

# Review of Protected Areas System in Pakistan: *Present Status and Problems Concerning Future Development*

## *Pakistan'daki Korunan Alanlar Sisteminin Değerlendirilmesi: Mevcut Durum ve Gelecekteki Gelişmelerle İlgili Problemler*

Mehmet SOMUNCU<sup>1</sup>, Ashfaq Ahmad KHAN<sup>2</sup>, Liaqat Ali WASEEM<sup>3</sup>

<sup>1</sup>Department of Geography, Ankara University, Sıhhiye, Ankara, Turkey

<sup>2</sup>Department of Geography, Ankara University, Sıhhiye, Ankara, Turkey

<sup>3</sup>Department of Geography, Geology and Mineralogy, University of Salzburg, Austria

**Abstract:** The concept of Protected Area has a long history and in recent years it has developed on large scale throughout the world. Pakistan has also given serious attention to conservation of biodiversity and cultural assets in sustainable manner. For this purpose, Pakistan has made stern efforts to establish legislation, policies and institutions for environmental protection. However, implementation of these legislations and policies as a whole is not achievable due a number of factors. The gaps and needs associated to conservation of Protected Areas in Pakistan can be dealt effectively through coordination of different segments of society for effectual management strategies. This paper has reviewed the establishment, current status and management of protected areas in Pakistan. The paper manages to describe the problems of these areas on one hand and try to suggest the solutions on the other hand.

**Key words:** Protected areas, Protected area management, Biodiversity, Pakistan

**Özet:** Korunan alan kavramı uzun bir tarihe sahiptir ve bu fikir son yıllarda büyük gelişmeler göstermektedir. Pakistan da biyolojik ve kültürel çeşitliliğin sürdürülebilir bir şekilde korunmasına önem vermektedir. Bu amaçla Pakistan bu konuda çevre ile ilgili mevzuat, politikaları ve kurumları kurmak için büyük çabalar sarf etmektedir. Ancak, birçok farklı nedenle bu mevzuat ve politikalar bir bütün olarak uygulanamamaktadır. Pakistan'da korunan alanların doğru yönetimi ve sürdürülebilirliği için etkili yönetim stratejileri ile toplumun farklı kesimlerinin bir koordinasyon içerisinde çalışması gerekmektedir. Bu makale Pakistan'daki korunan alanların kurulması, mevcut durum ve yönetimini gözden geçirmektedir. Ayrıca, makale bir yandan bu alanların problemlerinin tanımlaması ve diğer yandan çözüm önerdiklerini sunmaktadır.

**Anahtar kelimeler:** Korunan alanlar, Korunan alan yönetimi, Biyolojik çeşitlilik, Pakistan

### 1. Introduction

Protected areas are locations which receive protection because of their environmental, cultural or similar value. A large number of kinds of protected area exist which vary by level of protection and by the enabling laws of each country or rules of international organization. Examples include parks, reserves and wildlife sanctuaries. The concept of preserving certain places of natural and cultural importance for various purposes has a long history. For example, some historians claim that areas were specifically set aside in India for the protection of natural resources over two millennia ago (Holdgate, 1999). In Europe, tradition of preserving some areas as hunting grounds for dominant and influential persons of community starts nearly 1,000 years ago. In addition, the idea of protection of special places is universal in nature that happens at the same time in different cultures and societies of the world. For example it occurs among the traditions of communities in the Pacific ("tapu" areas) and parts of Africa (sacred groves). While many societies set aside special areas for cultural and resource uses, protected areas were first set aside by kings and other national rulers in Europe early in the Renaissance, typically as royal hunting reserves. Slowly these sites became open for public use, providing the basis for community involvement and tourism (Eagles, et al., 2002). With the passage of time, concept of protected areas spread through out world. At present many countries of world has established system of protected areas. Moreover, legislation, policies and management plans are also formulated for preserving biodiversity in these areas.

Pakistan is situated between the latitudes 23° and 36° north and between the longitudes of 61° and 75° east. India is on its eastern border, the People's Republic of China lies to the north east. Afghanistan is situated on its northwestern boundary line while Iran shares border with Pakistan in the

southwest. Pakistan covers a land area of 88.2 million hectares, almost all of which might be considered part of the watershed of the river Indus. From the coast and the mouth of the Indus near the tropic of Cancer, Pakistan extends some 1,700 kilometers north ward to the origins of the Indus among the mountains of the Himalayas, Hindu Kush and Karakorum. Many of their peaks exceed 8,000 m including K-2, at 8,611 meters, the second highest in the world. Pakistan has a coastline of about 1,046 Km with 22,820 Km<sup>2</sup> of territorial waters and an Exclusive Economic Zone of about 196,600 Km<sup>2</sup> in the Arabian Sea (Government of Pakistan et al., 2000).

With its dramatic geological history, broad latitudinal spread and immense altitudinal range, Pakistan spans a remarkable number of the world's ecological regions. According to various classification systems, Pakistan includes examples of two of the world's eight biogeographic realms: the Indo-Malayan and Palaeartic (Udvardy, 1975); four of the world's ten biomes: desert, temperate grassland, tropical seasonal forest and mountain (Cox and Moore, 1993). Biodiversity and natural capital encompass all of the country's wilderness areas and scenic landscapes, together with their associated fauna and flora. These in turn can be grouped into nine major ecological zones and 21 out of 22 of the recognized Asian wetland types (Roberts, 1991, as cited in Government of Pakistan et al., 2000).

