

Natural Characteristics and Biodiversity Protection of Economically Invested In the AL-Delmj Marsh- Iraq

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Astract

The phenomenon of the biodiversity protection of marshes and existence in the desert regions. Geographical phenomena unique in the world, especially when it has been associated with the emergence of the greatest civilizations, Transparent in Iraq that includes the civilization of Sumer, and Babylon. AL- Delmaje Marsh has advantages. The aims of study to Search for the biophysical characteristics, and diversity into biodiversity protection, and tries to invest a part of as a natural reserve to be the nucleus for a large protected area in the future.

Keywords: Biodiversity Protection, Marsh, Domestic Animals, Chemical Analysis, Environment.

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Resumen

El fenómeno de la protección de la biodiversidad de las marismas y su existencia en las regiones desérticas. Fenómenos geográficos únicos en el mundo, especialmente cuando se ha asociado con el surgimiento de las civilizaciones más grandes, Transparent in Iraq, que incluye la civilización de Sumer y Babilonia. AL- Delmaje Marsh tiene ventajas. Los objetivos del estudio es Buscar las características biofísicas y la diversidad en la protección de la biodiversidad, e intenta invertir una parte de ella como una reserva natural para ser el núcleo de un área protegida grande en el futuro.

Palabras clave: protección de la biodiversidad, pantanos, animales domésticos, análisis químico, medio ambiente.

Introduction

The marshlands added significant environmental, and economic space to the areas to which are located into it, and distinguish it from surroundings environments or desert areas. The Research problem can be as the main question: How can ensure the plan for a sustainable future for marsh, and transform to a pole of development into desert environment thus [1], the Research Hypothesis discussed, it is possible to form a geographical space in part from Al-Delmaje Marsh, and planning to be a sustainable reserve into the desert region if provided Facilities, and opportunity for foreign investment. The principal aim of research to discover the geographic, economic, and environmental potential for AL- Al-Delmaje Marsh, and employ them with a establish a nature reserve to maintain the sustainability of vital diversity Firstly, to be a pole in tourist, antiquities, and entertainment fields, Secondly. Researchers have adopted in study the analysis, and regional approach in order to be the study of the natural characteristics, and the possibility of investing by put vision for the future, and Antiquities and Heritage revival in the region, they Considered Al-Delmaje area regionally specific, in order to be the study of the natural characteristics, and the possibility of investing in an actual. The largest effects of material apparently through from on the human economic activities, and to define mineral resources, and groundwater in structure [2]. AL-Delmaje Marsh area, and the surrounding areas in the upper layers of depth consists (1496 m).

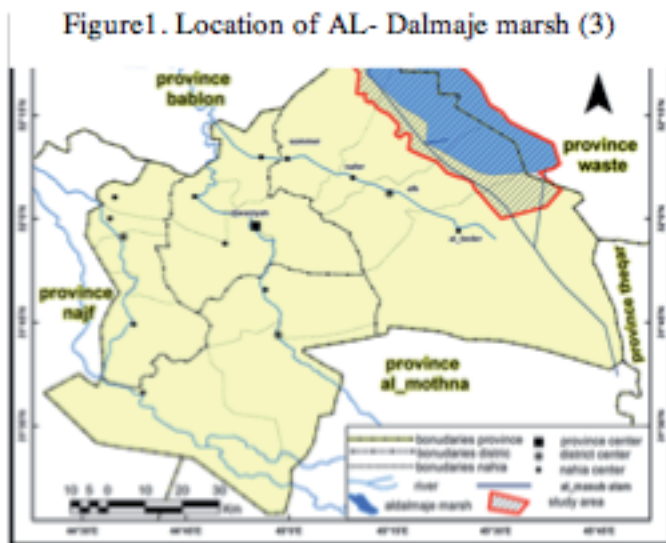
In conclusion AL-Delmaje Marsh has qualities, natural, and environmental, and diversity of vegetarian, and animal unique among Aquatic environments in Iraq, and these species of plants and animals are exposed to the danger of extinction [3].

Materials and Methods

The Study Area: AL- Dalmaje Marsh Region

AL-Delmaje Marsh region is part of Iraq's plain sedimentary (Figure 1), to which is characterized by Straightness the surface, and slow its incline towards the south, and represents most important alluvial plain surface sections Iraq economically, and demographically, and the more prominent are having in spite of depressions submerged from flood previously, and water drainage now; it is located in the eastern region of the AL- Qadisiya

Province [4], and a deep low between (13-21 m), occupies an area estimated at regarding (500 km²), it is always changing with the increase, and decrease through the time.



