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NATURAL PROTECTED AREAS AND NATIONAL PARKS IN LIBYA

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Summary. Libya has paid a great interest in the conservation of biodiversity and natural resources, as real wealth, source of food, medicine, and source of energy. This country has a large area with multiple patterns of different landscapes, environments, and ecosystems. Therefore, many legislation and regulations been issued aimed to protect the natural ecosystems against different human activities that cause damages and negative impacts. Moreover, organize grazing and hunting in order to determine the proper investment of natural resources without causing any damage to their balance. Efforts have been made to follow up the countries that have good experiments in the field of wildlife protection. Several protected areas and national parks have been established as an important step for the conservation of the biodiversity. The first protected area is been the Al-Kouf National Park (1978) while today the number of protected areas reaches to 13 sites that As a whole made up about 18% of the country's total area. Recently, in 2011, two sites have been declared as marine protected areas (MPA), Farwa Lagoon at the west and Ain Al-Ghazalah at the eastern part of Libya.

Key Words. Conservation, regulations, terrestrian and marine protected areas.

INTRODUCTION

Libya occupy a vast area about 1,759.530 km^2, containing different types of habitats such as coastal area spanning 1900 km, sandy beaches, small bays, large gulf, and rocky islands that are rich in biodiversity. The mountains outstanding in the eastern part of the country (Green mountain) and the western mountain (Jabel Nafusa) are sites of habitats for wild plants and various animal species (residents and migrants). The southern part of the country is

made almost entirely of the Sahara desert, which includes many oases and a variety of environments that still need to be studied and investigated. This very large habitat diversity is accompanied by climatic variability according to each environment, which is reflected in the distribution of plants and animals accordingly.

In response to the global interest in establishing protected areas (PA) and national parks (NP), Libya has established the first national park (Al-Kouf National Park) in 1978, in order to preserve the forests, natural pastures, and wildlife present in this area (Alshawesh, 2004). The criteria for the institution of this national park were to start a program of protected areas, in different terms and conditions, according with the IUCN guidelines and standards. Some areas, held in critical condition for conservation, were set off limits for the visitors and called protected areas. Conversely, there were other reserves that allowed visitors to specific controls commonly called national parks (IUCN, 1994). The Libyan government has declared several areas as nature reserves and national parks in the following decades (Alkhattabi, 2001). All of them are designed to protect local plant and animal species to increase their numbers and reintroduce some endangered species that existed in the past in the same areas (Shallouf, 2008).

The Libyan protected areas suffer from a change in the natural composition of biodiversity by introducing some alien plant and animal species, especially during reforestation campaigns. Although, it is not prohibited to restore the wildlife in the region, reforestation campaigns often introduced non-native species to these areas, which is certainly against the objectives and the rules of conservation and protection processes (Shalaby, 2009). Therefore, this paper aiming to highlight the main problems in Libyan protected areas and national parks, including the legislations and regulations, and their status after the year 2011. Objectives of the study are: assess the current status of PA's, NP's and MPA's in Libya; identify the needs of PA's, NP's and MPA's in Libya.

This work has been carried out through a methodology that has involved several phases: the gathering of the issued legislations, rules, regulation, and decrees concerning the PA's, NP's and MPA's in Libya; the reviewing the available information on the PA's, NP's and MPA's in Libya; the investigation on the current status of the PA's, NP's and MPA's in Libya; the assessing of the field visits that were conducted during the period from April 2012 to April 2015.

