

A RESEARCH ON BOTANY TOURISM AND PLANT MUSEUMS: APPLICABILITY IN TURKEY

Alper Ates, Asst. Prof.

Selcuk University, Tourism Faculty, Konya/Turkey

Halil Akmese, Asst. Prof.

Necmettin Erbakan University, Tourism Faculty, Department of Tourism Management, Konya/Turkey

Ahmet Buyuksalvarci, Assoc. Prof.

Necmettin Erbakan University, Tourism Faculty, Department of Tourism Management, Konya/Turkey

Ceyhun Kilinc, Assoc.Prof.

Selcuk University, Tourism Faculty, Konya/Turkey

Mustafa Coskuner

Selcuk University, Institute of Social Sciences, Konya/Turkey

Halil Sunar

Selcuk University, Institute of Social Sciences, Konya/Turkey

ABSTRACT

The geographical structure of Turkey causes rich plant diversity. Turkey has about 10,000 plant species and approximately 3000 of them is endemic plants. In this research the identification of botanical tourism and endemic plants are made and the diversity of plants has been studied in some countries and comparisons with Turkey have been made. In many countries, although they don't have plant diversity as much as our country, they give more importance to plants than our country. Our country is open to tourism development in terms of botany. Plant museums and botanic gardens should be set up and their promotion should be made, too. In this way as well as economic interests, nature will be preserved and developed and people will become conscious. While converting this wealth to economic interests, showing the sensitivity required for the protection of the ecological wealth of vital resources are provided.

Keywords: Botany tourism, Endemic Plants, Plant Watching

Jel Codes: Q01, Q56, Q57

1. INTRODUCTION

As in the world in recent years, the phenomenon of tourism in Turkey, depending on the level of people's economic and cultural development, is changing, developing and diversifying. The tourists took part in the fun and recreational tourism as tourism activities in the past. Today, tourists began to participate in cultural and nature tourism activities mainly by increased environmental awareness. The feature of these activities is that they are sustainable activities. The other aim here is to protect and develop nature and to make use of seasonality activities, by spreading tourism activities to all regions, during whole year. Today, there are many purposes to protect nature and develop tourism activities. One of them is the botanical tourism.

2. BOTANICAL TOURISM CONCEPT

Turkey is a natural bridge between three continents and climate diversity brought about some geographical features that have led to a rare variety of plants. The herbal assets which were regarded as an element of ecotourism before, in time, revealing a different kind of tourism, are named as botanic tourism as a result of coming into forefront more than other elements in the ecosystem. (Şahin and Tosun, 2006: 89)

Botanical tourism is defined as a type of tourism which is formed to examine in terms of different plant species and their geographical features in the world. On vegetation one of the most important causes of Turkey's prominence is during glacial ages it is in a conservation area for plants located in Anatolia. (Avcı, 2005: 27-32) In botanical tourism, the most important features that make the country different from each other are composed of endemic and plant of diversity. Endemic word derives from the Greek word 'endemos'. In the simplest sense of the name of the plants are endemic group grows in a limited area. (Kaya and Aksakal, 2005: 86) Another definition, due to the ecological conditions of the region only grows in certain regions, it is not likely to grow elsewhere and they are plant species of the region. Endemic plants, it consists in the change of climate and isolation conditions for various reasons. Endemic plants are classified into 4 groups by Favager and Contandriopulus. In these classes, paleoendemic, sizoendemic, patroendemic, apoendemic (Gemici et al., 1992: 61).

2.1 Paleoendemics

These endemic species are systematically isolated by various conditions taxa. There is no relationship and similarities between the endemic species and their origins. This endemic species is the only species to be shown as examples. Endemic species has no close relatives so they are older and less variable. These endemic plant

species spread widely in geological time and those species have come up today without any changes. However, their present places are not where they showed up first, they are the last places because of the constriction of the places in geological times (Kaya and Aksakal, 2005: 87).

2.2 Schizo Endemic

Schizos are taxa which emerge from in different parts of the distribution area, with different ecological conditions. The most important feature of these taxa is occurring without a slowly progressive differentiation. Geographic isolation took place before differentiation. Some populations as a result of it being isolated geographically are to ensure the formation of new species. Schizo endemics are known to be common origin with the gene. Schizo brother or arising from the same endemic parents is relative taxa. Schizo endemics occur at the same time about level of genus or species (Gemici et al., 1992: 62).

