AN ASSESSMENT OF BOUNDARY AND CATEGORY CHANGES IN TURKISH NATIONAL PARKS

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ABSTRACT

AN ASSESSMENT OF BOUNDARY AND CATEGORY CHANGES IN TURKISH NATIONAL PARKS

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The protected areas network in Turkey includes a number of sites designated by law as national parks (NP). Unfortunately, social and economic pressures may occasionally lead to downgrading of category or a redrawing of boundaries for some protected areas. The purpose of this thesis is to assess boundary and category changes in Turkish national parks, to try to understand the reasons behind such changes, and to develop recommendations. Such changes between 1959 and 2019 were identified by examining official documents, relevant literature and the press, and the extent and nature of these changes were spatially assessed using CORINE Land Cover maps. Nine NPs had boundary revisions, one site had category change while two sites had both. Seven of those protected areas have increased in size whereas four others got smaller (biggest loss 38.635 ha for Beydağları Sahil NP). Overall 61,726 hectares were added to the national protected area network. Unfavorable ecological outcomes were increased fragmentation, boundary shape change, area loss, and changes in habitat proportions. The main reason for boundary and category changes was apparently to enable managing the PAs with less conflict, which usually was politically motivated rather than being a technical necessity. Using Systematic Conservation Planning for site selection, prioritizing ecosystem integrity when drawing PA boundaries, and better management of established sites would largely reduce the need for future

boundary or category changes. We also recommend the reasons for any such changes be fully justified, well documented and shared with the public.

Keywords: National Park, Nature Conservation, Biodiversity, PADDD, Boundary Revisions

ÖZ

TÜRK MİLLİ PARKLARINDA SINIR VE STATÜ DEĞİŞİKLİKLERİNİN BİR DEĞERLENDİRMESİ

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Türkiye korunan alanlar sistemi, kanun ile milli park olarak belirlenmiş birtakım sahaları içermektedir. Ne yazık ki, sosyal ve ekonomik baskılar bazı korunan alanların sıklıkla statüsünün düşürülmesine ya da sınırlarının yeniden belirlenmesine yol açmaktadır. Bu tezin amacı sınırı ve statüsü değişen Türk milli parklarını değerlendirmek, bu gibi değişikliklerin arkasında yatan nedenleri anlamaya çalışmak ve öneriler geliştirmektir. Bu amaçla, 1959 ve 2019 yılları arasında gerçekleşen değişiklikler, resmi belgelerin, ilgili literatürün ve yayınların araştırılması sonucu belirlenmiş ve değişikliklerin boyutları ile mahiyetleri CORINE Arazi Örtüsü haritaları kullanılarak değerlendirilmiştir. Dokuz milli parkın sınırları, bir milli parkın statüsü değişmiş, iki milli parkın ise hem sınırları hem de statüsü değişmiştir. Bu korunan alanlardan yedisinin büyüklüğü artarken dördü küçülmüştür (En büyük kayıp 38.635 hektar ile Beydağları Sahil Milli Parkı'ndan olmuştur). Toplamda ulusal korunan alan sistemine 61.726 hektar eklenmiştir. Artan parçalanma, sınır şeklinin değişimi, alan kaybı ve habitat oranlarının değişimi olumsuz ekolojik sonuçlardır. Teknik gereklilikten çok politik baskılar nedeniyle yapıldığı görünen sınır ve statü değişikliklerinin temel sebebi, korunan alanların daha az çatışma ile yönetilmesini mümkün kılmaktır. Alan seçiminde Sistematik Koruma Planlaması yaklaşımını kullanmak, korunan alan sınırları çizilirken ekosistem bütünlüğünü öne çıkarmak ve

ilan edilmiş sahaları iyi yönetmek olası sınır ve statü değişikliği ihtiyacını büyük ölçüde azaltacaktır. Ayrıca herhangi bir değişikliğin nedenlerinin tamamıyla açıklanması, iyi belgelenmesi ve kamuoyuyla paylaşması önerilmektedir.

Anahtar Kelimeler: Milli Park, Doğa Koruma, Biyoçeşitlilik, PADDD, Sınır Değişikliği

To my beloved daughter Umay

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LIST OF ABBREVIATIONS

IUCN	International Union for Conservation of Nature
PA	Protected Area
UNEP-WCMC	United Nations Environment Programme
	World Conservation Monitoring Centre
CBD	The Convention on Biological Diversity
COP	The Conferans of the Parties
WCPA	The World Commission on Protected Areas
PADDD	Protected Area Downgrading, Downsizing, and Degazettement
WDPA	World Database on Protected Areas
NGO	Non Governmental Organization
GIS	Geographic Information System
CORINE	Coordination of Information on the Environment
METT	Management Effectiveness Tracking Tool
RAPPAM	Rapid Assessment and Prioritization of Protected Area Management
SHW	State Hydrolic Works

CHAPTER 1

INTRODUCTION

1.1. The Protected Area Concept

Nature conservation can be defined as "the protection, care, management and maintenance of ecosystems, habitats, wildlife species and populations, within or outside of their natural environments, in order to safeguard the natural conditions for their long-term permanence" (IUCN, 1980). To conserve species, habitats, and associated ecosystem services, public and private sector actors have implemented many different strategies (Adams, 2004). As shown in Figure 1.1, among these strategies setting up national parks, nature reserves, and other protected areas (PAs) is leading with more than 160,000 terrestrial and marine PAs established globally (Rands et al., 2010). National parks, nature reserves and other PAs are cornerstones of global efforts to conserve the world's biodiversity (Pack et al., 2016).

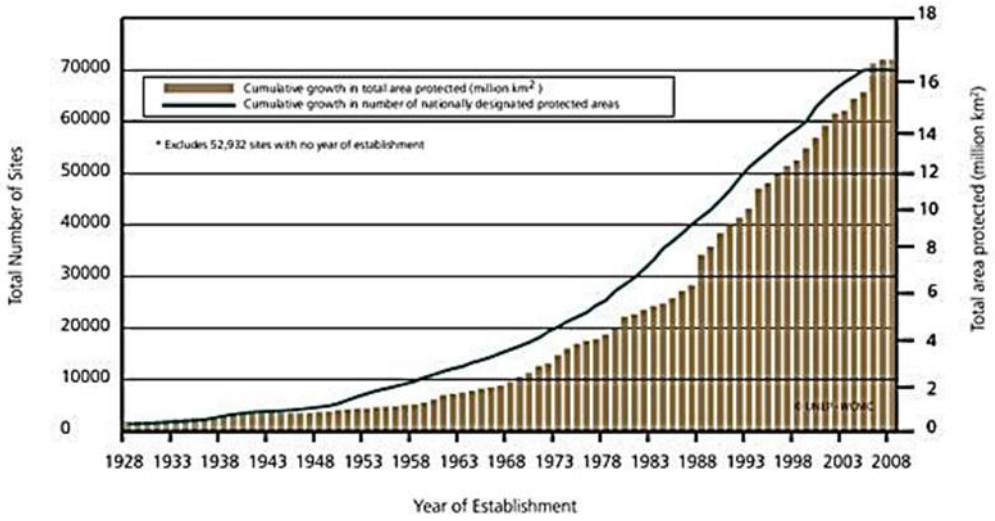

Figure 1.1. Cumulative growth of nationally designated protected areas (PAs), 1928–2008 (IUCN and UNEP 2009).

A protected area is defined by International Union for Conservation of Nature (IUCN), as "a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long term conservation of nature with associated ecosystem services and cultural values" (Dudley et al., 2008).

Protected areas have vital importance in the continuity of the world's natural evolution, ensuring that species and ecosystems under risk and danger are given protected area category protected by effective means, and protecting biodiversity is a necessity in terms of survival of human life and meeting human needs (Yıldırım & Erol, 2012).

Protected areas deliver benefits that extend beyond their boundaries. They play a key role in achieving health, livelihoods and well-being; strengthening ecosystem restoration and resilience; and promoting positive contributions to local economies and reducing poverty. Protected areas deliver natural solutions to global challenges, including storing and sequestering carbon to mitigate climate change, helping communities and protected area managers cope with the increasing risk of natural disasters (UNEP-WCMC & IUCN, 2016).

IUCN emphasizes that protected areas should be seen as part of broader conservation landscapes, including both protected area systems and wider ecosystem approaches to conservation that are implemented across the landscape or seascape. The overriding purpose of a system of protected areas is to increase the effectiveness of in-situ biodiversity conservation (Dudley et al., 2008).

Over the past 20 years, there has been a dramatic increase in the number and extent of protected areas established globally, representing a growing recognition of the value of protection as a way to defend nature and cultural resources and mitigate human impacts on biodiversity. It is also important to recognize the political commitments made by governments at many levels that have driven these achievements. The number of protected areas and their extent in countries is constantly changing, as boundaries change and areas are added or removed as shown in Figure 1.2 (UNEP-WCMC & IUCN, 2016).

The Convention on Biological Diversity (CBD), which calls for its 196 member states to establish comprehensive systems of representative and effectively managed terrestrial PAs by 2010 or 2012 for marine PAs (UNEP/CBD/COP, 2004)

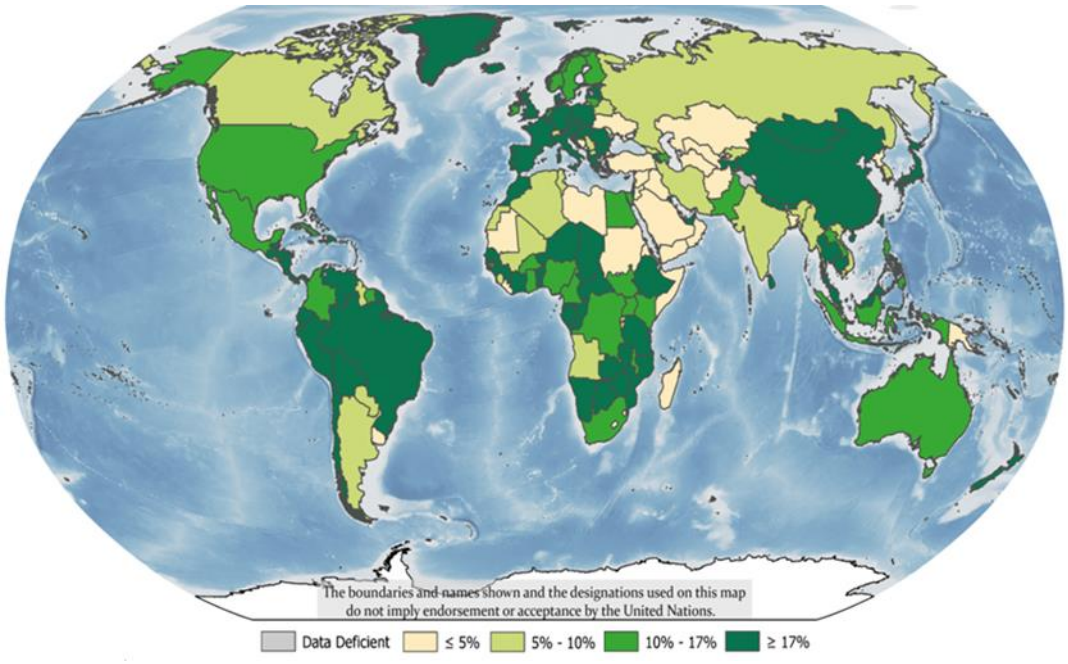

Figure 1.2. Protected Areas of the World (UNEP-WCMC and IUCN 2016).
(https://wdpa.s3.amazonaws.com/Files_pp_net/Figure_4.2_Final_w_logos.png)

1.2. Conservation Efforts

The World Commission on Protected Areas (WCPA), working under the umbrella of IUCN, is generally considered to be the foremost authority on the global protected area network. As part of its mission to promote the establishment and effective management of a worldwide representative network of terrestrial and marine protected areas, IUCN has defined protected area management categories that are also recognized by the Convention on Biological Diversity (Dudley et al., 2008). The IUCN General Assembly approved the management categories in 1994 (Dudley & Stolton, 2008), and currently over 60 % of more than 160.000 protected areas worldwide are classified under the IUCN system (Lockwood, 2006).

Table 1.1. *IUCN Protected Area Categories and Definitions (Dudley et al., 2008).*

Category Ia / Strict Nature Reserve	Strictly protected areas set aside to protect biodiversity and also possibly geological / geomorphological features, where human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values. Such protected areas can serve as indispensable reference areas for scientific research and monitoring.
Category Ib / Wilderness Area	Usually large unmodified or slightly modified areas, retaining their natural character and influence, without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition.
Category II / National Park	Large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities.
Category III / Natural Monument	Protected areas are set aside to protect a specific natural monument, which can be a landform, sea mount, submarine cavern, geological feature such as a cave or even a living feature such as an ancient grove. They are generally quite small protected areas and often have high visitor value.
Category IV / Habitat - Species Management	Protected areas aim to protect particular species or habitats and management reflects this priority. Many category IV protected areas will need regular, active interventions to address the requirements of particular species or to maintain habitats, but this is not a requirement of the category.

Category V / Protected landscape - seascape	A protected area where the interaction of people and nature over time has produced an area of distinct character with significant ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values.
Category VI / Protected area with sustainable use of natural resources	Protected areas conserve ecosystems and habitats, together with associated cultural values and traditional natural resource management systems. They are generally large, with most of the area in a natural condition, where a proportion is under sustainable natural resource management and where low-level non-industrial use of natural resources compatible with nature conservation is seen as one of the main aims of the area.

The protected areas' coverage percentages according to the category in the World Database of Protected Areas (WDPA) in 2016 are shown below.

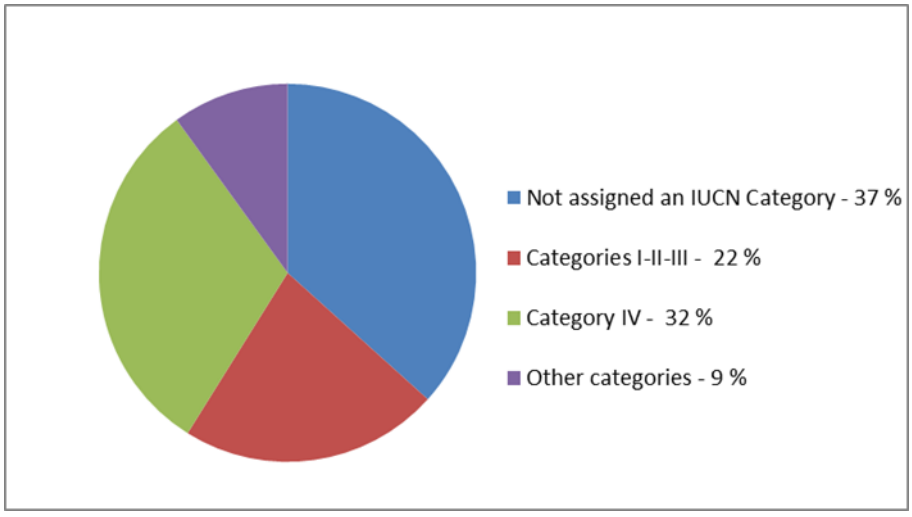

Figure 1.3. Protected area types in the World Database of Protected Areas in 2016 (UNEP-WCMC & IUCN, 2016).

Contrary to the fact that the Convention on Biological Diversity was signed more than twenty-five years ago in 1992, and in spite of the growing tendency towards the establishment of new protected areas in the last 20 years, global biological diversity has been lost in a continuous way. The main reason for this ongoing loss is most probably due to low effectiveness of protected area management. However, there is an increasing awareness of a need for the assessment of effectiveness of management (Grujicic, 2009).

However, protected areas are by no means uniform entities. They have a wide range of management aims and are governed by many different stakeholders as seen in Figure 1.4. At one extreme a few sites are so important and so fragile that no-one is allowed inside, whereas other protected areas encompass traditional, inhabited landscapes and seascapes where human actions have shaped cultural landscapes with high biodiversity. Some sites are owned and managed by governments, others by private individuals, companies, communities and faith groups (Dudley et al., 2008).

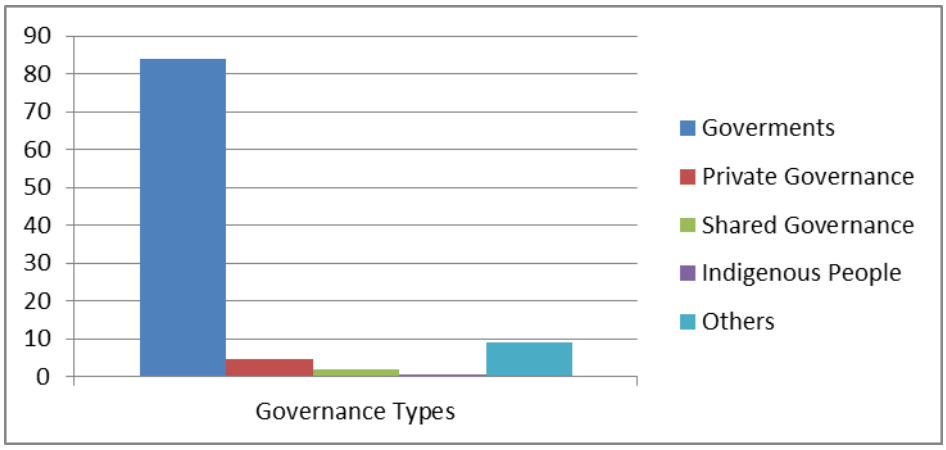

Figure 1.4. Governance Types of protected areas in in the World Database of Protected Areas in 2016 (UNEP-WCMC & IUCN, 2016).

In order to determine protected area classification, IUCN Protected Area Management Categories and IUCN Protected Area Governance Types are used. The first standard helps classify protected areas based on their primary management objectives, while the second standard classifies protected areas according to who holds authority,

responsibility and accountability for them (Dudley et al., 2008). The ownership or governance does not affect the category. The relationship between the governance types and management categories is shown in Table 1.2.

Table 1.2. " *The IUCN Protected Area Matrix " : A classification system for protected areas comprising both management category and governance type (Dudley et al., 2008).*

Governance types / Protected area categories	A. Governance by government			B. Shared governance			C. Private governance			D. Governance by indigenous peoples and local communities	
	Federal or national ministry or agency in charge	Sub-national ministry or agency in charge	Government-delegated management (e.g., to an NGO)	Transboundary management	Collaborative management (various forms of pluralist influence)	Joint management (pluralist management board)	Declared and run by individual land-owners	... by non-profit organizations (e.g., NGOs, universities)	... by for-profit organizations (e.g., corporate owners, cooperatives)	Indigenous peoples' protected areas and territories – established and run by indigenous peoples	Community conserved areas – declared and run by local communities
Ia. Strict Nature Reserve											
Ib. Wilderness Area											
II. National Park											
III. Natural Monument											
IV. Habitat/ Species Management											
V. Protected Landscape/ Seascape											
VI. Protected Area with Sustainable Use of Natural Resources											

1.3. The Origins of Nature Conservation and National Parks

Today, setting aside a protected area is gaining importance especially for developing countries in terms of selection of protection priorities, the limited resources for protection and the urgency of establishing new protected areas (Sierra et al., 2002).

The irresponsible use of natural resources and the destruction of natural factors are not new in the world, nor are the measures taken to protect nature. The Ashoka Pillar Edicts (issued by an ancient Indian emperor of the same name who lived 273-232 BCE) were the earliest conservation efforts in the world and expressed Ashoka's view

about the welfare of environment and biodiversity. Precautions about conservation and efforts to declare new protected areas continued in different fields of activity such as forestry, hunting, etc. in Germany around 556 CE, in Norman England, China, Persia and Romania after 10th century, in Japan around 1500s, and in Switzerland and Austria in 1800s. The first law in the Ottoman Empire on forest areas has been prepared during the time of Fatih Sultan Mehmet (the sultan who conquered Istanbul in 1453). In his edict he stated, “Whoever cuts a branch of a tree from my forest, his head will be cut off ”.

The national park idea is rooted in the Mariposa Grove/the United States of America. In 1864 the US Congress has designated over three million acres of the Sierra Nevada for protection in the National Wilderness Preservation System. President Lincoln signed the legislation protecting the Mariposa Grove and Yosemite Valley for "public use, resort, and recreation”. For the first time in the United States history, scenic natural areas were set aside and protected for the benefit of future generations (https://www.nps.gov/yose/learn/management/mgrove.htm).

Eight years later, photographs by William Henry Jackson and sketches by Thomas Moran influenced the Congress in 1872 to make Yellowstone the world’s first national park which is now a land-use model for many nations (Yellowstone National Park Brochure, National Park Service / U.S Department of the Interior, GPO:2011-365-615/80678).

Developed in the 19th century in the USA, Australia, Canada, New Zealand and South Africa, the national park practice spread to Europe and the rest of world in the 20th century. As a result, there was a significant increase in the number of protected areas since than (Erol, Kuvan, & Yıldırım, 2011).

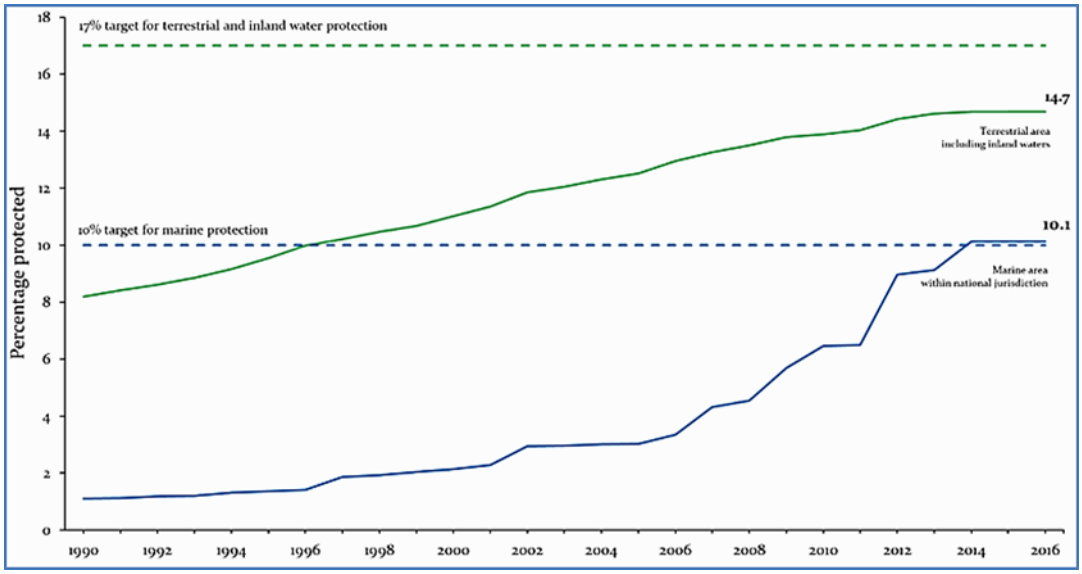

Figure 1.5. Percentage of all terrestrial and marine areas (0-200 nautical miles) covered by protected areas by year of designation of all designated protected areas included in the World Database on Protected Areas of April 2016 (IUCN and UNEP-WCMC, 2016).

Even today, the first areas that come to mind as a protected area are national parks. In addition to their environmental and ecological functions, national parks play a very important role in terms of their social and economic functions. Today, in many parts of the world, the local people traditionally lead a life within such areas. These people directly benefit from soil and water conservation in protected areas, their positive effects on climate, and their inclusion of medicinal plants and economic from activities such as eco-tourism (Yıldırım & Erol, 2012).

IUCN's World Commission on Protected Areas has defined "National Park" as its Category II type of protected areas out of the six associated management categories, and a national park was deemed to be a place with one or several ecosystems, not altered by human exploitation and occupation, where plant and animal species, geomorphological sites and habitats are of special scientific, educative and recreation interest, and contains a natural landscape of great beauty (IUCN/ICNP, 1971).

The International Union for Conservation of Nature (IUCN) has adopted the basic philosophy of current national park system at its 10th general assembly in New Delhi

in 1969. The principles of the system were born, and the features of a national park have been determined at this assembly (Yenilmez Arpa, N., 2005).

1.4. The Role and the Issues of Protected Areas and National Parks

The terrestrial protected areas alone attract an estimated 8 billion visits per year of which more than 80 % are in Europe and North America. The size of the area, local population size, remoteness, the attractiveness of the area's natural features, and national income parameters are biophysical and socioeconomic variables that might plausibly predict visit rates (Balmford et al., 2015).

Yellowstone National Park hosts about 4 million visitors every year (https://www.nps.gov/yell/planyourvisit/visitationstats.htm), while the Great Barrier Reef Marine Park attracts an estimated 2.62 million visitors annually (http://www.gbrmpa.gov.au/ our-work/reef-strategies/visitor-contributions [cited 7 May 2019]). The potential for tourism in national parks is growing. According to the World Tourism Organization, international tourism in protected areas will continue to grow by 3.3 % annually through 2030 (Leung et al., 2015).

In addition to attracting visitors, national parks provide opportunities to educate visitors through experiences, study, interpretation, visitor centers and publications. Ecotourism provides a specific way for people to come into direct contact with nature, and national park tourism offers significant opportunities to educate visitors about the values of biodiversity (Bushell & Bricker, 2017). To promote ecotourism and sustainable development, the relationships among tourism, local people, and biodiversity conservation in the study area must be strengthened (Xu, Lü, Chen, & Liu, 2017). Evidence of the wider benefits of national parks is growing around the world. Understanding the wider benefits of national parks will be increasingly important in the struggle to maintain the areas in the face of growing populations and resource demands (Jepson et al., 2015).

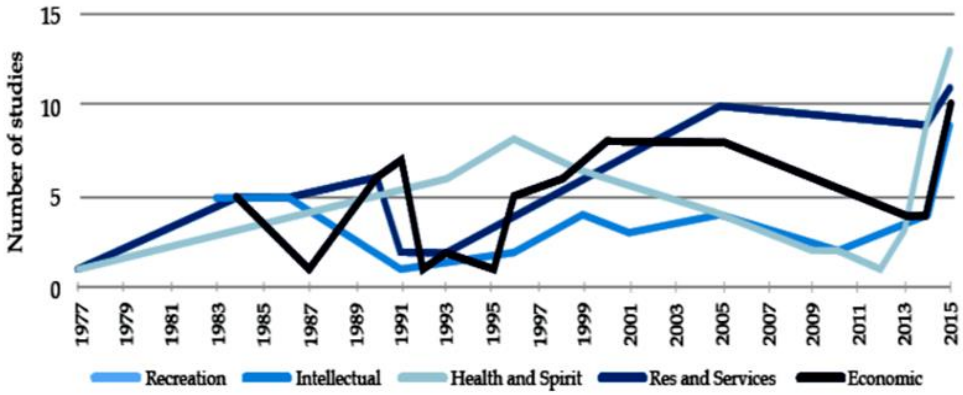

Figure 1.6. Graphical summary of the trends in the literature on protected areas' values (Jepson et al., 2015).

In an era of growing populations, struggling economies, increasing resource extraction and expanding linear infrastructure development there is a risk that protected areas could be seen as being 'in the way' of human development. Indeed, some countries are backtracking on international PA commitments, and PA downgrading, downsizing, and degazettement (PADDD) has recently emerged as a topic of concern (Mascia & Pailler, 2011).

PAs worldwide are losing legal protections through PADDD process. (Pack et al., 2016). The extent, patterns, trends, and causes of PADDD remain largely unrecognized and poorly understood as do the implications for conservation (Mascia & Pailler, 2011).

Although it is fundamental to understanding some of the most important dynamics in protected areas, PADDD does not measure changes at a global level in a systematic and spatially explicit way, nor does it measure positive changes in protected areas. While it has been possible over the decades to assess the national, regional and global coverage of protected areas at given points in time, the lack of a global protected area database that comprehensively assesses positive and negative changes in the protected areas estate has led UNEP-WCMC to start building such a database from historical versions of the WDPA (UNEP-WCMC & IUCN, 2016).

PA creation follows a defined legal process that requires public consultation and technical studies on environmental and social impacts. However, the legal process for PADDD only states that PA alterations should happen based on a specific law, and does not define limitations or the process for proposing such legislation. Therefore, once a PA is created, it has few legal safeguards against further alterations. Due to this lack of a process-based national policy, PADDD has occurred in a sporadic, ad hoc manner, without technical studies or public consultation (Pack et al., 2016).

As pressures on the natural environment increase with population growth and climate change, understanding and promoting the role of protected areas in the wider landscape will be increasingly important to demonstrate the relevance of protected areas to the economy and society, as well as to biodiversity. This will help promote understanding of the real trade-offs and synergies between protected area goals and other socio-economic objectives, rather than relying on market prices where the value of nature tends to be invisible (UNEP-WCMC & IUCN, 2016).

PAs are at increasing risk on a number of fronts. A combination of population growth, competing claims for land resources, growing demands for natural resources, and the expansion of infrastructure has resulted in diminished political, policy and public support for PAs. Increasingly PAs are seen as a luxury that struggling economies can ill afford and/or are in conflict with other policy priorities, such as economic development or tourism. This is at a time when many PAs are facing enhanced risks and managers are struggling to be effective in the face of significant funding shortfalls – estimated at between US $ 1 billion and US $ 1.7 billion per year in developing countries (Bruner et al., 2004). In short, PAs are facing increased political and social vulnerability today.

1.5. Historical Development and Legal Framework in Turkey

Located at the intersection of three different bio-geographical regions (Iran-Turan, Euro-Siberia, and Mediterranean) and containing three hot spots out of the global 34, Turkey has also been a populated country throughout its history. For this reason, its

natural sources have started to decline while its cultural wealth continued to accumulate. Excessive use of natural resources by human beings, supposing that it will never be exhausted has caused disturbed the natural balance and now threatens human wellbeing. Therefore, a contemporary understanding of nature conservation has increasingly become important. In parallel to nature conservation awareness in the world, Turkey has also started to put into force laws and regulations in order to protect certain endangered species and its rich diversity of flora and fauna (Yucel & Babus, 2005).