THE LEGISLATIVE CORPUS CONCERNING PROTECTED AREAS AND NATIONAL PARKS

We find it useful to report a synthetic chronological synthesis of the most

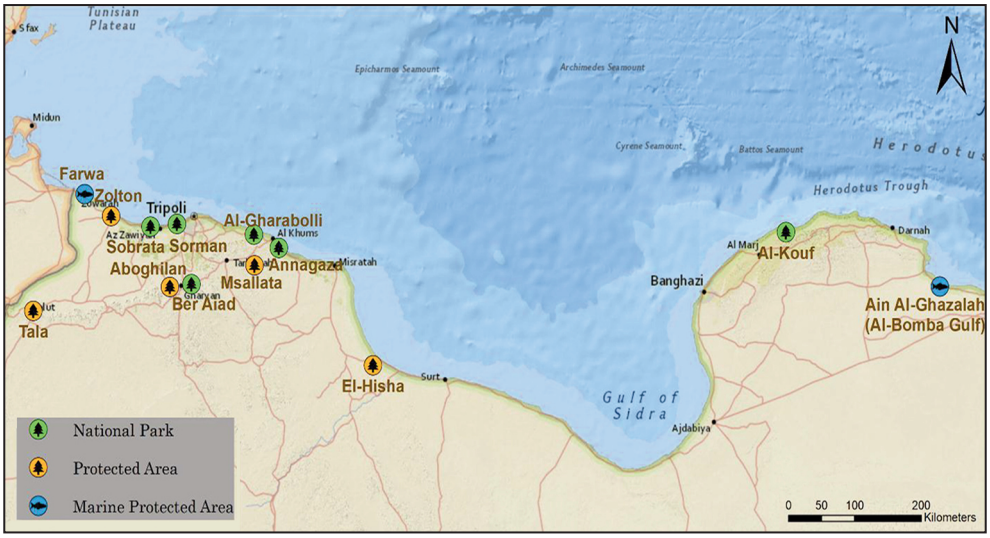

Figure 1. Map of Libyan PA's, NP's and MPA's distribution.

important legislative-institutional acts that have allowed the establishment of protected areas and national parks which, in Libya, constitute the protection and conservation system of important ecosystems and habitats and therefore of their biodiversity:

- decision of the Secretary of General People's Committee of Agriculture No. 365/995 for issuing some rules to protect the forests and pastures;
- act number 25/1950, for protection of forest;
- law number 47/1971, for the protection of forests and pastures;
- law number 7/1982, regarding the protection of environment. The third chapter addressed the protection of marine biology and the hazards of oil pollution on fishes;
- law number 5/1982 related to the protection of forests and pastures; amended by law No. 14/1992;
- law number 15/1984, prevent overhunting of wild animals;
- act number 3/1984, issued by General People's Committee of Agriculture and land reclamation concerning the protection of grasslands and forests from fire;
- act number 11/1990, issued by the General People's Committee concerning the establishment of Technical Committee for Wildlife, which conferred upon the technical and administrative supervision on the protected areas and national parks;

- act number 453/1993, issued by the General People's Committee of Agriculture and animal wealth to prohibit the hunting of terrestrial and sea turtles;
- act number 326/1998, related to the transfer of the responsibility and supervision of protected areas to the municipalities' councils;
- act number 205/2001, issued by General People's Committee regarding the establishment of Animal Wealth General Authority and one of its tasks is to supervise the protectorates and national parks.
- finally, a total of 13 Acts to establish protected areas and national parks in different years and sites.

In Table 1 are shown names, date of establishment, extension in hectares and environmental typology of PA's, NP's and MPAs, while Figure 1 shows their dislocation in Libyan territory

STATUS OF PROTECTED AREAS AND NATIONAL PARKS IN LIBYA

a - Al-Kouf National Park

180 km north-east to Benghazi, west to the town of Al Bayda. The park includes a 20 km stretch of coast. The coastal section of the park consists of sandy beaches interspersed with rock outcrops and coastal cliffs. Behind the beach is a disjunction band of sand-dunes which are fringed on the landward side by shallow, seasonal brackish lagoons. The rest of the area is a mountain forest. Moreover, the area is one of the important hotspots in the South Mediterranean, and Important Birds Area (IBA) in Libya. After the uprising in 2011, the NP been seized by some local people under the pretext of land ownership, and they pretended that the former regime had seized their lands by force.

b - El-Hisha Protected Area

El-Hisha is a group of freshwater springs, where fresh water comes to the surface at the edge of a higher, limestone coastal plain. It has a long history of settlement and cultivation. The original village seems largely to have been abandoned now, and the remaining buildings, made of wood from the palm trees that surround the springs (Azafzaf et al., 2005). The site has a great importance as one of the few surviving springs on the edge of the desert, and for its long cultural history. It is one of the nuclei of the larger El-Hisha site.