2.3 Patroendemics

Patroendemic kind in the region and neighboring regions and found that the diploid and polyploid taxa that new way is the name given to the group comprising the endemic species. The newly formed taxa areas are spacious, the ancestral taxon are patroendemic species with narrow distribution area (Gemici et al., 1992: 63).

2.4 Apoendemics

The most important feature of Apoendemic, unlike patroendemic species consists of an ancestral taxon. Unlike Schizo endemics, they most commonly occur with polyploidy way. In Apoendemics, new species are possible with sudden emergence. (www.msxslabs.org)

3. BOTANY TOURISM AND EXAMPLES IN THE WORLD

Today, experts estimate that plant species on earth between 750.000-1.000.000. Up to 500.000 of these plants have been identified and named in the period up to the present from the past. About 3.000 of them are produced from these plants to obtain food. Wild plant species that is used as food is more than 100.000. According to a survey conducted by World Health Organization 20.000 plant species it has been identified that are used for medicinal purposes (Yoğunlu, 2011: 9).

Table 1: Number of Plant Species and Endemic In Some Countries

Country	Number of Species	Number of Endemics
Bulgaria	3750	250
Denmark	1000	0
England	1756	73
Spain	7500	516
Italy	5599	712
Iceland	485	1
Hungary	2450	50
Norway	1253	11
Poland	2468	15
Greece	4992	1100
Turkey	10000	3000

Source: Hacıoğlu and Avcıkurt, 2008: 166

From table 1 we can see that, 3.000 of 10.000 plant species are endemics in Turkey and it seems that Turkey has three times more endemic than Greece where has most endemic except for Turkey. 3rd country is Italy and there are 712 endemic species.

Table 2: Field Size Of Some Of The World's Botanical Gardens And Number Of Their Flowery Plant Species

Botanic Garden	Field Size (Hectare)	Number of Flowery Plants
Kew Gardens (England)	121	34.000
Berlin-Dahlem (Germany)	43	20.000
Edinburgh (England)	24	17.000
Newyork (USA)	100	15.000

München (Germany)	22	14.000
Frankfurt (Germany)	20	13.000
Zürich (Switzerland)	7	10.000
St. Gallen (Switzerland)	2	8.000
Fribourg (Switzerland)	1,8	5.000

Source: Committee of Inspection, 2007: 3

Botanical gardens cover large areas and they are hosting a considerable number of plant species. There are approximately 3.000 species of plants in Switzerland. These plant species constitute 20% of the European plant species. There is 1 endemic plant species in Switzerland. There are a lot of books to reflect the Swiss Flora. Two of the most important of these books are Canton Bern Flora and Orchids of Switzerland. In the book of orchids in Switzerland 73 orchid species being grown in Switzerland are introduced with their pictures. Apart from this they published a book entitled Orchids of Turkey. This book is published in German; Turkey's rare and endemic orchids by the Germans to relevant resources can be accessed more easily compared with Turkish people. Botanical subjects in bookstores in Switzerland constitute a separate department. As well as the Swiss natural plants are used in the gift sector. (Committee of Inspection, 2007: 2-5)

There are 30 botanical gardens in Switzerland. In this botanical garden plants and trees are displayed as live. The 30 botanical garden, annual visitor numbers of 80.000 in Basel Brugglingen Botanical Garden, the annual number of visitors 300.000 Geneva Botanical Garden, the annual number of visitors 20.000 Neuchatel University Botanical Garden, the annual number of visitors 60.000 St. Gallen Botanical Garden, the annual number of visitors to the University of Zurich 130.000 New Botanical Garden, the annual number of visitors to Zurich 30.000 Cactus Plant Museum are the most important of them (Committee of Inspection, 2007: 3-4).

Berlin Dahlem Botanical Garden in Germany has a history of about 300 years. Containing lots of tropical plants in it, its size is 126 hectares. Garden has botanic museum and there are 23.000 different plant species (www.bgbm.org, 2015).

Brazil's Rio de Janeiro's Zona Sul in the southern region has a botanic garden whose name is Rio De-Janeiro has a lot of species both within and outside the country. Approximately 6,500 plant species with danger of extinction, it spreads over 54 hectares. The garden is located a few greenhouses for some plants. The botanical garden has a research center. This research center contains a library of over 32,000 publications about botany. Botanical garden was founded by Brazilian king Joao and Portuguese king in 1808. Original brought from the West Indies as coconut, black pepper and cinnamon-like plant that pursues the objective to adapt to Brazil this garden was opened to the public in 1822. Today during the day every day except 25th of December and 1st of January is open to the public (tr.wikipedia.org).

