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Original Article

Ecological Evaluation of Miangaran Wetland of Iran for Conservation Approaches

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ABSTRACT

Miangaran Wetland is located in Khuzestan province of Iran .Its area is about 2240 hectares and its elevation is 826 meters above sea level and its depth is 5.18 meters. It is including suitable lands for agriculture around, and the existence of the endemic species population such as turtles, birds, fishes and snakes. It has an important ecological and economical role in the region. Every year, about 130000 birds such as *Fulica atra*, *Marmaronetta angustirostris*, *Aythya ferina*, *Egretta garzetta*, *Anas querquedula*, and so on immigrate to this region. Considering the great importance of this ecosystem from point of view of different aspects, it is necessary to take this region under conservation and support. Therefore, there must be a general evaluation in order to determine whether this wetland can be considered as a conservative region or not. This study is based on an ecological evaluation to take into account Miangaran Wetland as a protected area. This research was performed using three standard methods including: IUCN, IMO,SALM & PRICE methods and the reformed method from Canada conservation organization. In this ecological evaluation, the used methods were including three criteria: The life conservation values, the socio-cultural values, and productive values of wetland. Each criterion has some subdivisions. According to the questions presented in each criterion and the answers required, we can determine whether each criterion exists or not and its level of importance from the national, provincial, regional and local point of view will be made clear and also the potential and capability of the wetland will be announced in order to be taken under conservation. Thus, having done a survey and field visit and collecting a series of maps to make the task easier, the data was collected. The results of several sections showed importance of this wetland. After answering the questions, Miangaran Wetland was considered as a protection capable region by obtaining more than sixty percent of the level of importance of criterion and the existence of more than three criteria in each value.

KEYWORDS: wetland, ecological evaluation, conservation, IUCN, IMO, SALM & PRICE.

INTRODUCTION

Wetlands provide a variety of functions and benefits to the community and the surrounding environment. Wetlands are important and valued environments for many reasons: They are highly productive ecosystems, and are able to capture energy and provide food for many animals. Wetlands provide important refuges for wildlife in times of drought. They are naturally beautiful places and provide opportunities for recreation activities such as boating, swimming, bushwalking and bird watching. Wetlands provide a natural water balance in the landscape and help to provide protection against floods. They have a role in providing water quality protection in the catchments by filtering pollutants such as sediments, nutrients, organic and inorganic matter and bacteria. They support a wide variety of flora (plants) and fauna (animals) and form different habitats and ecosystems. They provide nursery

areas for fish, and breeding grounds for wildlife, particularly water birds. Wetlands provide vital habitat for some species of threatened fauna (animals). Also provide refuge for migratory water birds that breed in the northern hemisphere. Thousands of migratory waterfowls inhabit Iranian wetlands each year. Many wetlands are of cultural significance to aboriginal people. They provide opportunities for scientific research and are a source of education for the community. For an ideal management and conservation we need recognize of their ecological evaluation. These ecological evaluations can study using standard methods. There are several methods for evaluation of wetlands conservational aspects:

In 1978 and with the purpose of selecting sensitive sea and coastal zones, the World Maritime Environmental committee created The International Maritime Organization (IMO). From 1986 this organization has been responsible for the identification and introducing of sensitive marine and coastal environments. The standards selected by IMO for the protecting of marine zones have been acquired from The International Associations Regulations for the Protecting of Natural Resources and Wildlife and the Salm & Price Regulations for the selecting of coastal-marine sanctuaries (Majnounian & Danehkar 2004). The International Commission for Protected areas (WCPA) has provided a series of regulations and managerial policies for the protecting of land and marine natural vistas. The objective of the aforementioned regulations and policies is the optimal management of such areas. (Phillips 2002). This research was performed using three standard methods including: IUCN, IMO, SALM & PRICE methods and the reformed method from Canada conservative environmental organization. In this ecological evaluation, the used methods were including three criteria: The life conservation values, the socio-cultural values, and productive values of wetland. Each criterion has some subdivisions. According to the questions presented in each criterion and the answers required, we can determine whether each criterion exists or not and its level of importance from the national, provincial, regional and local point of view will be made clear and also the potential and capability of the wetland will be announced in order to be taken under conservation. Thus, having done a survey and field visit and collecting a series of maps to make the task easier, the data was collected. This study is based on an ecological evaluation to take into account Miangaran Wetland as a conservative region. Miangaran Wetland is located in Khuzestan province of Iran. Its area is about 2240 hectares and its elevation is 826 meters above sea level and its depth is 5.18 meters. It is including suitable lands for agriculture around, and the existence of the endemic species population such as turtles, Birds, fishes and snakes. It has an important ecological and economical role in the region. Every year, about 130000 birds such as *Fulica atra*, *Marmaronetta angustirastris*, *Aythya ferina*, *Egretta garzetta*, *Anas querquedula*, and so on immigrate to this region. Considering the great importance of this ecosystem from point of view of different aspects, it is necessary to take this region under conservation and support. Therefore, there must be a general evaluation in order to determine whether this wetland can be considered as a conservative region or not.