The area of springs is surrounded by arid area with small desert shrubs and bushes. Reasonably, the site is still in natural status and no public access.

c - Al-Gharabolli National Park

Al-Garabolli NP, is situated 50 km east to Tripoli and two km north of the town of Al-Garabolli. The park is approximately rectangular and is bounded by the Wadi Ramal in the west, Wadi Turghat in the east and extends up to 7 km inland from the coast. The site consists of sand-dunes, with sandy beaches and rocky shores. The dunes are sparsely vegetated with *Ammophila arenaria* and *Tamarix* spp. and there is a natural scrub vegetation and areas of open pasture. While, beyond the dunes, there are open grass plains with low thorn scrub. However, most of the vegetation within the reserve is introduced, with sand-stabilizing plantations of *Acacia* and *Eucalyptus* spp. Currently, there is no administration or any kind of management to conserve and control the site. The protection is due to a temporary occupation of the site by army.

	Name of protected area	Establishing date	Area/ha	Landscape
1.	Al-Kouf National Park	1978	100,000	Mountain and coastal forest
2.	El- Hisha Protected Area	1984	160,000	Sobkha and fresh water springs
3.	Al-Gharabolli National Park	1992	8,000	Coastal forest
4.	Aboghilan National Park	1992	4,000	Mountain area
5.	Ber Aiad Protected Area	1992	1,200	Mountain to plain area
6.	Sorman National Park	1992	400	Forest of pine trees
7.	Annagaza National Park	1993	4,000	Mountain forest
8.	Sobrata National Park	1995	500	Coastal forest of pine trees
9.	Msallata Protected Area	1998	1,800	Mountain area
10.	Tala Protected Area	1998	200	Mountain area
11.	Zolton Protected Area	1998	1,000	Coastal salt marshes
12.	Farwa	2011	5,591	Island and coastal lagoon
13.	Ain Al-Ghazalah (Al-Bomba Gulf)	2011	29278	Marine, Islands and coastal lagoons

Table 1. Protected Areas and National Parks in Libya.

d - Aboghilan National Park

Aboghilan NP is situated in Jabal Nefhusa, 70 km southwest of Tripoli and northeast of the town of Gharyan. It includes a section of the Jabal Nefhusa escarpment from the peaks at 500 m down to the coastal plain including the foothills and a section of the plain. Areas of natural vegetation remain and there is a complex of small springs with old *Pistacia* trees, date-palms and thick scrub below the crags at Aboghilan. The current situation of the park seems neglected and it has no facilities.

e - Ber Aiad Protected Area

Ber Aiad PA is situated in Jabal Nefhusa as well, it is situated 120 km southwest of Tripoli and 15 km northwest of the town of Yeferen. It is a coastal plain area that has two valley systems. Areas of cultivated plant cover mainly Mulberry and *Acacia* trees (Eldaek et al., 2013). Before the establishing of the PA, the area was utilized as agricultural project. Since the establishment of this protected area, the criteria of the protection were not clear, and the change was only in the name from Ber Aiad agricultural project to Ber Aiad protected area. Currently, it has no administration and nor facilities.

f - Sorman National Park

Sorman NP (national park, nature reserve) is situated in Sorman city, 60 km west of Tripoli. It was established as a national park in 1992 in order to protect and preserve the biodiversity of the local habitat and for the sustainable management of the natural environment of the area. The site is mainly consistent of *Eucalyptus* trees plantation (Dohra, 2013). Currently, with low level of administration, the park became a place for picnic and recreational activities, rather than protected site.

g - Annagaza National Park

Annagaza NP is located west of Alkhoms city, and 98 km to the east of Tripoli. The area was established as National Park in 1992 and it mainly consist of mountain forest of pine trees, a coastal wetland area, and sandy and rocky beaches. It has an area of approximately 4,000 hectares of which 600 are supposed to be absolutely protected. The plain region is covered with planted forests of pine species because of seasonal afforestation campaigns by students and boy scouts. With the absence of administration and management,

the site experience several incidents of forest fires and some parts have been seized by the locals especially the coastal areas.