Systematic nature conservation efforts in Turkey were only seen after World War II. Following the use of the term "Mill Park" (National Park) by Prof. Selahattin İnal for the first time in 1948, the term entered into Turkish legislation with Articles 4 and 25 of the Forest Law in 1956. Based on this law, some forested land was declared as national park for the first time in 1958, and the first regulations about the management of national parks came in to force in 1959. Due to the need for new tourism projects and since just one article of the Forest Law was not sufficient, the State Planning Council charged the forestry organization with the duty of establishment new national parks with its first 5-year development plan in 1963. National Park Service specialists were invited to the USA to learn about planning, and some protected area master plans were jointly prepared in 1969 and 1970. In this way, the national park concept has won a real meaning during a period of general progress in Turkey.

Although a draft National Parks Law was prepared in 1974, it was not accepted because of the concerned ministries' opposition. It wasn't to take effect until 1983, due to lack of political cooperation and the 1980 coup. In accordance with Article 63 (on the conservation of historical, cultural and natural assets) of the 1982 Constitution, the National Parks Law was accepted on 9 August 1983 and published in the 11/08/1983 dated and 18132 numbered Official Gazette. Afterwards, a new National Parks Directive published in 1986.

Today protected areas are guarded under the Forest Law No. 6831, National Parks Law No. 2873, Land Hunting Law No. 4915, Cultural and Natural Heritage Protection Law No. 2863, Fisheries Law No. 1380, Zoning Law No. 3194, Environmental Law No. 2872, and pursuant to relevant by-laws. Consequently, there are 18 different conservation categories such as National Park, Nature Reserve, Natural Site, Special Environmental Protection Area, Nature Monument, or Internationally Significant Wetland. In some cases several conservation categories are assigned to a single area. Some PAs have been declared according to the national legislation, and some have been created on the basis of international agreements (Ardahanlıoğlu et al., 1983).

Started with the Forest Regulations in 1870 and continued with Land Hunting Act (1937), Forest Law (1956), and National Parks Law (1983); the Ministry of Forestry was entitled to legal management of protected areas until 2003. The General Directorate of National Parks and Hunting was founded in 1976 and it was transformed to the Department of National Parks in the General Directorate of Forestry in 1982. Later, the Department of National Parks was connected to the General Directorate of National Parks and Game-Wildlife in the Ministry of Forestry. After that, the ministries of Environment and Forestry were incorporated in 2003 and the General Directorate of Nature Conservation and National Parks was founded. The Ministry of Forestry and Water Affairs has been established in 2011 and the General Directorate of Nature Conservation and National Parks has been connected to this ministry. Ultimately, two ministries have bounded and the General Directorate of Nature Conservation and National Parks started to work under the Ministry of Agriculture and Forestry in 2018.

The importance of the declaration and the assignment process has increased as the protected area conservation categories have started to be applied as policy tools as well as ways of measurement. The process is up to the country or governing body concerned and thus there are different principles and proposed methodologies all around the World. (Dudley et al., 2008). However in Turkey, designation process of a national park was described until 2011 as “Upon the suggestion of the Ministry of

Agriculture and Forestry, the areas to be determined to have the characteristics of a national park will be made a national park by the Council of Ministers obtaining the favorable view of the Ministries of National Defense, Reconstruction and Resettlement, and Culture and Tourism, and whenever necessary other concerned ministries as well" (National Parks Law Article 3, 1983).

After the Ministry of Forestry and Water Affairs was established, the designation process has changed. It was now described as "Upon the suggestion of the Ministry of Environment and Urbanization, the areas which have the characteristics of a national park to be determined by the Ministry of Forestry and Water Affairs and will be designated as national park by the Council of Ministers obtaining the favorable view of the Ministries of National Defense, the Ministry of Energy and Natural Resources, the Ministry of Culture and Tourism, and whenever necessary other concerned ministries as well" (National Parks Law Article 3, 2011).

With the adaption of National Parks Law, it has become possible to conserve sites with various resource values as the purpose of the law is as "to establish the principles governing, the selection and the designation of national parks, nature parks, natural monuments and nature reserve areas of national and international value, and management of such place without spoiling their characteristics". According to the definitions in Article 2/a, "National Park" is a natural area having, from scientific and aesthetic standpoints, both natural and cultural values of rare national and international standing, and natural, recreational and touristic sites.

Currently, Turkey has 45 national parks (as of August 2019) which are conservation, recreation and tourism areas with high natural and/or cultural values. Seven of these parks have historical national park category.

Yozgat Çamlığı National Park is the first national park to be declared (1958) while the last national park to be declared is Botan Vadisi National Park (2019). The total area of all 45 national parks is 878.069 ha. covering 1,12 % of Turkey' s surface area (783.562 km²) (http://www.milliparklar.gov.tr/belge/mp.pdf).

Table 1.3. *Turkey's National Parks*

No	City	Name of the National Park (NP)	Area(Hectare)	Date of Declaration
1	Yozgat	Yozgat Çamlığı NP	266,90	1958
2	Osmaniye	Karatepe-Aslantaş NP	4.142,91	1958
3	Ankara	Soğuksu NP	1.186,26	1959
4	Balıkesir	Kuş Cenneti NP	17.058,37	1959
5	Bursa	Uludağ NP	13.024,07	1961
6	Bolu	Yedigöller NP	1.623,07	1965
7	Aydın	DilekYarımadası-B.Menderes D. NP	27.598,16	1966
8	Manisa	Spil Dağı NP	6.801,03	1968
9	Isparta	Kızıldağ NP	80.200,42	1969
10	Antalya	Güllük Dağı-Termessos NP	6.699,98	1970
11	Isparta	Kovada Gölü NP	6.550,71	1970
12	Tunceli	Munzur Vadisi NP	42.674,49	1971
13	Antalya	Beydağları (Olympos) NP	31.165,88	1972
14	Antalya	Köprülü Kanyon NP	35.719,16	1973
15	Kastamonu	Ilgaz Dağları NP	1.117,70	1976
16	Afyon	Başkomutan Historical NP	34.833,60	1981
17	Nevşehir	Göreme Historical NP	9.613,65	1986
18	Trabzon	Altındere Vadisi NP	4.467,71	1987
19	Çorum	Boğazköy-Alacahöyük NP	2.600,44	1988
20	Adıyaman	Nemrut Dağı NP	13.827,28	1988
21	Konya	Beyşehir Gölü NP	82.156,90	1993
22	Balıkesir	Kazdağı NP	20.934,83	1994
23	Rize	Kaçkar Dağları NP	52.970,08	1994
24	Artvin	Hatila Vadisi NP	16.943,78	1994
25	Artvin	Karagöl-Sahara NP	3.250,97	1994

26	Antalya	Altınbeşik Mağarası NP	1.146,65	1994
27	Niğde	Aladağlar NP	55.064,41	1995
28	Muğla	Marmaris NP	29.206,02	1996
29	Muğla	Saklıkent NP	1.643,30	1996
30	Çanakkale	Troya Historical NP	13.517,19	1996
31	Denizli	Honaz Dağı NP	9.428,98	1998
32	Kastamonu	Küre Dağları NP	37.753,38	2000
33	Kars	Sarıkamış-Allahuekber Dağları NP	22.519,89	2004
34	Ağrı	Ağrı Dağı NP	88.014,80	2004
35	Edirne	Gala Gölü NP	6.086,84	2005
36	Kayseri	Sultansazlığı NP	24.357,70	2006
37	Şanlıurfa	Tek Tek Dağları NP	19.335,24	2007
38	Kırklareli	İğneada Longoz Ormanları NP	3.155,00	2007
39	Erzurum	Nene Hatun Historical NP	387,42	2009
40	Ankara	Sakarya Meydan Muharebesi Historical NP	13.850,46	2015
41	Adana	Yumurtalık Lagünü NP	16.979,94	2008/2016
42	Bayburt	Kop Dağı Müdafaası Historical NP	6.335,10	2016
43	Muş	Malazgirt Meydan Muharebesi Historical NP	238,33	2018
44	Ankara, Çankırı, Kastamonu	Istiklal Yolu Historical NP	235,70	2018
45	Siirt	Botan Vadisi NP	11.384	2019
		Total Area	**878.069**	

The purpose of this study is to assess the boundary and category changes in Turkish National Parks and to develop various management approaches and recommendations. The features, functions, historical development of the parks, changes that have occurred over time, their demographic structure, and current human uses were assesed.

CHAPTER 2

MATERIALS & METHODS

2.1. Study Area

This study considered 12 out of the 45 national parks in Turkey. Nine of those national parks had their boundaries modified while another two had both boundary modification and category change, and Yumurtalık Lagünü National Park's category had been changed since they were established (Table 2.1).

Table 2.1. Studied National Parks

No	Name of the National Park	Boundary Revision	Category Change
1	Soğuksu	√	
2	Kuş Cenneti	√	
3	Uludağ	√	
4	Dilek Yarımadası-Büyük Menderes Deltası	√	
5	Beydağları Sahil	√	
6	Başkomutan (Historical)	√	
7	Saklıkent	√	
8	Kızıldağ	√	
9	Beyşehir Gölü	√	
10	Gala Gölü	√	√
11	Sultansazlığı	√	√
12	Yumurtalık Lagünü		√

The studied national parks are located in separate regions of the country, established in different years between 1959 and 1996, have various resource values, and they do not have much in common except for their “national park” categories.

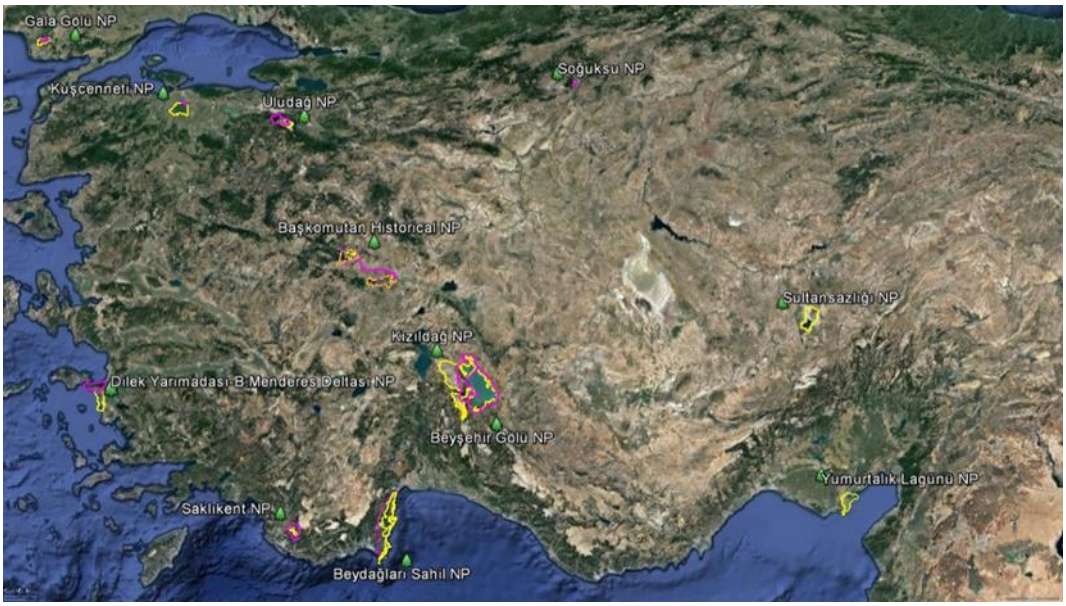

Figure 2.1. Locations of the studied national parks.

It is obvious from the Table 2.2 that some national parks have one, and some others have two or three boundary revisions during their history. When we compare the boundary revisions (Table 2.2) and category changes tables (Table 2.3), we would see that 73.68 % of these amendments took place after the year 2000. The total area of the study parks is 336.286 hectares and this corresponds to 38.3 % of the total national park area in Turkey.

The study reveals that 878.069 hectares land has been declared as national park, and this category is legally managed for ecosystem protection and recreation (Type II in the International Union for the Conservation of Nature (IUCN) nomenclature of management categories).

Table 2.2. *The National Parks whit boundary revisions in Turkey.*

No	Name	Location	Proclamation Date	Boundary Revisions
1	Soğuksu	Ankara - Kızılcahamam	19.02.1959	1997
2	Kuşcenneti	Balıkesir - Manyas	27.07.1959	2005
3	Uludağ	Bursa - Yıldırım, Kestel, Osmangazi	20.09.1961	1996/2006/2006
4	Dilek Yarımadası.- B.Menderes Deltası	Aydın - Kuşadası	19.05.1966	1994
5	Kızıldağ	Isparta, Konya	09.05.1969	1993/2018
6	Beydağları Sahil	Antalya - Kemer, Kumluca	16.03.1972	1988
7	Başkomutan (Historical)	Afyon, Kütahya	08.11.1981	2000/2016
8	Sultan Sazlığı	Kayseri - Yeşilhisar, Develi	21.04.1988	2003
9	Gala Gölü	Edirne - İpsala, Enez	18.08.1991	2005
10	Beyşehir Gölü	Konya	11.01.1993	2018
11	Saklıkent	Muğla - Fethiye, Antalya	06.06.1996	2009

Table 2.3. *The National Parks whit category changes in Turkey.*

No	Name	Location	Proclamation Date as Nature Reserve	Proclamation Date as National Park
1	Gala Gölü	Edirne - İpsala, Enez	18.08.1991	05.03.2005
2	Sultan Sazlığı	Kayseri - Yeşilhisar, Develi	21.04.1988	17.03.2006
3	Yumurtalık Lagünu	Adana	08.07.1994/16.10.2009	06.12.2008/2016

2.2. Methods

In general, this thesis is based on data gathering, analysis, and interpretation of the findings.

The data gathering phase included examination of the relevant literature and searches about the study topic, surveys which are conducted by the governmental organizations and NGOs, and theses and dissertations. National and international conservation projects were also considered.

Besides these, available Long Term Development Plans and the Management Plans of the parks were scrutinized. The Official Gazettes issues about the national parks' declarations and the revisions were consulted. Old and the new maps of boundaries were obtained and compared in GIS and CORINE Land Cover Project. The CORINE Land Cover Classes are used to understand the changes in years (Figure 2.2) but seasonal changes were ignored and excluded from calculation of land cover type ratios.

Interviews were carried out with the General Directorate of Nature Conservation and National Parks (DKMP) authorities and relevant NGOs. The interviews were supplemented with reviews of long term development plans-management plans, reports, press releases, legal documents, and other published and grey literature items. Global conservation and management methods such as METT (Management Effectiveness Tracking Tool) and RAPPAM (Rapid Assessment and Prioritization of Protected Area Management) were also taken into account.

The changes in the size of study national parks and/or in management category were documented by using the General Directorate of Nature Conservation and National Parks statistics. Afterwards, estimates of the resource uses, including tourism, hunting, fishing, and livestock grazing were presented.

Although the same type of data was aimed to be collected for all study sites some variation was encountered in the documents consulted. Unless stated otherwise in the

results & discussion chapter, the long term development plans/management plans are taken as references for the studied national parks.

Figure 2.2. Corine Land Cover Classes
(https://land.copernicus.eu/Corinelandcoverclasses.eps.75dpi.png/image_view_fullscreen)

CHAPTER 3

RESULTS & DISCUSSION

3.1. Results

3.1.1. Soğuksu National Park

Figure 3.1. Soğuksu National Park

Soğuksu National Park is adjacent to Kızılcahamam district, 80 km north west of Ankara. Soğuksu forests were declared a National Park in 1959 because it is a fine example of transitional woodlands at the edge of the Central Anatolian Steppe. It retains its rare natural beauty and is suitable for social, cultural and tourism activities due to local spa – mineral springs.

The National Park was first established in an area of 1.050 ha and was included in the "Kızılcahamam Tourism Region" announced by the Cabinet Decree dated 1985. An

area of about 3.25 ha to the west of the National Park where silicified tree fossils were present was registered as the first degree Natural Site.

The site on which “Patalya Thermal Resort Hotel” now exists was first occupied by a training center building for the Forest Management Unit, but then transferred to the Başkent University Foundation before completion, and eventually taken out of the national park boundaries in 1997. At the same time, national park boundaries were expanded in the north to Osmandede and Kayavatanı hills, increasing the total area of National Park from 1.050 ha to 1.187 ha. However, during the digitalization of boundary data in 2016, it was understood that actually the area was 3 ha less, and this error was corrected and updated. The current area of Soğuksu National Park is finalized as 1.187 ha (Table 3.1).

Table 3.1. *Soğuksu National Park*

SOĞUKSU NATIONAL PARK				
Date	**Category change**	**Change in area (ha)**	**Final area (ha)**	**Reason**
19.02.1959 (28.04.1959)	Declaration as national park	1,050	1,050	To conserve the rare natural source values.
28.06.1997	Boundary revision	+137	1,187 (1,184)	Patalya Thermal Resort’s area was removed out of the field. Osmandede and Kayavatanı hills were added to the field.
14.11.2008	Acceptance of Long Term Development Plan	-	-	
2016	Correction of the boundary	(3)	1,187	After GIS measurements a 3-ha difference was detected and the boundary was physically set as 1,187 hectars.
2018	Revision of Long Term Development Plan	-	-	

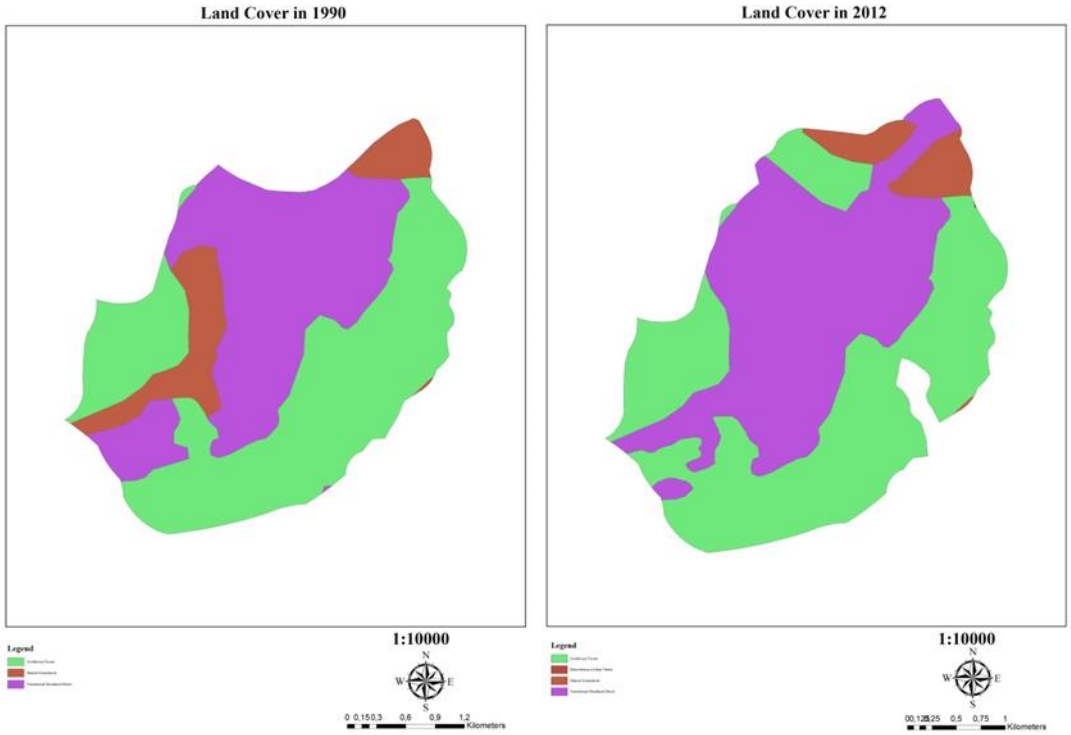

Figure 3.2. The Comparative CORINE Land Cover Maps of Soğuksu National Park.

A Long Term Development Plan (prepared in 2008 and revised in 2018) divides the national park into three different zones: A Sensitive Protected Zone where only traditional uses that do not harm nature are permitted, a Sustainable Utilization Zone where nature-friendly uses are allowed, and a Regulated Zone where recreation is concentrated. When the situation of the National Park before and after the border revision in 1997 is compared, it is observed that the section included into the area is within the sensitive protected zone. It was further observed that the spa hotel with 312 bed capacity is located in the excluded section and, that an indent is made in the boundary in the form of a pocket during the border change at the south east region of the park in order to exclude the hotel zone from the area. Furthermore, a greater area which is the property of forestry administration is added to the northern section of the national park in order to suppress the reactions. When progressing along the tour route in the national park, one goes out of the boundaries of the park from time to time and

then again back inside. It is clear that the removed area in the shape of a narrow and long pocket causes a control and authority confusion.

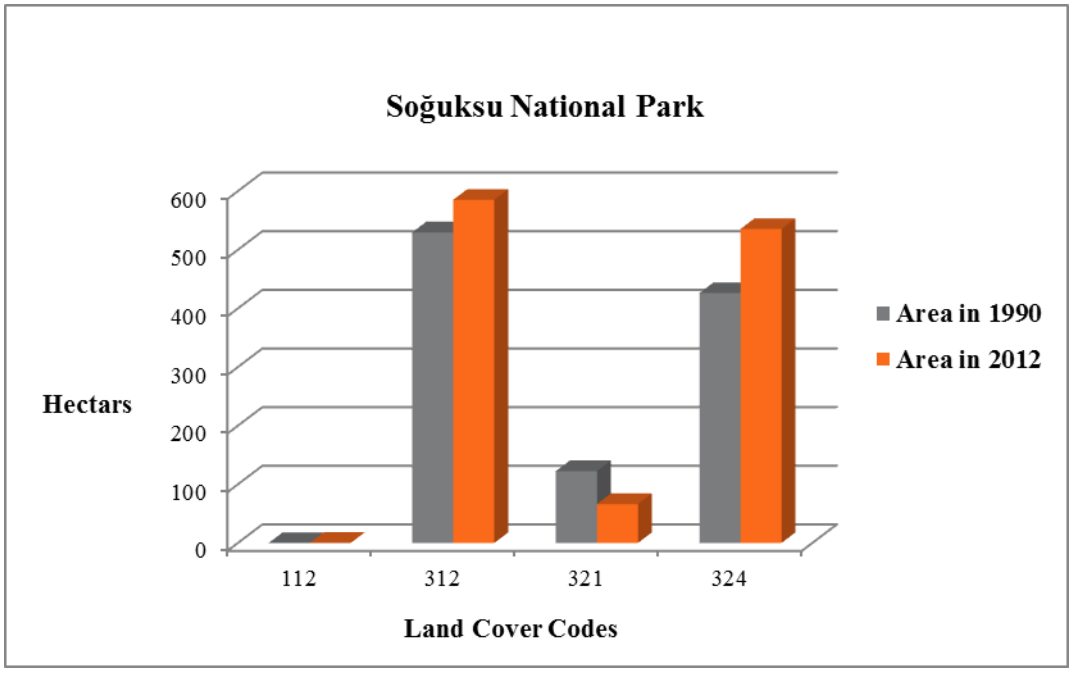

Figure 3.3. Variations on the land cover of Soğuksu National Park.

The change in boundaries appears to cause a decline in natural grassland cover (Corine code 321) to almost half of its former extent, while wooded areas appear to have increased further (Figure 3.3). However, a close look at the map (Figure 3.2) reveals that the removed part was all coniferous forest and its loss was compensated by the addition of new forested land. The decline in grassland cover is either a misclassification in 1990 or a natural change as a result of succession. Therefore, the composition of biotopes inside the national park can be considered to have remained roughly the same as before the change.

3.1.2. Kuş Cenneti National Park

Figure 3.4. Kuş Cenneti National Park

Kuş Cenneti National Park is the fourth oldest national park in Turkey and lies on an important bird migration path. Located in the Manyas district (Balıkesir), it covers a total area of 17.058 hectares. It is well known for its bird colonies and rich aquatic life.

With the efforts of Ord.Prof.Dr. Curt Kosswig, 52 ha part of the Sığırcı Stream delta was announced as a National Park with the Cabinet Decree dated 31.08.1959 and numbered 12108. On 20.06.1975, an area of 12.1 ha was nationalized and added to the area of the national park. Finally, the whole lake was added by the decision published in the Official Gazette dated 21.06.2005 and numbered 25852, and so the the national park was considerably expanded (Table 3.2).

In 1977, 23.667 hectares area which also covered the lake was announced as the Wildlife Preservation Area, and the National Park and its surroundings were registered as the first degree Natural Site in 1981. Manyas (Kuş) Lake is considered as a wetland of international importance according to the fish criteria within the scope of the "Project of Assessing Wetlands in Turkey according to Ramsar Convention Fish Criteria", which the Ministry of Environment made in 2001.

Table 3.2. *Kuş Cenneti National Park*

KUŞ CENNETİ NATIONAL PARK				
Date	**Category change**	**Change in area (ha)**	**Final area (ha)**	**Reason**
31.08.1959	Declaration as national park	52	52	Important wetland and bird area
20.06.1975	Boundary revision	+12,1	64,1	Some areas were nationalized.
21.06.2005	Boundary revision	+16,993.9	17,058	The area of Manyas Lake was added to the national park's area in order to control and manage it easily.
2017	LTDP is being prepared	-	-	

The National Park land at Sığırcı Delta (64 hectares) and the land possessed by the Kuş Cenneti Protection and Development Association are surrounded by wire fence and closed to any kind of human activity. Kuş Cenneti National Park Visitor's Center and its premises are located on a small part of this area.

Being a party in 1994 to the Ramsar Convention (Protection of Wetlands Having International Importance as Especially Living Environment of Water Birds), the governments have first added a 10.200 ha portion to the east of the lake and, in 1998, the complete Lake into the Ramsar List. In this way full protection of the ecological characteristics of the area was guaranteed internationally.

The boundaries of the National Park revised and the Lake was added to the park area in June, 2005. Hereby, the land cover of inland marshes (Corine code 411) and water bodies (Corine code 512) increased (Figure 3.6).

Six months later, the Bird Lake Wetland Protection Regions were specified in the second Ordinary Meeting of the National Wetland Commission dated 28.12.2005, and Manyas Lake Wetland was approved.

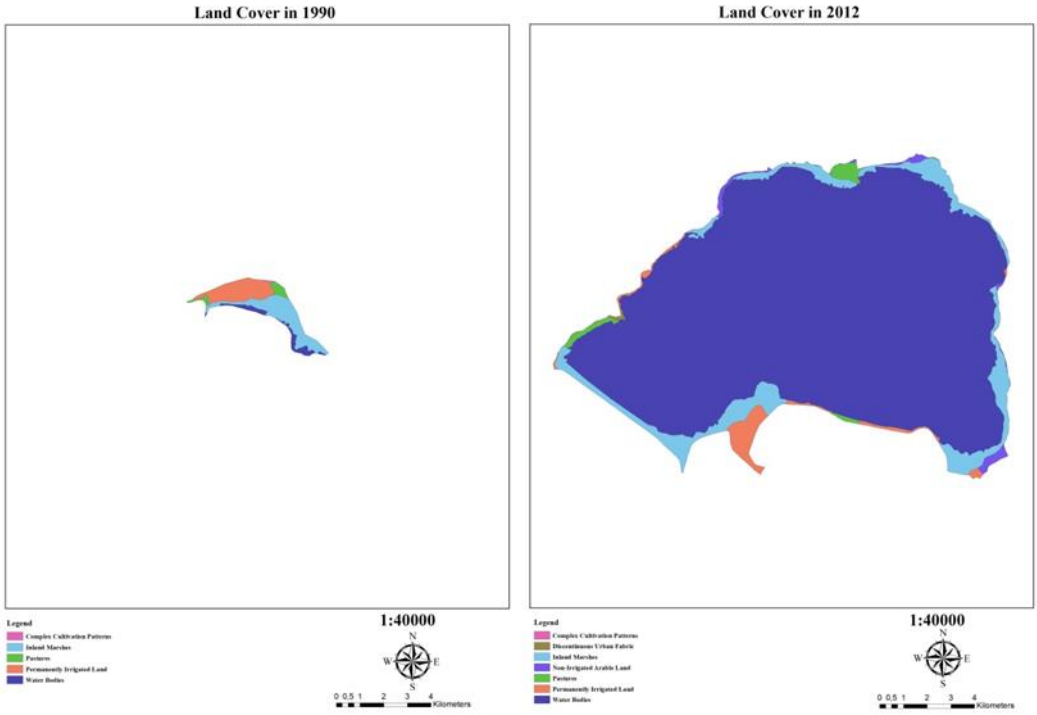

Figure 3.5. The Comparative CORINE Land Cover Maps of Kuş Cenneti National Park

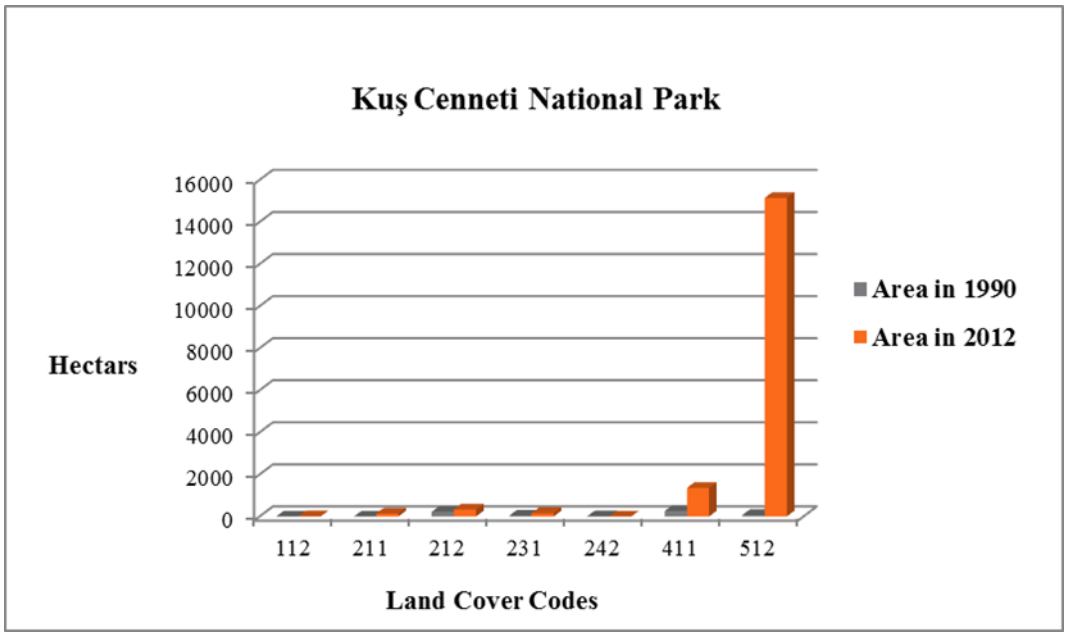

Figure 3.6. Variations on the land cover of Kuş Cenneti National Park

The total population of 13 quarters located around the National Park and which are regarded to be associated with the Lake was 7040 in 2016. The local people earn an income from agriculture, livestock and fishing. No tourism activity exists in the settlements associated with the Lake. The important touristic value of the region is Kuş Cenneti National Park.