The ecological trend of greatest concern in Pakistan today is the continuing loss, fragmentation and degradation of natural and modified habitats: the forest area, already greatly reduced and fragmented, is suffering further loss and degradation; most rangelands are suffering further degradation; and many freshwater and marine ecosystems have already been lost or are threatened with further destruction. Also of great concern in Pakistan today is the continuing decline in many native species of animals and plants; some species are already extinct, many are internationally threatened, and more still are of national concern. The degradation of agro-ecosystems and the accelerating loss of domesticated genetic diversity are also of grave concern in Pakistan (Government of Pakistan, et al., 2000).

Pakistan has inherited several laws for environmental protection from British period. Moreover new policies regarding this issue has also formulated since its independence. Environmental protection and ecology are included in the parallel legislative list of Pakistan's 1973 constitution. The Environment Protection Ordinance in 1983 is a benchmark in Pakistan's legislation and represents official recognition of a holistic approach to environmental issues (Mumtaz, 1989). It provides for the control of pollution and preservation of a comprehensive national environmental policy, and filling of detailed environmental impact statements by proponents of projects likely to adversely affect the environment. The implementation of existing laws is not according to international standards. There are many weaknesses and flaws regarding execution of concerned legislations (IUCN, 1990).

In this paper the authors has reviewed the development, management and concerning problems of Protected Area system in Pakistan. The main aim of the paper is to describe the current status and future momentum of development of these areas. Besides, associated problems have been highlighted in order to provide better understanding of the situation to improve the future strategy. Moreover, the paper also suggested some recommendations for the improvement of Protected Area system in Pakistan. Present paper facilitates to develop effective measures and actions for the growth of Protected Areas according to international standards.

## **2. The Concept of Protected Areas**

In recent years the concept of protected areas has developed on a large scale throughout the world. Moreover different ideas regarding definitions and types of protected areas have also emerged. However International Union for Conservation Nature (IUCN) has agreed upon a single definition of a protected area as follows:

“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).

Within this broad IUCN definition, protected areas are in fact managed for many different purposes. To help improve understanding and promote awareness of protected area purposes, IUCN has developed a six category system of protected areas identified by their primary management objective (IUCN, 1994).

Category I (a): Strict Nature Reserve

Protected area managed mainly for science which can be defined as an 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.

Category I (b): Wilderness Area

Protected area managed mainly for wilderness protection and defined as 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.

Category II: National Park

Protected area managed mainly for ecosystem protection and recreation which is defined as a 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.

Category III: Natural Monument

Protected area managed mainly for conservation of specific natural features which can be explained as an 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.

Category IV: Habitat/Species Management Area

Protected area managed mainly for conservation through management intervention and defined as an 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.

Category V: Protected Landscape/Seascape

Protected area managed mainly for landscape/seascape conservation and recreation and defined as an 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.

Category VI: Managed Resource Protected Area

Protected area managed mainly for the sustainable use of natural ecosystems and called as an 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.

According to the United Nation's List of protected areas, there exist 102,102 protected areas throughout the world that cover an area of more than 18.8 million km<sup>2</sup>, out of which 17.1 million km<sup>2</sup> (11.5% of the land surface) is of terrestrial type while remaining 1.7 million km<sup>2</sup> falls in the category of marine protected areas, as of year 2003. This figure is almost equivalent to 12.65% of the Earth's total land surface area, or an area greater than the combined land area of China, South Asia and Southeast Asia. IUCN Management Categories cover 68,066 protected areas within this total figure. Moreover, there are 4,633 internationally designated sites. 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) comprising almost 47% of all protected areas. While categories Ia, Ib, II, V and VI together only comprise 20% of the total

number of protected areas with Category II (National Park) comprising 3.8% and Category VI (Managed Resource Protected Area) 4% (Chape, et al., 2003).

### **3. Protected Area System in Pakistan**

#### **3.1 Overview**

History of preserving particular areas for specific purposes goes back to dawn of civilizations. Land areas set aside specifically for protecting wildlife is not a new concept in the area of present day Pakistan. The early rulers often declared certain areas as preserves especially for this purpose so they would have a sufficient supply of game animals for hunting.

Early Hindu and Muslim rulers at first formulated the rules and regulations to restrict hunting in several areas. The policies related to hunting were established by Mughals in late 16<sup>th</sup> century and further adopted by British administration. Among the first pieces of legislation that directly benefited wildlife were the rules and regulations formulated in Sindh under the Indian forest act 1887 and later incorporated in Bombay Forest Manual. Under this legislation, forests were protected from grazing by livestock but hunting was not legally controlled. Hunting and other forms of resource exploitation were subsequently controlled within areas declared as reserves or protected forests under the Indian Forest Act 1927, the title of which was changed to Pakistan Forest Act 1927, following the Pakistan's adoption of the act after partition in 1947 (Ferguson and Rao, as cited in IUCN, 1990).

Outside the Indus basin, wildlife has maintained itself due to the remoteness and inaccessibility of the terrain, especially in the northern mountainous, tribal areas of Pakistan. Local chieftains with a passion for hunting often recognized the value of putting certain areas off limits to hunting to allow animal populations to build up. Thus, coming into the present century there were a number of areas scattered around the country that served to protect wildlife. Except for the reserved or protected forests, few received more than a minimum amount of management and many were unknown (Khan, 1997).