Main Hypothesis of the Research was with due regards to the ecological characteristics of the Miangaran wetland, are the application of Protective Schemes in the Miangaran wetland, within the specifications defined in the integrated method of (Salm& Price, IMO,IUCN) necessary?

OBJECTIVES OF THE RESEARCH

- The Ecological evaluation of the Miangaran wetland in the vicinity of the city of Iezeh in order to determine the application of protective schemes, and the investigating of their compatibility with international standards.

-A comparison of the integrated method of (Salm& Price, IMO, IUCN) within the framework of the protective evaluation of the Miangaran wetlands.

Secondary Objectives of the Research:

- Valuating the main and secondary standards incorporated within the combined methods of (Salm & Price, IMO,IUCN) in order to determine the ecological conditions of the Miangaran wetlands .
- Determining the extent for implementing protective measures in the wetland
- The creating of an environmental resume for some of the ecological life forms in the Miangaran wetlands.
- Determining the existing potentials and the factors threatening the Miangaran wetland.

MATERIAL AND METHODS

Study Area:

Miangaran wetland located in Khuzestan province, Southern Iran.

The map of the location of Miangaran wetland & land use around it using software,satellite pictures & statistical data have been shown below:

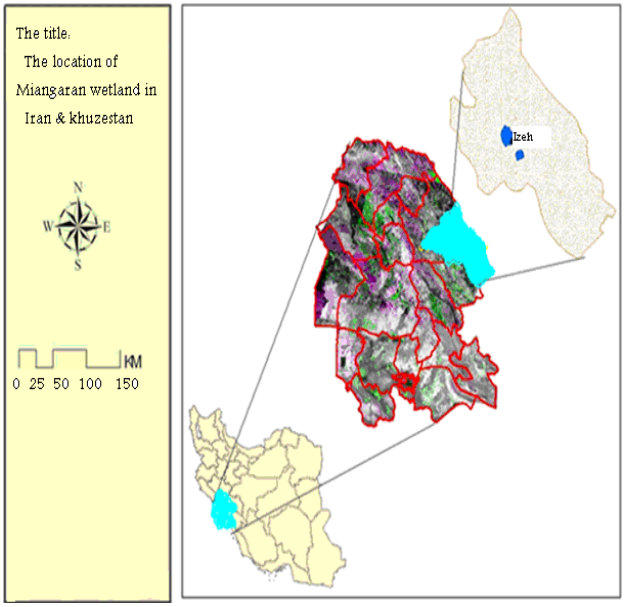

Fig. 1. The location of Miangaran wetland in Iran & Khuzestan province

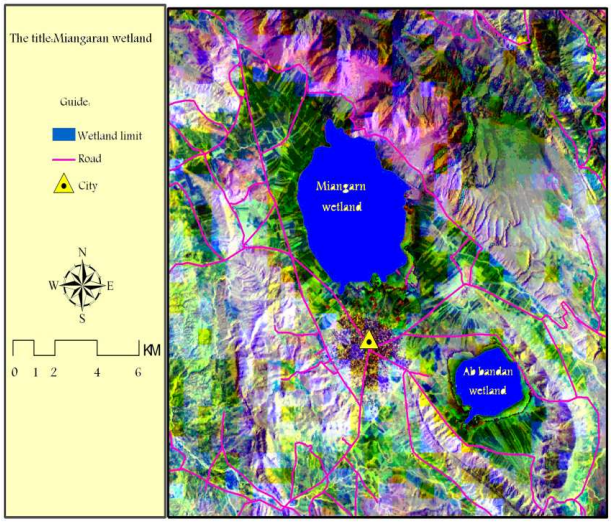

Fig. 2. The map of Miangaran wetland

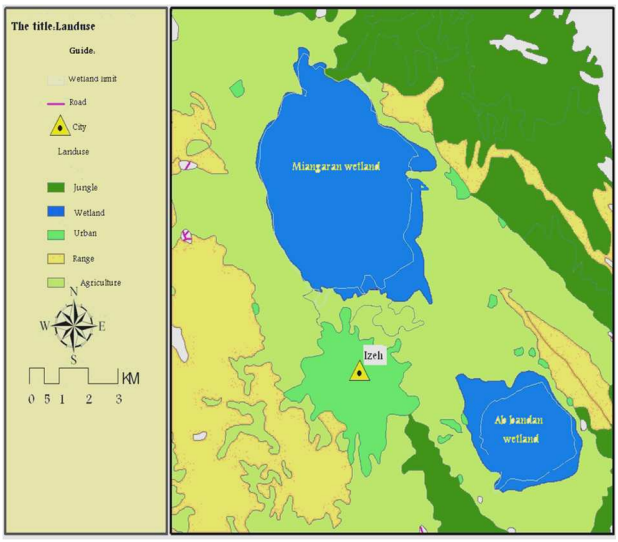

Fig. 3. The map of land use around Miangaran wetland

The methodology applied for the ecological evaluation of the Miangaran wetland in the Southwest of Iran was an integration of three different methods (i.e. IUCN, Salm & Price**,** and IMO) (Majnounian & Danehkar 2004).The criteria used in this study were a combination of 13 major criterion and 23 secondary factors which will be elaborated upon throughout the study. Once all the fundamental data had been collected and collated, weight factors were applied to each criterion of the wetland and ultimately the need to determine a protective zoning requirement for the said wetland was defined. It is of note that each of the methods of IUCN, Salm & Price**,** and IMO has provided various regulations and policies for ecological evaluation of ecosystems some of which are parallel to one another, but have been brought below:

1. Library research and the searching of relevant data basis
2. The collecting of related data regarding the flora and fauna, the hydrology, geology cultural and historical events of the region.
3. The completing of the fundamental data using field research, and the recording of other potential and actual threats to the wetlands.
4. The creating of various maps for the area under study such as topographical maps, Hydrographs, geological maps, land use maps, and the use of satellite and GRS statistics using ArcGis (9.1) software.
5. The determining of the main and secondary criteria in each of the individual methods.
6. The evaluating of the wetlands by applying a value to each criterion selected.
7. Determining the level of Protection required for the wetland based on the method selected.

The application of values for environmental resources existing in the wetlands will not only determine the vulnerability of the wetlands but also determine the means for protecting the wetlands and thus will be utilized as a criterion for selecting coastal–marine wildlife sanctuaries.

The Criterion Existent in the Salm & Price Method:

This method is composed of five major criterions, that is to say the economic, practical, regional, ecological and social criteria of the area under study. Each of the aforementioned are then divided into several secondary criteria.

The Economical evaluation takes into account aspects such as: 1. Tourism; 2.The nature of the Threat; 3.The effects upon fisheries; 4. Economic effects; 5. Effects upon species

The Practical criteria are: 1. capability of renovation 2.Opportunity 3. Priorities 4. Subsistence 5. Size 6.Yield 7.Extent of the threat

The Regional criteria are: 1. Importance of the region 2. The importance of the sub-region

The Ecological criteria are: 1. Utilization 2.Prominence 3.Naturalness 4.Variety 5. Integration 6.Vulnerability 7.Uniqueness

The Sociological criteria are: 1.Conflict of Interests 2.Research and Training 3.Social acceptance 4.Recreation 5.Control indices 6.Public awareness 7.Aesthetics 8. Public health and hygiene 9.Culture 10.Adaptability and inadaptability 11.Access 12. Safety

THE CRITERIA APPLIED IN THE IUCN METHOD

The criteria applied in the IUCN method are as follows: 1.Economic value 2.Sociological value 3.Ecological criterion 4.Practicality 5.Feasibility 6.The Biological-geographical criterion 7.National or International significance 8. Scientific import

The Criteria applied in the IMO Method:

The core criterion applied in the IMO method are The Individual and The Ecology.

