

The Development of National Parks and Protected Areas around the World

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The Development of National Parks and Protected Areas around the World

Masaaki Yui

● Introduction

Today, in an era of exacerbating global challenges for the natural environment, such as global warming, forest degradation, air pollution and desertification, protected areas, which have been established or designated by countries worldwide, play an important role in maintaining the Earth's natural environment as they contain vast areas of forest. Not only forests, but the status of natural habitats function as environmental indices that represent environmental richness and inform us that protecting the habitats of wild animals is closely linked with resolving global environmental issues.

While individual countries are focused on protecting domestically remarkable natural areas and those of high scientific value as protected areas, natural protected areas are widely distributed worldwide and collectively cover a large area. This wide coverage contributes significantly to conserving the global natural environment.

From a global perspective, this paper will discuss the development and some of the features of natural protected areas, which have contributed to the maintenance of the Earth's natural environment.

● The world's first natural protected area

The world's first natural protected area established by a national government is the Yellowstone National Park, established by the United States of America (U.S.) in 1872.

The following paragraphs will first review the developments which led to the establishment of the world's first protected area.

The Yellowstone National Park is located in the northern part of the American Rocky Mountains, spreading across the three states of Wyoming, Idaho and Montana. The park covers an area of 898,400ha, which is almost equivalent to the total area of Puerto Rico Island.

The mid-1800s was an era of Westward Expansion for the U.S. In 1870, Montana Territory sent the Washburn Party led by Henry Washburn to explore the Yellowstone region, where they discovered remarkable nature, including vast forest areas, geysers, lakes and ponds of many sizes, large canyons, and rich wild flora and fauna. Insisting that the remarkable natural land in the Yellowstone region should not be allocated to individuals for exploitation, the party proposed a new land management method to permanently protect the area as government-owned land and utilize it for the welfare of the people, such as for outdoor recreation.

However, with the center of the U.S. being on the east coast, few people could understand the

importance of the discovery of the remarkable nature in the Yellowstone region, and thus in 1871, the federal government sent an expedition led by Ferdinand Hayden, head of the U.S. Geological Survey for the Territories under the Department of the Interior to conduct scientific surveys. This expedition was joined by photographer, William H. Jackson, and painter, Thomas Moran. Jackson's photographs, which were taken with state-of-the-art technology, and Moran's colored paintings convinced Congress members of the remarkableness of the nature of the Yellowstone region and contributed to the enactment of the Act to Set Apart a Certain Tract of Land Lying Near the Headwaters of the Yellowstone River as a Public Park (Yellowstone Act; 1872). Hence, a vast area of remarkable nature covering approximately 900,000ha was made the world's first national park (natural protected area) which would enable its permanent protection and recreational use by the public.

While the Yellowstone National Park was the first protected area established by the U.S. government, two other areas had been established as protected areas at an earlier time. These areas are the Yosemite Valley and the Mariposa Grove of Giant Sequoias, both located within what is currently the Yosemite National Park. In 1864, approximately 150 km² of land was ceded from the federal government to the State of California for the purpose of protecting the giant sequoia grove from degradation, and was thus established a state park. With the state government's appointment of a park manager at Yosemite State Park, the park became the world's first natural park, but not its first national park.

When the Yosemite National Park was established in 1890, it did not include the state park area. Later in 1905, the Yosemite Valley and Mariposa Grove were returned from the State of California to the federal government to be incorporated into the Yosemite National Park.

During the 142 years since the establishment of the Yellowstone National Park in 1872 to present, national parks have been established in 142 countries around the world. Countries have also established protected areas for various purposes, in addition to national parks, which aim to protect and use natural scenic areas.

● **The introduction and development of national parks in other countries**

The year that the first national park was established in each country is provided in Table 1, based on the List of National Parks and Equivalent Reserves compiled by the United Nations Economic and Social Council in 1961, the 1993 United Nations List of National Parks and Protected Areas published in 1994 by the International Union for Conservation of Nature and Natural Resources (IUCN) and my survey of countries that established their first national park after the 1993 list was compiled. Table 1 categorizes the world's countries into seven regions, namely, North America, Oceania, Africa, Europe, South America, Asia and the CIS countries (members of the Commonwealth of Independent States signed in 1991 by the 12 countries of the former Union of

Soviet Socialist Republic (USSR), excluding the three Baltic States).

The new concept of land management introduced by Yellowstone National Park, the world's first national park, spread to Australia, Canada, New Zealand and other countries with vast unexplored land, where people had crossed the ocean from Europe to build a country.

Australia established the Royal National Park near Sydney in 1879, Canada established the Banff National Park in the Canadian Rockies in 1885, and New Zealand established the Tongariro National Park covering the volcanic landscape in the central part of North Island in 1894. Hence, four countries established national parks in the nineteenth century.

Table 1 reveals how national park systems spread to each country and region.

Regional characteristics can be observed in the period that national parks were first established. National parks were introduced to North America and Oceania in the 1800s, to Africa and Europe in the early 1900s, to South America in the 1910s and to Asia and CIS countries after the 1930s.

Namibia's Etosha National Park, Africa's first national park, was established in 1907 by Germany, the colonial power that then ruled Namibia. Sweden established Europe's first national park, the Abisko National Park in 1909. In South America, Uruguay established the Franklin Delano Roosevelt National Park in 1915. Asia's first national park is the Philippines' Mount Arayat National Park, established under the influence of the U.S. in 1933. However, after the Philippines became an independent state in 1946, after World War II, it newly established natural parks. Japan's first national parks were the Setonaikai National Park, the Unzen National Park and the Kirishima National Park, simultaneously designated in 1934; 62 years after the U.S. established Yellowstone National Park. In the CIS countries, the Belovezhskaya Pushcha National Park was first established in what is currently Belarus in 1939, during the Soviet era.

