

Tourist development and the environment: the case of Cephalonia and Ithaca

D. G. Prokopiou¹, B. S. Tselentis¹ & D. Bousbouras²

¹*Department of Maritime Studies, University of Piraeus, Greece*

²*Hellenic Ornithological Society, Greece*

Abstract

The tourist industry is one of the most important economic activities in Greece. The country receives over 14 million visitors per year, thus managing to double its population within the peak season. These numbers no doubt create some speculation as to the quality of the tourist product offered, but more importantly, concern is expressed by many, as to the impacts on environmental health and ecosystem stability. Many researches and scientists, over recent years, have studied the environmental impacts of tourist development, since it is well documented that when tourist development exceeds the capacity of the natural environment, many adverse effects arise, thus undermining the very substance of the tourist trade and associated services. Tourist development requires a multi disciplinary approach, since it is a function of various issues, such as natural resources and ecosystems management, the effects of human activities on fauna, flora and the coastal zone, economic and social aspects etc.

For the Greek Islands, the environment, both natural and man made, plays a vital role for the sustainable development of the industry. The purpose of this paper is to apply the principles of carrying capacity assessment to Cephalonia and Ithaca islands in an effort to highlight the importance of such a tool in developing long-term sustainable policies for such communities.

1 Introduction

The World Tourism Organisation (WTO) proposes the following definition of carrying capacity: “The maximum number of people that may visit a tourist destination at the same time, without causing destruction to the physical, economic, socio-cultural environment and an unacceptable decrease in the quality of visitors’ satisfaction” [1].



Today, controlling tourist growth has become a central policy issue for the tourist trade [2], and it is noteworthy that carrying capacity assessment has become an important tool for facilitating planning and developing policy issues for the industry. [3] Cephalonia and Ithaca islands attract over 200 thousand tourist visitors per year.



Figure 1: Map of Cephalonia and Ithaca [4].

Cephalonia is the largest of the Ionian Islands, with a total area of 688 square kilometres. It lies to the south of Lefkada and Ithaca and to the north of Zakynthos opposite the western entrance to the Gulf of Corinth. The coastline of Cephalonia totals more than 250 kilometres. The highest mountain is Ainos, which boasts a unique dense black-fir forest, which has been designated as a national park. [5]

Ithaca is a small island in the Ionian Sea with an area of 96 square kilometres [6]. The coastline of Ithaca is 101 kilometres.

Relevant carrying capacity indicators have been developed and categorised into three groups: 1. physical-ecological, 2. infrastructural and 3. Sociological-psychological [7]. The purpose of this paper is to try and attain values for these indicators and integrate them into the planning process of the Greek tourist business [8].

2 Basic population characteristics for Cephalonia and Ithaca

2.1 Population trends, Hellas, Ionian islands and Cephalonia

The data presented in Table 1 indicates that 30% of the island's residents reside in the capital Argostoli, thus giving the municipality of Argostoli the highest inhabitant density for Cephalonia. Table 2 shows that the population of the Prefecture of Cephalonia has increased during the period of 1971-2001. This increase in population is more pronounced for the towns of Argostoli, Livathous and Sami where many tourism businesses are based.

Table 1: Population data for the prefecture of Cephalonia.

POPULATION CHARACTERISTICS (2001)			
Municipality	Population	Area (km ²)	Density inhabitants/ km ²
Argostoli	12,589	157,670	79,84
Eleou Pronon	3,840	111,687	34,38
Erisou	1,963	78,114	25,13
Livathous	4,663	62,626	74,46
Palikis	7,836	119,341	62,66
Pilareon	1,565	81,112	19,29
Sami	2,895	129,326	22,39
Community of Omaloï	1,053	46,699	22,55
Cephalonia island	39,488	786,575	50,20
Ithaca island	3,084	117,812	26,18
Prefecture of Cephalonia	42,572	904,387	50,39

Table 2: Population history, prefecture of Cephalonia.

POPULATION CHARACTERISTICS AND TRENDS (1971-2001)							
Municipalities	Population/inhabitants				Population/Trends		
	1971	1981	1991	2001	1971-81	1981-91	1991-01
Argostoli	9796	9129	9918	12589	-0,68	0,86	2,69
Eleiou Pronon	4382	2972	3275	3840	-3,22	1,02	1,73
Erisou	1605	1470	1645	1963	-0,84	1,19	1,93
Livathous	3997	3446	3831	4663	-1,38	1,12	2,17
Palikis	7556	6277	6432	7836	-1,69	0,25	2,18
Sami	2189	2343	2258	2895	0,70	-0,36	2,82
Pilareon	1175	1093	1172	1565	-0,70	0,72	3,35
Community of Omaloï	1090	919	861	1053	-1,57	-0,63	2,23
Cephalonia island	31.790	27.649	29.392	36.404	-13%	6%	23%
Ithaca island	4162	3648	3082	3084	-1,23	-1,55	0,01
Prefecture of Cephalonia	35952	31297	32474	39488	-1,29	0,38	2,16

3 Tourist indicators

3.1 Tourist hospitality enterprises and tourist development

Tourist development in Cephalonia started in the early '80s, whereas in Ithaca it was not until the 90's. All development data are presented in Table 3.