The Individual criteria are: 1.Training 2.Extent of Human dependency 3.Research 4. Recreation 5. Economic benefits 6.Pre-Feasibility and Control studies

The Ecological criteria are: 1.Vulnerability 2.Pristine ness 3.Variety 4. Dependency 5. Rarity 6.Uniqueness 7.wildlife habitat 8.Integratedness 9 .breeding zones 10.Environmental geographical importance 11.Utilization

1- Criterion For selecting The Miangaran Wetland

The criteria applied for the selecting of the Miangaran wetland were as follows:

1-1- Wild Life Habitat

The Wildlife habitat criterion is in itself divided into four factors:

a) Variation in the habitat
b) The extent of the habitat
c) The integrated ness of the habitat
d) The value of the habitat

METHOD OF CORRESPONDING THE CRITERION OF HABITATS

The aforementioned criteria were corresponded with their equivalents in the IMO-2001 regulations (Variety, Integrated ness, Rarity, Habitats) and Salm & Price regulations (1995) for the selecting of Protected Marine zones. In addition they were also paralleled with the IUCN (1999) regulations for the selecting of Protected Marine zones.

1-1-1Extent of Habitat

The extent of the habitat lies from the outer boundary of the habitat and extends along the axis towards the wetlands or the interior and is based on the distance from its maximum extent to the axis.

1-1-2 Variety of the Habitat

This Criterion is valuated on the number of habitats existing in wetlands. These habitats are classified into the nine categories below:

1. Wetland grasslands 2.Coral outcrops 3.Forests growths 4.Sand spits without any ecological activity 5.Estuary biospheres 6.Marine grasslands 7.Mud flats 8.Rocky outcrops without any ecological activity 9.Moss growths

METHOD OF RATING

Should approximately half of the aforementioned habitats exist in proximity of the wetland, that area will have the highest rating.

1-1-3 Integration of the Habitat

There are two points which are two be considered in this regards:

a) The Ecosystems that are integrated will have the highest efficiency

b) There should not be an excessive focus on the physical boundaries of plant or wild life habitats, nor on its development; however should the habitat be integrated it is necessary to focus on its stability

c) In a sensitive and vulnerable habitat, each section must be protected and managed separately and all sections must be managed together

1-1-4 Significance of Habitat

Each habitat has its own specific significance and in the rating of the habitats, the duration in which a marine species such as crustaceans, fish, aquatic life forms etc. have thrived in a habitat.

The maximum rating for a habitat is 20 and the minimum rating is 3**.**

1-2-Criterion of Avian Life

Avian life is considered as one of the central factors in any environment and is therefore highly valued; thus it is necessary to identify various avian forms in the wetlands. In addition avian are one of the balancing factors in nature and provide recreational, educational, economic and aesthetic value to a region.

With due regards to the ecological and biological characteristics of wetlands, these areas host multitudes of birds which use the unique characteristics of the flora and fauna of the region to breed, or as a winter's nesting place, feeding, rest and as a sanctuary from predators. The said criterion is in itself divided into several sub-criteria which are as follows:

a) Birds on the brink of extinction b) Breeding area of birds c) Threats to Avian life

d) variety of avian life e) Avian population

INTEGRATING THE CRITERION OF AVIAN LIFE

The criterion of Avian life were integrated on the basis of IUCN (1999) standards for the Protecting of Marine zones; moreover the homogeneity, variety of habitats, breeding areas were based on the ecological standards of IMO (2001). The standards specified by Salm & Price (1995) were also used for the selecting of Protected Marine and coastal zones.

1-2-1-Avian Breeding Grounds

An avian breeding grounds criterion has a minimum rating of 0 and a maximum rating of 5.

1-2-2-Avian Population

The maximum rating for a Avian population is 5 and the minimum rating is 0**.**

1-2-3-Variety of Avian Species

Variety of Avian Species criterion has a minimum rating of 0 and a maximum rating of 5

1-2-4-Treatened Avian Species

Threatened Avian Species criterion has a minimum rating of 0 and a maximum rating of 5

1-2-5-Birds on the Brink of Extinction

Birds on the brink of extinction criterion has a minimum rating of 0 and a maximum rating of 5

1-3-History of Protection

Due to the fact that the wetlands are the most efficient local water ecosystems, the protecting of these bodies of water and the ensuring that they will not erode is of the highest priority. If the area has a history of being protected, it will assist in optimizing the management and up rating of the environmental quality of the wetlands. In Iran most protected areas are only that in name and there is no optimal management implemented on these regions.

METHOD OF CORRESPONDING THE CRITERIA RELATED TO THE HISTORY OF PROTECTED ZONES

The History of Protected zoning with due regards to the region's national or international importance corresponds with the following criteria:

The IMO(2001) standards for vulnerability, Integration, Pristine ness, The existence of pre-feasibility and feasibility studies and Abundance.