Ninety-nine countries established their first national park after the end of World War II (1945), and thus national park systems rapidly spread to and developed in many countries worldwide.

Some national parks in Africa and Asia were established by European countries under whose colonial rule countries had been placed and have been sustained to this day after their independence.

Considering the period during which countries established national parks, it can be concluded that national parks entered a period of early development prior to 1900, then a period of popularization from the beginning of 1900 to the end of World War II in 1945 during which they spread to developed countries, followed by a period of expansion after World War II when they rapidly developed worldwide, including in countries which became independent states.

Table 1 Establishment year of the first national park by country

Region	North America	Oceania	Africa	Europe	South America	Asia	CIS countries
Number of countries	15	4	44	32	11	27	9
1800s	U.S. 1872 Canada 1885	Australia 1879 New Zealand 1894					
1900-1909			Namibia 1907	Sweden 1909			
1910-1919			South Africa 1916	Switzerland 1914 Spain 1918	Uruguay 1915		
1920-1929			DR Congo 1925 Zimbabwe 1925 Rwanda 1925	Italy 1922 Iceland 1928	Chile 1926 Guyana 1929		
1930-1939	Cuba 1930 Mexico 1935		Burundi 1932 Central African R. 1933 Sudan 1935 Djibouti 1939	Netherlands 1930 Ireland 1932 Poland 1932 Bulgaria 1934 Romania 1935 Finland 1938 Greece 1938	Argentina 1934 Brazil 1937 Venezuela 1937 Bolivia 1939	Philippines 1933 Japan 1934 Indonesia 1935 India 1936 Sri Lanka 1938 Malaysia 1939	Belarus 1939
1940-1949			Congo 1940 Morocco 1942 Kenya 1946 Senegal 1949	Macedonia 1948 Slovakia 1948 Croatia 1949	Colombia 1948		
1950-1959	Costa Rica 1955 Dominican R. 1956 Guatemala 1956 Bahamas 1958		Togo 1950 Tanzania 1951 Zambia 1951 Uganda 1952 Cote d'Ivoire 1953 Benin 1954 Burkina Faso 1954 Mali 1954 Niger 1954 Angola 1957 Madagascar 1958	U.K. 1951 Yugoslavia 1952	Ecuador 1959	Israel 1955~ Iran 1957 Turkey 1958 D.P.R. Korea 1959	
1960-1969	Haiti 1968		Botswana 1963 Chad 1963 Malawi 1964 Ethiopia 1966 Cameroon 1968	Norway 1962 Czech R. 1963 France 1963 Bosnia and Herzegovina 1965 Albania 1966	Peru 1961 Paraguay 1966	Thailand 1962 Viet Nam 1962 Jordan 1963 R.Koria 1967	
1970-1979	Nicaragua 1971 Antigua and Barbuda 1973 Dominica 1975 Panama 1976	Papua New Guinea 1970 Samoa 1978	Lesotho 1970 Ghana 1971 Algeria 1972 Seychelles 1973 Tunisia 1973 Nigeria 1975 Mauritania 1976 Gambia 1978 Libya 1979	Germany 1970 Portugal 1971 Denmark 1973 Hungary 1973 Latvia 1973 Lithuania 1974 Estonia 1979		Pakistan 1972 Afghanistan 1973 Nepal 1973 Mongolia 1975	Georgia 1973 Kyrgystan 1976 Uzbekistan 1978 Armenia 1978
1980-1989	Honduras 1980 El Salvador 1987		Egypt 1983 Liberia 1983 Guinea 1985	Slovenia 1981 Austria 1984 Belgium 1985		Saudi Arabia 1981 Bangladesh 1982 Taiwan 1982 Myanmar 1984 Bhutan 1988 Lebanon 1988	Ukraine 1980 Russian F. 1983 Kazakhstan 1985
1990-			Belize 1991 Mauritius 1994 Sierra Leone 1995			Kuwait 1990 Brunei 1991 Cyprus 1992	Tajikistan 1992

Note: Year of National Park establishment of Israel is the estimated.

Although the term “national park” has been used throughout the world, national park systems have diversely evolved to meet unique country-specific circumstances, and thus are not uniform.

Many countries have adopted a system similar to that of national parks established in the U.S., where national parks have been established on government-owned land (state ownership system). However in European countries and in Japan, where much of the land has been developed in the course of history and land ownership has become complex, a system in which national parks can be designated in areas that have been excluded the ownership requirement (zoning system) was introduced.

In terms of park features, national parks have evolved from (1) parks seeking to both protect and use (pristine) natural landscape, which originated in the establishment of the Yellowstone National Park in the U.S. to include (2) parks protecting wildlife and their habitats and (3) parks prioritizing protection and limiting use, during the period between 1910 to 1920, and after 1930 further to encompass (4) parks based on artificial semi-natural landscapes.

● **Trends in establishing national parks and recent changes**

After establishing the Yellowstone National Park, the U.S. established its second national park, the Sequoia National Park, in 1890, followed by the General Grant National Park (currently, the Kings Canyon National Park) and Yosemite National Park the same year. The founding of these national parks were a result of dedicated nature protection campaigns and the efforts of John Muir, founder of the world-renowned nature protection organization, the Sierra Club. In 1899, the U.S. established Mount Rainier National Park, and in the 1900s, it consecutively established national parks in other parts of the country, including the Crater Lake National Park (1902), the Wind Cave National Park (1903), the Mesa Verde National Park (1906), and the Glacier National Park (1910), in 1919, it established its fourteenth national park, the Grand Canyon National Park. The U.S. has established 59 national parks as of 2013. With many countries having established national parks based on those in the U.S., the U.S. has been a world leader in establishing national parks, many of which have been based on those in the U.S.