National Botanic Garden of Belgium in Meise is the biggest botanical garden of the Belgium. One of the most important features of the botanical garden is to focus on research and education (www.br.fgov.be, 2015).

Main Botanical Garden of the Academy of Sciences is situated in Moscow, Russia. This botanical garden is one of the biggest botanical garden of the world. Botanical garden is built on 360 hectares and there are about 16,000 species of domestic and foreign plant species (tr.wikipedia.org).

4. POTENTIAL OF BOTANY TOURISM IN TURKEY AND SUPPLY SOURCES

Today, experts estimated plant species on earth between 750.000-1.000.000. Up to 500.000 of these plants have been identified and named in the period up to the present from the past. About 3.000 of them are produced in order to obtain food. As well as wild species used as food is over 100.000. According to a survey conducted by World Health Organization has been determined that 20.000 kinds of plants used for medicinal purposes (Yoğunlu, 2011: 9).

Turkey is located in the midrail as climate and hot middle generation, which is the southern part of the midrail, is located in subtropical zone alias. Turkey is under the influence of the Mediterranean climate. But the influence of the sea and landforms are associated with the effect of three different climate zones (Avcı, 2005: 20-30). There are 10.000 species of plants through phytogeography regions in Turkey. Approximately 34% of the plant species are endemic plants in Turkey and this is so important. The number of endemic plant species in our country is more than 3.000. This wealth of Turkey can be understood more clearly when it is compared with other European Countries.

4.1. Mediterranean Plant Communities

Mediterranean plant communities are not limited to the Mediterranean region. In the north, starting from Gallipoli and Biga Peninsula coast, the Aegean in Uşak and inserted up to Denizli, Taurus south-facing slopes rising portions over and continued south towards the Amanos mountain regions and covers the region including the Eastern Mediterranean flora region. Mediterranean plant community can grow from sea level up to 300 or 400 meters. It has a higher chance of catching up in high places if weather is more favorable. Leaves and roots

of Mediterranean vegetation is very durable. Mediterranean plant community has resistant to drought during the summer period (Günay, 2013: 9-11).

Figure 1. Phytogeography Zones In Turkey



Source: Alptekin et al. , 2010

4.2. Black Sea Plant Community (Europe-Siberia)

The Black Sea region has a temperate climate and plenty of rainfall. Black Sea Region plant communities are comprised of forests. This forest vegetation dominates the Black Sea and extends to the Marmara region. The plant community consists of broad-leaved species, where the increase in height, is associated with coniferous species. Black takes continuous rainfall and prevents the drought with this. Black Sea plant communities are divided into 2 groups, including Oksin and Colchic flora. Colchic groups of plants include Trabzon, Artvin, Ordu, Giresun and Rize. The remaining portion of the plant communities are dominated by Oksin flora (biyologlar.com).

4.3. Iran-Turan Plant Areas

Plant area starting from Thrace continues until our borders Iran and Iraq. Iran-Turan plant area is the most common vegetation dominated Anatolia and it is mainly observed in regions where drought is. This plant is common in areas where there are drought-tolerant plants (Muratgeldiev et al. , 2000: 121).

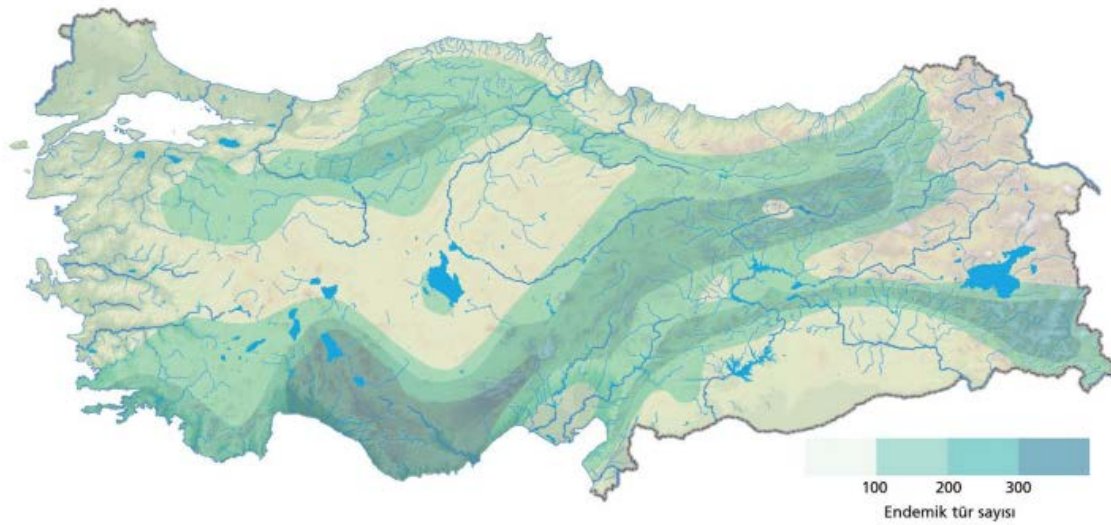
Table 3: Breakdown by Phytogeography Region Of Endemic Plants In Turkey