The leading economic value produced by the Bird Lake as a wetland ecosystem is the fisheries. Six aquatic product cooperatives with a total of 309 members had been operated in the Bird Lake by 2017.

Only 1.7 % (about 293 ha) of the National Park area is composed of agricultural lands, with only a small proportion being private property. About 170 ha of the public land is located on the delta where Kocaçay flows into the lake. Almost all this land belongs to public bodies and was nationalized in the process of constructing the banks. Although they were nationalized, the land was continued to be used by the villagers after the construction of the banks.

Agricultural activity in the delta has a two-way pressure on the National Park through the destruction and transformation of reeds to agricultural fields (cutting, burning and cultivating the drained areas), and through the impact of fertilizers and pesticides used in agriculture.

There is a total of 191.72 ha pasture land in 10 parcels within the National Park. However, the animals are also grazed in the wet meadows around the lake besides the pastures.

Great changes occurred in fish diversity and abundance in the Bird Lake due to the deterioration in water quality within the last 25-30 years, the draining of the flooded areas to the south of the Lake, the interventions in the water regime, and illegal and excessive fishing. The species fished in the Lake for the last 10 years is almost all Crucian Varp (*Carassius gibelio*).

In the past, 150 tons of crayfish (*Astacus leptodactylus*) were produced annually, but starting from the end of the 1980s, a fungus disease has destroyed the crayfish population in the lake.

Ecological relations in the area are harmed by the interventions in the water regime of the lake such as drying the flood areas at the south, pollution loads transported from the surrounding settlements, industrial plants, mining enterprises, and agricultural areas. The invasion of Crucian Carp and its becoming the dominant species within a short time in recent years threaten the lake's ecosystem.

In order to be able to provide a more efficient management in the area, especially the training and information sections of the existing administration and the visitors center must be made more functional; the necessary infrastructure and the opportunities to enable research and monitoring must be provided in the area; and some arrangements must be made to allow the visitors to see the wildlife in the area in any season without disturbing it.

3.1.3. Uludağ National Park

Figure 3.7. Uludağ National Park

Uludağ was announced as a National Park upon Ministry Approval dated 20.09.1961 and numbered 6119-5. The area of Uludağ National Park is 13.024 ha (Table 3.3). Its natural wealth and topographical and climatic conditions have made the area an important focus of the region and the park has become the most important winter tourism center of Turkey. The area also provides camping and daily recreation activities in spring and summer months.

Uludağ National Park is located at the south east of the city center within the boundaries of Bursa province at a distance of 22 km to Bursa. In addition, Sarıalan camping and daily recreation area is accessible from Bursa by cableway line.

Uludağ National Park is completely a natural site. The first Development Zone and the area surrounded by Zirve Hill, Çobankaya Hill, Çardakseki Hill and Çayırlı Creek to the north and north east of this zone (Including the second Development Zone) are the second degree Natural Site. All the rest of the area has first degree Natural Site category. In addition, the second Development Zone was determined as "Uludağ–Bursa Winter Tourism Center" in 1986. 82.8 % of the National Park area is State

Forest and the remaining part is the property of the Treasury. No land in the area is private property.

Table 3.3. *Uludağ National Park*

ULUDAĞ NATIONAL PARK				
Date	**Category change**	**Change in area (ha)**	**Final area (ha)**	**Reason**
20.09.1961	Declaration as national park	11,338	11,338	Being suitable for winter tourism due to its natural wealth and topographical and climatic conditions.
1964	Acceptance of Long Term Development Plan	-	-	Conserve the area and develop some utilization
06.06.1996	Boundary revision	+ 1,424	12,762	The Alaçam district was added to the park area.
01.04.2006	Boundary revision	-300 ?		Boundary revision was annulled by the court decision.
10.12.2009	Revision of LTDP		12,762	
-	Unofficial boundary revision	+ 262	13,024	Informal increase in land following the transfer of treasury lands by Directorate General of National Property, and forest management (not published in the Official Gazette).

The most important ecosystem of Uludağ National Park consists of forests. In addition, herbaceous ecosystem composed of alpine meadows and mountain steppe formations, as well as, bush and rock ecosystems of the continental ecosystem and stream and still water (glacier lakes) ecosystems are deployed.

No urban or rural settlement exists within the National Park. However, the influence of the nearby settlements is in question. The southern borders of Bursa city are at the northern boundaries of the National Park. Besides Bursa, Kirazlı town and Süleymaniye, Soğukpınar and Alaçam villages are in interaction with the area because of their proximity.

Uludağ National Park, which shelters the most developed winter tourism center of Turkey, is an area visited in any season because it enables camping, trekking, picnicking, sports etc. activities.

Winter tourism activities are focused on two zones within Uludağ National Park. 16 rest stops of public institutions and organizations and 18 rest stops of private sector exist in the first Development Zone are called as the hotels zone. The total bed amount in this zone is 5.904. Another zone where winter tourism activities is intense is the second Development Zone. This zone located at the north east of the first Development Zone is the "Tourism Center" at the same time and 4 hotels with total 2.193 bed amount are in operation.

The total population of the settlements in direct interaction with the park was 1.657.323 by 2007. Being a non-intervened natural environment at the end of the 1960s, Uludağ was destroyed in time through irregular and unplanned housing for touristic purposes. A hotels zone was formed within the National Park considering the needs of the people, and in this process, a natural environment and architecture contradiction was experienced. An urban environment was formed in the area through a rapid and unplanned housing process which was not suitable for the natural environment. This caused the destruction of natural resource assets and spoiling of the landscape integrity. Rapid and unplanned housing within the National Park has brought infrastructural problems with itself.

Infrastructure of ski run in the first Development Zone, which shelters the most developed winter tourism center of Turkey, is not sufficient to meet the visitor capacity. The hotels have private mechanical lines and more than one mechanical line

transports the visitors to one ski run. Therefore, there exist hundreds of skiers at the ski runs at the same time and accidents become unavoidable. Inadequacy of ski runs in the zone creates safety problems.

Whitin the scope of the 1/25.000 Scale Uludağ Locality Environmental Plan approved and put into effect on 08.06.1983, important planning decisions which shall direct the future of Uludağ National Park were derived, and an attempt was made to take steps to improve Uludağ National Park's first and second Development Zones at national and international levels in terms of ecology, esthetics, function and economy to take care of the conservation principles and conservation – utilization equilibrium.

After being announced as a National Park in 1961, a "Long Term Development Plan" was prepared for the national park for the purpose of preserving the area and developing some utilization in 1964, but it became necessary to prepare a new plan in 2007, due to boundary revisions which are made in 1996 and 2006.

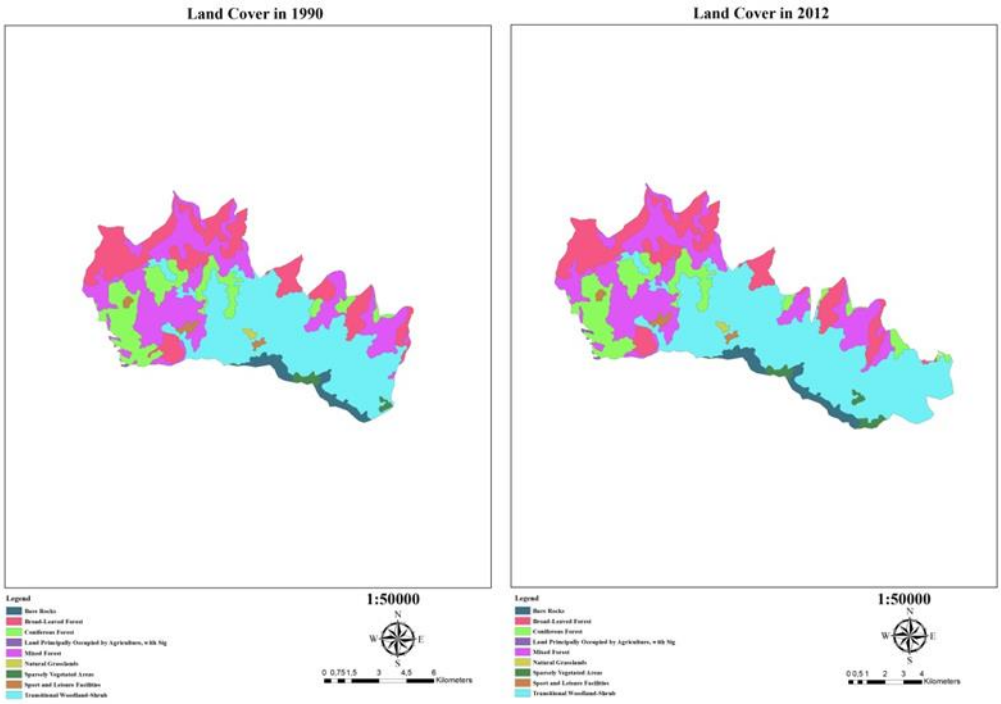

Figure 3.8. The Comparative CORINE Land Cover Maps of Uludağ National Park

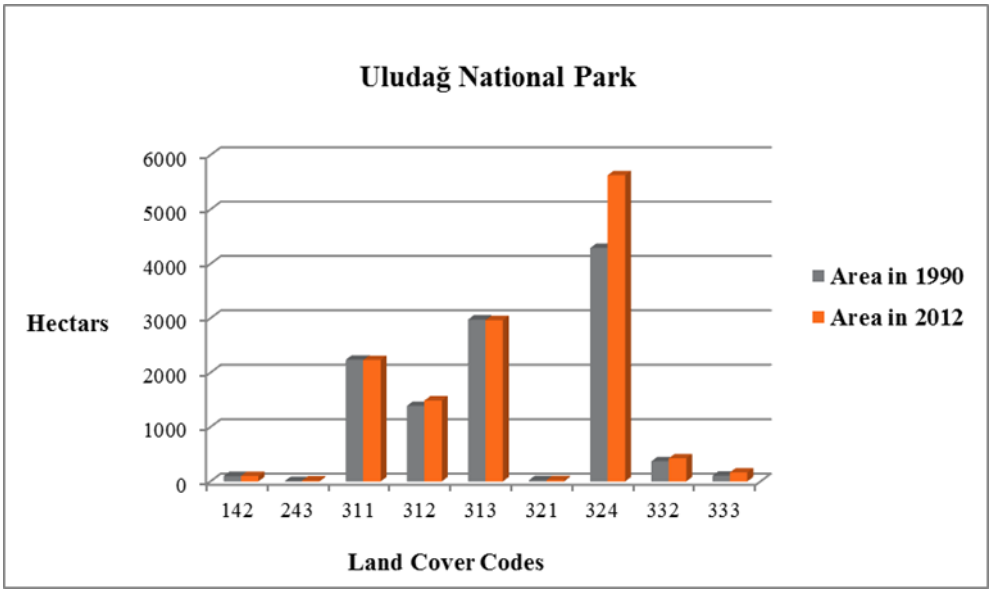

Figure 3.9. Variations on the land cover of Uludağ National Park.

The Alaçam district was added to the park area in 1996. The change in boundaries appears to cause an icrease in transitional woodland shrub cover (Corine code 324) (Figure 3.9). Then, an area of 300 ha was excluded from the southwest of the park, but this boundary revision was annulled by the court decision. Therefore, the new Long Term Development Plan was revised and put into effect again in 2009.

Uludağ National Park Directorate carries out the conservation, supervision, maintenance – repair and access control works within the National Park. However, distress is experienced in conservation and supervision activities due to the lack of personnel. Non-presence of a check point on the road from Alaçam Village causes inability both to collect statistical information and to supervise the activities of the visitors coming to the National Park through this road. Also, a security flaw is in question for those who are skiing or mountaineering, climbing, trekking etc. in Uludağ National Park.

3.1.4. Dilek Yarımadası-Büyük Menderes Deltası National Park

Figure 3.10. Dilek Yarımadası - Büyük Menderes Deltası National Park

Dilek Yarımadası - Büyük Menderes Deltası National Park is unique among all the protected areas in Turkey with its geomorphology, climate, and involving different types of ecosystems in a total area of 27.598 hectares. The Dilek Peninsula, which was declared as a national park in 1966, covers an area of 10.985 hectares, and the Great Menderes Delta, added in 1994 to the national park, covers an area of 16.613 hectares (Table 3.4). Dilek Yarımadası - Büyük Menderes Deltası National Park is also a first degree Natural Heritage Site, first degree Archeological Heritage Site, and Urban Heritage Site.

It is the only national park in Turkey, which consist of two parts, and these parts have totally different ecosystems. Considering the long declaration proccess of a new national park, it seems the Great Menderes Delta added to the Dilek Yarımadası National Park instead of declearing it as a new national park. Thus, Dilek Yarımadası - Büyük Menderes Deltası National Park has occurred.

Table 3.4. *Dilek Yarımadası - Büyük Menderes Deltası National Park*

DİLEK YARIMADASI-BÜYÜK MENDERES DELTASI NATIONAL PARK				
Date	**Category change**	**Change in area (ha)**	**Final area (ha)**	**Reason**
19.05.1966	Declaration as national park	10,985	10,985	Best conserved maquis areas in Mediterranean, rich flora and fauna, ecotourism potential.
08.07.1994	Büyük Menderes Delta added to the national park area	+16,613	27,598	Internationally important wetland, archeological, natural and cultural sites.
19.06.1997	Acceptance of Long Term Development Plan	-	-	Sustainable management
2018	Studies were initiated to revise LTDP	-	-	

Dilek Yarımadası - Büyük Menderes Deltası National Park is one of the most beautiful and scenic parks in Turkey, being rich in flora and fauna. However, the park has suffered from many threats which originated anthropogenically (Sütgibi, 2008). Urbanization, pollution, tourism, agriculture and grazing activities are the major factors that repress the national park area (Anonymous, 1997).

A Long Term Development Plan considering the rational conservation-utilization balance was prepared in 1997 in order to conserve, improve and provide continuity of the natural and cultural resources for future generations. According to this plan, the national park has three different zones and is managed with several provisions of the plan.

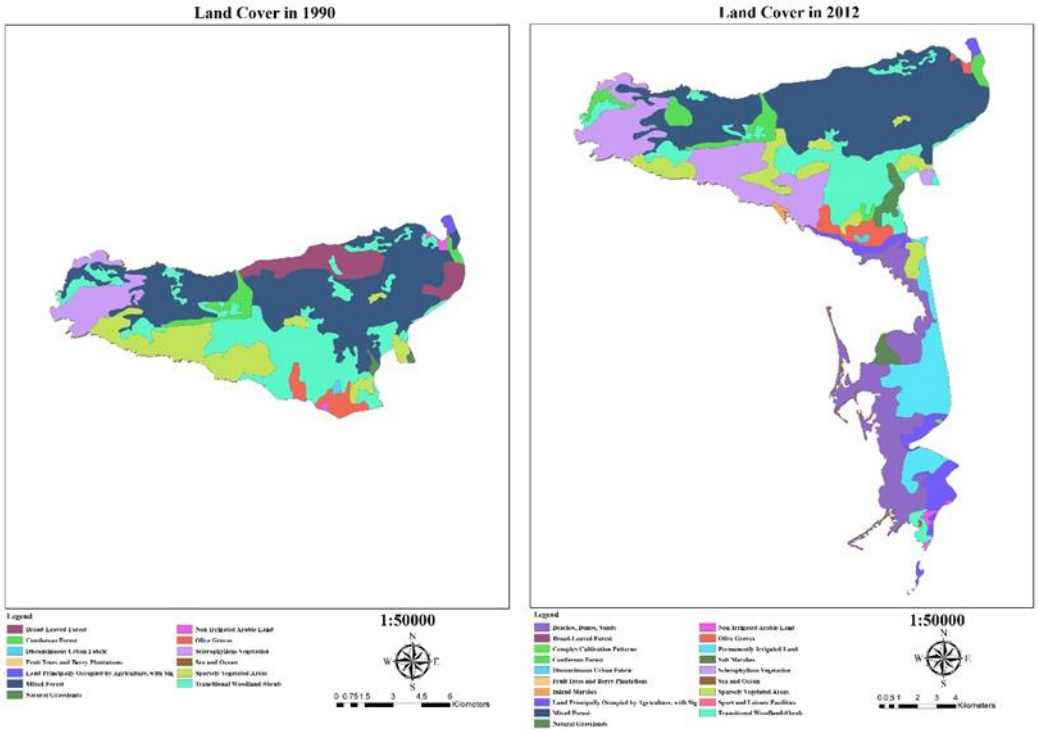

Figure 3.11. The Comparative CORINE Land Cover Maps of Dilek Yarımadası - Büyük Menderes Deltası National Park

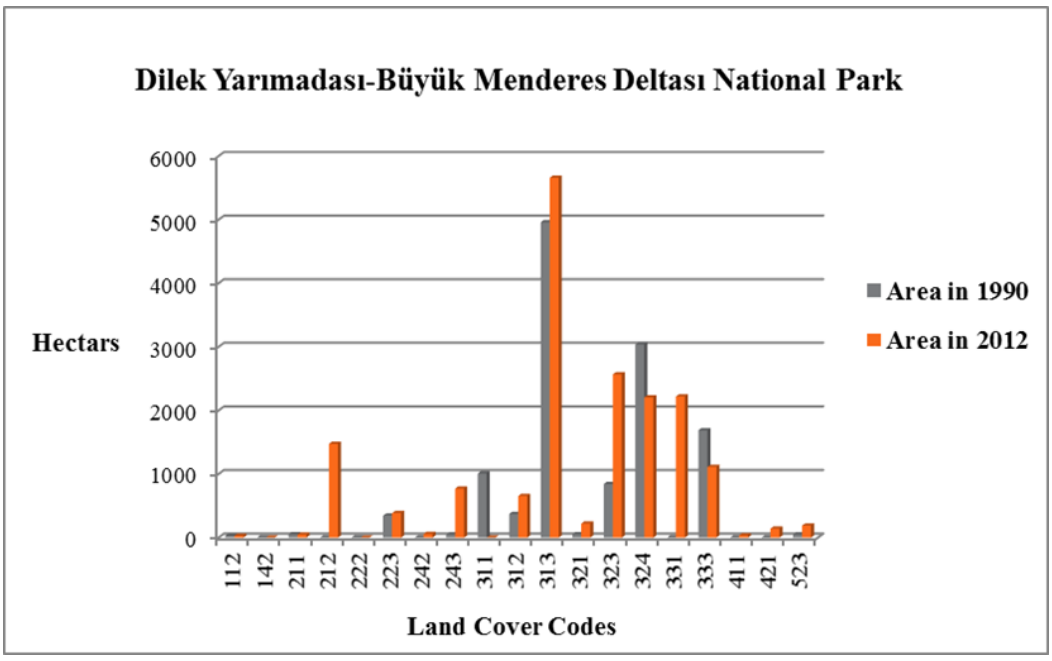

Figure 3.12. Variations on the land cover of Dilek Yarımadası-Büyük Menderes Deltası National Park

The land cover has changed after the boundary revision, and permanently irrigated land (Corine code 212), land principally occupied by agriculture (Corine code 243), and beaches, dunes and sand plains (Corine code 331) added as the new land cover types (Figure 3.12).

3.1.5. Beydağları Sahil National Park

Figure 3.13. Beydağları Sahil National Park

The boundaries of Beydağları Sahil National Park, which was declared by the Council of Ministers' Decision no. 6325 as a national park on 16.03.1972 and which had 69.800 hectares of area, were revised by the Council of Ministers' Decision no. 88/13268 on 23.12.1988. The current area of the national park is 31.165,88 hectares (Table 3.5). In total, 24 sites as grade I, II and III Archeological Sites, grade I, II and III Natural Site areas and also the historic sites are available within the boundaries of the park.

Table 3.5. *Beydağları Sahil National Park*

BEYDAĞLARI SAHİL NATIONAL PARK				
Date	**Category change**	**Change in area (ha)**	**Final area (ha)**	**Reason**
1971	Olympos - Beydağları Sahil National Park LTDP	-	-	Conservation of the park's values and enhancement of sustainable use by visitors.
16.03.1972	Declaration as national park	69,800	69,800	Presence of rich flora, fauna and archeological elements.
23.12.1988	Boundary revision	-38,782	31,165	To manage the park areas and easily ensure the development of tourism, and to solve the social and property problems.
2001	Acceptance of the Long Term Development Plan	-	-	
23.10.2003	Revision of the LTDP	-	-	
02.09.2005	Boundary Revision	?	31,018?	Some areas were excluded from the coastline because of the tourism and urbanization pressures.
25.04.2006	Annulment of the last boundary revision.	-	31,165	Boundary revision was annulled by the court decision.
26.06.2007	Revision of the LTDP	-	-	
05.01.2009	Revision of the LTDP	-	-	Cancelled
31.03.2010	Partially Revision of the LTDP	-	-	
26.10.2015	Acceptance of the new LTDP	-	-	The plan was not suitable to the new zoning rules and not eligible to solve the present day problems. Hence some part of the plan was annulled by the court in 2018.

The National Park, covering a total area of 31.165,9 hectares, can be defined as a medium-sized protected area considering the national and international levels. An area of this size can be considered as sufficient in terms of the sustainability of wildlife. Since Beydağları Sahil National Park is intensively used for touristic and recreational activities, the areas far from human influence are very limited. These limited areas are insufficient in terms of the sustainability of wildlife.

1.2 % of the National Park area can be used for tourism purposes and also 0.2% for excursion purposes. The tourism and recreational activities in the National Park are intertwined and therefore, it is very difficult to determine the visitor number. The total bed amount of the hotels and the ticket numbers sold in the enterprises are the data obtained for determining the visitor numbers. It is estimated according to this that about 8,800,000 people benefit from the area per year.

Tourism has been the primary economic activity in the post-1990 development of all settlements, which have interacted with Beydağları Sahil National Park. The population living near the National Park increased about 6 times between the years 1980-2012. Many touristic services are provided in the region. The National Park makes significant contributions to both the regional and national economy thanks to its natural and cultural resource values and also by making use of these values in tourism and recreational aspects.

Beydağları Sahil National Park coincides areally with the South Antalya Tourism Development Zone, one of the most important tourism centers of Turkey and the park's 15.384 hectares remain in the development zone. For this reason, many tourism facilities are available in the coastline of the National Park. The number of tourism facilities interacting with the National Park is 71. 48 of these facilities are located in the National Park with all their usage areas, the hotel structure of 16 facilities are out of the Park but their beaches are in the National Park. 69 of these tourism facilities have been allocated to the enterprise and tourism investors by the Ministry of Culture

and Tourism and two of them by the General Directorate of Nature Conservation and National Parks and their total bed amount is 55.855.

To be able to perform the tasks of control and inspection of the National Park, the Directorate of Beydağları Sahil National Park was established. However, the number of personnel is not sufficient to fulfill the tasks. There are the Administration and Visitor Center and also the Publicity Department. The most important factor, which makes vehicle access control difficult and also puts the continuity of the National Park's source values in danger, is that a part of the D–400 State Road to the settlement of Tekirova passes in transit in the National Park albeit intermittently. In addition, the following factors generate pressure: some current usages do not match up with the intended use stated in the previous long-term development plans, or there are ongoing judicial processes due to the inconsistent and unauthorized uses and also there are intensive usage and management requests for some areas in the park. Likewise, it is obvious that the reason for boundary changes, made in 1988 and 2005 but then cancelled by the court, has been caused by tourism pressure.

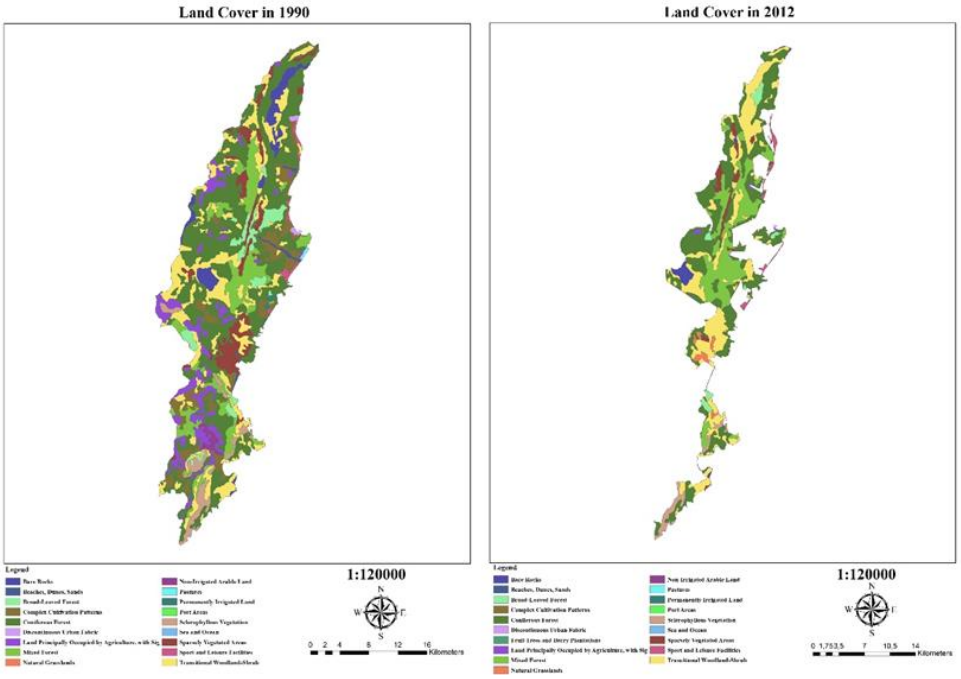

Figure 3.14. The Comparative CORINE Land Cover Maps of Beydağları Sahil National Park

As a result of the boundary change made in 1988, the National Park boundary had a very fragmented structure in the coastal region and the settlements and coastal areas in the immediate vicinity were excluded from the National Park. These areas excluded from the National Park have the tourism area category. The intensive structural development experienced in these areas has a negative impact on the National Park area, and especially the parts adjacent to the National Park boundaries create risk areas. The National Park area needs to be rearranged considering the natural structure of the northern and western part of its borders, where tourism pressure is newly experienced.

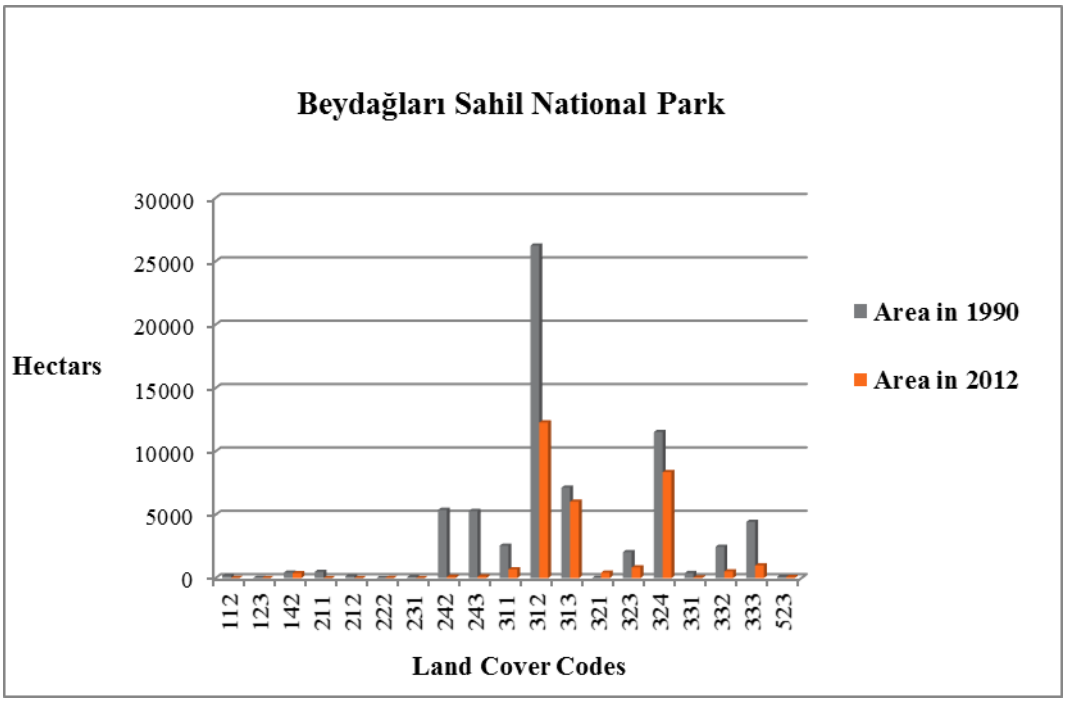

Figure 3.15. Variations on the land cover of Beydağları Sahil National Park

Complex cultivation patterns (Corine code 242), land principally occupied by agriculture (Corine code 243), broad-leaved forest (Corine code 311), coniferous forest (Corine code 312), and sparsely vegetated areas (Corine code 333) diminished more than half of their previous amounts (Figure 3.15).