In Europe, after Sweden established the first European national park, Switzerland established the second European national park, the Swiss National Park in 1914, covering an area of 16,877 ha in the European Alps. This national park continues to be the only national park in Switzerland today.

Some European characteristics are that areas covering less than 10,000 ha have been established as national parks because few vast natural areas remain in many European countries, as much of their land has been developed in their long history, and that some national parks have been established for the objective of protecting native landscapes, which are manmade landscapes created and managed by man that have come to be valued over a long time period.

Some European countries have designated national parks using a zoning system, due to national land restrictions. The United Kingdom (U.K.) is representative of such countries and adopts a system similar to that of Japan that does not consider land ownership requirement. In accordance with the National Parks and Access to the Countryside Act, enacted in 1949, the U.K. designated its first two national parks, namely, the Lake District National Park and the Peak District National Park, in 1951. The U.K. had designated ten national parks by 1957, after which it did not designate any parks for thirty years until in 1989 it designated the Broads National Park. It has consecutively designated three national parks in the 2000s and has fifteen national parks as of 2014.

Other than Japan and the U.K., Italy, Germany, France, Republic of Korea and Taiwan are also known to have adopted zoning systems, and recently, even countries that were pioneers in establishing national parks have begun to include privately-owned land in their national parks, instead of government-owned land National Park. Canada's Banff National Park and New Zealand's Tongariro National Park had originally been founded by acquisition of land owned by indigenous people, but the land ownership has recently been transferred to the indigenous people, and thus the land has become privately-owned. The U.S. has also established greenline parks, which include privately-owned land, since the 1970s.

The zoning systems of Japan and the U.K. have recently been given high appraisal for enabling the protection of natural environments including land that is not government-owned. Therefore, zoning system -based national parks are likely to gradually increase internationally.

● **Nature protection areas established in each country**

The International Union for Conservation of Nature and Natural Resources (IUCN) has published lists of protected areas around the world. The protected area list had originally been titled the "United Nations List of National Parks and Protected Areas", but since a national park is a type of protected area, the title of the 1997 list was changed to the "United Nations List of Protected Areas". Given the preciseness of the "1997 United Nations List of Protected Areas", as judged from the process of its compilation, this and other government material collected will be used herein to observe how protected areas have evolved.

Countries have established not only national parks but many other types of protected areas for the various purposes of protecting wildlife, protecting landscape and protecting nature with high scientific value.

The features of each type of protected area cannot be precisely elaborated without a study of the nature protection system in each country. However, the World Commission of Protected Areas (WCPA) under the IUCN has compile a list of different types of protected areas by categorizing them by their English names, which tend to imply the objectives for which they have been established.

Protected areas can thus be categorized into the following eleven objective-oriented types:

- (1) Protection of nature in a specific area [specific]
- (2) Protection of wildlife and habitat [wildlife]
- (3) Protection of ecosystems [ecosystem]
- (4) Protection of areas of high scientific value [scientific]
- (5) Protection of landscape [landscape]
- (6) Protection of outdoor recreational features [outdoor]
- (7) Protection and use of scenic areas [scenic]
- (8) Protection of areas with high historical and cultural value [historical]
- (9) Prohibition of hunting [non-hunting]
- (10) Protection of marine nature [marine]
- (11) Others [others]

National Parks have been included in group (7) Protection and use of scenic areas.

Table 2 Examples of natural protected areas

Category	English Names
(1) Protection of nature in a specific area	Aquatic Reserve, Integral Reserve, Nature Conservation Area, Nature Reserve, Natural Forest Reserve, Natural Environment Area, Protected Area, Strict Nature Reserve, Wetland Reserve, Wilderness Area
(2) Protection of wildlife and habitat	Biological Reserve, Biosphere Reserve, Fauna Refuge, Flora and Fauna Reserve, Flora Reserve, Sanctuary, Special Botanical Reserve, Wild Bird Reserve, Wildlife Refuge, Wildlife Management Area
(3) Protection of ecosystems	Biotope, Ecological Reserve, Natural Ecological System Preservation Area, Protected Biotope, State Area of Outstanding Ecological Interest
(4) Protection of areas of high scientific value	Forest Education Center, Forest Training and Research Center, Natural Scientific Reserve, Research Forest, Scientific Area, Scientific Reserve
(5) Protection of landscape	Area of Outstanding Natural Beauty, Landscape Protected Area, Landscape Reserve, Protected Landscape Area, Scenic Reserve
(6) Protection of outdoor recreational features	Conservation Park, Country Park, Environmental Park, Forest Park, Heritage Conservancy Park, Landscape Park, Recreation Park
(7) Protection and use of scenic areas	Marine National Park, National Nature Park, National Park, National Park Reserve, Natural National Park, Regional/Provincial Nature Park
(8) Protection of areas with high historical and cultural value	Cultural Monument, Heritage Area, Historic Site, Historical Reserve, Historical Sanctuary, National Historic Park, National Monument
(9) Prohibition of hunting	Controlled Hunting Area, Crown Games Reserve, Fishing Reserve, Game Bird Sanctuary, Game Protection Reserve, Game Sanctuary, Hunting Reserve
(10) Protection of marine nature	Marine Nature Reserve, Marine Reserve, Special Marine Reserve
(11) Others	Aboriginal Area, Anthropological Reserve, Atmospheric Reserve, National Military Park, University Park

● **Countries with natural protected areas and the period of their establishment**

Table 3 exhibits the number of countries that have established protected areas by region and by the period of establishment. The Antarctic region refers to the region south of 60 degrees latitude in accordance with the Antarctic Treaty.