The Salm & Price (1995) standards for the selecting of Marine Protected Zones.

The IUCN (1999) standards for determining the national or international importance of Marine Protected zones.

The History of Protection of an area has a minimum rating of 1 and a maximum rating of 5.

1-4-Recreation Value Criteria

The regions which have a greater potential for environmental recreation will have a higher rating.

METHOD OF CORRESPONDING THE CRITERIA RELATED TO THE RECREATIONAL VALUE OF A REGION

The IUCN (1999) standards for social importance, economic importance, practicality and feasibility for the selecting of Marine Protected zones.

The IMO (2001) standards for Human dependency (recreation) for the selecting of sensitive Marine zones.

The Salm & Price (1995) standards for culture and aesthetic values for the selecting of Marine Protected zones.

The criteria for the recreation value of a region are categorized into the following groups:

a. The Historical Heritage and Culture Value
b. Infrastructure and Tourist facilities
c. Aesthetic value d. Recreational value

1-4-1-The Historical Heritage – Cultural Value

The criteria for this particular value is based on the number of historical-cultural remains in the protected zone and each of the historical or cultural remain is evaluated separately. The values for the historical heritages are based on their historical importance and the cultural values are rated on the basis of various regulations.

1-4-2-Infrastructure and Tourist Facilities

The preparation and development of the necessary infrastructure for the presenting of suitable services in a protected area is essential. The existence and number of facilities and infrastructure is the basis of rating this particular criterion. Facilities are categorized into the following twelve groupings:

1. power and electricity 2. Potable water 3. Access roads 4. Hotels, motels, and rest areas 5. Parking lots 6. First Aid stations 7. Restaurants and cafes 8.local-seasonal markets 9.Recreational jetties 10. Communications center 11.reservoirs, piers, camp grounds and seasonal residential areas 12.Coastal and aqua sport facilities

1-4-3-Recreational Value

One on the important factors in valuating a natural landscape on the basis of tourism is the existence of scenic views. In addition it is considered an important criteria in the protecting of the area and the existing flora and fauna; thus one might state that the recreational value of a region is rated on the variety of existing resources in that region. These resources might be in the form of forests, coastal areas, wildlife (either as hunting areas or observation areas), the sea, lakes or marshes and are categorized as Large in extent, average in extent or small in extent.

1-4-4- Aesthetic Value

The existence of pristine and untouched areas in the wetlands makes these regions a magnet for lovers of nature and the outdoors. An evaluation of the ecotourism attractions of the wetlands will have great import on an international, national, local and Provincial scale (Manouri، 1990).

The Aesthetic value of an area has a minimum rating of 3 and a maximum rating of 20.

1-5-Human Dependency

The extent of human dependency in a region is evaluated on two levels:

a) The number of people whom utilize the resources of the wetlands on a constant basis.

b) The economic importance of the wetlands in the providing of livelihood for the population surrounding it.

METHOD OF CORRESPONDING THE CRITERIA RELATED TO THE EXTENT OF HUMAN DEPENDENCY

The IUCN (1999) standards for social importance, economic importance, practicality and feasibility.

The IMO (2001) standards for economic use and Human dependency.

The Salm & Price (1995) standards for economic use, and fisheries for the selecting of Marine Protected zones.

METHOD OF RATING HUMAN DEPENDENCY

The extent of human dependency on a region is divided into two sub-categories: a) Economic Value of the region and b) Human utilization of resources in the region.

1-5-1- Economic Value of a Region

The economic value of a region is based on three main criterions:

a) The economic value of the resources in the wetlands.

b) The accessible economic potential of the wetlands.

c) Recreational resources, picking of grass, sand and gravel miming, fishing, hunting birds, tourist services and the collecting of coral and shells.

1-5-2-Human Utilization of resources in the Region

The number of Physical-Natural resources such as 1) Fish and aquatic life 2) Avian life c) Grasslands d) Mines and e) Water will determine the extent of human utilization of resources in the region.

The Human Utilization of resources in the Region has a minimum rating of 2 and a maximum rating of 10.

1-6-Uniqueness

Each region has its own unique and unparalleled physical and ecological characteristics which affect the rating of that area.