The Geographical Structure

The marsh covers low-lying areas surrounding sediments low-lying areas; it is the most clay materials, either extended to the west marsh, and South-west of the region; it is a wind sediment formed, including sand dunes, and areas cover most of the surface of regions[5].

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Areas and the Sand Dunes

The sand dunes spread in the western region from the marsh, constitute the scope extends from northwest to the south-west, overlap with crescent sand

dunes formed by climatic conditions desert, deficiency of rainwater, and dry wind, making the process fragmentation of rocks, and sand transfer easy, in area was numerous from dune mobility, due to the wind speed in that arid, and semi-planar area that assist to move atoms dust, and sand. The climate changes, worsening problems of drought, and high temperatures will exacerbate the problems of desertification, especially sand creeps toward agricultural, and low-lying areas, Thus it should function to Processing phenomenon, and coarse sand creep, especially toward the economically vital areas [7].

Hills archaeological were spread into the study area, to which is the remains of ancient civilizations regions, rising in the surrounding areas of (6-9m), Called name (Ishan), and the area to the west of the sand dunes region, they flood agricultural areas, sedimentary ,and irrigated from the Shatt AL-Dagharah [8].

Climate

Climatic conditions effectively affect humanitarian, and development activities, particularly in the area characterized by desert climate (BWH), to which means seriously impacting of the Bio-Climactic comfort, and various activities for human, animals, and plants. However, the desert character makes the area is poor by natural vegetation it which reflected in the soil ,and the availability of natural grasslands in the animals, due to the global climate changes, climate problems ,and the effect was exacerbated taken in the last twenty years on the properties climatic ,and various activities in the study area [9].

The minimum temperature has risen (3-5 m°) than their natural rates in the last ten years, the maximum temperature has increased (2-3 m°), large height ,and the impact is spreading ,and apparently in the agricultural seasons ,and reap some crops, as well as its influence in an increase the total annual evaporation rates which means they require more water for irrigation ,and other recourse.

Water Feeding

AL-Delmaje Marsh is fed water from the Iraqi rivers like the other marshes, especially from the Tigris River at a higher rate from the Euphrates River. Water feeding has passed the different stages in the thirties of the last century, the flood water turned to the Marsh, specifically, from the western waters of the Tigris, which far away (20-25) km for the purposes of protection ,and get rid of floods. The channel of the general estuary became adjacent to the marsh, that's made the main water feeder for marsh, especially after the company (Bulgarian-Russian) established the feeding channel, a discharge power of up to 15 m³/ s, with a drainage channel for balancing water [10].

The worth mentioning should rely on the water of the general estuary in agriculture, especially when it reaches acceptable levels up to (220 m³/ s) the equivalent of 8 billion m³ per year ,and the proportion of salinity between (5.3 to 5) D/ m (MAJID, Ibid), table (1), it is acceptable ratios, that makes characteristics water

is constantly changing Comparison with the qualities of stagnant water of the rest of the Iraqi marshlands, to which is encouraging continued reliance on the water of the general estuary as a source of feeding water [11].

Table 1. The rate of five samples testing various locations in Al-Delmajefor six field visits monthly.

| Date of visit | NO3)mg/L) | PO4)ug/L) | COND)ug/L) | CL)mg/L) | SO4)mg/L) | MG)mg/L) | CA)mg/L) | T.H)ug/L) | ALK)ug/L) | T.D.S)ug/L) |
|---------------|------------|------------|-------------|-----------|------------|-----------|-----------|------------|------------|--------------|
| 14,06/2010 | 7.3 | NILL | 6593 | 1364 | 3551 | 256 | 271 | 1781 | 232 | 5533 |
| 19,09/2010 | 8.4 | NILL | 25908 | 382086 | 421765 | 94310 | 66665 | 43063 | 4170 | 24852 |
| 26/10/2010 | 9.06 | NILL | 84126 | 2955 | 1486 | 2122 | 217 | 21679 | 108 | 23989 |
| 08/11/2010 | 8.8 | NILL | 24247 | 1851 | 61515 | 58207 | 32302 | 81492 | 4173 | 83760 |
| 05/12/2010 | 9.36 | NILL | 83518 | 28739 | 61564 | 88186 | 62207 | 61677 | 6182 | 3156 |
| 11,01/2011 | 10.4 | NILL | 24842 | 76850 | 12692 | 3191 | 9233 | 81242 | 4,68 | 64046 |
| 16,02/2011 | 8.02 | NILL | 4139 | 361100 | 82326 | 84194 | 6277 | 681401 | 8218 | 85142 |

Chemical Laboratory Analysis Results

Biodiversity

Biodiversity leads a large role of conserving ecosystem, living organisms, environmental systems, terrestrial, and marine, Biodiversity are divided between. Al-Delmaje Marsh too.