Globally, the establishment of protected areas had been limited to developed countries up to the beginning of the twentieth century but was rapidly established in other countries after 1921. By 1997, 173 countries had established protected areas.

Dividing the 125 years from 1872, when the world's first protected area was established, to 1997 into two periods, 64 countries established protected areas during the first half before 1940 and, 105 countries, during the latter half after 1941. Therefore, in comparison, 41 more countries established protected areas in the latter period than during the earlier period.

Table 3 Period in which countries established their first natural protected area

Region	Asia	Oceania	Africa	Europe	CIS countries	North America	South America	Antarctic region	Number of countries
Period									
pre-1900	1	2	1	1		2			7
1901~1920	1		2	5	2	2	2		14
1921~1940	3		15	12	6	3	4		43
1941~1960	7	2	16	11	3	4	3		46
1961~1980	10	3	11	4	1	6	3	1	39
1981~1997	11	1	4	1		3			20
Year of establishment unknown		3				1			4
Total	33	11	49	34	12	21	12	1	173

Seven countries established protected areas before 1900 (nineteenth century). Four of these countries have been mentioned hereinbefore in the subsection about the introduction and development of national parks, namely, the U.S., Canada, Australia and New Zealand. The three remaining countries are Sri Lanka in the Asian region, South Africa in the African region, and the Netherlands in the European region.

With the end of World War II in the mid-1940s, many countries became independent states. The table shows that these newly independent countries adopted cultural policies to protect nature and thus established protected areas. An observation of the year of independence and the year in which the first protected area was established in each country reveals that in Asia and Africa, some countries had established protected areas before their independence. These countries have sustained the protected areas originally established by the colonial power that had governed prior to their independence and are represented by many Asian countries, including Sri Lanka, which established

Asia's first protected area, Indonesia, Malaysia, India, and African countries such as Nigeria, Sierra Leone, Angola, Central Africa, and Congo. In 1933, European colonial powers held the International Conference for the Protection of Fauna and Flora of Africa ("London Conference") in London and decided that international standardization would be sought regarding the establishment and management of national parks. This implies that the London Conference greatly impacted the increase of protected areas in African colonies.

Furthermore, all CIS countries had established protected areas prior to their gaining independence in 1991, indicating that protected areas established in the former USSR era were sustained.

• **Global trends in establishing natural protected areas: the dawn of natural protected areas**

Table 4 exhibits the year and country of the first protected area established in the eight regions by protected area type. The table indicates that in North America, Canada and the U.S. began establishing protected areas with various objectives from the late 1800s, and thus implies that North America has led the world in nature protection.

Table 4 also presents the development trends of protected areas by protected area type. Protected areas for the protection of nature in a specific area have a long history, dating back to as early as the early 1900s, in all seven regions excluding the Antarctic region.

Protected areas for the protection and use of scenic areas were established before 1900 in North America and Oceania, both pioneers in establishing protected areas, and were established from the early 1900s to 1940 in other regions.

Protected areas for the protection of wildlife and habitat spread to each region during the period between 1920 and 1940.

The first protected area for the protection of landscape was established in the early 1900s in Oceania but came to be established in other regions from 1930 to 1950.

Protected areas for the protection of areas of high scientific value and those for the protection of areas with high historical and cultural value were first established in the latter half of the twentieth century in regions other than North America.

The establishment of protected areas for the protection of marine nature was slow worldwide, and only began in 1973, when the first protected area of this type was established in the U.S.

Hence, the timing of the establishment of the first protected area is characteristically different according to protected area type and implies a global flow in the establishment of protected areas.

• **Development of natural protection areas**

In order to gain understanding of when each of the eleven protection area types developed, the number of protected areas established were compiled in Table 5, a matrix of protected area type and time frame, with the first time period being the pre-1900 period (nineteenth century) followed by

consecutive twenty-year periods.

According to Table 5, the number of protected areas increased from 50 worldwide before 1900 (in the nineteenth century) by approximately 250 times to almost 13,000 sites in 1997, around 100 years later.

Another characteristic is that protected areas rapidly developed in various areas of the world after 1961. Approximately 75% or three-fourths of all protected areas were established after 1961. Protected areas have a history of almost 130 years, with the majority established within the last 50 years, and 40% of all protected areas established in the last 30 years.

In the latter half of the 1900s, the global advancement of land development and industrial development in each country caused environmental issues, including the degradation of the natural environment, to occur, thus calling for global efforts towards nature protection. It was also during this period that international conventions, including the Convention on International Trade in Endangered Species of Wild Fauna and Flora (“Washington Convention”; 1975), the Convention on Wetlands of International Importance especially as Waterfowl Habitat (“Ramsar Convention”; 1975), and the Convention on Biological Diversity (“CBD”; 1993), that sought to protect nature were adopted and the international community enhanced its efforts towards nature protection. Protected areas can be understood to have rapidly increased after 1961 in the context of resulting global trends to promote the establishment of protected areas.