METHOD OF CORRESPONDING THE CRITERIA RELATED TO THE UNIQUENESS OF A REGION

The IMO(2001) standards for the uniqueness of a region on the basis of ecological values for the selecting of Marine Protected zones.
The Salm & Price (1995) standards for the selecting of Marine Protected zones.
The Uniqueness of resources in the Region has a minimum rating of 1 and a maximum rating of 5.

1-7- Pristine ness

The wetland are often untouched and pristine regions. The more pristine and virgin the wetlands are the more they will attract ecotourism to the region. In addition the will also attract fishermen and sportsmen.

METHOD OF CORRESPONDING THE CRITERIA RELATED TO THE PRISTINE NESS OF A REGION

The IUCN (1999) standards for Pristine ness in the selecting of Marine Protected areas.
The IMO (2001) standards for Pristine ness for the selecting of sensitive Marine Protected zones.
The Salm & Price (1995) standards for Naturalness of site for the selecting of Marine Protected zones.
The Pristine ness of resources criteria has a minimum rating of 0 and a maximum rating of 5.

1-8- Education and Training

Each wetland has its own ecological characteristic which influences the educational value of that region. Training and education is one of the methods for combining the management of protected areas with the total area. Official or unofficial training of various age groups both for the public and for universities and colleges may take place in the wetlands.
Wetlands which can be used for training and education:
1. Various species of wildlife 2. Flora and Fauna biospheres 3. Age level educational value
4. Geological formations 5. Metrological conditions 6. Ecological processes
7. Cultural events 8. The counter effects that physical phenomenon have upon one another
9. Botany

METHOD OF CORRESPONDING THE CRITERIA RELATED TO EDUCATION AND TRAINING

The Salm & Price (1995) standards for research and training, public awareness and access within the framework of economic and social factors.
The IUCN (1999) standards for educational importance.
The IMO (2001) standards for trainings regarding the selecting of sensitive Marine Protected zones.
The Educational value of the Region has a minimum rating of 1 and a maximum rating of 5.

1-9- Aquatic Life

The criteria applied in this specific area is based on two groups of species: Fish and invertebrate aquatic species which are directly part of the food chain for humans and other creatures. Basically fish are the most highly valued species in wetlands, having both ecological and economical value and containing high concentrations of protein thus considered as being an important meat source.

METHOD OF CORRESPONDING THE CRITERIA RELATED TO AQUATIC LIFE

The IUCN (1999) standards for economic importance.
The IMO (2001) standards for wildlife habitats, variation of species, uniqueness, breeding, fertilization and egg laying zones for the selecting of sensitive Marine Protected zones.
The Salm & Price (1995) standards for the selecting of marine protected zones.

The method of rating for aquatic life is based on the five criterions below:
a) endangered species of fish b) egg laying of fish c) species of fish on the brink of extinction d) Variety of aquatic life

1-9-1- Threatened Species of Fish

Threatened Species of fish criteria has a minimum rating of 0 and a maximum rating of 5.

1-9-2-Egg lying of Fish

The maximum rating for an egg lying of fish is 5 and the minimum rating is 0**.**

1-9-3- Endangered Species of Fish

Endangered species of fish criteria has a minimum of 0 and a maximum rating of 5.

1-9-4 - Breeding Of Fish

Breeding Of fish criteria has a minimum rating of 0 and a maximum rating of 5.

1-9-4- Variety Of Fish

Aquatic Life criterion has a minimum rating of 1 and a maximum rating of 5.

1-10- Research and Control

Each area has its own unique and individual characteristic for research and control and with due regards to the fact that in the field research of natural ecosystems, a comparative case is required; the region under study should have both pristine and developed zones.

METHOD OF CORRESPONDING THE CRITERIA RELATED TO RESEARCH AND CONTROL

The Salm & Price (1995) standards for the Control index, Public Awareness, Research and Training within the Economical and Social framework for the selecting of Marine Protected zones.
The IMO (2001) standards for research and Pre-feasibility and Control studies within the framework of Human dependency studies for the selecting of sensitive Marine Protected zones.
The IUCN (1999) standards for Educational importance for the selecting of protected marine zones.

METHOD OF RATING

When rating this particular aspect, the term "Observed area" is used. The term refers to the areas which are selected with due regards to their importance in a research study. The more a wetland has observation areas the higher its rating will be. The areas under study are:
a) Oceanography b) Historical research c) metrological studies d) Social studies
e) Natural resources f) Environment g) geology h) Cultural studies
i) Biology
A research and Control criterion has a minimum rating of 1 and a maximum rating of 5.