h - Sobrata National Park

The Sobrata National Park was established by the General People's Committee decision No. 311 in 1995. It has an area of 500 hectares in the coastal area of Sabrata city. This NP is considered an planted forest of pine trees and it has many *Eucalyptus* and *Acacia* trees in the north side of the park. Some animal species have been introduced for the purpose of captive breeding such as Gazelle, Oryxes and Ostrich. The local community currently controls this site. Although, there are some efforts to protect the natural components of this national park, the site been crowded by local people. The most important problem is the presence of nearby limestone quarries.

i - Msallata Protected Area

Situated in the west of Msallata city, about 90 km east of Tripoli. The protected area was established in 1998. It is characterized by mountainous nature and forests that extend along the foothills. The area has been nominated as a biosphere reserve by UNESCO. Its unique ecosystem consists of more than 368 species of wild plants covering 78% of the total area. Moreover, 20 species of mammals were observed. Birds, reptiles, and insects are still under study. Moreover, there is a great deal of interest from some associations to study and conserve the biodiversity of this protected area. The effect of fire was noticed very clear on a large proportion of the protected area.

j - Tala Protected Area

Tala PA is situated in Nalut municipality, about 275 km southwest of Tripoli. The area is mainly consistent of palm tree forests and shrubs in foothills that lead to a dried valley. It includes some cliffs, slopes and some flat areas that have been used as picnic areas including recreational facilities such as a cafe and restaurant. However, the area suffers from negligence and stagnancy as well as pollution by garbage.

k - Zolton Protected Area

Zolton PA is a salt plain and marshy area with a forest of Eucalyptus trees, situated in the western part of Libya 140 km west of Tripoli. Since the date of

establishment, the area doesn't receive any support or concern from the government, local community or non-governmental bodies. However, the aims and the criteria of protection were not clear.

l - Farwa

Farwa peninsula is a marine protected area and it is situated in the northwestern of the Libyan coast (11°54'45"E, 33°05'33"N), 150 km west of Tripoli near the borders between Libya and Tunisia (Lagabrielle et al., 2012). The protected area covers 5591 hectares. There is a blocked opening at the eastern end of the island, and it was replaced by an artificial opening in 1995 about 3 km west to the natural one. The Lagoon is dominated by three benthic macrophyte species, *Cymodocea nodosa*, *Posidonia oceanica* and the alga *Caulerpa prolifera*. It is used for fisheries by the villagers in the area. This area is one of the most important roosting sites for marine birds. The area suffers from heavy metals pollution due to the existence of a petrochemical factory nearby. Moreover, overfishing and some other activities such as hunting and recreational activities which cause a disturbance for birds and their habitats. However, since the establishment of Farwa marine protected area there has been no administration, management or action plan implemented to protect this area.

m - Ain Al-Ghazalah (Al-Bomba Gulf)

Ain Al-Ghazalah is a marine protected area located at 32°09'171"N 23°19'744"E, about 130 km east of Derna and 60 km west of Tobruk. The area is characterized by a lagoon which covers 180 ha and three islands distributed in the golf (Badalamentif et al., 2011). Sparse salt marsh vegetation covers the shores of this area and it experience a large amount of fishing activity. The majority of the fishermen are foreigners which results in overfishing activity, and the rest of them are locals. Regrettably, some of the fishermen using dynamite for fishing. However, since the establishment of the protected area there is no management or administration to control the area to implement conservation processes.

DISCUSSION

Although there are many regulations and decrees aimed to protect the biodiversity and natural habitats in Libya, the implementation of these measures

is limited. The current laws need to be updated, activated, and enforced (Etayeb et al., 2012). However, different studies and reports concluded the same difficulties, for instance: lack of coordination between the organizations and institutions who are responsible for the implementation of protective legislations as well as the overlapping of their tasks; instability of administrative bodies and institutions; lack of public environmental awareness; lack of specific bodies and agencies who are responsible for implementing these legislations; absence of capacity building and training in the field of conservation and protection of natural resources; the current legislations do not address the new problems of biodiversity such as 'biosafety' (Shallouf, 2008; Etayeb et al., 2012; Shakman, 2017).