Table 4 Global trends in establishing natural protected areas:
the establishment of the first protected area by type and region

Region	Asia	Oceania	Africa	Europe	CIS	North America	South America	Antarctic region
Type					countries			
Specific	1920	1907	1905	1902	1912	1893	1907	1971
	Indonesia	New Zealand	South Africa	Denmark	Georgia	Canada	Chili	Norway
Wildlife	1920	1937	1925	1926		1887	1966	
	Philippines	Australia	C.A.R.	Denmark		Canada	Uruguay	
Ecosystem	1931	1977	1890			1968	1958	
	Malaysia	New Zealand	South Africa			Canada	Argentina	
Scientific	1979	1979	1962	1921		1958		1975
	Kuwait	Australia	Morocco	Latvia		Canada		U.K.
Landscape	1950	1903	1948	1938		1930	1949	
	China	New Zealand	Zambia	Germany	Unknown	U.S.	Venezuela	
Outdoor	1956	1922	1939	1921		1893	1936	1975
	Malaysia	Australia	S. Africa	Germany		Canada	Argentina	U.K.
Scenic	1933	1879	1907	1909	1939	1872	1915	1924
	Philippines	Australia	Namibia	Sweden	Belarus	U. S.	Uruguay	France
Historical		1963		1960	1986	1917	1954	
		Australia		Bulgaria	Russian F.	U. S.	Argentina	
Non-hunting	1919	1967	1929	1966	1957	1939		
	Indonesia	Australia	Uganda	Spain	Ukraine, Russian F.	Canada		
Marine	1986	1975	1979	1986		1973	1986	
	Indonesia	New Zealand	South Africa	U.K., France		U.S.	Ecuador	

An observation of when each of the eleven types of protected area was first established reveals that the timing of establishment is varied among different protected area types.

Protected areas for the protection of nature in a specific area and those for the protection and use of scenic areas, such as national parks, were first established in the early 1900s, while protected areas for the protection of ecosystems, those for the protection of areas of high scientific value and those for the protection of marine nature were established in increasing numbers during the period from 1961 to 1980, and have maintained a growing trend beyond 1981. In particular, marine protected areas have gained international recognition in recent years.

Table 5 Number of protected areas established in the world by period and type

Classification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	Total	Composi- -tion ratio
	specific	wildlife	ecosystem	scientific	landscape	outdoor	scenic	historical	non-hanting	marine	others		
pre-1900	26	1	2		3	3	13	1			1	50	0.4
1901~1920	74	8	1		28	10	36	9	2			168	1.3
1921~1940	470	102	4	2	25	66	142	16	29			856	6.7
1941~1960	359	153	4	4	74	116	203	3	40			956	7.5
1961~1980	1,458	497	50	38	540	540	665	20	421	5	2	4,236	33.2
1981~1997	2,451	570	217	54	357	539	852	4	134	26	2	5,206	40.8
unknown	562	267	12	9	67	242	18	2	97	6		1,282	10.1
Total	5,400	1,598	290	107	1,094	1,516	1,929	55	723	37	5	12,754	
Composition ratio (%)	42.4	12.5	2.3	0.8	8.6	11.9	15.1	0.4	5.7	0.3	0.0		100.0

Table 6 provides the total area of protected areas established, by protected area type and time frame. According to Table 6, protected areas covering a total of approximately 5,902,200km², or 45.3% of the total area of protected areas established to date, were established during the period 1961-1980. Approximately 4,598,000km², or 35.3% of the total, were established from 1981 to 1997. Therefore, more than 80% of the total area of protected areas has been established after 1961. Although, according to table 5, the protected areas established in this period represented approximately 75% of the total number of parks established, they represented over 80% of the total in terms of area.

In particular, the number of protected areas established from 1961 to 1980 amounted to 33.2% of the total, but covering 45.3% of the total area, thus indicating that the protected area of large scale was established during this period.

By protected area type, protected areas established for the objective of protecting a specific area cover a total area of 4,342,200km², or 33.3% of the all protected areas. Therefore, one-third of all protected areas established fall under this category, which is followed by protected areas for the protection and use of scenic areas accounting for 28.3%, and protected areas for wildlife accounting for 18.2%. While the order of these three protected area types are unchanged in terms of the number of protected areas established, the average area of each protected area, as calculated by dividing the total area by the number of areas established, protected areas for the protection of nature in a specific areas cover an average of 804km² per area, those for the protection and use of scenic areas, 1,911km² and those for the protection of wildlife, 1,487km². Therefore, protected areas for the protection and use of scenic areas are the largest on average. A majority of these parks are national parks, thus indicating that of the various protected areas worldwide, national parks have contributed significantly to natural environment protection.

As for the number of sites and area covered by protected areas established for the protection

and use of scenic areas, 665 sites were established as parks in 1961-1980, while 852 sites were established in 1981-1997, amounting to 187 sites less but approximately 1 million km² more in 1961-1980. Hence, large-scale national parks were established in 1961-1980, during the period of which the U.S. established a total of eight large national parks in Alaska, including the Denali National Park (24,500km²) in 1971 and seven national parks, such as the Katmai National Park (13,696 km²), in 1980. These eight national parks cover a total area of 167,659 km² (16,765,900ha), including the Wrangell St. Elias National Park spreading across an area of 53,321km² (5,332,100ha), which is larger than the total area of all 31 Japanese national parks added together.