It is understood that the reservoir lake of Çamyuva Dam, allocated to the General Directorate of State Hydraulic Works and also the infrastructure elements (regulator, tunnels, delivery channel, crests etc.) were in the area stated as the strict protected area in the National Park in the long-term development plan, previously prepared, but this area was determined as the Sustainable Use Area in the new long-term development plan, approved in 2015 and this paved the way for the dam construction.

3.1.6. Başkomutan Historical National Park

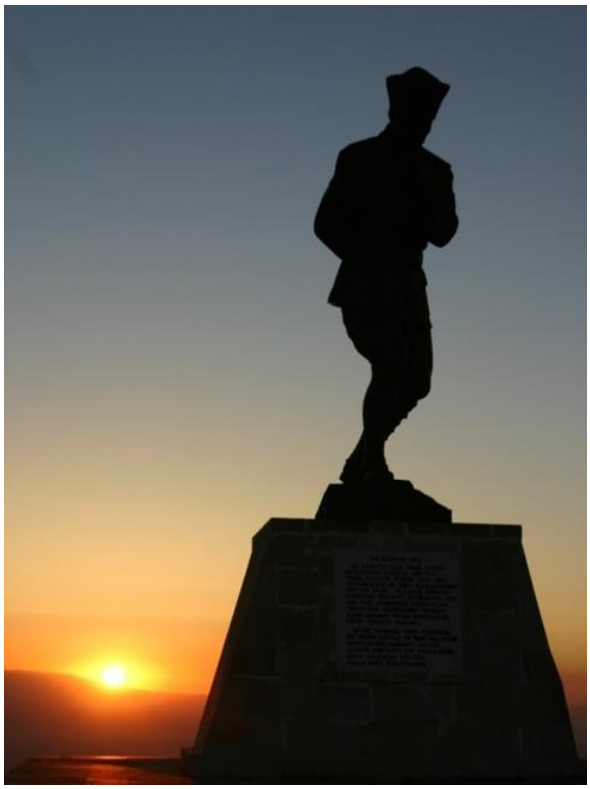

Figure 3.16. Başkomutan Historical National Park

Başkomutan Historical National Park is located within the provincial borders of Afyon, Kütahya and Uşak in the Inner Western Anatolia and was declared as the historical national park by the Council of Ministers' Decision no.3580 dated 31.08.1981. The area of the National Park has two separate sections as Afyon-Kocatepe and Dumlupınar according to the course of war and also is 34,834 hectares. 1.712 hectares of the area are located within the borders of Uşak, while 15.172

hectares are located within the borders of Kütahya and 17.950 hectares within the borders of Afyon (Table 3.6).

Table 3.6. *Başkomutan Historical National Park*

BAŞKOMUTAN HISTORICAL NATIONAL PARK				
Date	**Category change**	**Change in area (ha)**	**Final area (ha)**	**Reason**
08.11.1981	Declaration as national park	43,226	43,226	The area is sacred, as it is an important milestone in our Independence War, when our struggle for independence and freedom becam a legendary. The war is the symbol of determination, braveness and faith shown in the homeland defense of the Turkish Nation.
1989	Acceptance of Long Term Development Plan	-	-	To give the National Park category to the site to be regulated within the balance of protection-use in order to keep the victory of the great offensive and the Field Battle of the Commander-in-Chief alive in memories of the next generations.
31.05.2000	Boundary revision	-2,278	40,948	To take the hundred-meter strips on the side of the highway out of the borders.
2006	Revision of Long Term Development Plan	-	-	To reveal the themes of respect, tranquility and remembrance in the name of our martyrs. Absence of adequate ecological and biological research and the necessary conservation measures in the former plan.
03.10.2016	Boundary revision	-6,114	34,834	Exclusion of the villages from the national park area.

The settlements in the park are very close to each other and also the agricultural activities are conducted in its major part. The settlement areas covered by and around the area directly affect the National Park in terms of physical development. Accordingly, it has been determined that the population projection by 2020 would be recorded as 17.221 persons for the settlements within the borders of the park and also as 256.046 persons for the settlements which have involved one-to-one interaction.

While Ankara-İzmir highway, one of the important junctions of the country's transportation network passes along the park almost from beginning to end, Antalya-Afyonkarahisar highway divides Kocatepe part of the Park in two parts. This situation makes the perception of the region difficult and also constitutes a disadvantage in terms of control.

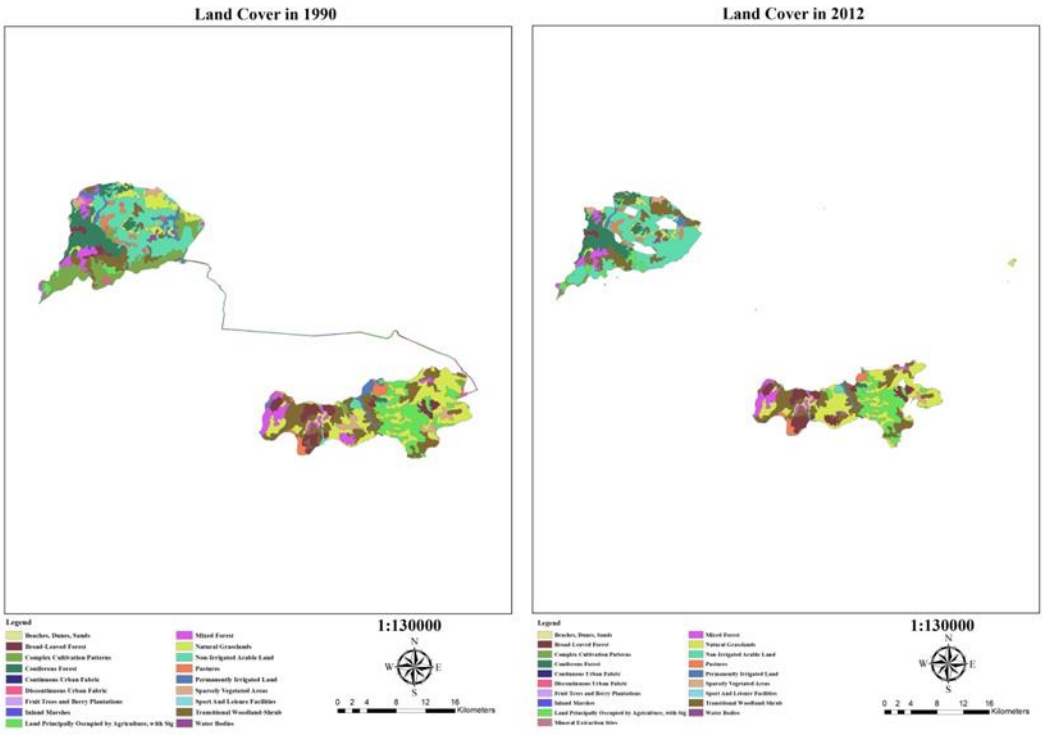

Figure 3.17. The Comparative CORINE Land Cover Maps of Başkomutan Historical National Park

After the boundary revisions, the land cover types of discontinuous urban fabric (Corine code 112), permanently irrigated lands (Corine code 212), complex

cultivation patterns (242) decreased (Figure 3.18). Therefore, the national park became very close to the settlements and this specifies the way of use. The activities commonly conducted in the area can be identified as agriculture, forestation, sand extraction and housing. The beginning of the disappearance of real trenches as a result of the agricultural activities on the war zone forming the main source value of the Historical National Park is considered to be the most important result of use pressure. Furthermore, it is likely that the housing request in the immediate vicinity will have negative impacts in the Historical National Park within the process.

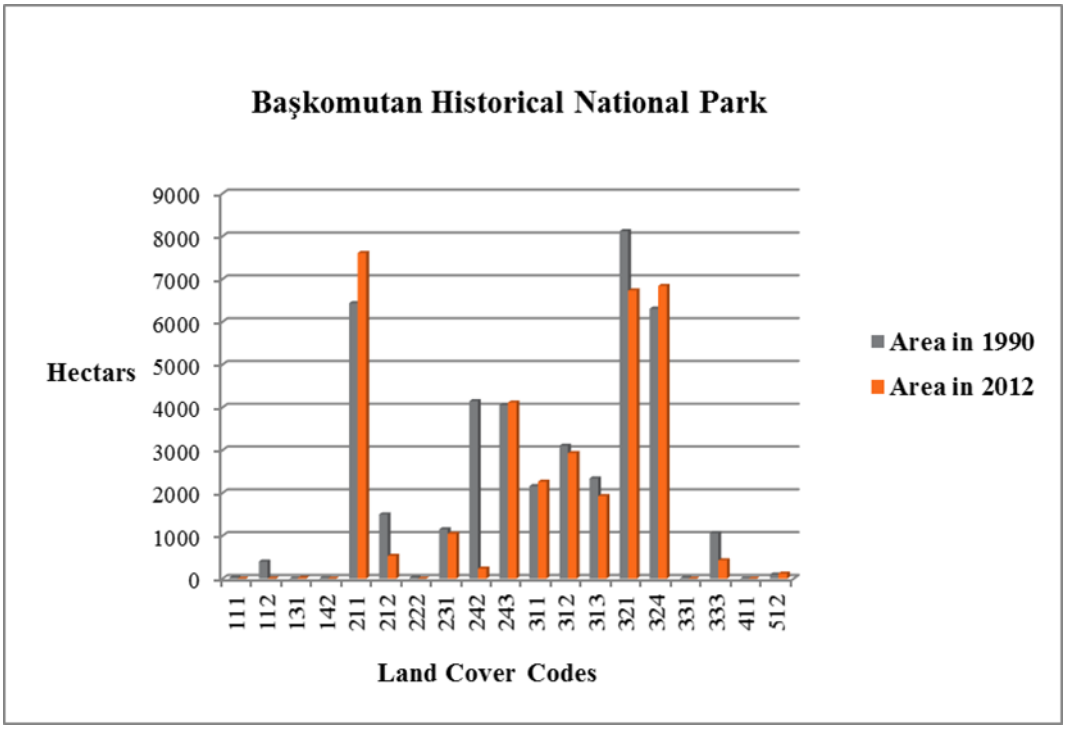

Figure 3.18. Variations on the land cover of Başkomutan Historical National Park.

The most important activity conducted in the park, which contains the examples of the step ecosystem not adequately represented within the protected areas of our country, is the educational visits. The fact that the regions with historical importance of the National Park are more preferred for this purpose leads to the increase in anthropogenic pressure.

3.1.7. Saklıkent National Park

Figure 3.19. Saklıkent National Park

Saklıkent National Park was declared as the national park on 06.06.1996 with the Council of Ministers' Decision. On the date when Saklıkent was declared as National Park, its total area was 12.390 hectares, 8.221 hectares of which was located within the borders of Antalya Province and the remaining 4.169 hectares was located within the borders of Muğla Province. However, its area was revised as 1.643 ha in total, 1556 hectares of which is now located within the borders of Antalya Province and 87 hectares within the borders of Muğla Province in line with the Council of Ministers' Decision published on the Official Gazette dated 14.11.2009 (Table 3.7). The main source value of the national park is the Saklıkent Canyon which is at 1000-1100 meters in height and has fairly steep valley slopes.

Table 3.7. *Saklıkent National Park*

SAKLIKENT NATIONAL PARK				
Date	**Category change**	**Change in area (ha)**	**Final area (ha)**	**Reason**
06.06.1996	Declaration as national park	12,390	12,390	To protect Saklıkent Canyon without disturbing its characteristics.
14.11.2009	Boundary revision	-10,747	1,643	To avoid the social and economic problems by taking 6 villages out of the national park.
2017	Acceptance of Long Term Development Plan	-	-	To effectively protect the biodiversity and other source values, to provide the sustainability of the natural sources within the balance of protection-use.

Most of the natural park area is forest land, but there are also 2b areas, private owned lands, and village areas. In 2015, the population of Fethiye was recorded as 147.703. The economy of the district is based on agriculture and tourism.

Saklıkent was discovered by the villagers, and it is a natural tourist destination, preferred for almost 20 years. The Saklıkent Canyon is walkable after April when most of the snow from the Taurus Mountains has melted and passed through the gorge on its way to the Xanthus River.

A survey report was prepared to change the border with the approval of the Directorate General for Nature Conservation and National Parks in 2006 and it was indicated in this report that the main source value of the National Park was the canyon, and as the *Pinus Brutia* and maquis, which are common in the National Park, are among the most common plant species in Turkey, and as some of them were planted in the area, the areas outside the canyon should be taken out of the National Park's borders not to have social and legal problems with the villagers (the survey report dated 16/10/2006). Afterwards, it was decided to change the borders of Saklıkent National Park by the

Council of Ministers on 12/10/2009 upon the letter no. 56236 dated 1/10/2009 of the Ministry of Environment and Forestry.

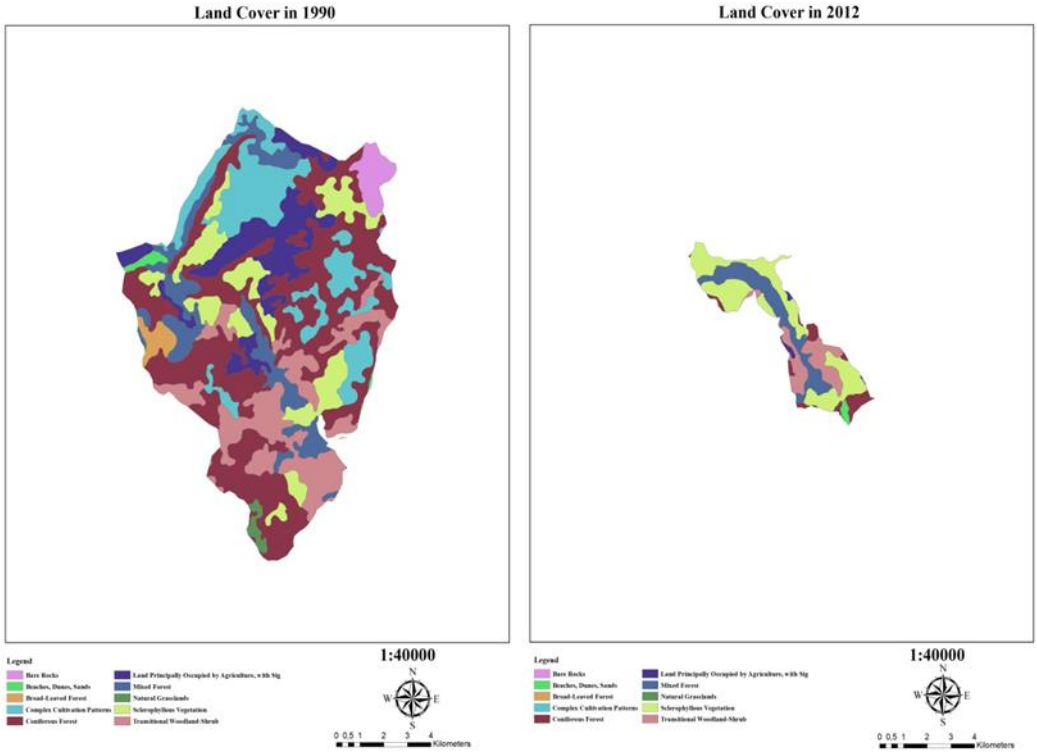

Figure 3.20. The Comparative CORINE Land Cover Maps of Saklıkent National Park

The land cover types of the national park drastically decreased after the boundary change, and all of the major habitats were stayed outside the national park area (Figure 3.21).

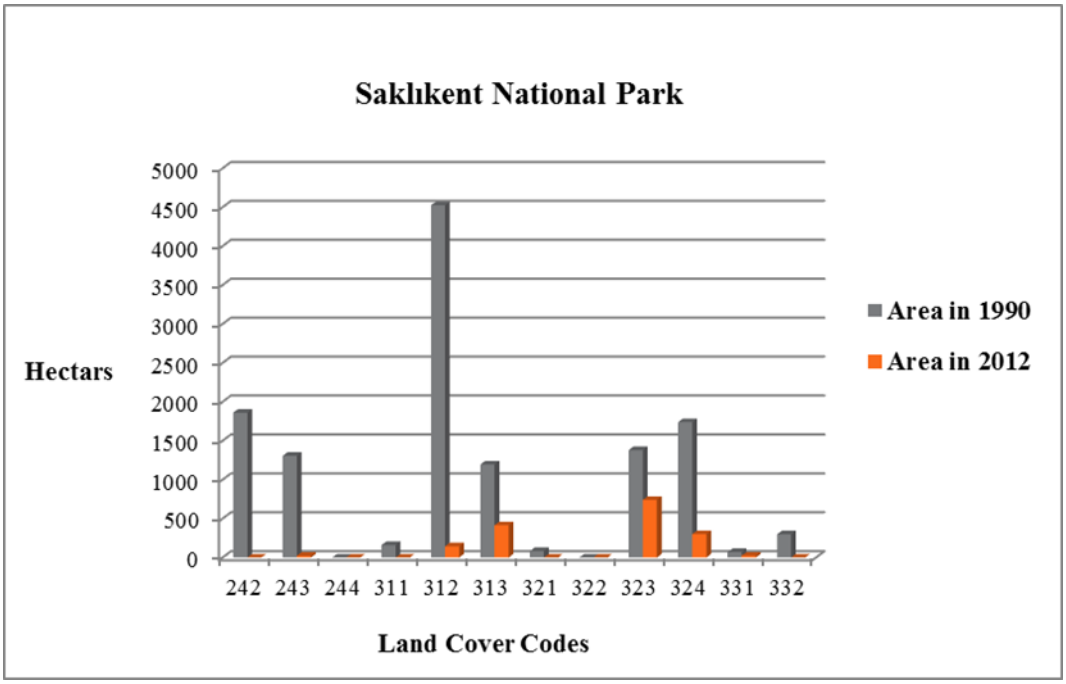

Figure 3.21. Variations on the land cover of Saklıkent National Park

3.1.8. Kızıldağ National Park

Figure 3.22. Kızıldağ National Park

Kızıldağ National Park surrounds Beyşehir Lake from north and west and was announced to have an area of 2.316 hectares on 09.05.1969. Its area was extended to 59.400 hectares with a Cabinet Decree published in the Official Gazette and which took effect on 20.02.1993. Again, in 2018, its current area has become 80.200 hectares with the border change (Table 3.8).

Table 3.8. *Kızıldağ National Park*

KIZILDAĞ NATIONAL PARK				
Date	**Category change**	**Change in area (ha)**	**Final area (ha)**	**Reason**
09.05.1969	Declaration as national park	2,316	2,316	To conserve the ecological and biological diversity of the area.
20.02.1993	Boundary Revision	+52,789	55,105	To conserve the natural and cultural source values of the region.
2008-2012	Acceptance of Long Term Development Plan	-	-	To determine the source value of the park and to establish the conservation-utilization balance.
2018	Boundary Revision	+25,095	80,200	To exclude the residential areas.

The most important ecosystem structure of the area is the forest ecosystem and the still water environment of Beyşehir Lake in terms of aquatic ecosystem. Besides these ecosystem types, the residential areas, agricultural areas and gardens nested within the National Park are excluded from the park area with the change of boundaries in 2018. However, the mountaneous land to the southeast of the park is included into the area.

12.868 people live in the settlements in one to one interaction with Kızıldağ National Park according to the 2000 census data. The local people make a living mainly from agriculture, livestock and fishing and carpet and rug weaving. Honamlı Yörüks, who camp at Sindel, Küre, Karamık, Körkuyu, İncebel, Malanda uplands at certain periods, still sustain their transhumance culture in the area.

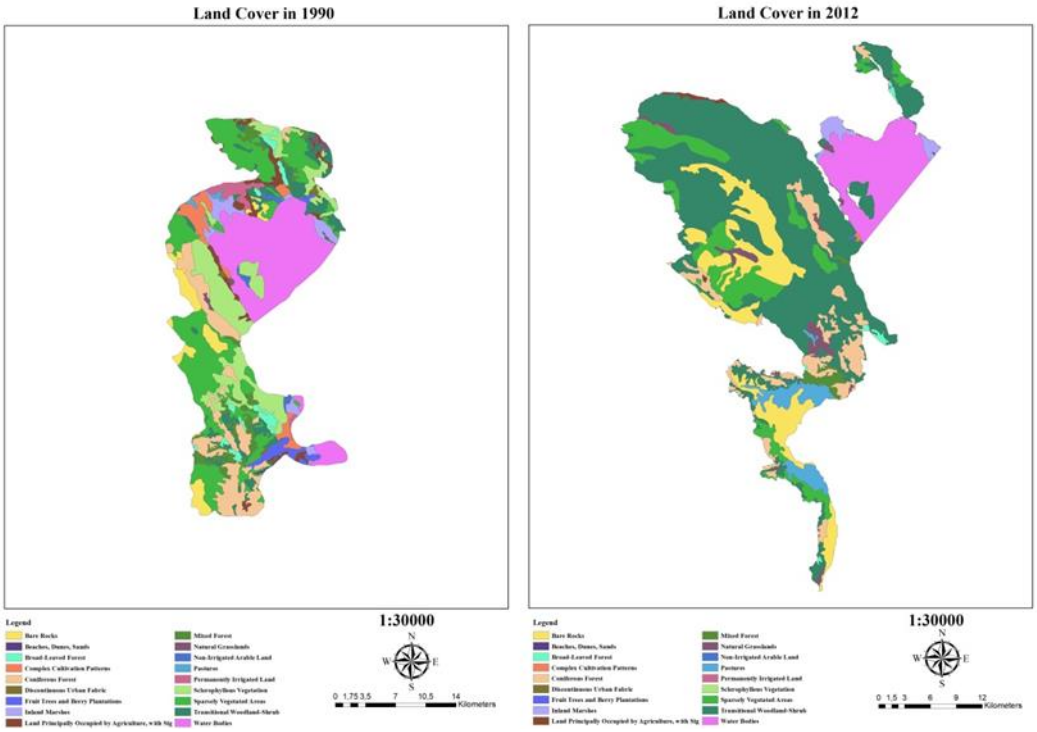

Figure 3.23. The Comparative CORINE Land Cover Maps of Kızıldağ National Park.

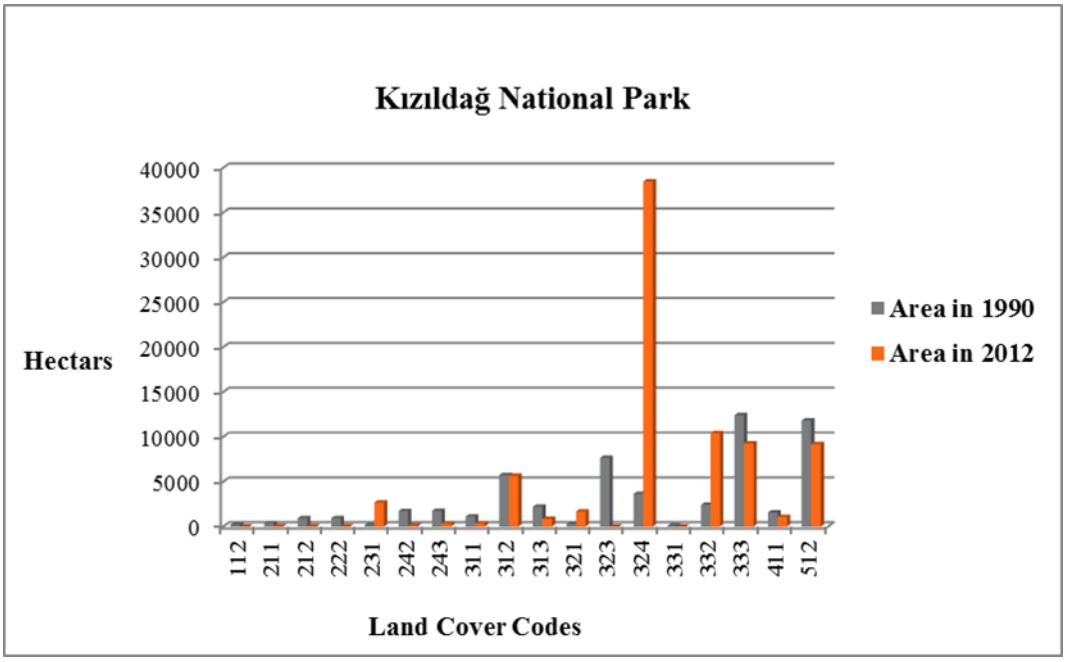

Figure 3.24. Variations on the land cover of Kızıldağ National Park

The land cover types of pastures (Corine code 231), transitional woodland shrub (Corine code 324), natural grassland (Corine code 321), and bare rock (Corine code 332) increased with the boundary change. Moreover, the land cover types of permanently irrigated land (Corine code 212), fruit trees and berry plantations (Corine code 222), complex cultivation patterns (Corine code 242), land principally occupied by agriculture (Corine code 243), broad-leaved forest (Corine code 311), mixed forest (Corine code 313), and sclerophyllous vegetation (Corine code 323) decreased (Figure 3.24).

Ecosystem richness and diversity of flora and fauna species within the National park put forth the biological importance of the area. In this scope, it is very important to have sustainable management and to eliminate the factors which threaten the conservation system. However, personnel and source inadequacy causes insufficiency in terms of supervision and control.

3.1.9. Beyşehir Gölü National Park

Figure 3.25. Beyşehir Gölü National Park

Beyşehir Gölü National Park is located within Konya Province of Central Anatolia Region. At the same time, it is neighbor to the Kızıldağ National Park. The park area, which was 86.855,14 hectares when the park was first announced as a national park

in 1993, has dropped to 82.156,90 hectares with the change made in 2018 (Table 3.9) Although Beyşehir Lake is the third biggest lake of our country with regards to the area it covers after Van and Salt Lakes, it is the biggest of our fresh water lakes.

Table 3.9. *Beyşehir Gölü National Park*

BEYŞEHİR GÖLÜ NATIONAL PARK				
Date	**Category change**	**Change in area (ha)**	**Final area (ha)**	**Reason**
20.02.1993	Declaration as National Park	86.855,14	86.855,14	To conserve the natural and cultural source values of the region.
2008	Acceptance of Long Term Development Plan	-	-	To determine the source value of the park and to establish the conservation-utilization balance.
2013	Annulment of the LTDP			The Council of State annulled the LTDP
27.11.2018	Boundary Revision	- 4.698,24	82.156,90	To exclude the residential areas.

The lake and its vicinity contain terrestrial ecosystems which involve forest areas, maquis areas and culture areas and aquatic ecosystems which are represented by the lake, streams, reeds and swamps.

Having the property of the biggest fresh water lake of our country, Beyşehir Lake is under danger because of adverse conditions such as unconscious water utilization, drawing water from the lake, by channels and/or length of the time of arid periods due to global warming. Due to this reason, unnatural interventions which cause negative effects on the water of Beyşehir Lake, having the characteristics of both natural beauty and fresh water, must not be allowed both in terms of quality and quantity.

Crayfish plague that emerged in 1985 has caused great destruction in *Astacus leptodactylus* (Crayfish) population, and its fishing reaching 107 tons previously in Beyşehir Lake has rather decreased.

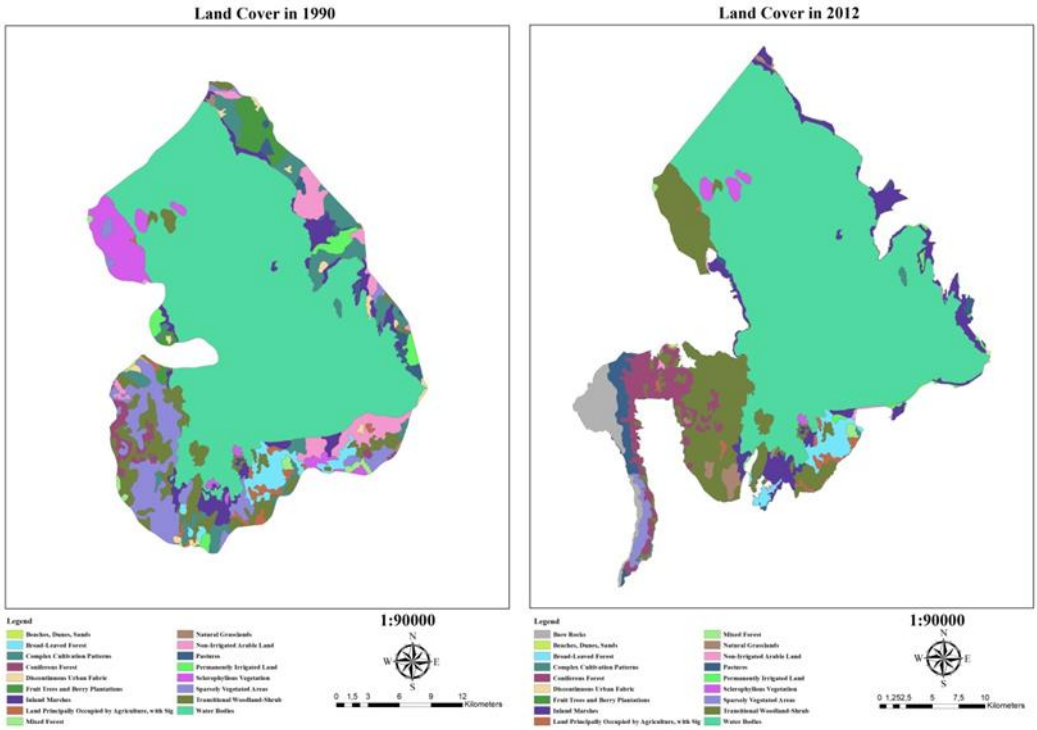

Figure 3.26. The Comparative CORINE Land Cover Maps of Beyşehir Gölü National Park

21 settlement centers around Beyşehir Lake in which 78 thousand people live and the agricultural areas were taken out of the boundaries of the national park whitin a change made in 2018, and the Dedegöl Mountains having a rare mountain ecosystem were included in the boundaries of the national park. It is very likely that this change was made because of socio-political reasons that increase the anthropogenic pressure around the lake.