At independence, Pakistan inherited a number of laws and regulations from the British period that were remained applicable after partition. The constitution of 1973 describes environmental objectives in the preface, but no specific law was formulated at that time. In 1983, the Pakistan Environmental Protection Ordinance (PEPO) was approved. This highlighted the need to have a framework of environmental laws in Pakistan to deal with emerging national issues related to environment. PEPO established the Pakistan Environmental Protection Council (PEPC) as well as introducing the idea of Environmental Impact Assessments. It is fateful that PEPO was not implemented accordingly. PEPC met in 1993 for the first time, after 9 years of its establishment, and approved National Environmental Quality Standards (NEQS) which later formulated the limits on major pollutants in municipal and industrial liquid effluents, industrial gaseous emissions, motor vehicle exhaust and noise. The Environmental Protection Act has been collectively passed by the National Assembly in 1997. Pakistan Environmental Protection Agency is responsible for implementation of Environmental Protection Act. A Biodiversity Directorate within Ministry of Environment, Pakistan has also been established since 2005 in order to improve environmental values in steady fashion.

#### **3.2. Policies and Institutional Framework for Protected Areas in Pakistan**

Wildlife conservation legislation inherited from British India was superseded by the now obsolete West Pakistan Wildlife Protection Ordinance, 1959 and the West Pakistan Wildlife Protection Rules, 1960 issued under that Ordinance. Apart from prohibiting the killing of certain species of fauna, this legislation made provision for the declaration of Game Sanctuaries, in which hunting was prohibited, and Game Reserves in which hunting was controlled under license, but did not protect the habitat against settlement, cultivation, grazing and other forms of exploitation. Furthermore both the West Pakistan Wildlife Protection Ordinance and the Pakistan Forest Act applied only to the settled

areas of Pakistan (i.e. the flood plains of Kabul and Indus rivers and all the land east of them); neither were applicable to the Special/ Tribal areas, which constituted most of the mountainous half of the country to the west of Indus and where much of Pakistan's remaining wildlife was to be found (Grimwood, 1969).

A Wildlife Enquiry Committee was set up in 1968 to review inter alia the existing conservation legislation based on recommendation by World Wildlife Fund. The legislation was drafted by this committee and with minor modifications was subsequently adopted at provincial level through the provisions of various acts and ordinances, namely Sindh Wildlife Protection Ordinance 1972, Punjab Wildlife Protection, Preservation, Conservation and Management Act 1974, Baluchistan Wildlife Protection Ordinance 1974, NWFP Wildlife Protection, Preservation, Conservation and Management Act 1975. Separated laws were passed for the then Northern Areas (Gilgit Baltistan), Azad Jammu and Kashmir and Federal Capital Territory of Islamabad. These were Northern areas Wildlife preservation Act 1975, Azad Jammu and Kashmir Wildlife Act 1975, and the Islamabad Wildlife Protection, Preservation, Conservation and Management Ordinance 1979 (Rao, 1984). This is the first time in the history of Pakistan's wildlife legislation that an attempt has been made to provide for the conservation of habitat, although limited to protected areas, and species other than game species (IUCN, 1990).

Following the recommendations of Wildlife Enquiry Committee, a National Council for Conservation of Wildlife (NCCW) was established on 7 July 1974 within Federal Ministry of Food and Agriculture (IUCN, 1990). NCCW has played an important role in encouraging the provincial wildlife departments for better management of protected areas particularly national parks. Provincial Wild Life Departments are also being encouraged to bring more areas under the protected network. NCCW in collaboration with provincial Governments got control of bear baiting practices, which was causing a bad name for country. The effective advocacy and control measures have reduced the bear baiting events in country, which has been acknowledged by World Society for Protection of Animals (WSPA) (Government of Pakistan, et al., 2000).

In 1997, the 1983 Ordinance has been replaced by the Pakistan Environmental Protection Act. The relevance of this Act to biodiversity conservation is primarily through the necessary screening process for proposed projects. It is important to ensure that the Initial Environmental Examinations and the Environmental Impact Assessments adequately address the relevant issues and that the federal and provincial environmental protection agencies have the skills to evaluate these reports in relation to the conservation of biodiversity in the country. Since then many institutional, policy and regulatory developments have taken place at the Federal and Provincial levels. These, inter alia, include creation of the Ministry of Environment, promulgation of Pakistan Environmental Protection Ordinance-1983, development of the National Conservation Strategy (NCS)-1992, enactment of Pakistan Environmental Protection Act-1997 and preparation of the Forestry Sector Master Plan and Biodiversity Action Plan. Various projects and programs have also been launched to reverse the accelerating trend of environmental degradation in the country (Government of Pakistan, 2005 and Government of Pakistan, et al., 2000).

The NCS, which has served as the de facto environmental policy of Pakistan, describes the environmental situation existing in Pakistan and recommends actions to be taken in 14 core areas, in order to redress the aggravating environmental degradation and to facilitate sustainable utilization of natural resources. The strategy was followed by the National Environmental Action Plan (NEAP), approved in February 2001, which narrows the Government's policy focus on the environment to four core programs: clean air, clean water, waste management and ecosystem management. A comprehensive program has been launched to support implementation of NEAP (Government of Pakistan, 2005). The policies, legislations and institutions for environment protection and protected area management in Pakistan are being developed with the passage of time as shown in Table 1.