1-11 Endangering Criteria

Regions and areas which have an ecological value are beset by various endangering elements. Based on the resources endangered in a region, the vulnerability of that region is defined. The greater the threat, the more the danger of its pristine ness, integration and other values being destroyed exists. The factors endangering wetlands are divided into the following categories:
Category one endangering factors: The factors classified in this category are very important and several of them have highly negative impacts.
Category two endangering factors: The importance of these factors is less than the those of category one and they have little or no negative impacts.

METHOD OF CORRESPONDING THE CRITERIA RELATED TO ENDANGERING

The IUCN (1999) standards for Practicality and Feasibility for the selecting of protected marine zones.
The IMO(2001) standards for Vulnerability within the framework of the ecology of the region for the selecting of sensitive Marine Protected zones.
The Salm & Price (1995) standards for Vulnerability and the Extent of danger within the framework of practice and ecology.

1-11-1-Category One Endangering Factors

The wetlands are beset by non-native species and predators; agro-pollution; miss-management of water resources; oil slicks; industrial pollution and development on the fringes of the wetlands. Industrial pollution includes water pollution; noise pollution; soil pollution; heavy metals intrusion into natural resources; and long term pollutants. In addition predatory activities such as the illegal poaching of bird and sea turtle eggs or hunting are also endangering factors.

METHOD OF CORRESPONDING THE CRITERIA

The Salm & Price (1995) standards for the selecting of Marine Protected zones.
The IMO(2001) standards for the ecological Introduction and Geography of the Habitat for the selecting of sensitive Marine Protected zones.
The IUCN (1999) standards for Geographical ecological factors for the selecting of protected marine zones.

1-11-2-Category Two Endangering Factors

The abuse of avian species in the wetlands; the drainage of large portions of the wetlands; road construction in the wetlands; coastal erosion of the wetlands; recreational abuse of the wetlands; over fishing; climate change and warming of the wetlands; the proximity of harbors and jetties and the passage of marine craft; sand, gravel, and surface mining operations; abuse and over harvesting of marsh plants (flowers, reeds, leaves etc.); impact of industrial fisheries and fish farming; urban wastewater pollution, materials and trash dumping, over fishing and destruction of aquatic species; over grazing; dredging activities. Endangering criteria has a minimum rating of 2 and a maximum rating of 10.

1-12 Geographical Extent of Habitat

If any wetland has a geological particularity or unique formation and/or contains rare species it will have a higher rating than other similar locations surrounding it. The geological formations must be individual and distinctive and particular to the wetlands. The existence of geysers or waterfalls; coastal formations sculptured by the wind and waves bordering the wetlands; a small ecological community with unique characteristics; rare wildlife or Botanical habitats on a national or international scale, or the remains of ancient habitats are all important factors in the determining of the geographical habitat.

1-13 Dependency Criteria

The extent of a species' commercial or protective value with due regards to its habitat in a wetland is defined as its level of dependency. The greater the species level of dependency the higher the wetlands rating will be.

METHOD OF CORRESPONDING THE CRITERIA RELATED TO DEPENDENCY

The IUCN (1999) standards for ecological habitats for the selecting of protected marine zones.
The IMO(2001) standards for the dependency of ecological habitats for the selecting of sensitive Marine Protected zones.
The Salm & Price (1995) standards for the selecting of protected marine zones.

Once the main and subsidiary criteria were defined and the ratings imposed for each, the total values obtained were collated and applied to the wetlands in order to determine its significance as a protected zone. The results are presented in the table below:

RESULTS

Table1-1 The results of ecological evaluation of Miangaran Wetland in Iran(Ratings based on the integrated method of Salm & Price, IMO, IUCN) is shown below:

criteria	Rating	Maximum	Criteria	Rating	Maximum
Geography	1	5	Variety of Aquatic life	1	5
Pristine nests	3	5	Aquatic life on the brink of extinction	0	5
Uniqueness	5	5	Threatened aquatic life	0	5
Dependency	5	5	Fish Egg laying	0	5
Value of Habitat	5	5	Fish breeding zones	0	5
Variety of habitat	5	5	Threatened avian species	5	5
Extent of habitat	5	5	Avian on the brink of extinction	0	5
Integration of habitat	5	5	Research and Control	3	5
Human Utilization	5	5	Category one Endangering factors	1	5
Economic value	3	5	Category two Endangering factors	5	5
Aesthetic value	5	5	Variety of avian Life	5	5
Recreational value	3	5	Avian Breeding	5	5
Tourist facilities and infrastructure	5	5	Avian Population	5	5
History of Protection	1	5	Historical-Cultural Heritages	3	5
Educational value	3	5	Total score: 92 points		

Out of a total of 150 points the Miangaran wetland obtained a total score of 92, thus proving that it should be categorized as a Marine-Coastal Protected zone.

