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Impacts and user preferences along a hiking trail on the Chalcidice

Peninsula in northern Greece

Diploma Thesis, Nature Conservation 2022

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DIPLOMA THESIS ASSIGNMENT

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Nature Conservation

Thesis title

Impacts and User Preferences along a hiking trail on the Chalcidice Peninsula in northern Greece

Objectives of thesis

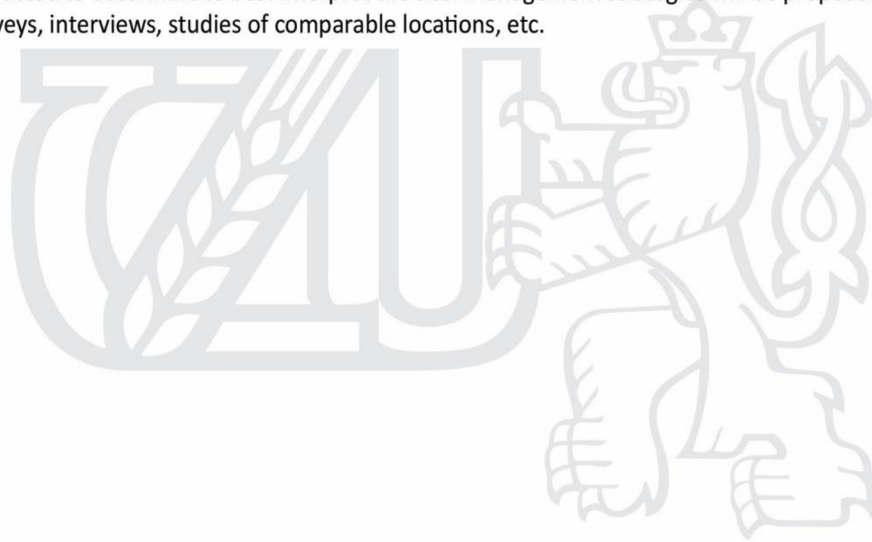
The objective of this thesis research is multi-purposed. This work intends to conduct the first cultural, environmental and economic evaluation of touristic activity along a historic cultural path located close to the village of Torone on the Chalcidice Peninsula in northern Greece. This location is significant as the area of Torone has been recognized as Natura 2000 site and as an Area of Archeological Importance with the presence of a medieval-byzantine castle and the remnants of a WW2 military installation; nearly all of these unique features exist along and throughout much of landscape on the route of this cultural trail/pathway. Because the path was created mainly through the initiative of the local villages as a means by which to attract tourism, there is great need for providing guidance and a clear direction for how to best interpret the unique features that are present; provide guidance for how to include this location as part of a broader network of cultural and eco-tourism attractions; clarify what are the rare and sensitive landscape features (plants, animals, view-sheds, cultural icons) that should be carefully interpreted and protected; identify who should be responsible for site management; and finally how to best market and attract both domestic and international visitors to this location. What is unknown at the present time are who are the visitors, their demographic characteristics, tourism expectations, and how to best convey the story of this unique and rare location.

Methodology

To accomplish the ambitious goals of site documentation, interpretation, user expectations, and marketing, the existing trail must first be clarified and marked with important wayfinding (guidance signage) with the initial plan to mark and map the existing path by using GPS positioning devices. The route must be fully documented based upon earlier research by others to determine the flora and fauna, historic and archaeological features, etc. For this thesis research, GPS and digital cameras will be used to photograph key points, such as elements of cultural significance, ecological integrity and scenic vistas. All of this is to provide an official record and reference of this location with website-based information for the visitor; local and international.

The characteristics of the route, as well as information about the local flora of the area, will be presented on a web site that the visitor can access via smart devices, from a QR codes that can be placed along the trail route on some signs. Moreover the creation of a visitor survey, both in English and Greek, will be conducted online with the use of QR codes placed on an interpretive sign post positioned at the trail entry.

The survey will be conducted over a period of 4 months and is critical for the collection of data related to the frequency of use, expectations, desires and the type of touristic activity in this area. Interviews with local municipal officials, NGOs, research scientists from X University and local governmental ministries will be conducted to determine to best interpret the site. Management strategies will be proposed based upon the surveys, interviews, studies of comparable locations, etc.