The land cover types of discontinuous urban fabric (Corine code 112), non-irrigated arable land (Corine code 211), fruit trees and berry plantations (Corine code 222), complex cultivation patterns (Corine code 242), sclerophyllous vegetation (Corine code 323), sparsely vegetated areas (Corine code 333) decreased and coniferous forest (Corine code 312), transitional woodland shrub (Corine code 324), and bare rock (Corine code 332) increased after the boundary revision (Figure 3.27).

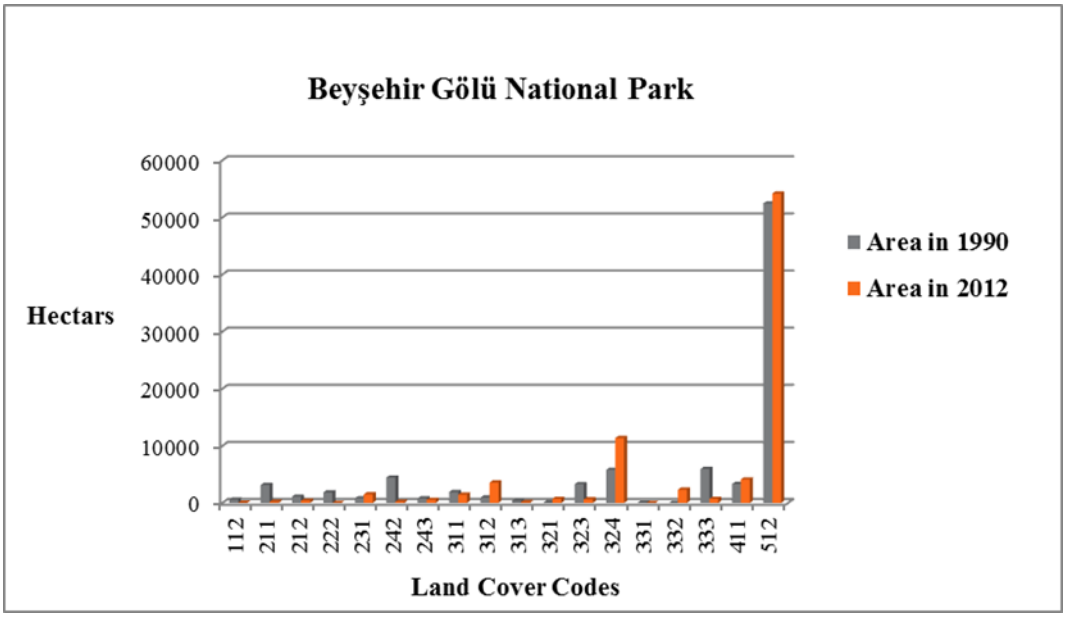

Figure 3.27. Variations on the land cover of Beyşehir Gölü National Park

3.1.10. Gala Gölü National Park

Figure 3.28. Gala Gölü National Park

Gala Gölü National Park is located in the southwest of Ergene (Trakya) Basin between the districts of İpsala and Enez of Edirne Province. In 1991, the national park, which has an area of 6.087 hectares now and which forms an important part of Meriç Delta and is in the List of Wetlands of International Importance and covering Small Gala

Lake and Pamuklu Lake, was firstly declared as nature reserve with an area of 2.369 hectares (Table 3.10). The following are the most important reasons for declaring the area as a national park: it has rich habitat diversity and also it is on the north-south migration route used by an important part of migratory birds breeding in Europe during their migration to Africa. The park, named as "Gala Gölü National Park" as a consequence of the boundary extension and category changes on 05.03.2005, is 154 km away from the province of Edirne.

Gala Lake has rich habitat diversity due to its wetland ecosystem, its proximity to the sea, the large meadow areas around it, the forest ecosystem and the high-mountain environments which are very close to each other. The vicinities of Big Gala, Small Gala and Pamuklu Lakes, which are located in this area with international importance as well as national importance as the habitat of water birds, are the first and the second degree Natural Site areas at the same time.

Table 3.10. *Gala Gölü National Park*

GALA GÖLÜ NATIONAL PARK				
Date	**Category change**	**Change in area (ha)**	**Final area (ha)**	**Reason**
18.08.1991	Declaration as nature reserve	2,369	2,369	Internationally important wetland and presence of rich habitat elements.
05.03.2005	Boundary revision and category changed as national park	+3,718	6,087	To manage the park areas and to solve the social and property problems.
2013	Acceptance of Long Term Development Plan	-	-	To conserve the area and determine the rules of sustainable use.

When the ecological structure of the Lake Gala is evaluated in general, it is observed that it is a highly productive lake and also the relations among the food chain rings are based on complex ecological dynamics. The diversity of species and population density of the aquatic species are higher in the reed fields condensed especially in the coastal regions of the Lake.

There is no settlement in the Gala Gölü National Park. However, the settlements which are in interaction with the National Park are the districts of Enez and İpsala. The number of people living in this region was 37.836 according to the 2017 census data.

The locals mainly live on agricultural activities. The rice obtained especially from the paddy fields accounts for 24% of the rice production of Turkey.

The terrestrial part of the National Park area was deforested in order to clear the grazing land and agricultural lands; thus, it can be said that there is intense grazing pressure. When evaluating the economic activities in the area, the area is still under great pressure due to both agricultural and livestock activities and also the illegal cutting and fishing activities. However, the audits cannot be performed adequately due to the lack of personnel and equipment required for conservation. The presence of the privately owned dry farming lands in the National Park area and also the establishment of wind turbines in an area not far away from the park are the other threatening factors.

In 2005, the area was expanded by adding the reed fields in the eastern part of the park after the agricultural lands in the northern part were excluded from the park borders, and its category was changed as "National Park". The main reason for this change was that there were some privately owned lands rented by the General Directorate for Foundations to be used for agricultural activities in the period when the area was first declared as the nature reserve. İpsala Revenue Department rented the lands out to the landless villagers for agricultural purposes by mistake and the region was declared as the "Agricultural Reform Implementation Area" by the Council of Ministers' Decision dated 27/12/1992. This led to the problems such as the clearing paddy fields, water pollution and habitat destruction. As a result of the joint endeavors to solve the inter-

institutional technical, administrative and legal issues and also to solve the social problems in the region, it was aimed to prevent some implementations in contradiction with the Law no. 2873 on National Parks and also to ensure that the region is administrated in a healthy way. Thus, the category of nature reserve where only educational and scientific activities are allowed, was removed.

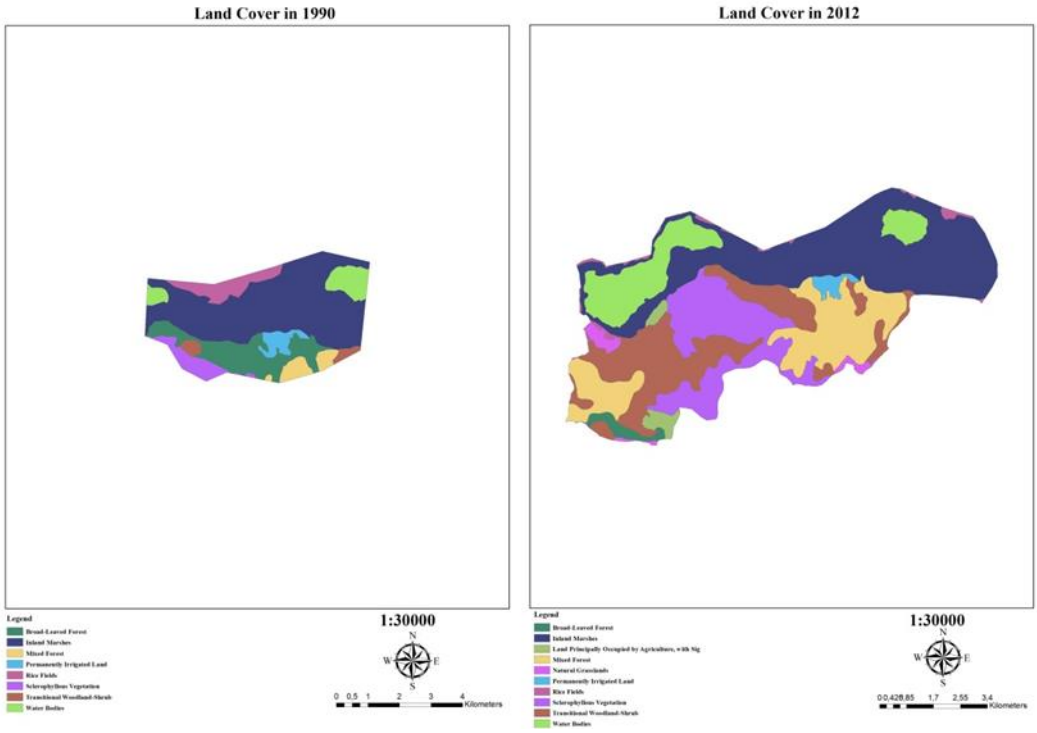

Figure 3.29. The Comparative CORINE Land Cover Maps of Gala Gölü National Park

The rice fields (Corine code 213) stayed out of the national park area after the boundary revision. There is a decrease in broad-leaved forest (Corine code 311) area and an increase in mixed forest (Corine code 313) area, but it is not clear that this changes are either related with misclassification or became after boundary and category changes. Besides these, the land cover types of land principally occupied by agriculture (Corine code 243), natural grassland (Corine code 321), sclerophyllous vegetation (Corine code 323), transitional woodland shrub (Corine code 324), inland marshes (Corine code 411), and water bodies (Corine code 512) increased after the boundary revision (Figure 3.30).

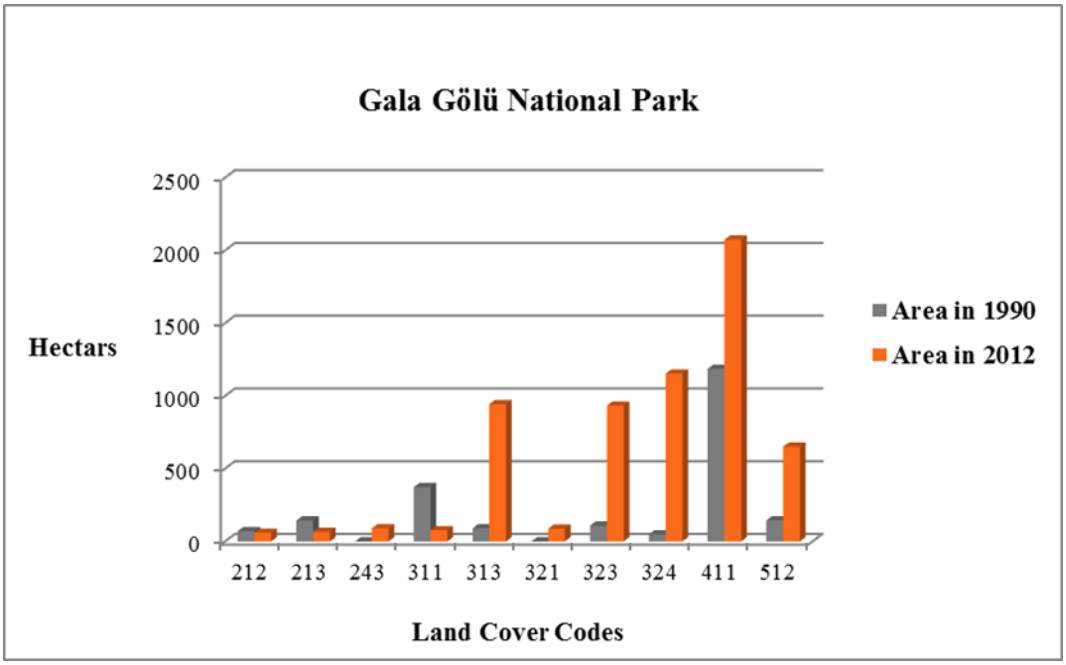

Figure 3.30. Variations on the land cover of Gala Gölü National Park

Since the National Park is located in Trakya Region, which is the end point of the southeastern part of Europe in the West Palearctic, and since the starits create a natural biogeographic barrier between Europe and Asia, it is the last spreading point for the species which can not pass beyond the straits. Due to intense anthropogenic activities, the rate of habitats in the natural process of energy flow in this region is very low. Therefore, the Lake Gala, one of the few remaining semi-natural habitats, should be protected and developed with its existing ecological structure, and some technical measures should be taken to ensure its sustainability.

3.1.11. Sultan Sazlığı National Park

Figure 3.31. Sultan Sazlığı National Park

Sultan Sazlığı is one of the most important wet lands of our country because it keeps the rare fresh and saline water ecosystems together within the steppe ecosystem; it has rich biological diversity; and it is on the intersection of two main bird migration routes used by the birds migrating between Africa and Europe.

The area was first announced as Water Birds Protection and Reproduction Area in 1971 whitin the scope of Forestry Law number 6831 and Land Hunting Law number 3167. Then, in 1988, its category was made Nature Reserve whitin the scope of National Parks Law number 2873. However, the category of Sultan Sazlığı Nature Reserve was changed as National Park in 2006 (Table 3.11). It also has the category of Conservation of Natural Habitats (Bern Convention), first and third degree Natural Site, Class A Wetland and Ramsar Site.

Although property and management belongs to the state at a great part of the conserved area, there also exist lands in the possession of the local people or which the local people has the formal / informal right of use on the natural resources whitin the boundaries of the area.

Table 3.11. *Sultansazlığı National Park*

SULTAN SAZLIĞI NATIONAL PARK				
Date	**Category change**	**Change in area (ha)**	**Final area (ha)**	**Reason**
1971	Waterfowl Conservation and Breeding Area	?	?	To conserve Sultan Sazlığı due to its importance as a wetland.
21.04.1988	Category change as Nature Reserve	17,200	17,200	To provide the category in line with the definitions in the National Park Law.
1993	Preparation of Wetland Management Master Plan	-	-	To conserve the wetland ecosystem with its biodiversity and to manage the sustainable use of natural values (Could not be finished).
2003	Boundary revision	+7,157	24,357	To determine the final coordinates of the boundaries and to ensure the areas under the maximum water elevation (1074 m) will be within the protected area
17.03.2006	Category changed as national park	0	24,357	Non-compliance of the actual situation in the area with the definition of Nature Reserve in the National Parks Law
2008	Acceptance of Long Term Development Plan	-	-	

Although there are not any places and remains known within the boundaries of the conserved area having historical and archaeological importance, Sultan Sazlığı was used for ages for settlement, pasturing and agriculture by the people living around.

More than half of the local people make a living from agriculture, livestock and reed cutting. However, the use of land has started as a result of the interventions since 1950 whitin the scope of the Land Reform. General drying observed in all the area recently has led to radical changes in these habitats; besides the salt lakes converting to barren ground and halophilous steppes, reeds have started to convert into swamp, fresh water lakes, and brackish water.

In the 1960s, when the importance of swamp and wetland ecosystem was not known very well, State Hydrolic Works targeted to dry the basin completely to convert it to agricultural area with the "Develi Stage Project". At the beginning of the 1970s, three dams were constructed at the region and a great part of the water sources in the basin was started to be used in irrigation. When drainage channels were also opened, ground water level further dropped at the wetland. The wetland ecosystem of Sultan Sazlığı was destroyed greatly as a consequence of the impaired natural water circuit. Consequently, great areas dried and Sultan Sazlığı wetland ecosystem became unable to fulfill its functions maintained for centuries. Although put into conservation since 1971 with many laws, regulations and international conventions, legal conservation category could not be adequate to maintain the sustainability of the ecosystem in the area.

In 1993, the Ministry of Forestry initiated the Sultan Sazlığı Nature Reserve Master Plan through a classical planning method, but the plan could not be implemented because that the "Nature Reserve" category of the area did not match with the actual land utilization in the area.

A boundary revision was made in Sultan Sazlığı Nature Reserve in the period starting in 2003 for the purpose of finding permanent solutions to the problems, and the size of the area was increased from 17.200 ha to 24.523 ha. In 2006, the category of the area was converted to National Park.

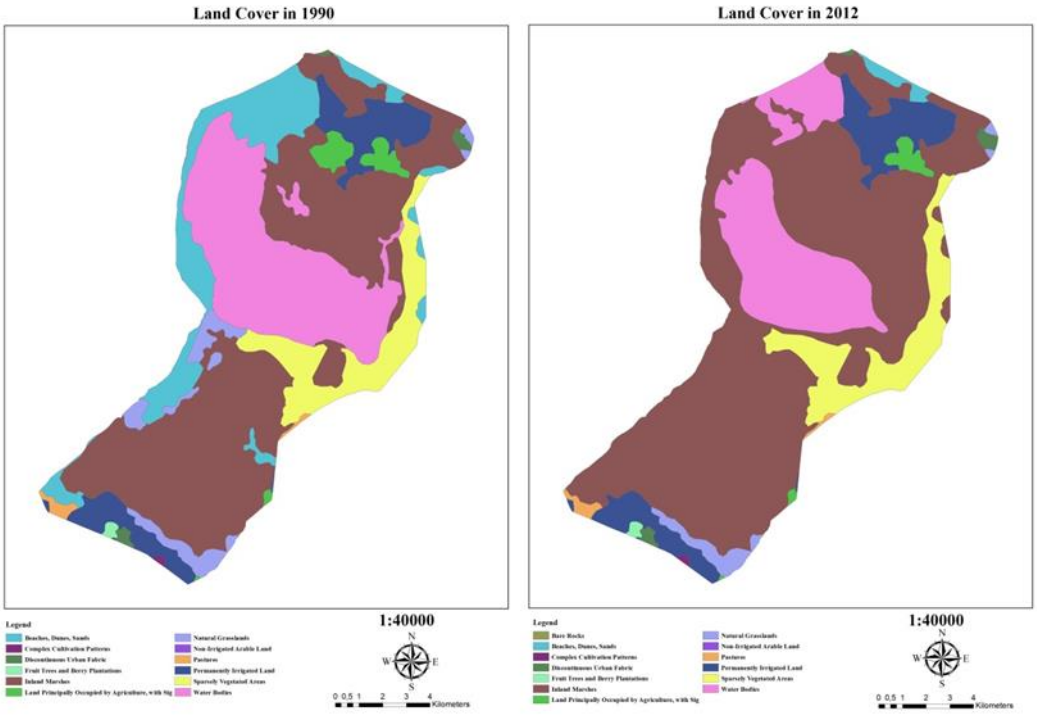

Figure 3.32. The Comparative CORINE Land Cover Maps of Sultansazlığı National Park

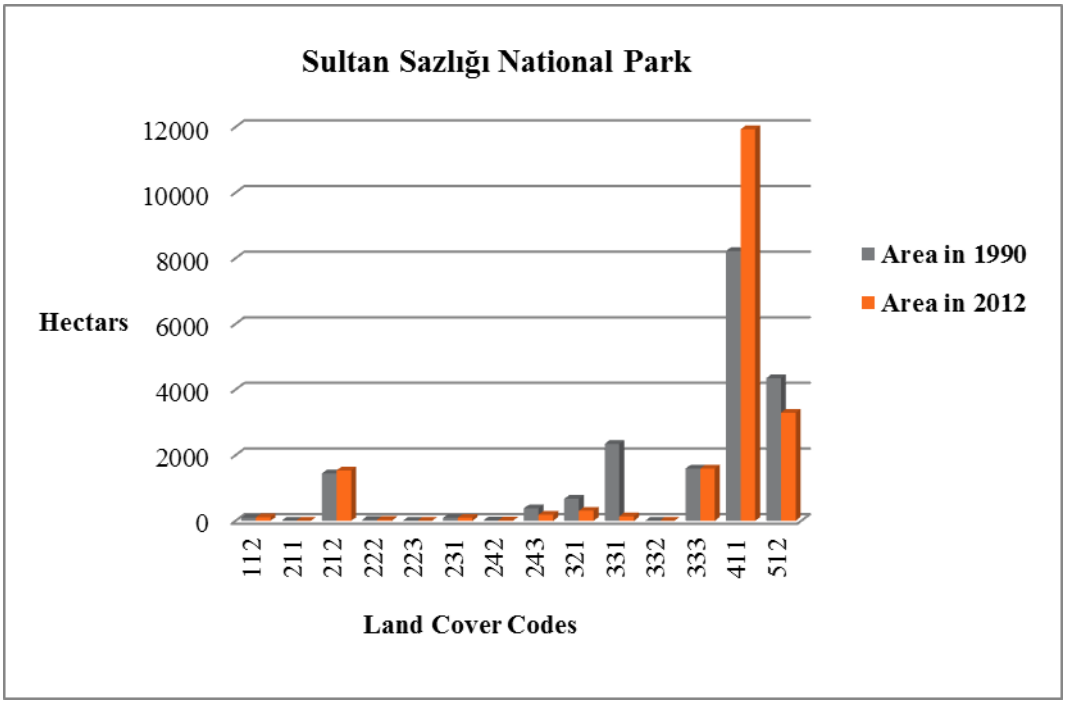

Figure 3.33. Variations on the land cover of Sultansazlığı National Park

The land cover types of land principally occupied by agriculture (Corine code 243), natural grassland (Corine code 321), beaches, dunes, and sand plains (Corine code 331), and water bodies (Corine code 512) decreased and inland marshes (Corine code 411) increased (Figure 3.33).

The 'Biological Diversity and Natural Resources Management Project' was carried out with the sources of GEF-II (Global Environment Fund) for the purpose of providing efficient management. The aim was to relieve the area from the adverse effects caused by the agricultural activities harmful to the wetland ecosystem, unplanned reed cutting and reed fires, unplanned pasturing, pollution, wind erosion, irregular housing and unplanned tourism activities. Later on, the Wetland Management Plan was prepared. After the category of the area was changed as national park, the Long Term Development Plan was formed by making some revisions in the management plan in the direction of the opinions of the related institutions.

3.1.12. Yumurtalık Lagünü National Park

Figure 3.34. Yumurtalık Lagünü National Park

Yumurtalık Lagünü National Park is located at Yumurtalık district of Adana province. It was announced as Nature Reserve on 08.07.1994 as it is the most important part of Çukurova wet lands complex, which is the largest delta in Turkey. The category of the area was converted to National Park with the Cabinet Decree on 06.08.2008. The Council of State took the decision of stay of execution on 16.10.2009 about this decree, but this decision was revoked on 11.04.2016. With a total area of 16.979,64 hectares, the National Park is 30 km away from the center of Yumurtalık district of Adana (Table 3.12).

Table 3.12. *Yumurtalık Lagünü National Park*

YUMURTALIK LAGÜNÜ NATIONAL PARK				
Date	**Category change**	**Change in area (ha)**	**Final area (ha)**	**Reason**
08.07.1994	Declaration as nature reserve	16,979,64	16.979,64	Due to its internationally important wetland structure, besides lagoons, sand dunes, rich flora and fauna elements
1998	A draft LTDP was prepared.	-	-	The plan was started to be prepared for Yumurtalık Lagoon Nature Reserve.
2007	Acceptance of the Wetland Management Plan	-	-	In order to conserve and manage the area, and solve the conflicts
06.12.2008	Category was changed as national park.	-	16.979,64	To alow the activities in the area.
16.10.2009	The Council of State decided for the stay of the execution.	-	16.979,64	
17.02.2014	The Council of State revoked the decision.	-	16.979,64	
11.04.2016	The appellate court reversed the judgment.	-	16.979,64	

Yumurtalık Lagoons were announced as Picnic Area in 1991, as the first degree Natural Site in 1993, and as Nature Reserve in 1994, and were put under preservation and included in the List of Ramsar Convention in 2005.

There are no settlements within the Yumurtalık Lagünü National Park. However, there are Kaldırım, Kuzupınarı and Deveciuşağı quarters of Yumurtalık district in the vicinity of the Park and in interaction with the National Park. The total population in these settlements was determined 3.621 in 2016.

The local people make aliving from agriculture, livestock and fishing. The cultivated lands within the Park are calculated to be 1665 ha totally. 949 hectares of such lands are private property. The other cultivated lands are areas converted from natural areas. In recent years, the yield and income can not be obtained from agriculture and this has increased the tendency towards livestock. Fishgarth fishing is made in the lagoons. Major fish species from the fishgarths are bass, gray mullet, bream, blue fish and maiger. In addition, spiny rush (*Juncus acutus*) is collected to produce mats and glasswort (*Salicornia europaea*) growing commonly at saline swamps. It is gathered and sold by the local people.

Yumurtalık Lagünü National Park has a coast strip of 25.4 km in length and is used as a beach in summer months by the local people. Although it has an important potential, ecotourism activity is none to zero in the region. Only bird watchers locally or from abroad come to the area at miscellaneous periods. However, there is no information about the number of visitors as no records are kept for access to the land.

Basic problems in the area are the conversion of natural areas to agricultural areas, excessive and untimely grazing, fishing not made appropriatelly either within the national park or in the gulf, deterioration of water quality, severe erosion and filling of lagoons.

The soil is compacted due to excessive grazing and this has harmed the natural rejunevation of the Aleppo Pine forest. Again, when the floods are avoided by constructing dams on the river, fresh water feeding and the depth of the lagoons are

influenced. Ecological equilibrium is impaired in the lakes and lagoons due to the interventions to the water regime. As fresh water inlet has decreased, the lagoons have lost nutrients, and their natural productivity has decreased. On the contrary, salinity rates have increased and serious reductions have been experienced in fish stocks.

In addition, it is detected by analyses that pesticide and chemical fertilizer residues are carried to the area through the brooks and channels. Flora is destroyed due to untimely and excessive grazing at the dunes and as a result of this, severe dune erosion has filled the lagoons and made them shallower. On the other hand, some species which are not eaten by the animals have become dominant, and flora distribution have been influenced. The decrease in the bird population of the area is thought to have close relation with the prevention of fresh water inlet.

In accordance with National Parks Law number 2873, any activities except for scientific and training activities are not allowed in the Nature Reserve Areas. However, since fishgarthing and animal grazing are carried out in the area for centuries, there are private property areas and farming is continued. Thus, Yumurtalık Lagoons Steering Committee has decided on 27.12.2006 to transform the preservation category of the area from nature reserve area to national park and submitted this decision to the Ministry of Environment and Forestry. The category change was realized in 2008 and the area has become a national park.

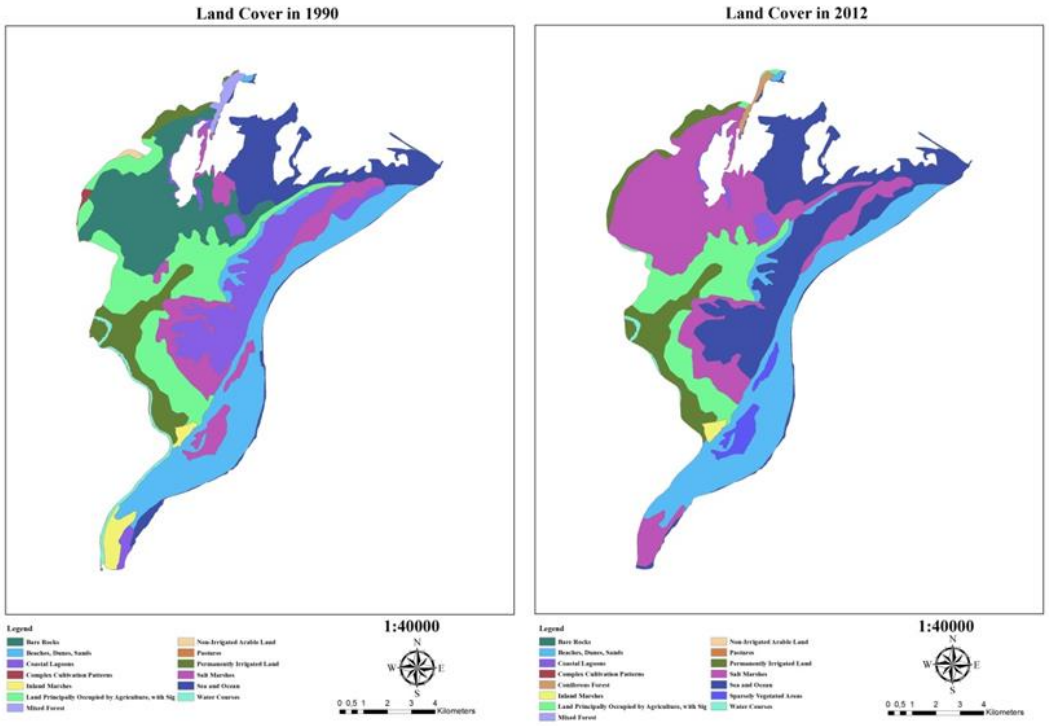

Figure 3.35. The Comparative CORINE Land Cover Maps of Yumurtalık Lagünü National Park

However, as a result of the suit filed upon the application of two non-governmental organization with the request of cancellation of the decision concerning the annulment of Nature Reserve category of Yumurtalık Lagoon and determination of its new category as national park, the Council of State has decided on the stay of execution with its decision on 16.10.2009 numbered E:2009/1713 by indicating that the subject Cabinet Decree does not have compliance with laws as the conditions which require a change in the reserve category of the subject area are not formed and then, decided on 17.02.2014 for the cancellation of the Cabinet Decree leaving the way of objection open.

Then, this decision was appealed by the Ministry of Environment and Urbanism. Plenary Session of Administrative Law Chambers of the Council of State reversed on 11.04.2016 the decision numbered E:2009/1713 by mentioning that the structure of the defendant administration has changed and the Ministry of Forestry and Water Affairs, which has become the new administration authorized to apply the decision, is

not in the position of the adverse party. Following this date, the category of Yumurtalık Lagoon has continued as National Park again and its Long Term Development Plan is now being prepared.