The Fig. showing the results of criteria used in the integrative method for conservative evaluation of Miangaran Wetland is shown below:

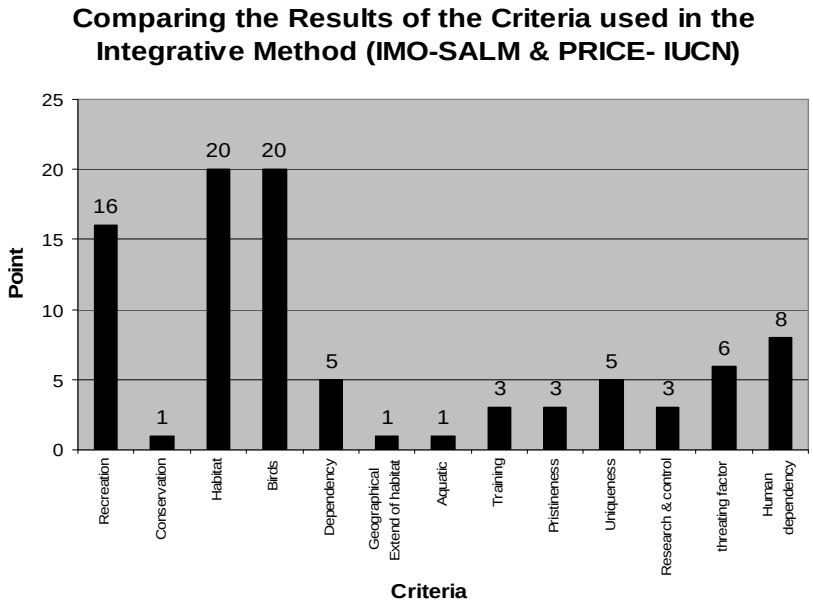

Figure 1.1. The Result of conservative evaluation of Miangaran Wetland

DISCUSSION

Research into the application of various methods of research into the wetlands of Iran have shown that the integrated method of (Salm& Price, IMO,IUCN) has never been applied locally in Iran.

This research based on using IUCN method showed similar approach with a project entitled "Practical Managerial Solutions, Environmental Valuating and the Protective Classification of Mino Island" was carried out by Yavari (2005) with the main

objective of surveying the feasibility of creating a coastal sanctuary on Mino Island and the selecting of a proposed site. In this research the IUCN criteria was applied in order to attain the said objectives and from among the four areas studied, two areas had more than half of the required specifications and were considered as ideal locations for Protective zoning.

Also this research was similar to research entitled "The Protective Classifying of the Coastal Regions of Iran: a Case Study on the Coastal area of the Caspian Sea." applied the integrated Salm& Price, IMO, IUCN method using the 15 main criteria and the 23 secondary criteria required for the protective classifying of coastal regions, including the Gorgan wetlands; the Gomishan wetlands; and the Boujagh area. Among the findings was that the Gorgan and Gomishan wetlands had higher ratings than the Boujagh and the Lavandevil wildlife sanctuary (Majnounian and Danehkar, 2007). This research showed suitability of these methods for evaluation of wetlands. Former researches showed their suitability for coastal areas evaluation: case study entitled "A Comparison of the Application of Various Evaluative Methodologies in Order to determine the protected costal regions of the Khuzestan Province" was carried out using the integrated IUCN, Salm & Price, IMO method in order to determine the Protective criteria of the Arvand coastal region. In this study the Arvand coastal region obtained 99 points out of the total of 150 and was selected as a coastal- sea wildlife sanctuary (Omidi،2007).

This study showed that The Miangaran Wetland should be officially announced as a protected zone and All environmental laws and regulations should be applied to the area to minimize and halt any further destruction to the environment of the wetlands and The Khuzestan Environmental Organization must take the necessary steps to register the Miangaran wetland as a nationally protected environmental zone. There should be a supervisory committee to regulate the amount of water abstraction from the wetlands during various seasons and Encouraging public awareness and corporation regarding the protecting of the wetlands and the cooperation of NGOs in this regards.

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