Regions	Number of Endemic Plants
Mediterranean Plant Communities	1050
Black Sea Plant Community	300
Iran-Turan Plant Areas	1220

Source: Kaya and Aksakal, 2005: 96

In table 3 we can see that endemic species are in Iran and Turan most. Black Sea and Mediterranean vegetation plant communities respectively after Iran and Turan. 500 endemic taxa are not known to belong to which plant geography which also grows in Turkey.

Figure 2: Places of Turkey's Endemic Plants



Source: www.sb.k12.tr, 2016

Table 4. Distribution Of Endemic Plants In Turkey

Regions	Number of Endemic Plants
Mediterranean Region	750
East Anatolia Region	380
Central Anatolia Region	275
Black Sea Region	220
Aegean Region	160
Marmara Region	70
Souteast Anatolia Region	35
Total	1890

Source: Kaya and Aksakal, 2005: 96

As we can see the most endemic plant species are located in the Mediterranean region. The minimum endemic plant is in the southeastern Anatolia region.

Table 5 : Number of Endemic Plants by Province

Cities	Number of Endemic Plants	Cities	Number of Endemic Plants
Adana	349	İzmir	178
Adıyaman	80	Kars(Ardahan-İğdir)	130
Afyon	254	Kastamonu	229
Ağrı	91	Kayseri	389
Aksaray	41	Kırıkkale	106
Amasya	244	Kırklareli	9
Ankara	331	Kırşehir	38
Antalya	731	Kocaeli	11
Artvin	143	Konya	559
Aydın	99	Kütahya	163
Balıkesir	86	Malatya	295
Bilecik	53	Manisa	100
Bingöl	29	Kahraman Maraş	412
Bitlis	173	Mardin	69
Bolu	97	Muğla	329
Burdur	169	Muş	69
Bursa	215	Nevşehir	88
Çanakkale	57	Niğde	313

Çankırı	141	Ordu	26
Çorum	114	Osmaniye	103
Denizli	235	Rize	106
Diyarbakır	93	Sakarya	21
Edirne	8	Samsun	85
Elazığ	133	Siirt	64
Erzincan	349	Sinop	45
Erzurum	303	Sivas	429
Eskişehir	137	Tekirdağ	13
Gaziantep	91	Tokat	129
Giresun	65	Trabzon	106
Gümüşhane	235	Tunceli	201
Hakkari	136	Şanlı Urfa	83
Hatay	233	Uşak	80
Isparta	250	Van	196
Mersin	454	Yozgat	80
İstanbul	75	Zonguldak- Karabük- Bartın	71

Source: Committee of Inspection, 2007: 55-56

When we examine the table that has the most endemic provinces in Turkey it is apparent that, Antalya with 731 plant species, Konya with 559 plant species and Mersin with 454 plant species seem to be the leading provinces. Number of endemic plants in Edirne is smallest if we compare with other provinces. The most important thing is that all provinces have peculiar endemic species.

5. LEGISLATION IN TURKEY

Turkey, in order to protect wild flora and fauna and their habitats has been signed European Wildlife and Natural Habitats Protection Agreement (BERN) in 20 February 1984 (www.resmigazete.gov.tr, 2016).

Turkey signed international Convention on the Trade in Endangered Species of Wild Fauna and Flora (CITES) in 22 December 1996. This agreement also aimed to follow the international trade of species that may be endangered or extinct. This contract is also intended to prevent the exploitation through international trade of ecological balance and also intended to ensure the sustainable use of biological resources of the country (www.resmigazete.gov.tr, 2016).