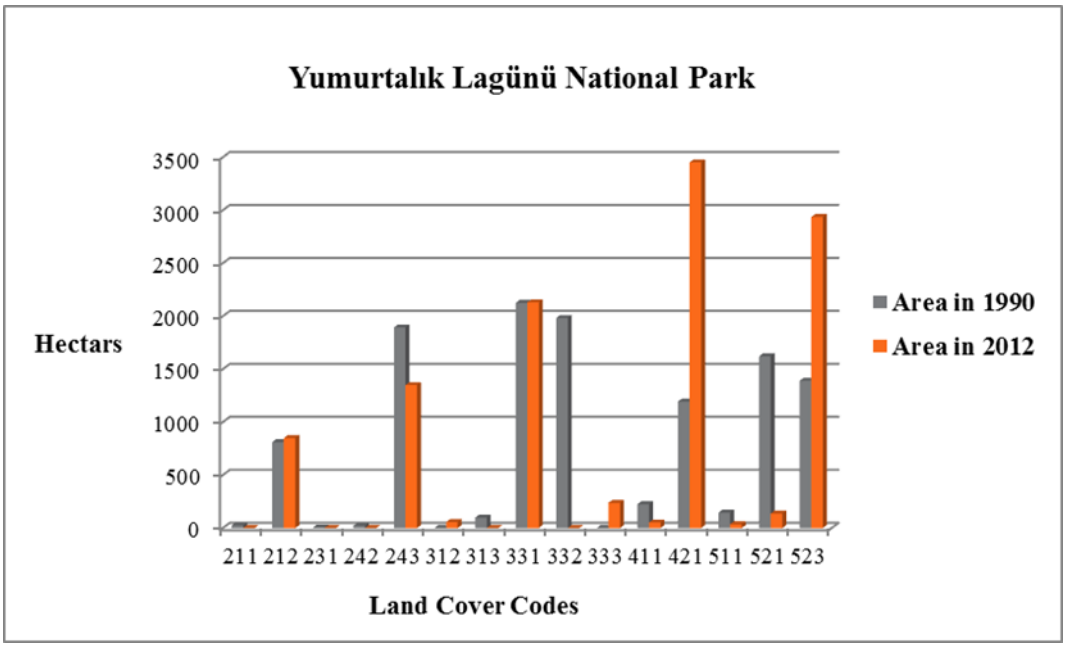

Figure 3.36. Variations on the land cover of Yumurtalık Lagünü National Park

The land cover types of land principally occupied by agriculture (Corine code 243), mixed forest (Corine code 313), bare rock (Corine code 332), water courses (Corine code 511), and coastal lagoons (Corine code 521) decreased when we compare the maps in1990 and 2012. The coniferous forest (Corine code 312), sparsely vegetated areas (Corine code 333), salt marshes (Corine code 421), and sea and ocean (Corine code 523) covers increased in time (Figure 3.36).

3.2. Discussion

Besides their nature conservation goals, national parks take on some functions for sustainable human uses, and they generate ecological, social, and economic benefits with their source values. Moreover, all stakeholders which are direct or indirect beneficiaries have some responsibilities. The relations with the stakeholders were regulated with laws. Nevertheless, legal frameworks could not be sufficient due to social and political issues and occasionally there are still unsolvable conflicts.

The total area of 12 study parks is 336.286 ha today. When we look at the total area at the first declaration dates of the national parks, we see it as 274.560 ha. There is a total gain of 61.726 ha with the boundary changes in time. The area of 7 national parks were increased, 4 national parks' areas were decreased, and one national park's area stayed same but it's category has changed. The biggest area gain of 77.884 ha comes from Kızıldağ National Park, and the biggest area loss of 38.635 ha comes from Beydağları Sahil National Park in hectares. However, Kuş Cenneti National Park's area multiplied by 328 times and Saklıkent National Park's area divided by 7.5 times on park by park basis (Table 3.13).

It seems the boundary revision of Dilek Yarımadası-Büyük Menderes Deltası National Park and the first boundary revision of Kızıldağ National Park (1993) are the changes which were made by only the idea of conservation.

At first sight, the increase of the total area may look positive for the realization of conservation goals but when we compare the difference between the maps of the parks, we noticed some favorable and unfavorable ecological, social and administrative outcomes.

The legislation and the procedure on the issue are inadequate and indefinite.

It is really difficult to find out the main reasons behind these changes because they are not explicitly reported.

Often villages, residential areas, and private properties such as farms are taken out of the national parks' boundary, possibly to reduce existing or potential social conflicts.

Category change into a national park enables the PA authority to intervene and might be a major reason for the documented downgradings.

Due to attaching importance to wetlands with the RAMSAR Convention, gaining wetland areas is more understandable (Figure 3.37).

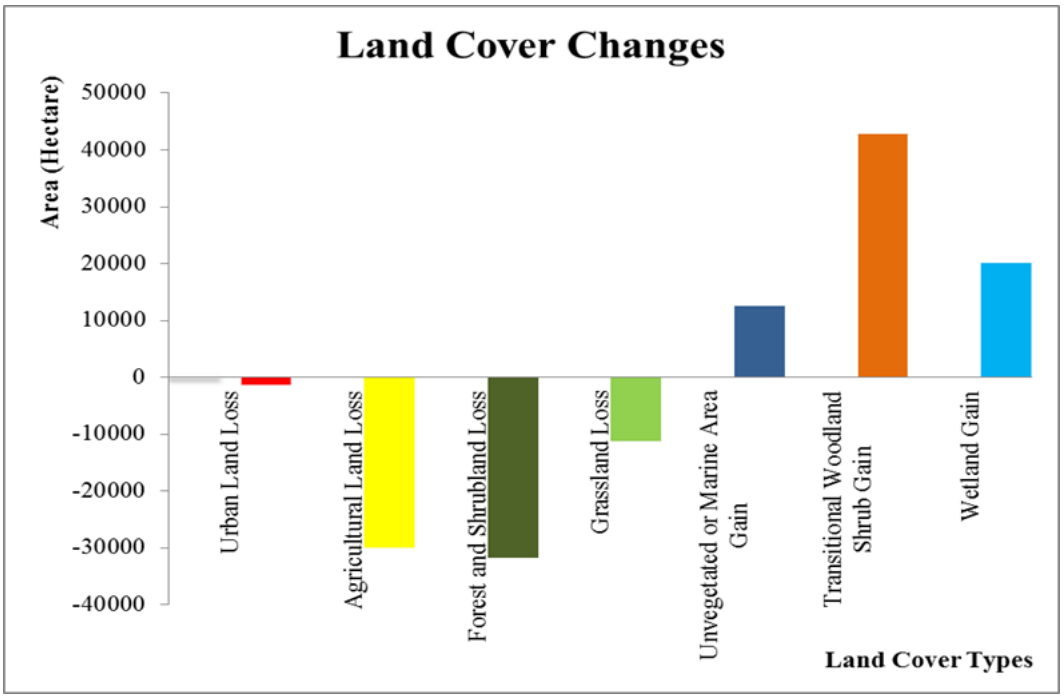

Figure 3.37. Land cover changes between 1990 and 2012 according to CORINE maps.

In order to clearly understand the outcomes of the boundary changes we took advantage of CORINE (Coordination of Information on the Environment) Land Cover maps. All of the study national parks' data on the maps has been checked and the years' 1990 and 2012 data were used due to being best available for Turkey (Table 3.14).

Table 3.13. *Area Changes in Time*

No	Name of the National Park	First Area (ha)	Current Area (ha)
1	Soğuksu	1.050	1.187
2	Kuş Cenneti	52	17.058
3	Uludağ	11.338	13.024
4	Dilek Yarımadası-Büyük Menderes Deltası	10.985	27.598
5	Beydağları Sahil	69.800	31.165
6	Başkomutan (Historical)	43.226	34.833
7	Saklıkent	12.390	1.643
8	Kızıldağ	2.316	80.200
9	Beyşehir Gölü	86.855	82.156
10	Gala Gölü	2.369	6.086
11	Sultansazlığı	17.200	24.357
12	Yumurtalık Lagünü	16.979	16.979
	Total Area	**274.560**	**336.286**

Table 3.14. *The Comparative Total Areas of Study National Parks According to CORINE Land Cover Class Codes Between the Years 1990 and 2012.*

Comparative Study National Park Areas According to Corine Land Cover Class Codes Between 1990 and 2012

Class Codes	CORINE Land Cover	Areas (Ha) in 1990	Areas (Ha) in 2012
111	Continuous Urban Fabric	15,65	0,00
112	Discontinuous Urban Fabric	1515,10	186,53
121	Industrial or Commercial Units	0,00	0,00
122	Road and Rail Networks and Associated Land	0,00	0,00
123	Port Areas	1,99	0,00
124	Airports	0,00	0,00
131	Mineral Extraction Sites	0,00	17,01
132	Dump Sites	0,00	0,00
133	Construction Sites	0,00	0,00
141	Green Urban Areas	0,00	0,00
142	Sport and Leisure Facilities	533,68	491,80
211	Non-Irrigated Arable Land	10524,16	8040,46
212	Permanently Irrigated Land	6230,78	5220,14
213	Rice Fields	143,26	64,51
221	Vineyards	0,00	0,00
222	Fruit Trees and Berry Plantations	2849,51	102,54
223	Olive Groves	345,57	384,90
231	Pastures	2370,48	5498,03
241	Annual Crops Associated with Permanent Crops	0,00	0,00
242	Complex Cultivation Patterns	17595,01	743,38
243	Land Principally Occupied by Agriculture, with Significant Areas of Natural Vegetation	15541,58	7568,69
244	Agro-Forestry Areas	0,00	0,00
311	Broad-Leaved Forest	11518,97	7069,30
312	Coniferous Forest	42866,30	27405,90
313	Mixed Forest	21370,87	18941,70
321	Natural Grasslands	9467,39	10268,60
322	Moors and Heathland	0,00	0,00
323	Sclerophyllous Vegetation	15305,58	5718,96
324	Transitional Woodland-Shrub	36823,29	74844,97
331	Beaches, Dunes, Sands	5058,67	4577,06
332	Bare Rocks	7530,12	13672,35
333	Sparsely Vegetated Areas	27238,01	14524,70
334	Burnt Areas	0,00	0,00
335	Glaciers and Perpetual Snow	0,00	0,00
411	Inland Marshes	14759,78	20637,90
412	Peat Bogs	0,00	0,00
421	Salt Marshes	1193,50	3592,41
422	Salines	0,00	0,00
423	Intertidal Flats	0,00	0,00
511	Water Courses	145,84	35,55
512	Water Bodies	68914,23	82551,06
521	Coastal Lagoons	1620,97	136,85
522	Estuaries	0,00	0,00
523	Sea and Ocean	1528,25	3207,78

The unfavorable outcomes of the boundary changes were seen as habitat fragmentation, boundary shape change, area loss, and change in habitat proportions as ecological aspect in consequence of the comparison of the parks' data.

After evaluating the articial surface areas of the studied national parks and calculating the current hectares, we will see that the urban and agricultural land losses are much more at some national parks' boundary revisions. Villages, residential areas, and private properties such as farms taken out of the national parks' boundary in which social conflicts go on between the local people and the administration. We understand that facing with less conflict considered as a favorable social and administrative outcome.

When we scrutinized the area losses of 12 national parks, we see 40 % of the urban land loss happened at Beyşehir Gölü National Park with 568.6 ha and 29 % of the loss happened at Başkomutan Historical National Park (Figure 3.38).

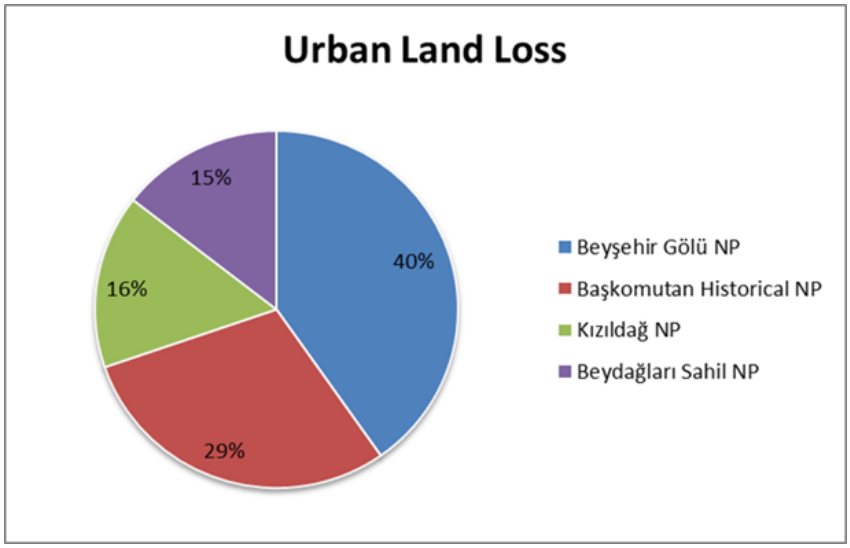

Figure 3.38. Urban Land Loss Ratios According to CORINE Land Cover Data.

Besides that 37 % of the total agricultural land loss is in Beydağları Sahil National Park with 11.134,5 ha area. The second agricultural land loss is 31 % of the total and is in Başkomutan Historical National Park (Figure 3.39).

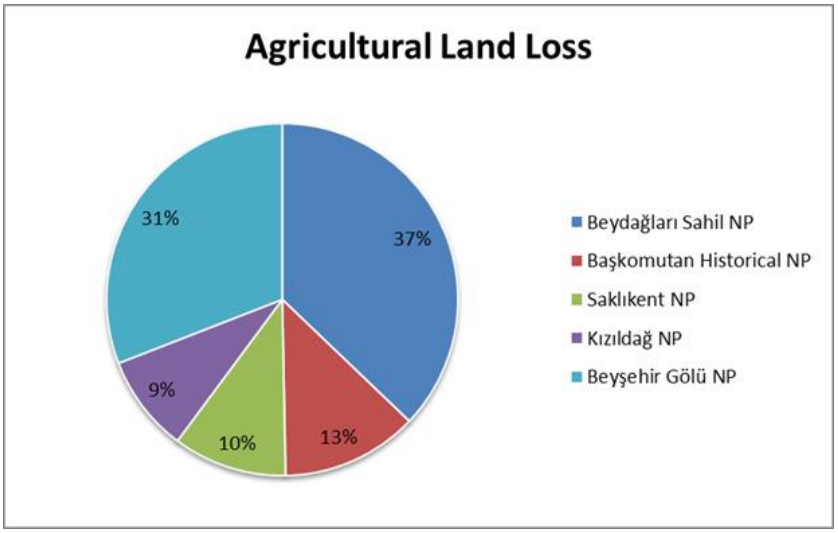

Figure 3.39. Agricultural Land Loss Ratios According to CORINE Land Cover Data.

The biggest loss due to boundary revisions is 18.139 ha forest and shrubland loss in Beydağları Sahil National Park. It is 52 % of the total forest area loss. Kızıldağ National Park is at the second rank with its 28 % loss (Figure 3.40).

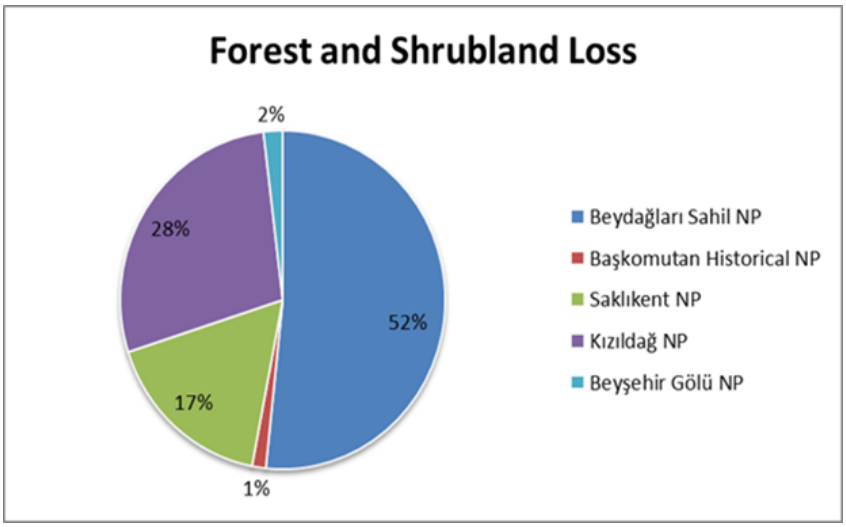

Figure 3.40. Forest and Shrubland Loss Ratios According to CORINE Land Cover Data.

Grasslands and sparsely vegetated areas have lost 12.159,3 ha in total and 4.596,1 ha of it belongs to Beyşehir Gölü National Park with its 40 % ratio (Figure 3.41).

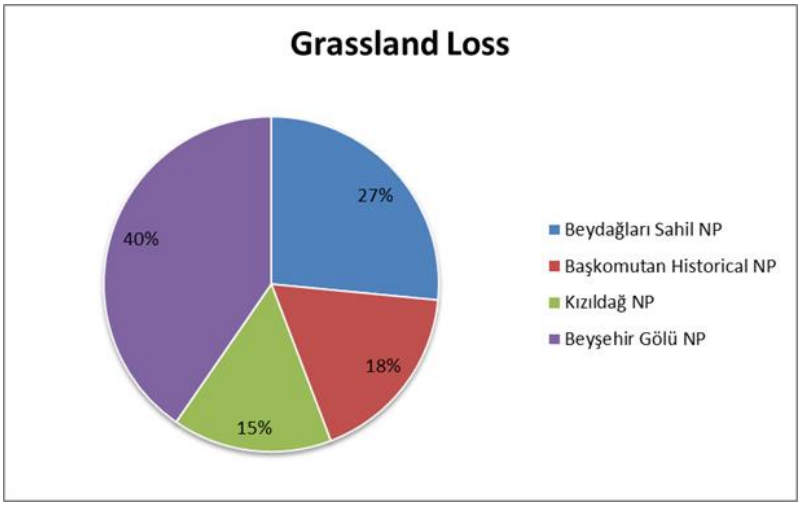

Figure 3.41. Grassland Loss Ratios According to CORINE Land Cover Data.

There are also favorable outcomes of the boundary changes for some of the study national parks, which are increased area and habitat diversity. Especially unvegetated area, transitional woodland shrub, marine area and wetland gains are remarkable.

Unvegetated area and transitional woodland shrub area gains are the most occurred in Kızıldağ National Park which is originated from the addend mountainous areas (Figures 3.42 and 3.43).

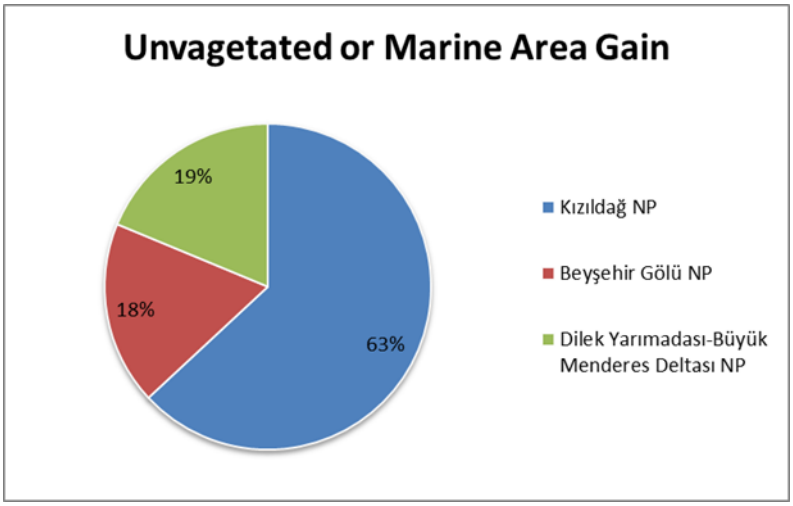

Figure 3.42. Unvagetated or Marine Area Gain Ratios According to CORINE Land Cover Data.

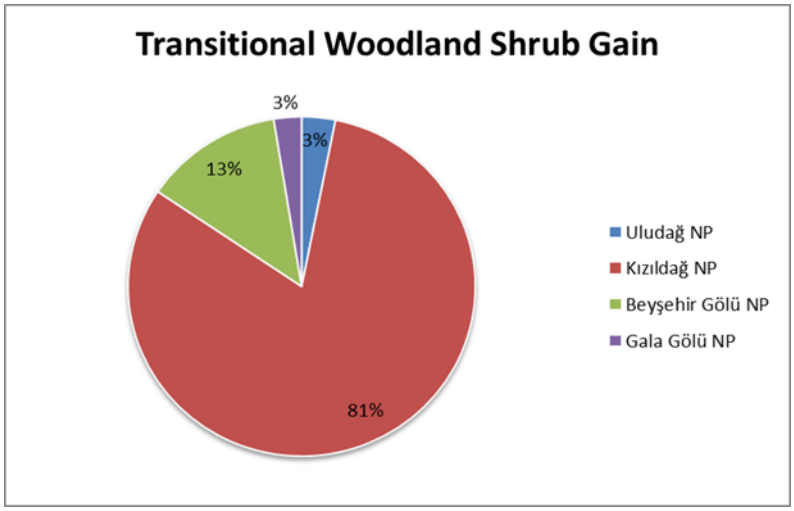

Figure 3.43. Transitional Woodland Shrub Gain Ratios According to CORINE Land Cover Data.

Aquatic ecosystmes also multiplied by the revision of Kuş Cenneti National Park's boundary. The ratio of the park's wetland gain is 80 % of the total wetland area gain. Due to attaching importance to wetlands with the RAMSAR Convention, gaining wetland areas is more understandable. 16.165 ha out of the 20.114 ha wetland gain just comes from Kuş Cenneti National Park (Figure 3.44).

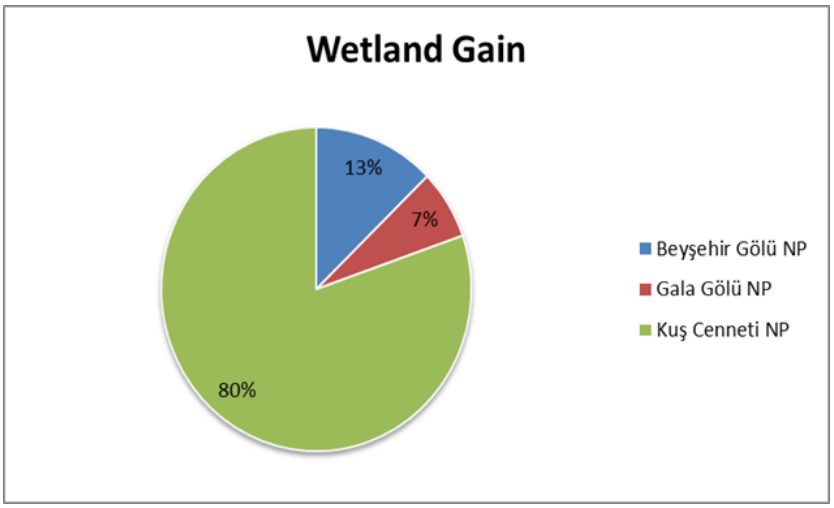

Figure 3.44. Wetland Gain Ratios According to CORINE Land Cover Data.

A summary of the changes in each studied protected area can be seen in the Table 3.15.

Table 3.15. *The boundary and category changes of the national parks in different aspects.*

Name	Changes in Ecological Aspect	Changes in Social and Administrative Aspects
Soğuksu	Habitat fragmentation occurred due to exclusion of the rare forest area in the transition zone of the Anatolia. Stand density of the coniferous forest decreased in the added areas.	Discontinuous urban fabric areas increased with the bad influence of the boundary revision. It became more difficult to intervene with the area.
Kuş Cenneti	The addition of the whole of Manyas Lake increased the probability of reaching the conservation goals. Interventions on to the water regime of the lake is possible, which may help bird populations.	Destruction and transformation pressure on the area due to farmers is still ongoing but it's not threatening. Pollution that originate from pesticides, fertilizers and also from the industrial plants could not be prevented properly.
Uludağ	Transitional woodland-shrub, bare rocks and sparsely vegetated areas increased with the boundary revision. An area, covered with broad leaved forest and mixed-forest, was excluded from the park area due to being private property.	Prevention of further social conflict was possible and more areas were allocated for winter tourism.
Dilek Yarımadası-Büyük Menderes Deltası	Habitat and land cover diversity increased significantly.	Management strategies became more important for the fishermen, farmers and local people, and also for the balance of conservation and utilization.
Beydağları Sahil	Huge habitat loss (55.4 % of the declaration area) including forests, arable areas, beaches, pastures and vegetated areas besides the ports, residential and tourism areas.	Tourism development was much easier afterwards.
Başkomutan (Historical)	Exclusion of the villages, quarters and the connecting road from the park area.	Social conflicts (due to construction restrictions) have supposedly been reduced. Easier maintenance of the connecting road.

Saklıkent	86.7 % of the first declaration area of the National Park was excluded with the boundary revision and only the canyon protected its' category.	The legal and economic problems with the villagers and national park administration were solved.
Kızıldağ	Urban areas, forests, arable and irrigated areas, and wetland habitats decreased, while the important karstic areas covered with bare rocks, natural grasslands, pastures, and transitional woodland shrubs increased.	Social conflicts with farmers were reduced.
Beyşehir Gölü	Urban areas, forests, beaches, arable and irrigated areas decreased.	Social and legal problems between the farmers, municipality and national park administration were solved.
Gala Gölü	The category of the park was downgraded but the wetland area was increased. Whole wetland ecosystem added to the area while irrigated areas, rice fields and broad leaved forest areas were excluded.	Social conflicts with rice growers were solved.
Sultansazlığı	The category of the park was downgraded due to non-compliance with the actual situation in the area as a Nature Reserve. Natural vegetation areas and grasslands, beaches, dunes, sands, and water bodies were decreased. Urban fabric areas, irrigated lands, bare rocks and inland marshes were increased.	Easier management, especially regarding reed cutting. Visitor numbers increased significantly.
Yumurtalık Lagünü	Not known.	Ongoing activities (grazing, fishing, using the beach) in the area continiues, but possibly social conflicts can be managed easier.

3.2.1. Reasons behind the changes

National parks, nature reserves, and other protected areas are the center piece of efforts to conserve biodiversity. Conservation policy and practice assume that protected areas are permanent institutions, but scattered evidence suggests widespread protected area downgrading, downsizing, and degazettement (PADDD). The proximate causes of PADDD were examined in Africa, Asia, and Latin America and the Caribbean. Based on an inductive examination of the data, proximate causes were determined as forestry, mining, oil and gas, industrial, agriculture, industrialization, infrastructure, land claims, rural settlement, subsistence, degradation, shifting sovereignty, refugee accommodation, and conservation planning (Mascia et al., 2014).

The data, however, that only a small fraction of PADDD events are associated with efforts to strengthen conservation regimes through PA system revisions, whereas a majority of all PADDD events are associated with industrial-scale activities and local pressures that appear largely decoupled from conservation objectives (Mascia et al., 2014).

The studied national parks have similar histories about PADDD events. The main reasons for downsizing and downgrading (boundary and category changes) vary, but the important one is to manage the areas with less conflict (Table 3.15). There are two frequently encountered approaches to easily manage these conflicts. The first one is removing urban areas and rarely private farmlands out of the national park's area. In most of the cases, natural entities or legal entities want to raise a building or make renovations on their private property in the national park area, but the long term development plans of the parks and city master plans are in force and usually have many restrictive provisions. These provisions generally prevent higher and larger buildings or some kind of facilities, and they comprise many procedures. Although these provisions are implemental, entities do not want to abide by the rules, and the national park authorities to be forced about carrying them out due to political pressures. In some cases, small-scale farmers have been planting public lands from

long before and the ceding of this land to farmers prefers by the authority via changing boundaries.

Because of social and political habits in Turkey, either determining the boundary of a protected area has to be more scientific and unchangeable or managing of the protected areas has to be more effective, efficient and important. Even it's possible to expropriation of some lands during proclamation process, it has to become applicable and possible in many respects.

A second approach is downgrading the area's legal category to a less strict protected one for resolving contradictions between legal category and actual practice. Especially ongoing grazing, planting and fishing activities were common reasons for downgrading an area's nature reserve category to national park. Eventhough, changing the nature reserve category means downgrading, many people suppouse that the national park category is higher.

Instead of auditing or restricting ongoing activities, category changes are made in order to theoretically manage the areas. This approach maybe provides new tools for effective management of the area, but removes from the primary aim of preservation. Therefore, reviewing category determining process and legal framework has to become more of an issue.

Another reason for boundary changes is to include the whole ecosystem instead of a small part of it. This approach has especially taken for the wetlands as we understand from the examples of Kuş Cenneti and Gala Gölü National Parks. As we know ecosystem based conservation is gaining importance to conserve the delicate balance between habitats and populations. We have to consider complicated relationships in ecosystems along with prominent species of it in order to preserve these ecosystems' services. Large scale viewing approach is important in terms of conservation and prevents both species and ecosystems from extinction. The conservation of a whole ecosystem also may be more economic rather than species by species conservation.

Finally, the boundary change for Dilek Yarımadası was in reality declaring a completely new protected area, the Büyük Menderes Deltası National Park, adjacent to the former national park. The Büyük Menderes Delta NP have completely different ecosystems and is not an extension of its neighbor ecologically.

It is clear that PADDD probability increases with PA size and local population density. Eventhough the authorities have started to adopt the systematic conservation planning; the current approach is still far away from its aims. It is important to improve the efficacy and efficiency of PAs and PA networks using mathematical optimisation algorithms to identify sites for new PAs, according to specific goals or criteria. These PA site selection processes can be tailored to optimise various biotic and economic factors simultaneously (Symes et al., 2016).

3.2.2. Concluding Remarks

Certainly, all of the changes' histories are investigated one by one and the main reasons for the boundary and category changes vary, but the important one is to manage the PAs with less conflict.

Mostly the category changes cause to have little future hope as an unfavorable outcome of social and administrative aspect. Ongoing grazing, planting and fishing activities were common reasons for downgrading an area's nature reserve status to national park. The nature conservationists believe that downgrading a park's category hinder to avoid harmful human activities such as grazing, and agriculture.