Table 1. Policies and Institutions for Environment Protection and Protected Area Development

Year	Legislation / Objective	Concerned Institution
1959	Pakistan Wildlife Protection Ordinance	Game Department
1968	To review existing conservation legislation	Wildlife Enquiry Committee
1974	To manage protected areas and biodiversity particularly National Parks	National council for Conservation of Wildlife
1975	To address environmental concerns after the United Nations Conference on Environment and Development held in Stockholm	Environment and Urban Division, Ministry of Urban Affairs
1983	Environmental Protection Ordinance	Pakistan environmental Protection Council
1992	National Conservation Strategy	Ministry of Environment
1997	Pakistan Environmental Protection Act	Pakistan Environmental Protection Agency
2000	Pakistan Biodiversity Action Plan	Government of Pakistan, IUCN
2001	National Environmental Action Plan	Ministry of Environment
2005	Implementation of Biodiversity Action Plan	Directorate of Biodiversity

### 3.3. Current Status of Protected Areas in Pakistan

Prior to 1966 Pakistan had taken no significant steps towards establishing a protected areas network. That year at the invitation of Government of Pakistan the World Wildlife Fund carried out a survey of country's wildlife resources and recommended measures to arrest their deterioration. These included the establishment of two large National Parks and eight Wildlife Sanctuaries. This initiative was followed by constitution of Wildlife Enquiry Committee in 1968, which made further recommendations for the establishment of four National Parks, 18 Wildlife Sanctuaries and 52 Game reserves (Government of Pakistan, 1971). These recommendations have been substantially exceeded 4 National Parks, 44 Wildlife Sanctuaries and 65 Game reserves by the year 1978 (ALIC, 1981, as cited in IUCN, 1990).

Though 1983 Environment Protection Ordinance was an important step towards dealing environment problems more precisely but it was not implemented even after the establishment of Pakistan Environment Protection Council. In 1992, heads of many countries signed Agenda 21 on the eve of Earth Summit on global commitment to protect environment and promote sustainable development in Rio de Janeiro. That was the time when Pakistan prepared its National Conservation Strategy for sustainable development and environmental improvement. After Mid-Term review of NCS, Ministry of Environment developed a National Environment Action Plan which has started working in 2001. Pakistan is also a party to Convention of Biological Diversity since 1994. Being a party to CBD, Government of Pakistan has prepared Biodiversity Action Plan in 2000 with the help of IUCN and WWF for sustainable use of biological resources and maintenance of biological diversity.

According to Third National Report on Implementation of Biodiversity Action Plan, the target of enhancing the percentage of protected areas of the country to 12% has been achieved. Time framework, targets and indicators are to be developed under the Protected Areas Management Project (PAMP) for three national parks i.e. Hingol, Chitral Gol and Machiara national parks. The model shall be followed for other Protected Areas. New protected areas are being established in un-fragmented natural areas and areas under high threat. In the recent past, four new National Parks have been notified in regions of NWFP and AJK. Initial consultative process for declaration of Marine protected Areas has been initiated by IUCN Karachi, Pakistan. Protected Area System Workshop organized by the Ministry of Environment under the Protected Areas Management Project (PAMP) held during May, 2006 in order to identify the gaps and barriers for the establishment and management of new Protected Areas.

According to Biodiversity Action Plan for Pakistan, 2000, there is a network of 225 Protected Areas comprising 14 National Parks, 99 Wildlife Sanctuaries, 96 Game Reserves, and 16 unclassified (private, proposed or recommended) in Pakistan. The total area covered by these categories is 9,170,121 ha which makes 10.4% of the total land area. The detail of protected areas system in Pakistan is described in Table 2.

The network of Protected Areas in Pakistan comprises of following categories. National Parks; Wildlife Sanctuaries; Game Reserves; Unclassified (private, proposed or recommended)

Table 2. Summary of Protected Areas in Pakistan, (Government of Pakistan et al., 2000).

Region/ Province	National Parks	Wildlife Sanctuaries	Game Reserves	Un Classified	Total Protected Areas	Total Area Conserved (ha)	Percentage of Total Land Area Protected
Azad Jammu Kashmir	1	0	8	0	9	51,998	3.91
Balochistan	2	15	7	7	31	1,837,704	5.29
Punjab	2	37	19	0	58	3,315,803	16.14
NWFP	3	6	38	5	52	470,675	6.30
Sindh	1	35	14	4	54	1,307,575	9.27
Federal Territory	1	1	1	0	3	94,186	100
Northern Areas	4	5	9	0	18	2,092,180	2.97
Total	14	99	96	16	225	9,170,121	10.40

### 3.3.1. National Parks

The main objective of establishment of a National Park is to protect and conserve areas of exceptional geographical, biological and cultural importance for educational, recreational and scientific uses. A national park is comparatively large area of outstanding scenic merit and natural interest, wherein the primary objective is to protect the landscape, flora and fauna in its natural state and to which the public are allowed access for purposes of recreation, education and research. No hunting or trapping of birds or animal is permitted. Harvesting of forest produce on sustained basis is allowed provided national park values are not jeopardized. Construction of Access roads, accommodation facilities and public amenities should be carefully planned so as not to impair the primary objective of a park's establishment (IUCN, 1990).