6. CONCLUSIONS

People are becoming sensitive to the environment due to the increasing environmental pollution. As a result of this instead of mass tourism, nature tourism activities are used about 3.000 of them endemic plant species in Turkey. Botanical tourism is a kind of special interest tourism. There are 2.750 endemic plants in Europe. The number of endemic plants in Turkey is more than the number of endemic plants in Europe. Therefore it is important to use endemic plant richness of Turkey. Many European countries, although less diversity of endemic plants from Turkey, have made large investments for endemic plants. Biological richness of Turkey's geography brings with it great responsibilities while offering many opportunities Turkey. Ecological wealth must be protected when they are used for earn Money.

In recent years, with increasing demand for nature tourism activities, an increase has been observed in the number of travel agents serving in Nature tourism. The names of the endemic plants are usually in Latin that's why we need tour guides. Another reason is to know the characteristics of endemic plants and tours are organized according to this information (Erdoğan, 2003: 139). Considering all these factors, there is a need to guide experienced in botany. Botanical tourism guides will be trained within the framework of endemic plants that visitors will be informed by guidance on environmental protection issues. Turkey has not given due consideration to the endemic plants. Endemic plants museums or botanical gardens should be established and their advertisements should be made. We have to protect nature and use it for knowledge.

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BIOGRAPHIES OF AUTHORS

Asst. Prof. Dr. ALPER ATEŞ

He was born in 1979 in Elazığ. Years of education and training during the years after the end of the cultivars studied in schools, Istanbul University School of Business, studied "Business Administration" undergraduate program and after that Selçuk University Social Sciences Institute, studied "Business Administration" MBA and Doctorate programs. I have been working at Selçuk University since 2005

Asst. Prof. Dr. HALİL AKMESE

Dr. AKMESE was born in 1980. He started his M.Sc. in Department of Business Administration at Selçuk University after graduating from Tourism and Hotel Management Department of Bilkent University with the degree of Bachelor of Science. He worked as a lecturer between 2003 and 2014 at Social Sciences Vocational School of Selçuk University. He completed business administration Master's degree program at Social Sciences Institute in 2006 and received doctorate diploma in Business administration in 2013 from Social Sciences Institute. He has become an assistant professor in 2014 at Necmettin Erbakan University. He has been working at Tourism Faculty and lecturing accounting, finance, management, financial statements analyses, cost accounting, sustainability and corporate social responsibility courses.

Assoc. Prof. Dr. AHMET BUYUKSALVARCI

He was born in 1971. Dr. BUYUKSALVARCI started M.Sc. in Department of Business Administration at Selçuk University after graduating from Business Administration Department of Başkent University. After completing M.Sc. program, he worked as a lecturer in Beyşehir Vocational School during 2002-2006. He finished Ph.D. program in Business Administration at Selçuk University in 2007. He became Assistant

Professor in 2008. He has been working as an Associate Professor of Finance in Tourism Faculty of Necmettin Erbakan University since 2012. Dr. Buyuksalvarci is also a member of some international academic journals worldwide.

Assoc. Prof. Dr. CEYHUN CAGLAR KILINC

Dr. Kilinc started M.Sc. in Department of Business Administration at Selcuk University after graduating from Business Department at Eastern Mediterranean University. After completing M.Sc. program, he worked as a lecturer in Beysehir Vocational School during 2004-2009. He finished Ph.D. program in Business at Selcuk University in 2009. He became Assistant Professor in 2010. He has been working as an Associated Professor of Marketing in Tourism Faculty of Selcuk University since 2015. Dr. Kilinc is also a member of some international academic journals worldwide and now is the co-editor of the International Journal of Economic Perspectives and International Journal of Tourism Perspectives.

MUSTAFA COSKUNER

He was born in Aksaray in 1990. He has graduated from primary school and high school in Aksaray. He received his bachelor's degree from Selcuk University, department of English Language. Now he is a post graduate student in travel management and tourism guidance at Selcuk University.

HALIL SUNAR

He was born in Hatay in 1988. After finishing primary and high school in Hatay in 2010 he graduated from Selcuk University. After that in 2013 he graduated from Mustafa Kemal University and his study area was tourism management and now he is a post graduate student at the department of travel management and tourism guidance.