The Plants

Dominate many species of plants on the environment of marshes that adapted with it for a long time, the most important of it [12].

1- Prominent plants (Reeds, Sedge, Schenoplectus pectorals)

2- Submersible plants

A- Root Submersible plants Alkhuysh (Vallisneria sp).

B- Submersible not roots Achammblan (Ceratophyllum).

3- Floating plants (Phytoplankton):

a. Release floating (Salvinia natans), (Lemna spp) or (Adaisseh).

b. Anchored floating (Nymphoides sp plant) or (Zahr Kaaab), and (Nymphaea Alba plant).

4 - Terrestrial plants: the terrestrial plants from a large collection of plants that reside near the marsh area in the surrounding areas AL-Delmajein Marsh, Table (2).

Table 2. A group of terrestrial plants in the area of AL-Delmaje Marsh

| S | The scientific name | S | The scientific name |
|----|----------------------|----|------------------------|
| 1 | Ranunculus sphaermue | 16 | Typha |
| 2 | Melilau indica | 17 | Phragmites |
| 3 | Potamogeton spp | 18 | Chara |
| 4 | Lippianodoiflora | 19 | Phragmites australis |
| 5 | Sanchus oleraceus | 20 | Ceratophyllum demersum |
| 6 | PanicumCruss Calli | 21 | Salvinia natans |
| 7 | Paspalun distichum | 22 | Lemna minor |
| 8 | Cyperus | 23 | Typha domingensis |
| 9 | Barbus sharpeyi | 24 | Potamogeton lucens |
| 10 | Ceratophllum | 25 | P. natas |
| 11 | Potamageton | 26 | P. nodosus |
| 12 | Profilatus | 27 | P. pectinatus |
| 13 | g.cryspus | 28 | Water Milfoil |
| 14 | P.Pectinutus | 29 | Trapa natans |
| 15 | Maryophyllum | 30 | Najas marina |

Animals

1. Domestic Animals: the Buffalo is the most important animal in area, and that is called locally (Ghazal Marsh). However, the number of its lowest in 20 years ago even reached to (250) animal, due Water scarcity, and a dry conditions prevailing [13].

The population consumed animals to provide food like milk, dairy products, and meat, Furthermore, they consume the leather to make clothing, as well as the droppings as fuel after drying (biofuel). On the edges of the marsh, the animals have resided, as Caws, Sheep, and Goats, coming in Second location after the buffalo. However, in minimal numbers.

2. Wild animals: many states gave except importance for wild animals as a nationalism wealth, and plans, and steps were aimed to maintain them from extinction or risks. Wildlife Society was Varied, and huge, like the large mammals (Wildcats, hyenas, deer, wild boars, gray fox, the Iraqi Reem, the wolf, the jackal, Caracal, Porcupine (Da'lj), and dwarf Iraqi lion), as well as minimal mammals such as (rabbits, hedgehog, rats, mice of various kinds), and amphibious animals (turtles, a dog water, frogs, various snakes). However, animals had a share of neglect as a result of previous policies until many of them

extinct species ,and other species threatened with extinction, the (WWF) ,and (UNEP) has revealed more than (35) species threatened with extinction in Iraq [14].

3. Birds: The Iraqi Marshlands in general, and area of study specifically, considered as an area affluent a variety of birds by large ,and minimal forms ,and species; it was classified into two groups are: -

A- Migrating birds: They begin to migrate, and come in autumn from different areas the Black Sea, northern Turkey, Caspian Sea, northern Iran ,and Siberian ,and the coasts of northern Europe, escape from frost ,and cold, they seek to warm area in Iraqi marshlands, for nesting and requesting marriage ,and Reproduction ;specifically , birds begin to leave(immigration adverse) ,and returning to their regions of origin with a shift in climate or locally called (appearance star Sohail), the first one is called (immigration coming), while the second migration is called (immigration depart) , the Minimal birds migrate back to their original habitat at night ,and feed during the day, As for large birds, they migrate during the day due they fed during flying ,and rest at night, (Mallard, Eurasian Teal, Breccia, gulls, Crowned Sandgrouse, white swans, red Goose, bustards, and Falcons.

B- Birds were adapted to the surrounding environment to get food, Such as (Red stork, Herons, Iraqi blather, African arrow, AL-Hljugi, little egret, water chicken, Redshank, Ducks, Mallard, Sekket mother, Gamel mother, Teal, Alkouchmh, Red Crested Pochard, Alepesh ,and Swamphens.