National parks in Pakistan have apparently been established primarily for wildlife and not necessarily for their historic or scenic features. Their administration is handled by the provincial wildlife departments. After the implementation of biodiversity action plan, the target to establish new national parks has been achieved. Five new national parks in North West Frontier Province (NWFP) and Azad Jammu Kashmir (AJK) have been established in years 2004-05. At present there are 19 National Parks in Pakistan as shown in Fig 1. The characteristics of National Parks in Pakistan have been described in Table 3.

Majority of national parks in Pakistan lack any management plans. Due to this, conservation activities do not meet the international standards. Moreover the wildlife in national parks is also prone to depletion due to lack of implementation of laws and policies. In recent years, efforts have been made to overcome these weaknesses. Through a consultative process several national parks of country have short listed for their management at global standards including Lal Sahunra National Park(Punjab), Kirthar National Park (Sindh), Khujrab National Park ( NWFP), Chiltan Hazar Ganji National Park(Balochistan), Margalla Hills National Park (Islamabad and Chitral Gol National Park( NWFP) (Government of Pakistan, 2005).



Figure1. National Parks in Pakistan



Table 3. National Parks of Pakistan (Government of Pakistan, 2009)

No.	Name of National Park	Province/ Territory	IUCN Category	Area (ha)	Year of Declaration	Characteristics
1	Ayubia	NWFP*	V	1,684	1984	It is important for wildlife conservation.
2	Central Karakorum	G B**	?	13,90,100	1995	It comprises the Baltoro, Panmah, Biafo and Hispar glaciers and their tributary glaciers
3	Chinji	Punjab	II	6,095	1987	It is important place for wildlife conservation.
4	Chitral Gol	NWFP	II	7,750	1974	Markhor goats and snow leopards are important animals found in this park.
5	Deosai Plains	G B	?	3,58,400	1993	It provides natural habitat for the Himalayan brown bear.
6	Ghamot	AJK***	?	27394	2004	It provides natural habitat for wildlife.
7	Hazarganji-Chiltan	Balochistan	V	15,555	1980	It is important habitat for wildlife.
8	Hingol	Balochistan	II	165,004	1997	A number of animals and birds species are protected in this park.
9	Khunjerab	G B	II	226,913	1975	It provides protection for wildlife.
10	Kirthar	Sindh	II	308,733	1974	Kirthar provides important habitat for wildlife.
11	Lal Sohanra	Punjab	V	87,426	1972	It provides natural habitat for wildlife.
12	Lake Lulu Sar	NWFP	?	30375	2003	It provides protection to wildlife.
13	Lake Saiful Muluk	NWFP	?	4867	2003	It is important for natural and cultural biodiversity.
14	Margalla Hills	Islamabad	V	17,386	1980	It is important for wildlife habitat.
15	Machiara	AJK	?	13,593	1996	It is important for wildlife conservation.
16	Pir Lasora	AJK	?	5625	2005	It provides natural habitat for biodiversity.
17	Shandur Hundrup	G B	?	1,64,000	1993	It is important for biodiversity conservation activities.
18	Sheikh Buddin	NWFP	?	15540	1993	It provides natural habitat for Markhor.
19	Toli Pir	AJK	?	5045	2005	It is important for wildlife conservation.

\*North Western Frontier Province

\*\*Gilgit Baltistan

\*\*\* Azad Jammu Kashmir

### 3.3.2. Wildlife Sanctuaries

A wildlife Sanctuary is an area set aside as an undisturbed breeding ground, primarily for protection of all natural resources to which public access is restricted or regulated. Whereas settlement and grazing by domestic livestock is allowed in National Park, such activities are prohibited in Wildlife Sanctuaries (IUCN, 1990). The main objectives of the establishment of a Wildlife Sanctuary are to protect particular species or groups of species of flora and fauna for reproduction and to protect them from extinction. Hunting is strictly prohibited in these areas. At present there are 99 Wildlife Sanctuaries in Pakistan. In Pakistan, Wildlife sanctuaries enjoy better protection, but in practice, legal restrictions are seldom enforced other than to prevent hunting. Most sanctuaries have been designated in reserve forests of commercial value where timber and minor forest products are harvested. Enforcement is better in the national parks than Wildlife Sanctuaries.

### 3.3.3. Game Reserves

A game reserve is an area wherein controlled hunting and shooting is permitted on permit basis. A private game reserve is an area of private land set aside by its owner for the same purpose as a game reserve. Parts of areas protected under some statutes may be exempted under pressure for agricultural extension or land development. Most of the areas have created to provide habitat protection for animal species commonly referred to as game (hunnable species for sport or meat). Providing protection for these species also offers a measure of security for many lesser known plant species and smaller animal species (IUCN, 1990). Pakistan has declared 96 Game Reserves to be included in protected areas. But the conservation activities are not implemented properly. Game reserves, in particular in private land, receive minimal protection due to the lack of legal provisions to control land use.

### 3.4. International Activities

Pakistan is a Party to two international conventions dealing with species: the Convention on the Conservation of Migratory Species of Wild Animals (adopted in Bonn, Germany in 1979 and to which Pakistan has been a Party since 1987); and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (signed in Washington in 1973, to which Pakistan has been a Party since 1976). Pakistan is also a party to two area-based treaties: the Convention on Wetlands of International importance especially as Waterfowl Habitat (signed in Ramsar, Iran in 1971, and to which Pakistan has been a Party since 1978); the Convention concerning the Protection of the World Cultural and Natural Heritage (signed at UNESCO, Paris in 1972). In addition to these treaties, Pakistan is a Party to the United Nations Convention on the Law of the Sea (signed at Montego Bay in 1982), supports the UNESCO Man and Biosphere (MAB) programme (initiated in Paris in 1968) and has signed (but not yet ratified) the Convention for Combatting Desertification.