At that point, the importance of the local communities comes to mind. The local communities' opinions have to be considered when the PAs were first created or renewed in case the areas can be effectively managed without conflicts.

It is obvious to say that there is a need for systematic conservation planning and management effectiveness in Turkey, both to better identify which sites to protect, and to avoid making frequent and unnecessary changes.

There is also a need for an inclusive law on biodiversity conservation and it is really important to renew the National Park Law. The current legislation and the procedure on the issue are inadequate and indefinite.

There can be a few suggestions for the future;

1. Determining the boundary of a protected area has to be more scientific. It is important to avoid excessive fragmentation and maintain the ecological integrity of the area during the site selection process.
2. Auditing and managing of the protected areas has to be more effective and efficient.
3. Expropriation has to be made applicable and feasible in many respects.
4. PA site selection processes can be tailored to optimise various biotic and economic factors simultaneously.
5. The local communities have to be consulted when the PAs are first created or renewed so that the areas can be effectively managed with minimum conflicts.
6. The reasons of the change have to be well documented and these reasons have to be justified and shared with the public.
7. The administrative capacity of national park departments has to be strengthened, with an emphasis on on-site protection.
8. The economic activities in protected areas to be not excluded if they are in line with the PA status and are sustainably carried out.

CHAPTER 4

CHAPTER NAME

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APPENDICES

A. Soğuksu National Park

Soğuksu National Park is in the Kızılcahamam district, 80 km northwest of Ankara. It has a rugged topography, with a mean altitude of 1354 m. Its highest point is Tolubelen Tepe (1776 m) and its lowest point is where the access gate is located at the northeast of the park.

Kızılcahamam is in "Steppe – Semi Humid" climate zone. Soğuksu National Park and its surroundings show the characteristics of a transition zone between the continental climate of Central Anatolia having steppe characteristics and rainy North Anatolia climate. Mean annual temperature is 9.9°C. The highest recorded temperature belongs to July as 40.0°C and the lowest temperature to February as -22.8°C. Precipitation concentrates in winter and spring months. Mean annual precipitation quantity is 542.1 mm.

The National Park is completely composed of non-calcerous brown forest soils. The land consists of VII. Class soil according to the usability classification and is very shallow (0-20). Located to 45 km south of North Anatolian Fault Line, Soğuksu National Park is under the influence of this fault line due to its fractured structure and is in the second degree earthquake zone.

Soğuksu National Park has a geomorphological structure consisting of many side creeks opening to two main valleys and plains between the valleys. The area where the regional forests are present is a volcanic land. In this respect, there are hot and cold water springs around. This forms Kızılcahamam Spas and becomes an important attraction source.

The most important stream existence within the Natural Park area is Büyüksoğuksu Creek flowing along the main axis. 23 springs of low discharge are formed from the impermeable tuff layers of waters seeping from fractures and cracks due to the tectonic

structure of the region. These waters are palatable waters of low mineral concentration.

In the national park, there is the 'coniferous forest ecosystem' consisting of pure communities where black pine (*Pinus nigra*) is dominant and, from place to place, this system forms stands mixed with scots pine (*Pinus sylvestris*) and fir (*Abies nordmanniana*). There is also 'mixed forest ecosystem' consisting of black pine and pubescent oak at the middle sections of the area and the 'Pubescent Oak (*Quercus pubescens*) forest ecosystem' is observed at lower elevations. Besides these, *Populus tremula* and *Juniperus communis* are included in the forest vegetation. The most dominant tree species is *Pinus nigra*. There exist six types of ecosystems in the park including the 'steppe ecosystem', and 'meadow ecosystem' observed dispersedly within in-forest openings at Keltepe, Kuzcapınar, Harmandoruk and İncegeliş locations, and the 'streamside ecosystem' is at the side of streams. Mixed forest ecosystems are important elements which lead to an increase in biological diversity as they form ecotone zones and form the point of wildlife passes.

In the National Park, 113 mushroom species, 116 bryophytes, and 375 species and subspecies taxons of 71 families of vascular plants of which 44 are endemic exist. There are also 5 amphibia species and 10 reptile species in the park area. There exists 85 bird species which can easily be watched in the area throughout the year. It is observed that especially passeriformes are concentrated for the purpose of feeding, reproducing and sheltering depending on the existing natural forest. *Aegypius monachus* (Black Vulture), *Asio otus* (Long Eared Owl), *Parus ater* (Coal Tit), *Phylloscopus collybita* (Warbler), *Dendrocopus minor* (Lesser Spotted Woodpecker) are often encountered. Being the symbol of the Soğuksu National Park, Black Vulture (*Aegypius monachus*) is an endangered bird species. The area where most of the couples are seen is Turkey following Spain. These birds make their nests on the slopes of mountains and at the top of old black pines and leave only one egg in a year to sustain their generation. There exists two black vulture nests within the borders of Soğuksu National Park, but the vultures do not use these anymore. The black vultures

which used these nests in the past have left the nests upon the extension and expansion of picnic activities and settled at the northwest direction.

In the park, 35 mammalian species of 18 families, especially *Microtus subterraneus* (Vole), *Vulpes vulpes* (Fox), *Capreolus capreolus* (Roe deer), *Dryomys nitedula* (Forest Dormouse), *Meles meles* (Badger), *Sciurus anomalus* (Caucasian Squerrel), *Ursus arctos* (Brown Bear), *Canis lupus* (Wolf), *Lynx lynx* (Lynx), *Miniopterus schreibersii* (Common Bent Wing Bat) and *Sus scrofa* (Wild Boar) are identified.

A Long Term Development Plan was prepared in 2008 and revised in 2018 for rational conservation-utilization balance. According to this plan, the National Park has three different zones and is managed with the several provisions of the plan.

Soğuksu National Park contains tour routes, walking trails and stop over and vista points in the 'Sustainable Utilization Zone'. The 'Controlled Utilization Zone' contains the access checkpoint, visitor publicity center, Soğuksu Natural Preservation and National Parks Chieftancy, rural restaurant, mosque, rest area and premises, vulture watching house, Atatürk Pine Special Project Area and daily utilization areas.

According to the 2016 general census results, the population of the Kızılcahamam district where the National Park is located is 25.021 and that of the Çamlıdere district is 6.483. However, due to its proximity to Ankara, average daily number of visitors sums up to 8577 especially at the weekends on July. This number was 18.975 in the first day of Ramadan Feast of 2017.

The park has suffered from many anthropogenic pollutants due to these crowds. Soil, air and noise pollution are the main threats for the animals. Especially most of the mammalians are obliged to develop very good conformance and hiding strategies to maintain their lives. At weekends, problems are experienced in vehicle parking and traffic due to the intensity in the area and the uncontrolled fires lit by the picnickers invite forest fires. As officially approved zoning plans and plan provisions are valid in the private registered areas within the borders of the Tourism Center at the controlled utilization zone, it is thought that the pollution and pressure originating

from humans will increase more unless rest facilities are constructed in those areas. Looking at the former and new LTDPs, it is observed that the Controlled and Sustainable Utilization Zones are reduced and the Sensitive Preservation Zone is extended to cover %91,9 of the park area. However, it is clear that the increase in the intensity within the Controlled Utilization Zone is caused by increasing the number of daily areas. It is essential to limit entrance to the park by calculating the recreational capacity besides the physical capacity and by paying the activities of the visitors and making them conscious to make conservation efficient. If the 2018 LTDP is not changed by new revisions and the necessary sensitivity is shown in the stage of implementation, it is clear that more contribution can be made to the conservation of the park.

B. Kuş Cenneti National Park

Kuş Cenneti National Park is located within the borders of Balıkesir province, Manyas district. The total area of the National Park is 17.058 hectares. The wetlands ecosystem forms about 16.566 ha and the land ecosystems form the remaining 492 ha of this. The area was called as “Paradeisos”, meaning paradise in Roman and Byzantine periods.

Manyas lake forms the bottom of a depression plain and is a fresh water lake with 2,5 m average depth. The depression area is surrounded by mountains and highlands whose height reaches 100 to 700-800 meters from place to place.

In the region, summer is arid and hot, while winter is rainy and warm. Average precipitation is 700 mm and 1/3 of the precipitation occurs between November and March. 12 years’ temperature means are 5.6°C at January and 24.7°C in July. Annual evaporation is 1.143 m^3 in average.

The most important stream which feeds the lake is Manyas (Kocaçay) Brook in the south. Discharge of the lake is under control since 1992 through Ergili and Karadere regulators constructed on Karadere to the southeast.

Kuş Cenneti National Park is composed of open water surfaces, willow groves, reeds, fresh water swamps, wet meadows and steppes around the lake which have pasture characteristics, dry meadows and agricultural fields. Willow groves are the most valuable habitats within the National Park for the bird species which brood on trees.

Open water surface covers 88 % (15.019 ha) of Kuş Cenneti National Park and is an extremely valuable ecosystem in terms of the sheltering and feeding of water birds. Ten thousands of water birds gather in the area during their migrating periods in winter. Especially in December and January of the last 6-7 years, about 1/3 (3.500 – 7.000 individiuals) of the world population of the white headed duck which is estimated to be about 13-14 thousand all around the world gather at the Manyas Lake.

Almost all of the plant species at the park are plant communities of halophyte features. Dominant aquatic plants in the Lake are knotgrass (*Paspalum distichum*), reed (*Phragmites australis*), keek (*Rorippa sylvestre*), bur reed (*Spargenium erectum ssp. Neglectum*), sorghum (*Phalarisar undinaceae*), nutgrass (*Typha angustifolia*), white willow (*Salix alba*), goat willow (*Salix caprea*), crack willow (*Salix ekcelsa*), *Cyperus longus*, *Cirsium arvense ssp. Arvense* and spike rush (*Eleocharis palustris*). *Salix alba*, *Cyperus longus*, *Rorippa sylvestre* and *Cirsium arvense* are the plant groups specific to the bird lake.

The lake is one of the lakes in our country where fish diversity is the highest with 21 natural fish species (two of 23 fish species identified in the lake are invasive species). Only four of this species have economic value.

There are 240 bird species identified and 105 of these probably or definitely reproduce in the area.

Many bird species use the willow groves and common ash trees for reproduction. There exist artificial breeding platforms at the opening in front of the willow groves at Sığırcı delta. Dalmatian pelicans naturally build vessel-like nests from reeds and branches at the coasts and brood in these. First in 1968, artificial platforms were constructed for the breeding of pelicans and, when the pelicans preferred the platforms

as their nest areas, every year the platforms are repaired or new ones are built to replace the toppled ones by the National Park officers. Every year, more than 40 couples of Dalmatian pelicans brood on these platforms. Kuş Cenneti National Park is the most important brooding area of Dalmatian pelican (*Pelecanus crispus*) which are estimated as about 10-14 thousand all around the world. Again, it is the most important wintering ground of white headed duck (*Oxyura leucocephala*), an endangered bird species with an estimated population of about 8-13 thousand in the world (Birdlife, 2015). The lake provides IBA-A4i criterion as it shelters a remarkable number of endangered species.

According to the literature, 48 mammalian species are deployed in the area including Manyas and surroundings. The boundaries of the Kuş Cenneti National Park shelter aquatic habitats. Fewer land areas influence mammalian diversity and number within the National Park. Besides widespread species such as jackal (*Canis aureus*), fox (*Vulpes vulpes*), wild boar (*Sus scrofa*), hedgehog (*Erinaceus concolor*), marten (*Martes foina*), lump nosed bat (*Miniopterus schreibersii*), rare species such as otter (*Lutra lutra*) and wild cat (*Felis sylvestris*) are present in the area.

Kuş Cenneti National Park was awarded "A" class diploma in 1976 by the European Council. This diploma is given to the well preserved and managed preservation areas. The diploma was four times renewed in 1981, 1986, 1991 and 1996. But, Ergili regulator was put into service between the years 1992 – 1997 and all willow trees on which the birds brood dried because the lake waters were not sufficiently discharged. Due to these reasons, the A class diploma was suspended by the European Council in 2001. In 2002, the implementation of "Manyas (Bird) Lake Management Plan" prepared in coordination with the general Directorate of Environment Protection of the Canceled Ministry of Environment was started, and consequently the water level dropped, and new trees were planted to replace the dried ones. In 2003, the developments were assessed throughout the on-site investigations by the experts of he European Commission; the developments were found appropriate, and the diploma was conditionally renewed in 2004.

Kuş Cenneti National Park has a good potential especially with the possibilities of bird watching, bird photography, and ecotourism in the event of good management, increasing advertisement and other opportunities.

C. Uludağ National Park

Uludağ National Park is located at the south east of the city center within the boundaries of Bursa province at a distance of 22 km to Bursa. In addition, Sarıalan camping and daily recreation area is accessible from Bursa by cableway line.

Uludağ is located to the east of Uluabat Lake and south of Gemlik Gulf and lies in the direction of north west – south east. The length of the mountain is about 40 km and the width is 20 km. Bordered by Nilüfer Brook from west and south and Bursa and İnegöl plains from north and east, the area is in the first degree earthquake zone. There exist many summits within the National Park. The highest hill in the area which gives its name also to the mountain, is the Uludağ Hill, which forms the highest point of Marmara Region with the height of 2.543 m.

Although the zone generally bears the characteristics of Marmara climate, it has a transition climate between marine and continental climates. Summers are hot and arid and winters are warm and rainy. Mean annual temperature at Uludağ Summit station is 4.8 °C, and the annual precipitation is 1453,3 mm on average. Again, the mean snowy number of days at Uludağ is 180.3 between September and June.

The most important stream in the region is Nilüfer Brook and Kaplıkaya creek passing nearby the hotels zone. There exist many falls on the creeks going down to the plains, and rich mineral water is obtained from the Kalabak region of the mountain. There are also plants within the National Park for the use and operation of five different water springs which are exposed in different scales and elevations depending on the topography.

Toroids that developed during the last ice age when mainly arid and cold climatic conditions were observed and seven glacier lakes at the region below Uludağ Hill,

some of which dry in summer, are the important geomorphologic structures in the park and these attract the interest of visitors when the necessary arrangement are made.

There exist three different soil groups within the boundaries of Uludağ National Park. % 90,2 of the area is composed of Class VII – non-calcareous brown forest soil unsuitable for agriculture and the remaining area is high mountain meadows to the south of the area, barren rock and debris.

Conifers dominate the boundaries of the forest and vegetation shows characteristic transitions depending on altitude and exposure. Dominant forest species in the boundaries of the National Park which spread naturally and form the forest ecosystem are Uludağ fir (*Abies bornmülleriana*), beach (*Fagus orientalis*), sweet chestnut (*Castanea sativa*), black pine (*Pinus nigra*), and oak and hornbeam. Besides these species, poplar and linden trees form the forests in the area.

309 plant species of 52 families, 83 of which are endemic, have been identified within the boundaries of the National Park. On the other hand, it is determined that there exist vertebrates including 8 amphibians, 10 fishes, 17 reptiles and 111 birds and 37 mammalian animals.

Apollo Butterfly, an endemic species specific to Uludağ, and Bearded Vulture, very rare worldwide, are seen in the park. Besides, Fox, Jackal, Wild Cat, Badger, Squirrel, Weasel, Brown Hare, Roe deer, Red deer, Wild Boar, Indian Porcupine, Wolf and Bear are the frequently observed species.

As all forest assets of the National Park are sensitive areas in terms of ecology by forming feeding, sheltering and reproduction media to flora and fauna elements especially in the clearings in the forest and with high species diversity, the ecosystems where Uludağ Fir (*Abies bornmulleriana*) endemic to Turkey is dominant are areas having ecologic priority. The clearings in the forest especially at Kirazlıyayla, Sarıalan and Çobankaya zones have lost the forest quality and are converted to humid steppes by anthropogenic influences. On the other hand, the flora at the hotels zone designated as the first Development Zone and the second Development Zone has been destroyed

due to housing and ski runs. Therefore, such areas are degraded areas in terms of ecology.

Uludağ has importance in terms of history and culture besides its natural resources. Known in mythology as “Bthyniana Olympos” and “Monk” mountain (due to the abundance of monasteries and thus monks / priests at the mountain), Uludağ has taken its name upon the attempts of “Bursa Province Geography Society” and the proposal of Osman Şevki Bey in 1925. While taking its name in this way, Uludağ has given its former name to a wind. As Uludağ is located at the south east of İstanbul and Marmara Sea and its former name was Monk Mountain, the wind blowing from the south east has been called “southeaster (monkwise)”.

Recreational activities at Uludağ National Park such as daily use and camping intensify in four areas. These areas are Karabelen, Kirazlıyayla, Sarıalan and Çobankaya. Sarıalan Camping and Daily Use Area is the area within the boundaries of Uludağ National Park where recreational activities are most developed. The area is intensely used in spring and summer months for the purpose of resting, camping, picnicking and sports. There exist 12 bungalows and 29 barracks and a camping area for 300-350 tents. The capacity of the area is 3.000 persons / day. The last station of the cableway has been located here, which increased the utilization of the area.

The most important contamination within Uludağ National Park is water pollution. Sewerage problems are experienced at Uludağ in winter months. The hotels which do not have healthy infrastructure and treatment plants discharge the sewerage wastes of their increasing winter visitors randomly in the creeks and forest.

Forest areas within the area are used for purpose of producing wood or other products. *Gentiana lutea* in a wide area at Tutyeli Hill is one of the species that face the risk of extinction because of medical utilization. Agricultural utilization is not possible in the National Park area. However, pasturage is made in some parts of the area. There does not exist any registered pasture, summer and winter pasturage areas in the area.

The most important resource utilization in Uludağ National Park is the utilization of water resources. According to the information received from Bursa Water and Sewerage Administration, 21.5 hm^3 of water per year is used from the springs at Uludağ. 12.7 hm^3 of the water is used for urban purposes and 8.8 hm^3 of water is processed by miscellaneous firms and marketed countrywide.

Recreational activities realized in many zones within the National Park adversely affect the natural resources of the area. At Sarıalan, saffron and galanthus face the risk of extinction. Wild life is also adversely affected at the regions where recreational activities are carried out. Especially, at Karabelen, Hamuralanı and Devetaşı locations, habitats of insects and mammalians are under human pressure. Devetaşı location is the most important habitat of grizzly bears within the National Park.

D. Dilek Yarımadası-Büyük Menderes Deltası National Park

The Dilek Peninsula is situated at approximately 26 km south of Kuşadası, near Davutlar and Güzelçamlı in the province of Aydın. It is the last point of Samsun Mountains which reach out to the Aegean Sea. The average altitude of peninsula is 650 m and the highest point is the Dilek Hill (Mycale), from which the national park derives its name, with an altitude of 1237 m. Massive mountainous part extends from east to west and separated from the Sisam (Samos) island in the Aegean Sea by a strait. Western coasts of the peninsula are very steep, and deep valleys are found in the north and south of the area formed by short running streams flowing into the Aegean Sea (Altay et al., 2015). Besides its interesting geological formation, the Dilek Peninsula has a rare flora. Due to containing Mediterranean, Euro-Siberian and Irano-Turanian flora elements together, it is accepted as Flora Biogenetic Reserve (Anonymous, 1997).

The Great Menderes Delta is situated in the south of Kuşadası. This part of the park consists of Great Menderes river, sandbars, lagoons, salt marshes, and fresh and hard water supplies (Anonymous, 1997; Anonymous, 2006). The streams flowing towards the Menderes river in the south have produced sedimentary conical formations and

alluvial fans. It is one of the most diverse wetlands in Turkey in terms of both vegetation and marine life (Altay et al., 2015). The delta serves as nursery and spawning grounds for fish, provides water for agriculture, and builds up soils. The Great Menderes Delta is one of the most important habitats in the Aegean Region for migratory birds and consequently delta is an important bird area and has an internationally important wetland status (Anonymous, 1997). The Great Menderes Delta and Lake Bafa are the integrated components of the same ecosystem and are considered holistically. Therefore, the delta is currently protected under the Ramsar Convention, the Bern Convention on the Conservation of European Wildlife and Natural Habitats, the Rio Convention on Biological Diversity, and the Barcelona Convention (http://www.milliparklar.gov.tr/mp/dilekyarimadasi/sayfa1.htm).

The National Park has a Mediterranean climate. The average temperature year-round is about 18 °C, ranging from average lows of 8 °C in the winter to highs of around 27 °C in the summer. There are additional precipitation differences depending on elevation, and also between the north and south sides of the peninsula. Such precipitation amounts range from 900–1,500 mm annually. Hence, different species of foliage and plants live at higher altitudes than those at ground level, and the same is true when comparing the southern face of the peninsula and areas of the river delta with those to the north (Altay et al., 2015).

There are three major types of vegetation distributed on the Dilek Peninsula. These are phrygana, maquis and forests. The garrigue and maquis are mainly distributed between 0-500 m; forming the Mediterranean zone with hot-mild (subtropical) climatic features; followed by *Pinus brutia* forest vegetation between 500-1200 m in the upper Mediterranean zone and mild climate conditions. *Pinus brutia* and *Pinus nigra subsp. pallasiana* are found in the form of a mixed forest at 1200 m. Due to the temperature and climate differences between different areas and elevations of the park, not only the typical Aegean flora, but also the Euro-Siberian and Irano-Turanian elements coexist here. J*uniperus phoenicea, Viburnum tinus, Quercus ilex, Acer sempervirens* seen in restricted sites in Turkey all grow together naturally in this park.

These are found together with such Euro-Siberian elements as *Castanea sativa, Quercus frainetto, Tilia argentata*, widely distributed in the north. All 870 taxa have been recorded in the peninsula and 30 of them are endemics (A. Çelik, et al.,2003; http://www.milliparklar.gov.tr/mp/dilekyarimadasi/sayfa3.htm).

Dilek Yarımadası - Büyük Menderes Deltası National Park has a rich fauna as well as its tremendous flora. 28 mammalian, 42 reptilian, 250 bird species and a great number of marine species have been documented within the park. In deep waters of Kalamaki *Posidonia oceanica* community is widespread which is the indicator of unpolluted waters. Many of these species are endangered. Ornithological studies conducted within the national park, showed that out of 250 bird species 70 species breed at the delta. Some of the more common bird species observed here include pygmy cormorants (*Microcarbo pygmeus*), little egrets (*Egretta garzetta*), lesser kestrels (*Falco naumanni*), Kentish plovers (*Charadrius alexandrinus*), white-tailed eagles (*Haliaeetus albicilla*), and the Dalmatian pelicans (*Pelecanus crispus*), for which the park is a key nesting place. Mediterranean monk seals (Monachus monachus) have found reproducing opportunity on the south coasts of the peninsula. Wild boar (*Sus scrofa*), golden jackals (*Canis aureus*), jungle cat (*Felis chaus*), porcupine (*Hystrix indica*), and even several striped hyenas (*Hyaena hyaena*) are the other mammals which can be spotted in the national park. The Anatolian leopard (*Panthera pardus tuliana*) were seen in the 1950s at the territory (Başar, 2007).

Beside all of these characteristics, Dilek Yarımadası - Büyük Menderes Deltası National Park has an archeological importance as well. Panionium was erected as the meeting place of the Ionian League in the 9 century BC. The archaic city Thebai, Ayayorgi Monastery, historical Doğanbey village, Karina, Hagios Antonios Monastery and Cave of Zeus are the attractive places within the national park (Başar, 2007).

E. Beydağları Sahil National Park

The National Park is 10 km away from Antalya city center and extends along the 80-km shoreline between Antalya Marina and Cape Gelidonya in the south. The main reasons for the establishment of the National Park are the forest, high mountain and coastal ecosystems, endemic plant diversity and also the archeological remains of Lycia.

At the Peak of Tahtalı Mountain, the highest point of the area is 2366 meters. The average height of the National Park is 700 meters and the slope values are high in about 95 % of the area.

Beydağları Sahil National Park is located in the first and second-degree seismic zones pursuant to the earthquake risk map of Antalya province.

The most important geomorphological units in Beydağları Sahil National Park are the coastal dunes among coastal forms, fluvial valleys and also the dolines and caves among the karstic forms.

While the average annual temperature is 18.2 ºC in Antalya, the highest temperature was recorded as 45 ºC and the lowest temperature was recorded as -4.0 ºC. The total annual precipitation is quite a lot with 1132.9 mm and it is located in the “sub-humid” climatic zone. "Mediterranean climate" prevails in the region and also “Mediterranean High-Mountain Climate” is observed in high areas. This climate is distinguished from the other high mountain climates with its apparent summer drought and also from the Mediterranean Climate with its 4-5 months of snow cover.

The surface water in Beydağları Sahil National Park is drained to the sea in the east from the high regions in the west. The most important tributaries of the National Park drainage network are Belpınar and Beldibi watercourses in Beldibi region; Göynük Stream in Göynük Region; Kesmeboğazı watercourse-Ağva stream in Kemer Region; Sarımeşe watercourse in Çamyuva region; Kocaçay (stream) in Tekirova region and

also Adrasan watercourse in Adrasan Region. These watercourses are used for the irrigation of plains.

The presence of the soluble carbonate rocks and water, the karstification due to tectonic activity and also the dolines known as “snow pit” among the people are common in the region. These karstic structures are filled with snow in winters and then feed the underground waters. Tahtalı Mountain is the water source of many settlement areas especially Kemer, Tekirova and Çamyuva. For this reason, the protection of dolines is of great importance.

It is seen that four different large soil groups and land types are prevalent in the park. These, according to the space they take, are as follows: Bare Rock and Debris, Red Mediterranean Soils, Non-calcareous Brown Forest soils and Reddish Brown Mediterranean Soils. These four large soil groups and land types cover 97% of the National Park and non-arable lands.

99.2 % of the National Park is forest. Tahtalı Mountain, one of the unique mountain ranges in the western Taurus, is the highest mountain rising from the coast in the Mediterranean with 2366 m. 865 plant species have been observed in the park which is very rich in endemic species thanks to this high mountain ecosystem and 155 of these species are endemic and 23 of them are local endemic species.

The National Park’s forest ecosystem is one of the best examples of *Pinus brutia* (Red Pine) of bottom land in Turkey and the red pine is replaced with *Cedrus libani* (Cedar), *Pinus nigra* ssp. *pallasiana* (Black Pine), *Juniperus* (Juniperus), *Duercus infectoria* (Cyprus Oak) and *Cupressus sempervirens* (Cupressus Sempervirens) at high altitudes. The forest diversity from the coast to the peaks in the west draws attention. Another zone, having importance in terms of flora, is Kesmeboğazı. *Crocus wattiorum* (Olympus Crocus) and *Ophrys climacis* (Kemer Orchids), which are seen only in Antalya in the world, are in this zone.

Tahtalı Mountain is an exceptional zone not only for its floristic diversity but also for its geomorphological and hydrogeological properties. Numerous dolines (karstic pits) on the mountain slopes are the forms providing drinking water for many settlement areas in the region.

According to the studies conducted in the National Park and its immediate surroundings until today, there are 5 amphibian, 11 reptile, 85 bird and 13 mammal species in the area. Two of the reptiles are in the category of CR, and *Capra aegagrus* (Wild goat) is in the vulnerable (VU) category.

The important archeological values in Beydağları Sahil National Park and surrounding area are part of the ancient Lycian Way and Olympus, Chimaera, Phaselis and Idyros ancient cities on this way. The Lycian Way is a 509 km ancient trade route and is regarded as one of the longest paths in Europe and also one of 10 most beautiful routes of the world, marked by international standards. Chimaera is located near Çıralı in the district of Kemer and is a natural gas source, which has historical and touristic importance. The “Olympic Torch”, lighted today, is a symbolic expression of the Chimera's deadly fire.

According to the population data of Turkish Statistical Institute for 2017, 2.364.396 people live in the immediate vicinities of Beydağları Sahil National Park. There are no settlement areas within the boundaries of the National Park.

Another usage increasing the diversity of recreational activities of the National Park is the ropeway, being one of the longest ropeways of the world with a length of 4350 meters. The ropeway, transporting the visitors to the peak of Tahtalı Mountation which is 2366 meters high, has an important share in increasing the visitor numbers of the National Park.

Moreover, Antalya fishing port with a capacity of 650 boats has been established opposite the Sıçan Island. For this purpose, a land of 29 hectares in sea and 1.6 hectares in land has been allocated.

Currently, 21 excursion areas are available in the region. 10 of these areas are run by the Administration or keepers, 7 of them are used for the hotels' annexes, 3 of them are not occupied and the last one is occupied as the fishing port.

F. Başkomutan Historical National Park

The areas in the Historical National Park form the site where the great defence started on 26th August and also the site where the Field Battle of the Commander-in-Chief on 30th August happened. These two events constitute the most important part of the Turkish War of Independence, ending with the expulsion of the imperialist occupation forces from Anatolia. There are 2 museums, 1 Publicity Park, 11 monuments and cemeteries in the Park. The following constitute the main resource value of Başkomutan Historical National Park; Kocatepe Monument and Inscription, Yzb. Agâh Efendi Cemetery, Büyük Taarruz Cemetery and Mustafa Kemal Atatürk Monument, Alb. Reşat Çiğiltepe Cemetery and Zafer Museum in the province of Afyon and also Zafertepe Monument, Şehit Sancaktar Mehmetçik Monument, Yzb. Şekip Efendi Cemetery, Üç Tepeler (Aslıhanlar) Cemetery, Dumlupınar Monument, Dumlupınar Cemetery and Dumlupınar Museum in the province of Kütahya.

The part of Dumlupınar, where the Field Battle of the Commander-in-Chief occurred and had the characteristics of a part of the road proceeded step by step to this battle, was registered as the historical site area in 1990 and also the part of Afyon in 2000 based on the Historical National Park's boundry. Furthermore, Allıören Mound and Ağaçköy Mound were registered as the first degree Archeological Site. While Ulualan Mound and Yörük Graves were registered as the first and the second degree Archeological Site, Sümbültepe Necropolis is the first degree Archeological Site and also Aslantaş I and Aslantaş II Tumulus are the first and the second degree Archeological Sites.