In Cephalonia and Ithaca, over the last years 6 small hotels have closed down. We must note at this point, that the tourist industry in Cephalonia is moving steadily towards small units offering high quality services thus attracting high income tourists. The question as to the relationship between size and quality, however, still remains, especially in trying to convince businessmen that the emphasis should be on higher quality and not higher numbers.

3.2 Tourist capacity, arrivals and visitors

Unfortunately the official data do not represent the real tourist capacity, as is the case for other destinations in Greece. The data collected and presented in this paper was thus collated through ground collection exercises with the use of questionnaires and local visits. The estimated tourist infrastructure available and operable in Cephalonia and Ithaca is presented in Table 6.



Table 3: Bed capacity in Cephalonia and Ithaca in relation to area and local population.

BED CAPACITY IN CEPHALONIA AND ITHACA (2008)					
Municipalities	Hotels	Hotel's beds	Other hospitality enterprises	Total beds	Density beds/ km ²
Argostoli	26	2.386	2.889	5.275	33,45
Eleiou Pronon	32	2.014	3037	5.051	45,22
Erisouou	10	432	835	1.267	16,22
Livathous	24	1.478	2.787	4.265	68,10
Palikis	15	1.889	1.092	2.981	24,98
Sami	10	592	771	1.363	10,54
Pilareon	6	0	600	791	9,75
Community of Omaloi	0	0	25	25	0,54
Cephalonia island	123	8.986	12.032	21.018	26,72
Ithaca island	5	195	959	1.154	9,80
Prefecture of Cephalonia	128	9.181	12.991	22.172	24,52

Table 4: Estimated tourist infrastructure.

BED CAPACITY IN CEPHALONIA AND ITHACA		
	<i>Estimated total tourist capacity in beds</i>	<i>Beds per sq kilometre</i>
Cephalonia	28.000	35,60
Ithaca	1.300	11,03

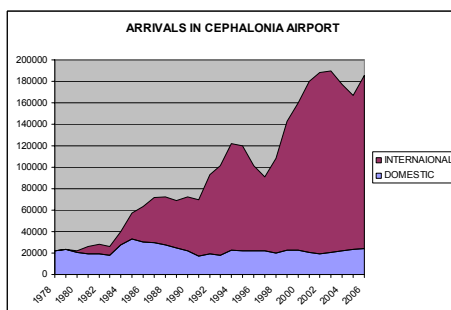


Figure 2: Arrivals in Cephalonia Airport.

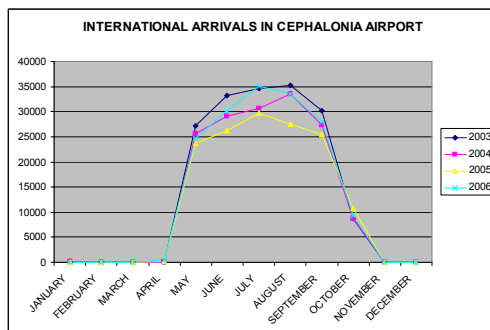


Figure 3: International arrivals in Cephalonia Airport.



Total airport arrivals are presented in Figure 2. From 1980 international and domestic arrivals has risen considerably. The tourist season is mainly during the months of May to September.

3.3 Tourist development as hotel beds and units

Table 5: Tourist development in the Ionian islands.

TOURIST DEVELOPMENT IN IONIAN ISLANDS (HOTEL'S BEDS)			
Prefectures	1991	1996	2001
Corfu	30.381	36.732	37.001
Lefkas	1.447	2.904	3.620
Cephalonia	3.658	5.857	6.235
Zakynthos	6.759	11.945	16.642
Summary for Ionian islands	42.245	57.438	63.498

Table 6: Hotel beds – trends in Cephalonia and Ithaca.

TOURIST DEVELOPMENT IN CEPHALONIA AND ITHACA (Hotel beds)			
	1965	1969	1977
Cephalonia	33	141	1.471
Ithaca	0	36	107

Table 7: Hotel units – trends in Cephalonia and Ithaca.