Based on their global significance, 19 wetlands have been designated as Ramsar sites and one area is recognized as UNESCO-MAB Biosphere Reserve. Six sites with unique cultural and historical properties have been prescribed on UNESCO World Heritage List (Table 4). Most of major habitats of the world are represented within Pakistan's Protected Area system. However the size, distribution and management of these areas do not meet the needs of the ecosystems they are meant to safeguard (Government of Pakistan et al., 2000).

Table 4. Internationally Recognized Areas in Pakistan, World Resource Institute, 2003

Site	Number	Area(ha)
Wetlands Ramsar Sites	19	284000
Biosphere Reserve	01	66000
World Heritage Sites	06	?

#### 4. Issues Related to Management of Protected Areas

Government of Pakistan is continuously trying to improve the overall status of environment in the country. In particular, the conservation activities concerning biodiversity have gained thrust in recent years after the involvement of international organizations. For this purpose, various projects, associated to management and development of Protected Areas, have been launched throughout Pakistan. However, due to a number of internal issues that provide barrier for desired results, these projects are not much successful. There is lack of sufficient data in many respects. Information about the biodiversity of Pakistan is presently scattered among a wide range of institutions, and current capacity to collect, store, analyse, and disseminate information is limited. Moreover, information about the component of biodiversity is very incomplete. There is no biodiversity information and monitoring centre to maintain, store, and organize data or to analyze, evaluate and disseminate data in a usable form. Besides, there are many loop holes regarding management plans and policy formation for these areas. Some management related issues and suggestions are discussed here in order to understand the situation more systematically.

##### 4.1. Weakness in Law Enforcement

Existing wildlife laws do not provide an adequate framework for management. The laws give authority for protected area management to the provincial wildlife departments, but give no authority to these departments over the management of adjacent areas. Consequently, development activities in areas adjacent to protected areas often conflict with biodiversity conservation. There are a number of weaknesses related to enforcement of laws regarding conservation of biodiversity. With regard to the conservation of species, a serious weakness in the law is that it deals excessively with animal species with no provisions for the protection of threatened and endangered plant species. Attempts have been made to control the hunting of designated game animals, but most of these regulatory measures have proved difficult to enforce. (Grimwood, 1969 and Government of Pakistan, et al., 2000).

##### 4.2. Lack of Local Community's Involvement

Current thinking on protected area management is that, to be effective, the communities living alongside the area should have a hand in management and should derive some benefits from the area. None of the existing categories of protected areas in Pakistan make allowance for participatory management by communities. In order to overcome these deficiencies a draft wildlife law empowering local communities to participate in joint wildlife management with governments has been prepared and is currently under review by the provinces.

Local communities rarely have any role in the management of protected areas. Little progress has been made on instituting collaborative management regimes for protected areas. Few efforts have been directed at raising public education and awareness in areas adjacent to protected areas, providing environmentally sound and sustainable development assistance to local communities, or formulating appropriate packages of incentives and disincentives. Consequently, local communities either continue to disregard protected area provisions leading to degradation of the protected area or, where those provisions are enforced against local communities' interests, conflicts have arisen. The conflict between local communities and park authorities in the Khunjerab National Park, arising from the loss

of grazing rights, is well known. An attempt has been made to resolve and manage the conflict in Khunjerab, but deep-rooted problems remain (Government of Pakistan, et al., 2000 and Khan, 2003).

#### 4.3. Deficiencies in Selection Criteria

The majority of Pakistan's protected areas were created in the 1970s, and paid insufficient attention to ecological criteria and the requirements of communities. Protected areas have been created haphazardly, often in the absence of any criteria for their selection, and boundaries drawn with little or no ecological basis. Besides, selection criteria for protected areas have also other serious shortcomings. No attention was being made for regional distribution of areas. Therefore considerable regional inequality in the distribution of Protected Areas across Pakistan can be observed. For example, whilst over 16% of Punjab is protected as one of three Protected Area categories (national park, wildlife sanctuary or game reserve); about 6% of the NWFP and less than 6% of Balochistan is formally protected (Table 2). This is unfortunate; since these are the regions where most of Pakistan's remaining biodiversity is concentrated (Mumtaz, 1989; IUCN, 1990 and Government of Pakistan, et al., 2000).

#### 4.4. Limited Protected Area Categories

The three categories of Protected Areas used in Pakistan are too limited for contemporary needs. Most of the remaining unprotected areas of biodiversity significance are currently used and managed by local communities in one way or another. The best way to protect these areas will be through the establishment of collaborative management regimes. However, existing wildlife legislation in Pakistan does not provide for a protected area category in which sustainable use of resources and community involvement can take place (along the lines of IUCN Category VI: Managed Resource Protected Area). Moreover, many of the Protected Areas are too small and isolated to be effective. Most ecological zones are not adequately represented within the protected area system, including a majority of the critically threatened ecosystems. For example, there are no marine Protected Areas, very few coastal Protected Areas and no formal designation to protect the remaining juniper forests in Balochistan (Government of Pakistan, et al., 2000 and Khan, 2003).