Since the visitor center in Afyon-Kocatepe is the center where the resources of the National Park are introduced in the widest sense and the most detailed information about the National Park is provided, this center constitutes the starting point of the

park tour. After receiving the first and comprehensive information about the war at the visitor center, the visitors arrive at Kocatepe Information Center by visiting the current war zone and cemeteries on the road of Afyon, Deper (Ataköy). To visit Dumlupınar part; the visitors first come to Düzağaç from Afyon-Uşak-İzmir highway and then arrive at Zafertepe Information Center by visiting the cemeteries on the road in the north.

Although the main source values are the historical source values of the park, it is also rich in ecological and biological sources. The vegetation covering the valleys, ponds where the water is available through the year in the forested lands, many endemic species, and also wildlife richness are the other source values of the national park. Tınaztepe Pond is located in the Oak forest and it is also the most important habitat of the water birds in the region. Zafertepe-Çalköy Pond located in the Dumlupınar part is a wetland area composed of the fresh water meadows and reeds which provide fresh water to the creatures and extending along the shore. Dumlupınar Pond at a height of 1315 m is an artificial freshwater pond. It is composed of the pastures hosting the aquatic vegetation as a narrow strip and stony coastal strip around it.

In general, the vegetation showing the characteristics of forest-steppe transition is available in the National Park. There are over 60 species of plants in the publicity park. It has been detected that 43 endemic taxons are available in Dumlupınar part and also 19 endemic taxons in Kocatepe and Dumlupınar parts. It has been found in the studies conducted until now that there are 403 taxons in Dumlupınar part. The dominant specie in the forest ecosystem is *Pinus nigra*. Besides this, *Pinus sylvestris, Juniperus excelsa, Juniperus foetidissima, Cedrus libani, Fagus orientalis* and *Quercus vulcanica, Verbascum thapus, Tribulus terrestris, Astragalus microcephalus* are the common species in the field.

The Historical National Park, where there are 5 amphibian, 13 reptile and 10 mammal and also 159 bird species belonging to 43 families, hosts the specie of *Triturus vittatus* which is rarely seen across Turkey.

The dry period continues until mid September from June with the central Anatolian continental climatic conditions. The period of January-February is quite snowy and cold. The average temperature is annually 11.2 C° and the annual average precipitation is 438.4 mm.

The Historical National Park is located in the first and the second degree seismic zones.

G. Saklıkent National Park

Saklıkent National Park is located within the borders of Seydikemer District of Muğla Province and also Kaş District of Antalya Province. There is access from two different directions: south and north. Its distance to the center of Fethiye is 44 km. The road following Korkuteli highway from the district of Fethiye which is located in the northwest of the area, is the main connection reaching Saklıkent National Park. In the south of the area, the stabilized road following the road of Aklar Village within the borders of Antalya Province and reaching Çamlıköy Village is the second route with an access to the national park.

The region covering the national park is under the influence of the Mediterranean climate. The maximum and minimum temperature values, humidity, precipitation amount and dominant wind directions vary by the local geographical conditions. The annual average temperature varies between 18.3 to 17.4°C. Moreover, average precipitation is around 812.5 mm per year. These ratios increase as we get closer to the shore line. January is the month in which temperature is the lowest at 10.1°C. The highest average temperature is observed in July and August at 27.9°C. The maximum temperatures are noted is July at 44.3°C and minimum temperatures at -2.7°C in January (Şengün, 2011).

Karaçay, on which Saklıkent Canyon is located, is fed by a fault spring close to the canyon mouth, surface water and karstic sources. Its flow rate decreases in summer months but has a flow throughout the year. Despite summer drought, it reaches the

Mediterranean Sea by forming Eşen Delta Plain together with Saklıkent Canyon, fed by the rich karstic sources.

The red forest soil is found in and around Saklıkent National Park and also the clay soil, rocks and rocky structures are found in high sections. Water erosions are observed with increasing water level and speed in Karaçay River especially in winter months when there are heavy rainfalls in and around the national park. Furthermore, water erosions, occurring because of the slope of Akdağ Mountains in the south of and outside the borders of the park, affect the park. Saklıkent National Park is located in the first and the second degree seismic zones.

In general, the following tree species are dominant in the area; *Pinus brutia, Pinus nigra, Pinus pinea, Cedrus libani, Castanea sativa, Tilia sp., Eucalyptus camaldulensis Dehn., Ceretonia sliqua.* Some of the maquis species observed in the area are *Thymus spp., Myrtus communis, Nerium oleander, Laurus nobilis, Vitex agnus- castus, Olea europaea* and *Ceretonia siliqua.*

The woody species are listed as maquis, *Pinus brutia, Pinus nigra, Cedrus libani* according to the height of the geomorphological gradients. While the *Pinus brutia* is widespread in the vicinity of the canyon entrance, the *Pinus nigra,* in the zones above 1000 m. especially in the southeast parts of the park, and also the *Cedrus libani,* having the characteristics of monument on and around Dumanlı Mountain, offer impressive images.

The following animal species are the most common species in the National Park: wild boar, brown hare, spur-tighed turtle, common buzzard, long-legged buzzard, wood pigeon, chukar partridge, bee-eater, hooded crow, Eurasian hoopoe, and Syrian woodpecker. Saklıkent canyon, in the east of the Gulf of Fethiye, is a depression running to the Mediterranean in the southern-northern side of Eşen Stream valley. The canyon located on one of the tributaries of Eşen Stream (Karaçay) is surrounded by Akdağ in the north and Beydağları in the east. The highest point of the mountainsides ranged approximately above 2500 m is the Aktaş Peak with 2974 m.

It is one of the most important formations as one of Turkey's long and deep canyons. The length of Saklikent Valley is about 18 km. However, the section which shows the characteristic canyon valley features is about 8 km long. Heights of the slopes of the canyon vary between 100 and 350 meters. Dip values of the slopes become 90° at some places. The width is about 4-5 m at some sections, whereas it gets so narrow at times that you cannot fully open your arms. It is observed that stones and rocks have a wide variety of shapes and their surfaces are slippery.

Summer is the best time to visit the canyon as it is deliciously cool and shady with cold water. The water at the bottom is cold even in summer, because sunlight hardly penetrates, and it is possible to walk through the water, and sometimes on suspended wooden platforms in Saklikent National Park. It is among the canyons that attract the most attention of tourists in Turkey. Approximately 300 thousand people visit the canyon every year (www.nationalparksofturkey.com/09.11.2018).

There are important historical and natural areas visited by tourists around Saklıkent National Park. While the ancient cities of Letoon and Tlos, being the most important ruins of the Hellenistic period are visited especially by foreign tourists, Eşen Stream and Girdev Plateau are the important points preferred for nature sports and transhumance activities.

H. Kızıldağ National Park

Kızıldağ National Park is located at the Lakes Region of the West Taurus Mountains of the Mediterranean Region and is included within the boundaries of Isparta Province, Şarkikaraağaç, Yenişarbademli, Eğirdir, Aksu and Sütçüler Districts.

The National Park is connected to the national transportation network through Isparta – Konya highway at the north. Şarkikaraağaç, Yenişarbademli, Beyşehir and Eğirdir districts are located in the vicinity and it is 121 km away from Isparta. It is also neighbored by the Beyşehir Gölü National Park.

The annual mean precipitation is 631.7 mm at the region and the mean weather temperatures are about 0.6 C° for winter and 20.9 C° for summer. 'Humid – semi humid' climate type prevails at Kızıldağ National Park.

The northern parts of the park are in the first degree earthquake zone and the southern parts are in the second degree earthquake zone. These parts contain active fault lines. The third biggest barite beds of Turkey are located in this region.

The basin area has had numerous natural features as a consequence of its morphological evolution for centuries. As a result of the instantaneous tectonic and volcanic events, Beyşehir Lake emerged by the blockage of the valley where the lake is formed. The highest point of Anamas Mountain range, which borders Beyşehir Lake from the west, is the 2992 m high Dedegöl (Dipoyraz) Mountain. Anamas Mountains are rather rich with regards to karstic shapes. The Pınar Gözü Cave located in Kızıldağ National Park is an important geomorphological structure in terms of both hydrology and cave features and is the longest cave in Turkey with a length of 15 km. the investigation of the cave whose height is 800 m from the entrance point still continues.

Creeks within the area of Kızıldağ National Park are seasonal creeks and the only creek which continuously flows is the Hizar creek to 8 km west of Yenişarbademli. Water comes to the creek from the cave and it is a creek which continuously flows although its discharge decreases in summer months. However, there exist over about 70 springs of varying sizes within the area. In addition, a portion of Beyşehir Lake enters in the boundaries of Kızıldağ National Park.

Concerning soil formation and classification, the areas left within the National Park may be assessed in two separate categories. Yenişarbademli is known to have Red Mediterranean Soils and the great part is first class soil which is the best with regards to soil capability. The great majority of the lands in the National Park within the borders of Şarkikaraağaç District are VII. class lands. These lands are forest or heaths and pastures. There are extreme levels of erosion in the lands. An important part of

the remaining agricultural lands where soil is processed is the first and third class lands.

In the region, there are especially, juniper (*Juniperus excelsa*), cedar (*Cedrus libani*), black pine (*Pinus nigra*), fir (*Abies cilicica*) and oak (*Quercus coccifera*) forests. Again within this ecosystem, forests of Kasnak Meşesi (*Quercus vulcanica*) which is a species endemic to our country are found. 1124 plant species, 201 of which are endemic, are detected within the boundaries of Kızıldağ National Park.

4 amphibian, 16 reptile, 173 bird and 11 mammalian species exist in the region as understood as a result of open area surveys conducted within the boundaries of the National Park and its vicinity. *C. carpio* (carp), *T. tinca* (tench) and *S. lucioperca* (pikeperch) in Beyşehir Lake are economic species and continuously fished.

The area located within the park where cedar forests are located has the property of being one of the richest regions in the worlds in terms of oxygen values and poses importance in terms of health for the people having lung – asthma problems.

Settlement areas have been founded in the geography in which Kızıldağ National Park is located since very ancient times because of its natural characteristics. This geography crossed by ancient routes puts forth the importance of the region in ancient times. From the tumuli seen everywhere, it is understood that the region is one of the most important regions in Anatolia, where history goes back to Neolithic Ages, and it has been an intensive and favorite settlement place since ancient ages. There exist 10 tumuli within the borders of Şarkikaraağaç district. 32 of them are within the Park area and 8 are at its edges. The areas within the National Park which contain Karayaka and Yeniköy Tumuli were announced as Archaeological Site Areas in 1988. Many of the other tumuli were excessively destroyed due to the agricultural activities on them. Besides, settlements and their surroundings were announced as the third degree Natural Site, while the remaining park area was announced as the first degree Natural Site.

The residential areas of Karayaka, Sarıkabalı, Gedikli villages of Şarkikaraağaç and Yenişarbademli district and Gölkonak village were taken out of Kızıldağ National Park with the change in 2018. The people living here are from yörük culture and are mainly engaged in livestock. The fields used as agricultural area are the plains around the lake.

In the National Park region, the garbage and solid wastes arising from the settlements and the excursion and camping areas at the coast of Beyşehir lake are the most important environmental problems. Agriculture at the coastal areas made by use of fertilizers and the wastes of settlement areas lead to the contamination of underground water and lake. Grazing, illegal hunting, tree cutting and land clearing are the crimes mostly committed in the area.

İ. Beyşehir Gölü National Park

Beyşehir Lake Basin forms a natural and ideal habitat in terms of flora and fauna elements as it is located at the intersection of Central Anatolia, Toros and Western Anatolia Mountains and accommodates very different habitat types. Beyşehir Lake is among the essentials of the local people with drinking water supply, irrigation, beach use to a certain extent, and fishing activities. The lake contains about 60 islands of varying sizes, almost all of which have different natural and archaeological values. These islands provide reproduction, feed, spawning and brooding environment for the birds.

The lake which forms almost all the national park is bordered at the west by Anamas Mountains and at the northeast by Sultan Mountains. Its length from north to south is 42 km. Its widest place is 26 km between Kaşaklı Gulf at the southwest and Çiftlik Village at the northeast.

Beyşehir Lake is the main element in the National Park area and has images which may vary in all directions due to different heights around it. The lake resembles a little sea having very diverse characteristics with little bays formed at its indented coasts, beaches, reeds and, from time to time, steep ridges perpendicular to the coast.

The northern sections of the lake are located in the second degree earthquake zone, while the southern sections are in third the degree earthquake zone.

Beyşehir Gölü National Park and its vicinity are represented by “arid – semi humid” and first mesothermal climate types. The annual mean precipitation is 631.7 mm and the mean weather temperatures are 0.6 C for winter and 20.9 C for summer.

The annual and seasonal water level variation causes changes at the coast line, and the water elevation at the lake is accepted as 1124.60 m. The deepest places are the sections close to the east and south of the lake and the depth exceeds 6 m. However, the lake is shallower at the north and west and the depth varies between 3-5 m.

The coasts bordering Beyşehir Lake may be examined in two groups as Low Coasts and High Coasts with regards to their morphological features. The coasts which surround the lake from east and south are low coasts and coast profile has a slight slope. An unobtrusive topography is dominant at the backshore formed by alluvial plains. At the northern segment of the lake, Taşlı Tepe Island with an altitude of 1139 km south to Karayaka Village is connected to the coast with a spit. The length of the spit is 125 m and the width is 75 m. Thus, a tombolo was formed here. But, in the event of water rise in the lake, the spit which is rather flattened and low may be left under water, and the connection of the island with the mainland may be cut.

88 of 560 taxons found within the National Park area are endemic. Lebanon Cedar, Common Juniper, Cade Juniper, Fir, Black Pine, Kermes Oak, Ash, Walnut, Black Mulberry, Spanish Marigold, Opium Poppy, Sage, Galanthus and Cyclamen are some of the important plant species at the National Park and its vicinity.

Beyşehir Lake is rather important in terms of water birds. There are 153 bird species in the National Park area. Some of these are common coot, mallard, little grebe, kingfisher and tufted duck. Pelicans, gulls, herons and wild ducks breed in the islands and shallow coasts and different species of birds accommodate in coveys at the lake during migration.

Around the lake is rather rich, too, with regards to species of amphibians, reptiles and mammalians. There exist a total of 51 species (3 amphibian, 14 reptile and 34 mammalian species) in the area. Also, a total of 16 fish species exist in the lake and brooks. Some of these are perch, zander, carp, dace, large carp, minnow, barb and rudd.

The region has been an attraction center from ancient times and hosted various civilizations. In the past and today, people have continued and continue to live around the lake for economic gain and settlement. The main source of income at the settlement places located in the National Park area are agriculture, livestock and fishing.

It is known that, in the past, the water of Beyşehir Lake flew to Suğla Lake at the southeast through Beyşehir Creek depending on the natural gradient. Today, this natural flow has stopped either due to rather arid periods (periods of less precipitation) experienced in the world and the engineering structures constructed by SHW on the creek. Besides this, water of Beyşehir Lake is improved and the court has decided its transfer to Çarşamba Creek and keeping water disposal gates continuously open. The water of lake is directed to Apa Dam located within the borders of Konya Province and to Konya – Çumra Plain for irrigation purpose.

Fish in Beyşehir Lake lay eggs in April, May and June to the coastal segments where aquatic plants are found abundantly. The same months are again the periods when irrigation and drawing water from the lake is intense. Depending on excessive water drawing, the drop in the water level of the lake causes also the danger of drying of the eggs left at the shallow coast segments. Excessive water drawing from Beyşehir Lake also indirectly affects fishing adversely.

As a result of the surveys done in Beyşehir Lake Basin, fish species of Cyprinidae, Atherinidae, Percidae and Cobitidae families were detected. *Cyprinus carpio* (Common Carp), *Carassius carassius* (Crussian carp), *Tinca tinca* (Tench), *Leuciscus lepidus anatolicus* (Perch), *Chondrostoma beysehirense* (Beyşehir nase), *Pseudophoxinus battalgili* (Beyşehir minnow), *Alburnus akili* (Beyşehir bleak), *Gobio*

gobio microlepidotus (gudgeon), *Capoeta pestai* (Eğirdir barb) from *Cyprinidae* family, *Stizostedion lucioperca* (Zander) from the Percidae family, *Atherina boyeri* (Sand smelt) from the Atherinidae family, *Cobitis bilseli* (Spined loach) from the Cobitidae family are found in Beyşehir Lake and the brooks flowing to the lake. Among these fish species *Chondrostoma beysheriense, Pseudophoxinus battalgili, Alburnus akili, Gobio gobio microlepidotus, Cobitis bilseli* are endemic in Beyşehir Lake basin.

However, important changes have been occuring in the fish species composition of Beyşehir Lake. Zander, later brought to this lake, has had a negative impact on the natural fish structure of the lake. As it is a carnivore fish, zander fed on the other natural species of the lake and caused a gradual decrease in the number of the fish species in the lake. The surveys show that, after Zander (*Stizostedion lucioperca*) was put to the lake, the endemic species other than *G. gobio microlepidotus* and *Pseudophoxinus battalgili* became extinct. *Cyprinus carpio* (common carp), *Tinca tinca* (tench) ve *Stizostedion lucioperca* (zander) are the species continuously fished at Beyşehir Lake.

J. Gala Gölü National Park

It is possible to divide the Gala Gölü National Park area in two large geomorphological units as Hisarlıdağ Mass-Gala Lake and Pamuklu Lake-Aşağı Kocadere Valley Alluvial Base. The ratio of the areas less than 50 m in the park to the park area is 58.8% and the height is about 350-400 m on the peak plains of Hisarlıdağ volcanic mass.

The mean yearly temperature of İpsala region is 13.9 °C. The winter temperatures range from 3-5 °C and the mean temperature is around 25 °C in summer months. This situation reveals that there is a thermal regime seen in the semi-continental climate in the region. The annual precipitation is below 600 mm in a major part of the National Park.

The Lake Gala is composed of two parts as the Big Gala and Small Gala Lakes. However, there is no definite boundary between these two parts. The Big and Small Gala Lakes, Sığırcı Lake, Pamuklu Lake and Meriç River act as a whole wetland. Therefore, their surface areas vary depending on the meteorological conditions and the release of water from the lake for paddy irrigation and the release of water left in the fields at the end of the harvest such as the depth of the lake.

The area is the single flood plain in Trakya region and was formed as a result of the alluviums brought by Meriç River that blocked the areas in the delta. Through Enez fishponds, it is connected with the sea and Meriç River.

There is no apparent stream flowing into Lake Gala. The Lake has been excluded from the effect of Meriç River floods through the flood facilities within the scope of "Meriç-Ergene Basin Project" implemented by the State Hydraulic Works and after this project, the feeding of the Lake Gala with the fresh water supplies has become dependent on Muzalı Stream coming from Keşan Valley and also the surface runoffs. The fresh water supplies coming to the lake have been further decreased as a result of the irrigation and storage facilities established within the scope of "Aşağı İpsala Project". The exit of the lake is carried out through the discharge structures built by the SHW.

Two types of large soil groups were identified in the National Park area: Hydromorphic and Non-calcareous Brown Forest Soil. In general, they are the areas having the Land Use Capability in Class VII. The park is located in the second-degree seismic zone.

The Gala Gölü National Park consists of the maquis shrubland with secondary character formed as a result of the anthropogenic pressures of the marshlands around the national park and also the broad-leaved forests in its south. The 60,3 ha area has been allocated as the "Mixed broad-leaved forest, *Acer monspessulanum L.* Gene Conservation Forest" in the higher parts along the south-west border of the National Park. It is one of the important ecological areas with its wetland, lake and shrub

ecosystems and also with various species living in these ecosystems, the presence of birds over 100 and also hosting the bird species in danger of extinction such as *Pelecanus crispus*, *Plegadis falcinellus* and *Phalacrocorax pygmeus*.

The lakes are surrounded by large reed fields. The taxons, namely *Nymphaea spp.*, *Ceratophyllum spp.* and *Lemna ssp.*, moving passively on the water of *Typha angustifolia* species forming dense vegetation in wetlands are common in closer areas.

It was determined as a result of the studies conducted that 311 plant taxons are available within the borders of the park. The wide spread of plants living in aquatic habitats has caused a decreased rate of endemism and 5 endemic plant species have been identified in the area.

The areas in the south of Gala and Pamuklu Lakes are completely covered with maquis formation. The dominant species are *Quercus coccifera, Phillyrea latifolia, Quercus pubescens* and *Paliurus spina-christi*.

9 amphibian, 25 reptile, in total 59 mammal species, 24 of which are bats, and 165 bird species were found in the National Park area and within its ecological borders. The following threatened and rare bird species need to be protected in the area: *Milvus milvus, Circus cyaneus, Accipiter gentilis, Aquila heliaca, Cygnus columbianus, Monticola saxatilis, Oenanthe pleschanka*.

The aquatic ecosystem has a dynamic food chain network. 12 of the 20 identified fish species have economic importance. Especially *Anguilla anguilla* (European Eel) is a fish species consumed economically in Lake Gala.

It is not possible to talk about the visitor heavy traffic of the National Park. The most important reason for this is the National Park's location and transportation difficulties to the National Park area. Most of the visitors are bird watchers and nature photographers who come from the surrounding provinces after the incubation period of water birds.

While the energy flow in the aquatic ecosystem of Lake Gala is at high levels, the irregular changes occur in the water level, and this problem and the agricultural pollution are important factors threatening the system. Nitrogenous and phosphate compounds coming from discharge water increase the primer production in the lake and algae blooms occur during hot periods. This situation accelerates the eutrophication process of the lake and leads to the deterioration of water quality. Although it is a National Park, illegal fishing in the Lake Gala is an important problem. Uncontrolled and irregular hunting pressure, especially during fish breeding periods, caused a significant decrease in the populations of European eel, European barracuda and sheatfish.

K. Sultansazlığı National Park

Taking its name due to being the hunting place of sultans in the era of Ottoman Empire, Sultan Sazlığı is located in the middle of the closed water basin of 319.000 ha which was formed upon the upheaval of Erciyes Mountain, a volcano in geological times, and left between Kayseri Province Develi, Yahyalı and Yeşilhisar Districts.

The basin which includes the National Park is surrounded by Erciyes Mountain (3.916 m) to the north, Develi Mountain (2.074 m) to the east, Aladağlar (3.373 m) to the south and Karadağ and Hodul Mountain to the west.

The factors which determine the hydrological structure of the area are the precipitation, streams down the slopes to the plain (Yahyalı, Ağcaşar, Develi, Yeşilhisar and Dündarlı creeks) and the waters which seep down in the surrounding heights and then exposed as springs at the surfaces on the slopes facing the plain.

Although Sultan Sazlığı is located in the Central Anatolia Region where continental climate is prevailing, it shows “Semiarid Subtropical Mediterranean Continental” climatic properties where winters are cold and cool, and summers are hot. The mean temperature at the basin is 11.5 C°. The mean annual precipitation quantity is 364.1 mm.

A rather wide part of Develi Plain on which the area takes place is covered by alluvial soils. Other large soil groups are organic soils, hydromorphic alluvial soils, brown soils and brown acidic soils. While heavy clayey soils are present around Yay Lake, volcanic tuff is widespread in the vicinity of Sindelhöyük.

Sultan Sazlığı National Park incorporates different plant species and communities and forms a rare example of association of fresh, brackish and saline water ecosystems and halophilous steppe. A significant part of the plant species is endemic to Turkey. There exist five different habitats as Reeds, Fresh Water Lakes (Eğri Lake, Bağınaltı Lake, Sarp Lake, Kanlı Lake and Soysallı Spring), Salt Lakes (Yay Lake and Tuzla Lake), Meadows and Halophilous Steppes.

As a result of flora studies conducted between 2002–2004, 428 species of 73 families were identified and 48 of these are endemic to Turkey. The only range of *Puccinellia bulbosa caesaria* species in the world is Sultan Sazlığı. The other plant species are Common reed *(Phragmites australis)*, Narrowleaf cattail *(Typha angustifolia)*, White water lily (*Nymphaea alba*), Bladderwort (*Utricularia australis*), Common duckweed (*Lemna minor*), Opposite leaved pondweed (*Groenlandia densa*) and Mad dog weed (*Alisma plantago-aquatica*), Common glasswort (*Salicornia europae*), Saltbush (*Artiplex nitens*), Milk vetch (*Astragalus macrocephalus*), Esfand (*Peganum harmala L.*) and Sagebrush (*Artemisia herba-alba*).

Having different ecosystems and habitats altogether enablesSultan Sazlığı to be rather rich in terms of Phytoplancton, Zooplancton, Invertebrates and Vertebrates. 21 mammalian, 10 reptile, 3 amphibian and 7 fish species have been identified in the area.

Sultan Sazlığı has a different importance for bird species. It is the only area in Europe where crane, flamingo, great white heron and pelicans brood all together. It provides feeding, reproduction and stopover opportunity for 301 bird species. It is possible to see 600.000 water birds around Sultan Sazlığı at the periods when the ecosystem characteristics in Sultan Sazlığı are close to ideal. Western marsh harrier *(Circus aeruginosus)*, Pygmy cormorant *(Phalacrocorax pygmaeus)*, Little bittern

(Ixobrychus minutus), Bearded reedling *(Panurus biarmicus)*, White headed duck (*Oxyura leucocephala*), Ferruginous pochard (*Aythya nyroca*), Red-necked grebe (*Podiceps grisegena*), Greater flamingo (*Phoenicopterus ruber*), Ruddy shelduck (*Todorna ferruginea*), Ringed plover (*Charadrius hiaticula*), Greater short toed lark (*Calandrella brachydactyla*) and Black bellied sand grouse (*Pterocles orientalis*) are bird species often observed in Sultan Sazlığı habitats.

Çayırözü and Soysallı Villages of Develi District, 4 hamlets of Sindelhöyük Town (Devesazı Damları, Çarıklı Sazdamları, Yağızlı Sazdamları, Karapınar Damları) and Ovaçiftlik Village of Yeşilhisar District are the settlements within the area boundaries. The area has great importance for those living in these settlements in terms of economy and culture.

L. Yumurtalık Lagünü National Park

With a total area of 16.979.64 hectares, the National Park is 30 km away from the center of Yumurtalık district of Adana.

The National Park is a typical lagoon pond and altitude and inclination are none to zero. In addition, it is in Karataş – Osmaniye Fault Zone and is in the first degree earthquake zone.

A typical Mediterraean climate is seen in the region. The annual mean temperature value is 18.7^{o}C and rain amount is 769.9 mm.

In the area, there exists four main soil groups: alluvial coast marsh, hydromorphical alluvial, alluvial and colluvial. The majority is VI, VII and VIII class soils. There are private, treasury, pasture and allocated lands in the National Park.

Although the length of Ceyhan River, which is effective in the formation of the delta, is 509 km and the catchment basin is 22.300 km^2, it is among the important streams of Turkey with regards to the volume of its discharge. Its mean discharge is 238 m^3 per second and this figure increases to 400 m^3 in April and May. In the past, great floods occurred and many ponds, lagoons, meanders and swamps were formed due to

frequent bed changes of the river. Lastly, it steered to the south in a great flood in 1932 and started to flow in its current bed.

Yumurtalık Lagoon is a wet land system having a rather complex structure consisting of lagoons, fresh and saline water swamps, wide barren plains, reeds, wet meadows, dunes and Aleppo pine forest left between the point where Ceyhan River goes into the sea and Yumurtalık Gulf. Contrary to the other lagoon in the region, it has an irregular coastal line and joins the sea at many points.

The area covering Çamlık and Yelkoma lagoon systems is divided into two by the former bed of Ceyhan River. In the north, Çamlık fishgarth and wide barren plains, swamps and shallow lakes are located; Aleppo pine forest (*Pinus halepensis*) is located in the area of 105 hectares between Ömer Lake and Çamlık Fishgarth and this is one of the two areas in Turkey where Aleppo Pine forms a forest. At the south of the former river bed, Yelkoma Lagoon surrounded by saline swamps and dunes is located. The lagoons are rather shallow and their depth varies between 20-60 cm.

The Yumurtalık Lagünü National Park is located within the Mediterranean Phytogeographical Zone and within the Ceyhan Delta Important Plant Site, which is one of the 112 important plant sites of Turkey. 301 taxons of 68 families have been identified in the area. Mixed stands of *Pinus brutia* (Turkish pine) and *Pinus halepensis* (Aleppo pine) forests are the most important part of the area in terms of flora.

In this area, there exist *Bromus psammophilus, Silene pompeiopolitana, Echinops dumanii* and *Trigonella halophila*e which are critically endangered. *Halopeplis amplexicaulis* is a rare species for Turkey and exists at a single point only at Yumurtalık Lagoon.

41 of about 120 Odonata (damselflies) species living in Turkey may be observed in the area. A population of Blue Crab (*Callinectes sapidus*) with a density of 1 nest per square meter was identified between the sea coast and sand hills. A total of 27 fish species of 10 families were identified in Ceyhan Delta. Other than these, *Gambusia*

holbrooki (mosquitofish), which is an exotic species of Poecilidae family, is also present.

It is possible to observe 2 amphibia species and 5 reptile species in the area. *Trionyx triunguis* (African softshell turtle) copulates at the river mouth and makes its nest and reproduce at the coast dune. Yumurtalık Gulf is the only known wintering site of the endangered *Chelonia mydas* (green turtle) in the Mediterranean.

Yumurtalık Lagoons are an important stop over, rest and feed area on the bird migration paths passing over Anatolia. In the past, a total of 211 bird species was identified in the area in a study conducted in March, April and May. It is identified that 48 of these species reproduce in the area. Among these, snowy plover, little tern, collared pratincole, spur-winged plover and white-throated kingfisher and marbled teal are the species which provide important bird area criteria for the area. The bird species which caused the area to gain the important bird area status are shelduck, crane, ruddy shelduck, cormorant, eurasian wigeon, avocet and dunlin.

34 mammalian species of 12 families have been observed in Ceyhan Delta. Among these, watershrew, bats, Anatolian squirrel, Egyptian mongoose, badger, otter, Indian porcupine, fox and jackal are the main ones.