Table 6 Area covered by protected areas by time frame and protected area type

Classification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	Total	Composition ratio (%)
	specific	wildlife	ecosystem	scientific	landscape	outdoor	scenic	historical	non-hunting	marine	others		
pre-1900	1,178	7,934	67	0	84	7,814	26,517	14	0	0	33	43,641	0.3
1901~1920	108,002	168	19	0	1,104	5,334	66,403	1,406	797	0	0	183,233	1.4
1921~1940	166,742	82,474	294	165	896	35,070	273,955	12,079	99,066	0	0	670,741	5.2
1941~1960	103,798	146,496	91	218	9,758	29,574	247,375	47	52,743	0	0	590,100	4.5
1961~1980	1,372,665	975,630	9,655	3,955	107,103	650,862	2,017,984	1,256	762,374	534	159	5,902,177	45.3
1981~1997	1,795,602	1,088,259	141,872	3,795	140,262	274,409	1,037,786	212	94,268	20,595	854	4,597,914	35.3
unknown	794,211	75,911	2,763	262	21,703	14,650	16,225	67	120,284	178	0	1,046,254	8.0
Total	4,342,198	2,376,872	154,761	8,395	280,910	1,017,713	3,686,245	15,081	1,129,532	21,307	1,046	13,034,060	
Composition ratio (%)	33.3	18.2	1.2	0.1	2.2	7.8	28.3	0.1	8.7	0.2	0.0		100.0

● Features of nature protection areas by region

Regional differences can be observed among the objectives of protecting nature, depending on whether a region comprises many countries with long histories such as those in Europe, whether a region has much unexplored land like the U.S. and Australia, or whether a region comprises many countries rich in wild fauna as is the case with Africa.

Table 7 divides the world in eight regions and exhibits the number of protected areas established, compiled by region and by the eleven objectives of protection. Table 8 is a compilation of the area covered.

Table 7 reveals that protected areas for all eleven objectives have been established in Oceania and North America.

The largest number of protected areas is found in North America, which is home to 25.8% of all protected areas established. The North American region encompasses the U.S. and Canada, both the world's pioneers in establishing protected areas. Given their vast land and rich nature, they have established various types of protected areas, which have thus developed in these countries. North

America leads the world in nature protection.

Following North America, Europe has the second largest number of protected areas, established in 34 countries. Europe is home to more protected areas to protect landscapes than any other region. Given their long history, European countries have little nature remaining as a result of development reaching all corners of each country. Over the years, such countries have come to value landscape created through daily human activities as native landscape, the protection of which protected areas have been established.

North America and Europe have also characteristically established a significantly larger number of protected areas for the protection of nature of high scientific value compared to other regions.

Table 7 Number of protected areas established by region and protected area type

Classification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	unit : site	
	specific	wildlife	ecosystem	scientific	landscape	outdoor	scenic	historical	non-hanting	marine	others	Total	Composition ratio (%)
Asia	1,408	503	29	2	62	66	367	1	88	2	0	2,528	19.8
Oceania	605	100	85	2	66	195	364	5	9	12	1	1,444	11.3
Africa	341	116	4	2	2	36	235	0	239	6	0	981	7.7
Europe	1,186	65	25	30	832	261	434	1	93	8	0	2,935	23.0
CIS countries	168	3	0	4	12	0	54	0	263	0	0	504	4.0
North America	1,168	704	72	54	87	863	258	47	28	9	2	3,292	25.8
South America	515	107	75	0	33	95	217	1	3	0	2	1,048	8.2
Antarctic Region	9	0	0	13	0	0	0	0	0	0	0	22	0.2
Total	5,400	1,598	290	107	1,094	1,516	1,929	55	723	37	5	12,754	
Composition ratio (%)	42.4	12.5	2.3	0.8	8.6	11.9	15.1	0.4	5.7	0.3	0.0		100.0

Table 8 Area of protected areas established by region and protected area type

Classification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	unit : km ²	
	specific	wildlife	ecosystem	scientific	landscape	outdoor	scenic	historical	non-hanting	marine	others	Total	Composition ratio (%)
Asia	1,132,328	993,180	964	33	40,087	9,201	358,974	138	42,728	150	0	2,577,783	19.8
Oceania	300,716	17,957	5,888	38	2,260	479,753	289,635	260	359	16,463	114	1,113,443	8.5
Africa	209,461	318,680	68	84	51	37,086	759,294	0	820,768	936	0	2,146,428	16.5
Europe	169,506	11,122	819	983	115,036	142,411	1,119,686	29	17,578	218	0	1,577,388	12.1
CIS countries	323,994	1,596	0	186	270	0	100,780	0	230,763	0	0	657,589	5.1
North America	1,349,004	880,904	8,851	4,276	60,540	293,462	487,983	14,619	16,569	3,540	50	3,119,798	23.9
South America	857,021	153,433	138,171	0	62,666	55,800	569,893	35	768	0	882	1,838,669	14.1
Antarctic Region	168	0	0	2,795	0	0	0	0	0	0	0	2,963	0.0
Total	4,342,198	2,376,872	154,761	8,395	280,910	1,017,713	3,686,245	15,081	1,129,533	21,307	1,046	13,034,061	
Composition ratio (%)	33.3	18.2	1.2	0.1	2.2	7.8	28.3	0.1	8.7	0.2	0.0		100.0

In Oceania, both Australia and New Zealand have established large numbers of protected areas.

In terms of protected area type, protected areas for the protection of nature in a specific area, those for the protection and use of scenic areas and those for the protection of outdoor recreational features have been established in large numbers, with these three types of protected area representing 81% of all protected areas in the region. Eleven countries in Oceania have established protected areas. While many Oceanian countries other than Australia, New Zealand and Papua New Guinea have small land area, the region has established all eleven types of protected area. Considering the number of countries belonging to this region, it can be understood that this region contains a large number of protected areas.

According to Table 8, protected areas cover a total of approximately 13 million km², which is the equivalent of approximately 9.24% of the total land area of the world (approximately 141 million km²; aggregate of land area provided for each country in “1997 the List of Countries of the World”, edited by the spokesman of the Ministry of Foreign Affairs, Japan).

In terms of regional features, Asia and North America have a larger coverage of protected areas for the protection of nature in specific areas and those for wildlife. The total area of the former type exceeds 1 million km².

In Africa the total area of protected area for the prohibition of hunting and those for the protection of wildlife exceed 50% of the total area of all protected areas in the region, indicating that the region is focused on establishing protected areas to protect wildlife.