#### 4.5. Shortage of Professionals

There is lack of sufficient professionals in order to formulate and implement the policies regarding development and conservation of biodiversity. Untrained persons can not successfully manage the related problem and issues. Provincial wildlife departments lack the capacity to carry out their functions effectively, and in particular, suffer from a shortage of suitably trained personnel. Therefore management activities in remote areas of the country can not be conducted in appropriate way. Moreover, current opportunities for training professionals in the area of conservation biology are very limited. There are institutions offering strong programmes in forestry and agriculture, but there are no degree programmes in wildlife management, bio-systematic, biodiversity conservation or community-based conservation of natural resources.

A shortage of funding and lack of trained staff have also limited the amount of research on the identification, conservation, and sustainable use of biological diversity in Pakistan. There is little integration of research among institutions and disciplines, and very limited use of traditional knowledge in defining management programs (Government of Pakistan, et al., 2000).

#### 4.6. Lack of management Plans:

Most protected areas in Pakistan lack comprehensive management plans, and where plans do exist, they are not fully implemented. There is also a tendency to regard management plans as blueprints rather than adaptive strategies requiring constant updating. In recent years, some efforts have been made to redress this situation, and plans have been developed for the Margalla Hills National Park (Federal Territory) and Khunjerab National Park (Northern Areas). WWF Pakistan is also working on plans for the Kirthar National Park in Sindh and the Hazarganji Chiltan National Park

in Balochistan. But there are still many National Parks without an adequate management plan. There is strong requirement to formulate management plans for these areas as soon as possible (Grimwood, 1969; Mumtaz, 1989 and Government of Pakistan, et al., 2000).

#### 4.7. Lack of funds

There is lack of adequate funding in order to conduct management activities fruitfully. Although a reasonable amount is allocated by Government for these activities but it does not meet the needs required. The federal and provincial governments are the most important stakeholders with overall responsibility for providing an adequate policy and legal framework, enforcing regulations, building capacity and providing incentives and funds for the conservation of biodiversity. The policies and programmes of key federal ministries i.e Environment, Local Government and Rural Development; Food and Agriculture; Finance; and Science and Technology and provincial departments of agriculture, livestock, forestry, wildlife and fisheries regarding funding are crucial to the conservation and sustainable use of biodiversity (Government of Pakistan, et al., 2000 and Khan, 2003).

### 5. Conclusion and Recommendations

Conservation of biodiversity in a sustainable way is vital for future of any country. Pakistan has taken practical steps towards protection of environment in steady manner. Many efforts have been made for protection and improvement of environmental biodiversity to reach the international standards. But there are still too many gaps and differences due to lack of proper management activities. It is necessary to take serious actions for effective management of protected areas in Pakistan. After comprehensive analysis of present situation of protected areas of Pakistan, following suggestions are recommended;

- Most important issue regarding development of protected areas according to international standards is enforcement of existing laws in more effective mode. Although laws related to environmental protection have formulated since the independence of Pakistan but their implementation is very rare or partial. Law enforcing agencies should provide accomplishment of rules and regulation in affirm way without any exception. The goal of conservation is only achieved wholly through execution of policies regarding restriction on resource use, hunting, land use or any other activity in protected areas. Therefore enforcement of laws by severe punishment for illegal consumption of natural resources is strongly recommended.
- Without provision of proper management plan and monitoring the conservation of environmental biodiversity in protected areas can not be attained. Effective management plan for any protected area is compulsory for successful implementation of concerning rules and regulation. In Pakistan many of protected areas lack appropriate management plan, and if any exist is not practiced productively. So it is suggested that management plans for good administration of protected areas must be formulated and executed as soon as possible. In this way, areas with unique characteristics of biodiversity can be safeguarded more efficiently.
- Community involvement during establishment of protected areas is another important factor concerning this issue. Needs of local population of the area are not considered properly before establishment of protected areas in Pakistan. Residents of periphery of protected areas play important role in effective conservation strategies. The alternative income sources must be provided to local people if they are dependent upon natural resources for their livelihood. For this purpose local community must be benefited from development activities related to areas. Moreover local community's participation in management activities can also enhance the viability of protected area. Therefore, more positive results can be achieved through effective policies related to community involvement.

- It is strongly recommended to employ more experts and skilled persons for achievement of conservation target successfully. Moreover there is an urgent need for trainings at higher education level in nature conservation.
- Promotion of education and awareness regarding conservation of biodiversity is also an important tool for dynamics of protected areas management. People's awareness and consciousness about importance of protected areas, environmental conservation, biodiversity and endangered ecosystems can be improved through press and other information media. For this purpose, related articles and brochures in national and local languages must be published. Availability of information centers for communication of conservation related issues is mandatory for effective management of protective areas. People residing adjacent to protected areas must be informed about the importance of protected status of the area. It is strongly recommended to provide visitors to protected areas with necessary information for preservation of area effectively.
- Protected areas in Pakistan are of three categories, which are very limited as compare to present day needs. It is strongly recommended to establish new categories of protected areas according to IUCN selection criteria. There is a lack of Marine protected areas system in Pakistan which should be considered on priority basis. Efforts for establishment of new National Parks, Game Reserves and Wildlife is compulsory for areas where natural resources and biodiversity are being depleted due to absence of proper management and administration.
- Funding is an important issue concerning the management of protected areas. Without adequate funding the management activities, laws and policies can not be implemented. So it is suggested to provide reasonable funding for welfare of these areas. Federal and provincial governments along with non governmental organizations can play important role to deal the issue of funding.