As a result to absence of government control and deterrent laws, the region is unprotected ,therefore, the birds were exposed to intensive hunting operations on two types, the random hunting ,and the hunting of specializes in one type of bird,(Bustard, Falcons- specific (peregrine falcon) ,and be the pretext of hobby hunting, recreation or as a genuine Arab traditions ; it was found many types of birds in danger of extinction due to poaching (ducks tail marble, Falcon imperialist has known (Iraqi hawk), Falcon white tail ,and fish hawk), as well as (Bustard) , the most important the main habitats in Iraq for bird; it did not record bird was seen in any other location except in AL Delmj area [15].

4. Fish: The fishes different in terms of quantity ,and quality significantly in AL-Delmaje Marsh is regarding the local Iraqi fish species distinctive, delicious taste of the local consumer, Such as Abu mullet, *Barbus luteus*, Barbel, carp, and Gattan.

However, Group through the reality of production is slow up to (7 kg/ watery dunum annually), compared with (40 kg/ watery dunum annually) in similar protected areas like marsh, Thus considered more abundant ,and affluent in

aquatic plants, and natural and as a food base for fish. However, the hunting is illegal, and not methodical, especially in the breeding season, and hunting minimal fish. Prior to reaching the age of maturity by nets, poisons, and electric shock, even became. Many fish species are threatened with extinction, and after covered AL-Qadisiyah province, and the provinces neighboring by production, it was regarding (100) tons per day in 1988, amount significantly declined in the last 10 years, and it has become than (five tons) only.

Results and Discussion

Selection Proposed Site

In Iraq, although exist more than (13) nature reserves. Prior to 2003. However, they exposed to neglect, and vandalism, no serious steps was taken in regard, thus, despite the creation of a ministry for the environment [16].

Today, many organizations from the world interested in wildlife, and biodiversity protection in Iraq, especially in southern Iraq. The Responsibility of Manage facilities is difficult, and impossible in light of political, and financial crises passage in Iraq.

Activities in the Reserve

Must be a set of activities imposed by the administration, and environmental necessities, and ought to harmony with the main objective behind of the establishment it, due some vital groups, and ecosystems fragile cannot tolerate any intervention or be adapted to transform or activities in the environment, therefore, activities will be limited, and restricted, include:

- 1- Building special passages, observatories, and bunkers.
- 2- Agriculture food plants, and water parks or placing cubes containing salts, and metals to encourage some wild animals to come down in areas.
- 3- Establishment of open locations to feed wild animals.
- 4- Control of certain types of animals, the numbers increased, due to a certain imbalance in the food chain, or control on the types of competition for the type to desire be breeding.
- 5- Prevent operations of the cutting, burn or allow grazing in certain areas of conservation a certain plant tidy.
- 6- Settlement or Resettlement of wildlife in order to ensure the transfer of the genetic code.

The Management Plan

When preparing the management plan for the reserve usually follows steps:

1. Describe the location, and existing animals, usually using a description of the geology of the region, Topography, weather, soil, vegetation, and the animal distribution.
2. Assessment importance, after the description begins the process of

analyzing the data, as evaluating the site, and to highlight the importance of the previous description.

3. Setting goals, and options for management, after analyzing the significance of the location to transparent the reasons of protecting, and to put a set of goals were to function is focused on the preparation of a group of possible options for the activities achieve the goals.

4. Identify projects: put a range of different projects in detail with scheduling a full balancing for each individual project.

5. Action Plan includes: whom will be carried out the function, and when Special specifications:

a. Contain reserve site to the copiously diversity aquatic plants, fish, and birds.

b. The Location has to away from the Antiquities, and human activities dense.

c. Having open areas exist; it plentiful plants represent special environmental areas, and easy access to it, and the existence of locations to graze buffalo on the edges marsh.

The reserve will be on form rectangular by length (11 km), and width (4) km, and thus areas of will be (44 km²), with an ideal specification, and Planned it to be one of the most important ecological reserves in Iraq, and the region. The plan will achieve the identified targets to it:

1- Achieve continuity observe for Environment, wildlife at national, and international level with the aim of protecting, and preserving them.

2- Increase comprehension of the problem of the biosphere, and support a balanced relationship between the Man, and the Biosphere through continued to function in changing behaviors, and attitudes of individuals to the periphery.