The Libyan experience in the field of conservation has almost 40 years, since the establishment of Al-Kouf National Park in 1978 (Alshawesh, 2004). The number of protected areas and national parks has increased since 1978 to reach a total of 13 sites in 2011. All of them are established to conserve the components of biodiversity (plant and animal) and natural landscapes. However, the question is whether the protected areas and national parks have achieved the purpose of which they were created for. The current situation of the protected areas and national parks in Libya is not reassuring due to the absence of government regulations and control.

The expropriation of protected areas under the pretext of ownership is unfounded, as evidenced by the fact that when these areas were declared as protected areas and national parks, all the procedures were legal and the land was under the ownership of the state. This is confirmed in the establishment decree of each protected area with a map of boundaries and total area. This issue can be attributed to ignorance or unawareness of the protected areas and their goals. The common thread of protected areas is the focus on preserving local biodiversity now and into the future. In fact, the Convention on Biological Diversity emphasize that protected areas are essential tools for safeguarding biodiversity, life itself. The substantial values of biodiversity are arguably a compelling reason enough for saving life through protected areas (Secretariat of the Convention on Biological Diversity, 2008; Dudley et al., 2010). Chowdhury et al. (2014) mentioned that the most severe threats on protected areas are: fund shortages, policy level disorganization, illegal tree cutting, unsustainable forest resource extraction, forestland encroachment and wildlife poaching and smuggling. These findings indicate that protected areas throughout the entire ecosystem are at risk, and that threats vary geographically. Tranquilli et al. (2014) reported that agriculture and logging represented the most common indirect threats, and were most prevalent in West Africa. In addition to the above-mentioned threats, this study found

that the issue of appropriation and takeover of the protected sites is the most common threat to the preservation of protected areas and national parks in Libya.

Over all, the main causes of these threats are varied, but include (a) population growth and immigration, (b) easy access to protected areas, (c) weak laws and regulations with no enforcement, (d) government development plans and investments, such as roads that open up access to park resources and near protected areas, (e) insecure land tenure, (f) local dependency on natural resources due to limited alternatives, (g) cultural habits, (h) lucrative markets for illegal goods (timber, wildlife etc.), and (i) weak incentives and the failure of markets to capture the economic values of biodiversity and ecosystem goods and services (Alers et al., 2007). Caro et al. (2014) provide an overview of the principal threats to land based protected areas and discuss measures by which protected areas can continue to be effective such as the creation of additional PAs, enlarging, buffering and connecting existing reserves. Furthermore, more effective monitoring and management of the current PA is urgently needed.

The second major threat facing Libyan protected areas (Terrestrial and Marine) is the management and administration. Investigation of the direct and indirect threats will rely on effectiveness of planning and management (Knight et al., 2013). For instance, preventing illegal activities needs law enforcement and negotiating with local communities, managing fire needs suppression or prescribed burning (Caro et al., 2014). However, the most controversial issue in PAs and MPAs management is dependent on who should manage and how should local communities be involved in the process. The involvement, participation, or compensation of local people (bottom-up management) became popular in response to sociopolitical injustices related to a century of strict protectionism (Caro et al., 2014). Thus, if the Libyan program for conservation and the establishment of protected areas and national parks started by such principals, the program might have better results. At the same time, the involvement of community and compensation can enhance conservation goals by increasing local support for conservation and reducing activities such as wildlife threat, overfishing and illegal fishing from protected areas as well as habitat destruction.

CONCLUSIONS

There are many regulations and decrees aimed to protect the biodiversity and natural resources in Libya, but the current laws need to be updated, ac-

tivated and enforced. There are many indications that PAs are an effective measure for conserving species and landscapes, therefore, Libya has established a total of 13 protected areas and national parks since 1978 to 2011.

However, protected areas (terrestrial and marine) in Libya are still vulnerable to many human activities that they aimed to prevent at the time of establishment. This paper discussed threats that act on PAs in Libya, although, they are numerous, the most important threats are expropriation of protected sites, absence of management, and lack of enforcement.

Some of threats can be reduced or eliminated and therefore countries need to invest increasingly in conservation solutions and methods that are available for effective monitoring, conserving and management of the current PAs.

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