In the CIS countries, protected areas for the protection of nature in a specific area cover approximately 50% and those for the prohibition of hunting cover approximately 35%, collectively covering about 85% of all protected areas established in the region. CIS countries have not established any protected areas for the protection of outdoor recreation features.

In South America, protected areas for the protection of nature in a specific area have the largest share, which is 47% of total protected area in the region. Furthermore, an important feature of this region is that approximately 90% of the world's protected areas for the protection of ecosystems have been established by Brazil, Argentina and Ecuador.

Protected areas for the protection of nature of high scientific value, which have been widely established in North America, the Antarctic region and in Europe, account for only around 0.1% of all protected areas.

The area of protected area established in the Antarctic region is approximately 3,000km², almost 95% of which is for the protection of nature of high scientific value. This is a feature of the Antarctic region.

Concluding the discussion on Table 7 and 8, the following paragraphs will introduce a unique protected area in Korea in the Asian region.

In Korean Peninsula, there is a great endless backbone mountain range that stretches from Mt. Baekdu (2,744m), on the northernmost border between China and the Korean Peninsula, southward

along to Mt. Chiri (1,915m) one of the highest mountains in the southern part of peninsula. This mountain system is called Baekdudaegan , based on fengshui geographical theory.

In 2005, in this long mountain system extending over 500 km, the Baekdudaegan Mountain System, a vast and comprehensive ecological corridor was designated a protected area.

As exhibited in Figure 1, the protected area include not only seven national parks, from the Mt. Hyangnobong (1,296 m) in the northernmost part of the Republic of Korea (“South Korea”), southward to Mt. Sorak, Mt. Odae, Mt. Sobaek, Mt. Worak, Mt. Songni, Mt. Dokyu and Mt. Chiri, it also includes 11 other different types of protected areas. This comprehensive corridor-type of protected area is unique to South Korea cannot be found in Japan. The Baekdudaegan Mountain System Protected Area was designated in accordance with the Act on the Protection of the Baekdudaegan Mountain System, enacted in 2003, and covers 263,427ha, or 2.6% of South Korea’s land area. It is 79% government-owned, 8% publicly owned, and 13% privately owned. Of the 21 national parks in South Korea, seven parks overlap with the Baekdudaegan Mountain System Protected Area. The value of the Baekdudaegan Mountain System Protected Area lies in the fact that it constitutes the geographical backbone of National Land and that is not only a natural area that provides a basis for the fostering of lifestyles and culture unique to South Korea but also a natural corridor embracing a rich source of wildlife and enjoying natural Korean Peninsula’s ecosystems and biodiversity.



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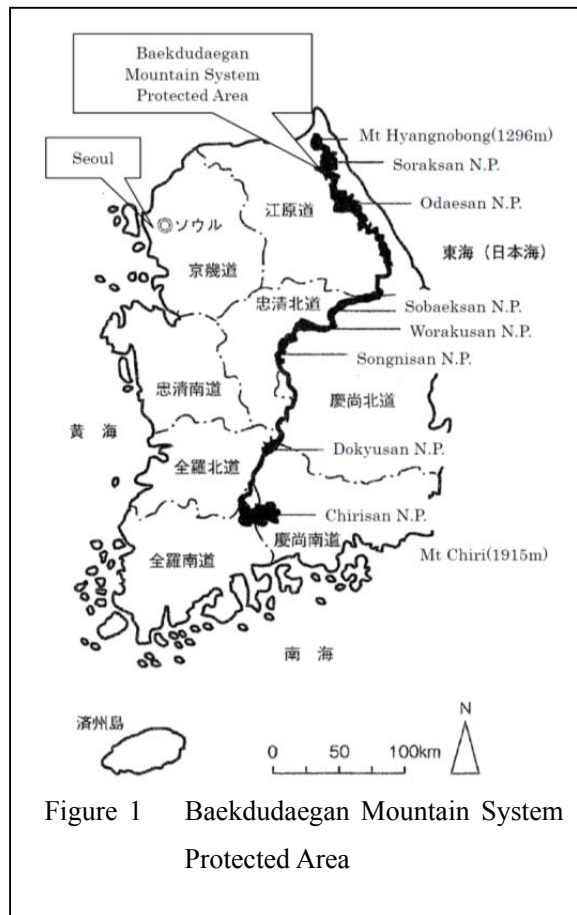


Figure 1 Baekdudaegan Mountain System Protected Area

● **The impact of international conventions and conferences on nature protection**

Based on the idea that international conventions and conferences on nature protection impacted the introduction to and development of protected areas in countries around the world, major international conventions and conferences have been compiled in Table 9.

The impacts that the international conventions and conferences listed in Table 9 had on the development of protected area are elaborated below.

(1) The first protected area established by a national government was the Yellowstone National Park established in the 1872 by the U.S., and National Park Service was established in the Department of the Interior, in 1916. Although Canada established the Banff National Park, its first national park in 1885, thirteen years after the establishment of the Yellowstone National Park, it established Parks Canada, the government authority that manages protected areas in 1911. Canada was five years ahead of the U.S. in establishing a government authority to manage protected areas. National parks and park management systems were established in the early twentieth century in Canada and the U.S., the national park systems of which served as models for the rest of the world, as national parks developed in many countries as a type of protected area.

(2) In Europe, Russia’s establishment of two protected areas, both covering a vast area of land, in 1919 and 1920, stimulated European countries, few of which had established national parks or protected areas before then. After 1919, protected areas were established in European countries based on the acknowledgement that, as culturally advanced countries, European countries had to engage in nature protection. These events would later lead to the establishment of protected areas in their African colonies after the London Conference in 1933.