TOURIST DEVELOPMENT IN CEPHALONIA AND ITHACA (Hotel units)						
	1969	1973	1978	1987	1998	2008
Cephalonia	5	11	19	35	87	92
Ithaca	3	2	3	2	4	3

4 Environmental indicators

Ainos Mountain situated towards the south of the island, near the capital Argostoli, is considered the most environmentally important area of the island. The sea surrounding Cephalonia is the home and breeding areas for whales, dolphins and seals.



Figure 4: Important areas for whales and dolphins in the Greek Seas [9].



Figure 5: Blue flags for beaches in Cephalonia and Ithaca [10].

Table 8: Beach impact factor for Cephalonia and Ithaka.

BEACH IMPACT FACTOR IN CEPHALONIA AND ITHACA							
Municipalities	Beach length (km)	Inhabitants	Hotel beds	Rooms to let (beds)[11]	Total beds	seasonal population	Beach impact factor (I)
Argostoli	10	12.589	2.386	2.889	5.275	17.864	1786,4
Eleiou Pronon	6	3.840	2.014	3037	5.051	8.891	1481,83
Erisoou	4,5	1.963	432	835	1.267	3.230	1,65
Livathous	4	4.663	1.478	2.787	4.265	8.928	2232
Palikis	6	7.836	1.889	1.092	2.981	10.817	1802,83
Sami	3	2.895	592	771	1.363	4.258	1419,33
Pilareon	1,5	1.565	191	600	791	2.356	1570,67
Community of Omaloï	-	1.053	0	25	25	1.078	0
Cephalonia island	35	39.488	8.986	12.032	21.018	60.506	1728,74
Ithaca island	3	3.084	195	959	1.154	4.238	1412,67
Prefecture of Cephalonia	38	39.488	9.181	12.991	22.172	61.660	1622,3

4.1 Beach impact factor

With this indicator we analyse the pressures facing the coastal environment, as they describe the concentration of people visiting and using the facilities of the coastal area, and especially beaches. From the data presented in Table 8, a beach impact factors of 1,7 persons per metre of beach and 1.6 persons per metre of beach were calculated for Cephalonia and Ithaca respectively. It is clear that both islands do not face serious pressure as other Greek islands do. From our previous studies Rhodes and Kos attain 2,8 and 2,18 persons per metre of beach, respectively. The quality of bathing water is high for both islands, as Cephalonia has 7 Blue Flags. Ithaca does not have any beaches with Blue Flag certification, a result that agrees with other indicators that show low tourist development.

In Ithaca island no environmental pollution incidents have occurred during the period of 1993 to 2007 [13]. Data concerning environmental incidents in seas and Cephalonia coastal waters, from Hellenic Coast Guard are presented in the table above. Different causes are highlighted above. Most of the incidents come from maritime pollution.



Table 9: Ports and marinas in the Prefecture of Cephalonia (nine ports operate in Cephalonia, whereas in Ithaca the number of ports is five). None have environmental management systems.

PORTS IN CEPHALONIA AND ITHACA			
Municipalities		Sami	1
Argostoli	1	Pilareon	1
Eleiou Pronon	0	Community of Omaloi	0
Erisou	2	Cephalonia island	9
Livathous	1	Ithaca island	5
Palikis	3	Prefecture of Cephalonia	14

Table 10: Shore and marine pollution in Cephalonia Island [12].

POLLUTION TO CEPHALONIA SHORE AND SEAS					
Municipalities	pollution due to bars and restaurants	pollution due to hotels	maritime pollution	pollution due to olive oil press	Pollution due to dairy factories
1997	1	0	1	0	0
1998	0	1	2	0	0
1999	0	0	1	2	0
2000	0	0	0	0	1
2001	0	0	0	0	0
2002	1	0	0	0	0
2003	0	0	1	0	0
2004	1	0	1	0	0
2005	0	0	1	0	0
2006	0	0	2	0	0

Table 11: Protected areas in Cephalonia [14].

GR2220001	SCI	KALON MOUNTAIN OF CEPHALONIA	Mountainous area with unique fauna and flora	2566,19
GR2220002	SCI & SPA	AIMOS NATIONAL PARK	Abies cephalonica forests	2779,43
GR2220004	SCI	COAST ZONE ARGOSTOLI EOS VLACHATA (CEPHALONIA & ORMOS MOUNTA	Important area for dolphins and seals	3763,52
GR2220005	SCI	CEPHALONIA WEST COASTS AND NORTH ITHAKI COASTS (CAPES: GERO GOMPOS - DRAKOU PIDIMA - KENTRI - AG. IOANNIS)	Important area for dolphins and seals	18682,16

4.2 Natural environment

The island of Cephalonia is mountainous (more than the other Ionian islands), with peaks running from the most northerly cape (Dafnoudi) to the extreme south (cape Mounda). Mt Ainos, popularly called “Megalo Vouno” (the big mountain) is covered by very rare species of fir tree (*Abies cephalonensis*) and the semi-wild pony of Kefalonia. Another 10 mountains are scattered around the island. The mountain of Ainos is one of the national parks in Greece due to the local flora, accompanied by some mountainous areas, as well as marine and coastal areas, all belonging to the NATURA 2000 network.