#### References

- ALIC.1981. Draft environmental Profile the Islamic republic of Pakistan US Agency for International Development/ US National Park Service/ Man and Biosphere Secretariat, Arid Land Information Center, Office of arid Land Studies, University of Arizona, Tucson, USA.
- Chape, S., Blyth, S., Fish, L., Fox P., and M. Spalding (compilers). 2003. United Nations List of Protected Areas, IUCN, Gland, Switzerland and Cambridge, UK and UNEP-WCMC, Cambridge, UK.
- Cox, C.B. and Moore, P.D. 1993. Biogeography: An Evolutionary Approach. London: Blackwell Scientific.
- Eagles, Paul F.J., McCool, Stephen F. and Haynes, C.D.A. 2002. Sustainable Tourism in Protected Areas: Guidelines for Planning and Management, IUCN Gland, Switzerland and Cambridge, UK.
- Ferguson, D.A. 1978. Protection, Conservation and Management of threatened and endangered species in Pakistan, US Fish and Wildlife Service, Washington D.C, Unpublished Report.
- Grimwood, I.R. 1969. Wildlife Conservation in Pakistan, Pakistan National Forestry Research and Training Project Report No. 17, UNDP/FAO, Rome.
- Grimwood, I.R. 1971. Wildlife Conservation and Management, Report No. TA 3077, FAO, Rome.
- Government of Pakistan. 1971. Summary of wildlife Enquiry Committee Report, Printing Corporation of Pakistan Press, Islamabad.
- Government of Pakistan and IUCN. 1987. Towards a national Conservation Strategy for Pakistan, Proceedings of the Pakistan Workshop 1986, Asian Art Press, Lahore.
- Government of Pakistan and IUCN. 1992. The Pakistan National Conservation Strategy. Pakistan: Government of Pakistan, Urban Affairs Division and IUCN Pakistan.
- Government of Pakistan. 1992. Forestry Sector Master Plan, Ministry of Environment, Environment Division, Government of Pakistan.
- Government of Pakistan. 1996. Economic Survey 1995-96 and Statistical Supplement. Islamabad: Government of Pakistan, Finance Division, Economic Adviser's Wing.

- Government of NWFP and IUCN. 1996. Sarhad Provincial Conservation Strategy, Peshawar.
- Government of Pakistan, WWF and IUCN. 2000. Biodiversity Action Plan for Pakistan: A Framework for conserving our Natural wealth Imprint (Pvt) Ltd., Rawalpindi Cantt., Pakistan.
- Government of Pakistan. 2005. National Environment Policy of Pakistan, Ministry of Environment, Islamabad.
- Government of Pakistan. 2009. National Parks of Pakistan, Ministry of Tourism, Islamabad. <http://www.tourism.gov.pk/> Date cited: 10-09-2009.
- IUCN. 1990. IUCN Directory of South Asian Protected Areas, Cambridge, UK: World Conservation Monitoring Centre.
- IUCN. 1994. Guidelines for Protected Area Management Categories. Gland, Switzerland and Cambridge, UK: IUCN, CNPPA with the assistance of WCMC.
- JRC.(not dated). Towards Sustainable Development: The Pakistan National Conservation Strategy, Journalists' Resource Center, IUCN Pakistan, Karachi.
- Khan, Mirza Hakim. 1997. Conservation of Biodiversity and Endangered Ecosystem In Pakistan, XI world forestry congress Antalya, Turkey, 13 to 22 October 1997, volume 2, topic 7.
- Khan, Zafar Iqbal. 2003. Protected Areas in Pakistan: Management and Issues, J.Natn. Science Foundation Sri Lanka, 31(1&2) 239-248
- Mackinnon, J. and MacKinnon, K. 1986. Review of protected areas System in Indo Malayan realm, IUCN, Gland, Switzerland and Cambridge, U.K.
- Mumtaz, K. 1989. Pakistan's Environment: A Historical Perspective in Shirkat Gah Women's Resource center, Pakistan's environment: a historical perspective and selected bibliography with annotations Journalists' Resource Center, IUCN Pakistan, Karachi.
- National Council for Conservation of Wildlife. 1978. Wildlife Conservation Strategy: Pakistan. Report, National Council for Conservation of Wildlife, Islamabad.
- Rao, A.L. 1984. A review of Wildlife Legislation in Pakistan, M.Sc. Thesis, University of Edinburgh, Edinburgh, U.K.
- Roberts, T.J. (1991/1992) The Birds of Pakistan, Oxford University Press, Karachi.
- Thomas, Lee and Middleton, Julie. 2003. Guidelines for Management Planning of Protected Areas. IUCN Gland, Switzerland and Cambridge, UK.
- Udvardy, M. D. V. 1975. A classification of the biogeographical provinces of the world, IUCN Occasional Paper 18. Morges.
- World Resource Institute, Earth Trends Country Profile, [www.earthtrends.wri.org](http://www.earthtrends.wri.org), Date Cited: 30-09-2009.
- WWF Pakistan. 1993. Ecological and Resource Survey for Forest Conservation in Pakistan, Lahore: WWF Pakistan.