3- Saving areas of appropriate for ecological, and biological research, training, education 3-for environmental staff on dynamic Reserve Management, and the best manners to invest. In light of the objectives that seek for achieving them, thus takes care into account the reserve planning must consist of two areas:

Region of the heart or nucleus; it usually represents the last remnant of the ecosystem in a natural state, and then first born, and has not yet been affected by human intervention, an area should be strictly protected, and does not allow exploitation it. However, observing for changes that occur in the components of the biosphere, and may include the protected more than a heart or a nucleus, (Figure 2) can choose part of the marsh, to which is located within the province of Qadisiyah, and establish a typical reserve, (Figure 2).

The Isolator scopes: They represent areas where ecosystem was deteriorated

by a degree of can be revived or restored to their natural state, the area into which the various activities ,and functions exercised into the reserve as the researches, experiments, training, education ,and other [17].

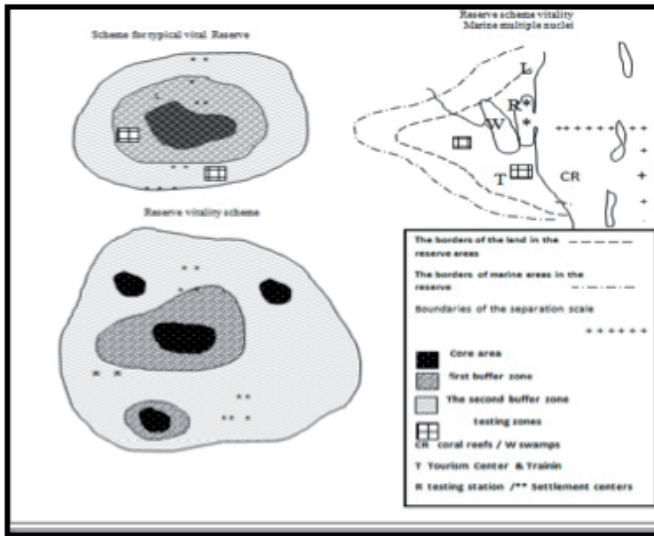


Figure 2. Nature reserves models (15)

Conclusions

- 1- AL-Delmaje Marsh considers unique phenomena, especially existing into dry desert climates.
- 2- They have qualities, natural, and environmental, and diversity of vegetarian, and animal unique between environments of the provinces of Middle Euphrates. However, suffers from severe neglect, and careless for many reasons, on her head is the loss of the legal reference or institutional for conserving it.
- 3- Although the only marsh to which can be fed by a fixed or stable water ration being adjacent to the general estuary, does not obtain a regularity quota of the water.
- 4- Many species of plants, and animals are exposed to the danger of extinction, and already entered the stage of extinction due to overfishing in various manners for a variety of species, thus exposing the largest ecosystems, and the most integrated on the surface of the earth to the danger of destruction,

and disappearance.

Recommendations

- 1- Establishment of a specialized center is interested in supervision the University of Qadisiyh AL- Delmaje Marsh directly in order to put strategies ,and the plans to study elements of the natural environment, and to function on the survey, detailed ,and comprehensive of plant, animal resources ,and soil through the control points is working with (GIS) ,and observation of the trans-forms that may occur in the area for rehabilitation it.
- 2- Work as soon as possible to transform agricultural interrupts occupied by the marsh to a national nature reserve formally, and legislation, laws regula-ting the pastoral, agricultural to function, and hunting with immediately the development of infrastructure in the region in cooperation with the concerned ministries on the level of local ,and central governments.
- 3- Ensure the sharing of the nutritious water resources for AL- Al-Delmaje Marsh as the essential condition for the existence marsh.
- 4- Contract of a joint agreement for the distribution of Tigris, and Euphrates water equitably among the three riparian countries (Turkey-Syria-Iraq).
- 5- The Ministry of Iraq's Culture, Tourism, and Antiquities has urged to enter of AL- Delmaje Marsh within plans for tourism development.
- 6- Establishment of integrated tourist villages inside the marsh or on one of its edges, and encourage some water sports, and racing hobbies, boating, hunting, and Safari.
- 7- Maintenance, and repair of archaeological sites, and build a museum for Antiquities, handicrafts, and displays the biodiversity.
- 8- The establishment of festivals, and celebrations that reflect the civili-zation, and heritage, and popular folklore of the marsh.
- 9- Encouraging tourism investments in the region by the private sector, and provision Government support for it.
- 10- Regulate, and ban overfishing process for fish, and adoption of a special plan in conjunction with the appointment fishing commencing from the 15th of February to Mid-April in the breeding season, and working with the launch of large quantities of small fish.
- 11- Activate the Environmental Policy Act.

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