These environmentally protected areas, based on the “Natura” program do not, as yet, have a management scheme and are not governed by a specific



establishment or organization. The National Park of Ainos in Cephalonia has a acquired a management body since 2007.

4.3 Garbage and waste management

Urban waste management (solid and liquid) on all the islands is characterized by lack of efficiency. Only the large urban centres fulfil the basic requirements of modern waste management installations. It is interesting to note that other smaller settlements do not even have a complete urban waste collection network.

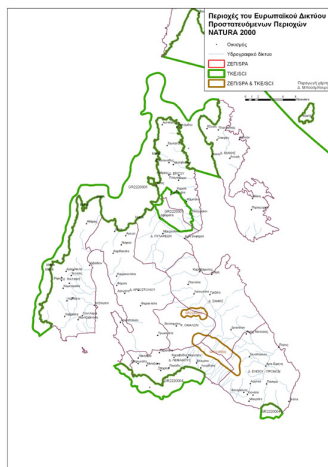


Figure 6: Environmentally protected areas in Cephalonia.

Table 12: Urban waste and garbage management in Cephalonia and Ithaca islands.

URBAN WASTE AND GARBAGE MANAGEMENT				
	Inhabitants	Urban waste treatment plant	Percentage of waste treated	Garbage management
Argostoli	12589	YES	80%	Place of sanitary burial
Eleiou Pronon	3840	NO	0	Place of sanitary burial
Erisoou	1963	YES	5%	Place of sanitary burial
Livathous	4663	NO	0	Place of sanitary burial
Palikis	7836	YES	40%	Place of sanitary burial
Sami	2895	YES	60%	Place of sanitary burial
Pilareon	1565	NO	0	Place of sanitary burial
Community of Omalois	1053	NO	0	Place of sanitary burial
Cephalonia island	39.488	19.951	50%	Place of sanitary burial
Ithaca island	3084	NO	0	Transferred in place of sanitary burial in Cephalonia
Prefecture of Cephalonia	42.572	19.951	45%	Place of sanitary burial

5 Conclusions

In this paper we present selected carrying capacity *assessment* indicators for Cephalonia and Ithaca islands that differ *in their tourist development, as well as draw some conclusions as to how these indicators can assist in developing sustainable tourist development policies, in island settings.*

Calculated coastline impact indicators, indicate that the island of Cephalonia faces the same pressure on its coastal regions (1,7 people/m of beach) as Ithaca (1,4). Comparing these measures to other islands of Dodecanese archipelago, Rhodes faces a similar pressure (1,3), whereas Kos with 2 persons/m of beach is more congested [15].

Cephalonia tourist product is based on the classical tourism model, relying on sea and beach activities. Alternative tourist services and activities in Cephalonia are slowly acquiring some momentum as there is a pilot alternative tourist village open to visitors; seems that such businesses represent the future for tourist development so far as the international demand for alternative tourism and the needs for the environmental protection are concerned.

Environmental indicators, indicate that the transformation from a low quality, high numbers tourist trade, to an alternative, high quality one, will not be easy, since waste management systems are insufficient in dealing with urban and solid waste. It is well known that, such inadequacies have serious environmental consequences, and hinder any attempts towards developing a tourist industry based on quality. The coverage of urban waste treatment plants in Cephalonia and Ithaca is lower than 50% of the needs.

Cephalonia hosts 4 environmentally protected areas. The increasing public interest in nature and landscape preservation is, today, considered a major positive factor in the tourist development process. It is true that the growing influx of visitors can exert strong pressures on fragile ecosystems [16]. Natura 2000 Network areas are a step in the right direction, but must be supported with effective management schemes [17] and be run under a modern and highly sophisticated regime.

Tourist development indicators for Cephalonia and Ithaca lead us to conclude that the tourist industry should aim at extending the tourist season to include more months, attain occupancy well over 50% for April, May, September and October, and probably more visitors with varied interests and expectations of Cephalonia and Ithaca.

Planning is conceptually related to sustainable development [18]. It includes approaches to deal with development and economic options, to prevent environmental damage and to involve public and stakeholders in decision-making processes. It is proposed that serious efforts have to be made in the direction of formulating viable policies and developing tools for effective implementation and control [19].

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