planted in the protected area where the wild genes are collected from the vicinity for reproduction. (*Source: EEAA, 2003*)

Appendix 6:

Egyptian Law for Protectorates:

1-Law No 102 of 1983 for Nature Protectorates

Article (1)

In implementing the articles of this Law, a natural protectorate is defined as any area of Land, or coastal or inland water characterized by flora, fauna, and natural features having cultural, scientific, touristic or esthetic value. These areas will be designated and delineated by Decree of the Prime Minister upon the recommendation of the Egyptian Environmental Affairs Agency.

Article (2)

It is forbidden to commit actions (deeds or activities or undertakings) which will lead to the destruction or deterioration of the natural environment or harm the biota (terrestrial, marine or fresh water), or which will detract from the esthetic (beauty) standards within protected areas.

In particular, the following acts are forbidden:

- Catching transporting killing or disturbing wildlife.
- Damaging or removing any living organisms or natural features and resources, such as shells, corals, rocks, or soil for any purpose.
- Damaging or removing plants (from) the protected areas.
- Spoiling or destroying the geological structures (and other features) of areas serving as natural habitats and breeding areas for plants and animals.

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- Introducing foreign (non-indigenous) species of biota into the protected area.
- Polluting the soil, water, or air of the protected areas in any manner.
- It is also forbidden to erect buildings and establishments, pave roads, drive vehicles, or undertake any agriculture, industrial, or commercial activities in the protected areas except with the permission of the concerned Administrative Body and restrictions specified by the Prime Ministerial Decree.

Article (3)

It is forbidden to undertake activities or experiments in the areas surrounding designated protectorates, which will have an effect on the protectorate's environment and natures, except with the permission of the concerned Administrative Body.

Article (4)

The Administrative Body (responsible for the enforcement of the provisions of this Law and related decrees) will be specified in a separate Decree issued by the Prime Minister. This Administrative Body will be empowered to establish regional offices within the

Governorates having protectorates, and **will be responsible for the following functions:**

- Preparation and execution of necessary studies and programs to enhance protectorates.
- Surveying and monitoring natural features and wildlife within the protectorates, and creating a registry of same;
- Managing and coordinating activities related to the protectorates.

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- Guiding and educating the public about the natural resources within protectorates, and the objectives and reasons for creating protectorates.
- Exchanging information and experiences relevant to the protectorates and natural resources therein with other countries and international organizations.
- Managing (operational) funds referred to in Article VI, below.

Article (5)

Societies for the protection of the environment, promulgated in accordance with national legislation, will be permitted to seek counsel with the concerned Administrative and with the judicial bodies to implement the provisions of the Laws and Decrees concerning the protection of the natural resources of the protectorates.

Article (6)

- A special Fund will be established to collect donations, grants, and (part) admission fees (as appropriate) as well as fines incurred by violators of this Law.
- The Fund will be used for the following purposes:
 - Supplementing the budget of the Administrative Body responsible for implementing the provisions of this Law;
 - Enhancement of the protectorates;
 - Undertaking surveys and field research on natural resources within the protectorates;

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- Paying rewards to persons who provide information concerning offenses or who apprehend offenders who contravene the provisions of this Law.

Article (7)

Notwithstanding a stronger penalty specified in another Law, any person who contravenes the provision of Articles II and III of this Law and the Executive Decrees associated with it, will be fined not less than LE 500 (five hundred Egyptian pounds) and not more than LE 5000 (five thousand Egyptian pounds) and/or will be imprisoned for not more than one year.

Recurrent offenders will be fined not less than LE 3000 (three thousand Egyptian pounds) and not more than LE 10.000 (ten thousand Egyptian pounds) and/or will be imprisoned for not less than one year.

In addition to this, the offender will bear the cost of removal or reparations specified by the concerned Administrative Body's representatives will be empowered to confiscate equipment, weapons or tools used in committing the offense.

Article (8)

The fines and the cost of reparation will be collected through administrative procedures and without delay.

Article (9)

Competent officials of the concerned Administrative Body responsible for enforcing this Law and the associated Executive Decrees will be designated in a Decree (Order) from Minister of justice upon consultation

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with the concerned Minister, and shall be accorded magistrate-level judicial powers concerning violations specified in this Law.

Article (10)

Any provision contrary to the provisions of this Law is abrogated.

Article (11)

- This Law is to be published in the Official Gazette and will be enacted within three months of the date of publication.
- Issued at the presidency on July 18, 1983 (9 Shawwal 1403 11.) and signed by Hosny Mubarak.
- *Ratified by the Egyptian parliament (people's Assembly) and Senate (Shura Council) on July 31, (EEAA, 1998)*

Protectorates regulations:



Do not collect, remove or damage any material, living or dead, from Protected Areas.



Fish feeding upsets the biological balance on the reef and is therefore prohibited.



It is prohibited to drive off marked tracks and to drive any motor vehicles on any beach.



Fishing and spear fishing are not allowed in Protected Areas.



Camping is prohibited unless in designated areas (by notice).



All visitors must leave Protected Areas by sunset unless using a designated camping area.



Do not litter. Place garbage in proper disposal containers or take it with you.



Access to diving areas is recommended at designated access points only.



It is prohibited to access any closed area.



Please take note of any instructions posted in Protected Areas.



It is prohibited to walk or anchor on any reef area. Please use marked access points.



Offenders are subject to prosecution according to the terms of Law 102 of 1983