(3) By region, protected areas for the protection of wildlife and habitat and those for the protection and use of scenic areas can be considered to have increased

Table 9 International conventions and conferences on nature protection

Year	International Conventions and international conferences, etc.
1872	United States established the Yellowstone National Park
1916	United States National Park Service established Russia established two large natural protected areas
1933	"London Conference"on the protection of wildlife of Africa
1940	On nature conservation in the Western Hemisphere "Washington Conference"
1948	International Union for Protection of Nature (IUPN) established
1956	Change to the IUCN named IUPN (The International Union for the Conservation of Natural Resources)
1958	International National Parks Board established in IUCN
1962	First World Parks Congress (Seattle, U.S.)
1972	United Nations Conference on the Human Environment (Stockholm, Sweden) Conference at the UN, was significant progress with respect to nature conservation (Only One Earth)
1975	Washington Convention and the Ramsar Convention entered into force
1982	Third World Parks Congress (Bali, Indonesia) To the concept of protected areas in developing countries from the concept of protected areas in developed countries
1987	International Symposium on Protected Landscapes (Lake District, U.K.)
1992	United Nations Conference on Environment and Development (Rio de Janeiro, Brazil) (the Earth Summit : Rio Declaration on Environment and Development) IVth IUCN World Parks Congress (Caracas, Venezuela)
1993	1st East Asia National parks and protected areas meeting (Beijing, China) Convention on Biological Diversity entered into force
1996	World Conservation Congress (Montreal, Canada)
2003	V th IUCN World Parks Congress (Durban, South Africa)
2004	3rd World Conservation Congress (Bangkok, Thailand)
2010	The tenth meeting of the Parties to the Convention on Biological Diversity (CBD COP10) (Nagoya, JAPAN)
2013	the 1st Asia Parks Congress (Sendai, JAPAN)

in Africa as a result of the London Conference in 1933 by the colonial powers with African colonies.

(4) In Asia, protected areas for wildlife were established in relatively early times in Sri Lanka, India and Malaysia, all of which were under British colonial rule. It can be concluded that the protection activities that the U.K.'s Society for the Preservation of the Wild Fauna of the Empire, an international environmental protection organization then active, were proactively engaged in nature protection activities in Asia and Africa in the late 1920s and the London Conference in 1933 affected the Crown Colonies as well.

(5) In North and South America, protected areas for the protection of nature in a specific area, those for the protection of wildlife and habitat, and those for the protection and use of scenic areas rapidly increased after 1941. This was a result of the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere held in Washington D.C. in 1940, after which many countries advanced the establishment of protected areas. This is also discussed in Harold J. Coolidge's "Evolution of the Concept, Role and Early History of National Parks" (1972).

(6) The majority of protected areas for the protection and use of scenic areas are national parks, which increased in number during the period between 1961 and 1980, against the backdrop of the convening of the First World Parks Congress in Seattle, U.S. in 1962, as well as the call for the establishment of national parks by the United Nations Economic and Social Council, which met in Mexico City in 1959 and recognized that national parks contribute to the inspiration, culture and welfare of mankind, and are valuable for economic and scientific reasons and also as areas for the future preservation of fauna and flora and geologic structures in their natural state.

(7) International conventions on nature protection include the Washington Convention and the Ramsar Convention both enacted in 1975, and the CBD enacted in 1993. Table 5 and 6 reveal that a growing number of protected areas for wildlife and those for ecosystems were established beyond 1981. Furthermore, the upward trend of establishing protected areas to protect nature in a specific area can also be considered to be an impact of the enactment of the CBD.

(8) The rapid increase of protected areas that protect nature in a specific area after 1981 is likely to have occurred in the context of not only the enactment of the CBD but also the discussion on protected areas that seek coexistence with local residents as a concept of nature protection at the Third World Parks Congress in Bali, Indonesia in 1982. At the international symposium on Protected Landscapes in the Lake District, U.K. in 1987, it was also debated that the economic stability of residents was important in for the continuity of protected areas to protect nature in specific areas,

and thus is likely to have influenced the increased establishment of protected areas recognizing multi-purpose land use. This is consistent with recent acknowledgement of the value of Japanese Satoyama from the viewpoint of protecting biodiversity.

(9) Marine protected areas were introduced in the 1970s and are still small in number. Given recent marine pollution issues and sea level rises due to global warming, the protection of marine areas has drawn much international attention. Discussions on the importance of protecting marine areas at the Fifth World Parks Congress held in Durban, South Africa in 2003 and the Third IUCN World Conservation Congress held in Bangkok, Thailand in 2004 led to agreement on encouraging the further establishment of marine protected areas, which are thus gradually increasing.

● Conclusion

Nature has been exploited as a result of human pursuit of material wealth in life. As a result, the state of the Earth's natural environment has increased its graveness. The protected areas established in each country play an important role in ending such trends and improving the circumstances.

One of the outcomes of the tenth meeting of the Conference of the Parties to the Convention on Biological Diversity (CBD COP10) held in Nagoya in 2010 was the adoption of concrete quantitative targets for establishing protected areas, from the perspective of protecting biodiversity. Each country aims increase protected areas so that they cover 17% of total terrestrial and inland water area and 10% of total coastal and marine area by 2020.

Countries around the world will endeavor to achieve this quantitative target, and thus establish an increasing number of protected areas, hopefully improving the Earth's natural environment from today's state. Having chaired this CBD COP10, Japan has been enthusiastically engaged in increasing protected areas through reorganizing its national park system and designating new parks. Furthermore, in 2013, the First Asia Parks Congress was held in Sendai, and the future development of protected areas in the Asia region is expected.

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