The proposed extent of the thesis

70 pages

Keywords

Trail users, touristic impacts, visual impacts, resource conservation

Recommended information sources

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I hereby declare that I wrote this thesis independently, under the direction of doc. Peter Kumble, Ph.D. I have listed all literature and publications used to acquire the information included in this thesis.

In Prague, 28.02.2022

Maria-Magdalini Mertzimeki

Abstract

Impacts and User Preferences along a hiking trail on the Chalcidice Peninsula in northern Greece.

Nowadays tourism seems to be one of the most significant social and economic enterprises, as well as a major source of revenue for many regions, particularly in Greece, which attracts a great number of visitors annually. Although tourism contributes positively to the development of regions, it can sometimes have detrimental consequences, particularly for the cultural and natural heritage of an area, which must be protected. The necessity for environmental and cultural conservation, combined with the growing desire of tourists to interact with nature and culture, has resulted in the emergence of alternative types of tourism, including ecotourism. The primary purpose of ecotourism is to protect natural and cultural values by ensuring that human activities are properly regulated. Cultural trails are a significant tool for ecotourism, and their administration and promotion would contribute to the integration of each region into a larger socio-economic environment, as well as to its further sustainable financial, cultural and environmental growth.

The village of Torone in Chalcidice Peninsula, which is in the northern part of Greece, attracts a lot of tourist attention every year, because of its significant environmental, historical, and cultural value. The aim of this diploma thesis is to record and present the special features along a 3km trail, which starts from Lekythos Byzantine Castle ruins and ends in the remnants of a WW2 military installation. As the creation of this cultural trail was mainly an initiative of the local residents, suggestions for the legal establishment, better management and promotion of the trail, as well as assessment and improvement of the overall quality of the visitor experience while visiting it, are presented. Further studies and regular monitoring activities should be considered essential for the preservation of the overall quality of the trail and its natural and cultural features, as well as for the well-being of the local community.

Keywords: Trail users, touristic impacts, visual impacts, resource conservation

Abstrakt

Dopady a preference uživatelů na turistické stezce na poloostrově Chalcidice v severním Řecku.

V současné době se cestovní ruch jeví jako jeden z nejvýznamnějších sociálních a ekonomických podniků a také jako hlavní zdroj příjmů pro mnoho regionů, zejména v Řecku, které každoročně přiláká velké množství návštěvníků. Přestože cestovní ruch pozitivně přispívá k rozvoji regionů, může mít někdy i škodlivé důsledky, zejména pro kulturní a přírodní dědictví dané oblasti, které je třeba chránit. Nutnost ochrany životního prostředí a kultury spolu s rostoucí touhou turistů po kontaktu s přírodou a kulturou vedly ke vzniku alternativních druhů cestovního ruchu, včetně ekoturismu. Hlavním cílem ekoturismu je ochrana přírodních a kulturních hodnot zajištěním řádné regulace lidských činností. Kulturní stezky jsou významným nástrojem ekoturismu a jejich správa a propagace by přispěla k integraci každého regionu do širšího socioekonomického prostředí a k jeho dalšímu udržitelnému finančnímu, kulturnímu a environmentálnímu růstu.

Vesnice Torone na poloostrově Chalcidice, který se nachází v severní části Řecka, přitahuje každoročně velkou pozornost turistů, protože má významnou ekologickou, historickou a kulturní hodnotu. Cílem této diplomové práce je zaznamenat a představit zvláštnosti na tříkilometrové stezce, která začíná u zříceniny byzantského hradu Lekythos a končí u zbytků vojenského zařízení z 2. světové války. Vzhledem k tomu, že vznik této kulturní stezky byl především iniciativou místních obyvatel, jsou zde uvedeny návrhy na právní zakotvení, lepší správu a propagaci stezky, jakož i zhodnocení a zlepšení celkové kvality zážitků návštěvníků při její návštěvě. Další studie a pravidelná monitorovací činnost by měly být považovány za nezbytné pro zachování celkové kvality stezky a jejích přírodních a kulturních prvků, jakož i pro blaho místní komunity.

Klíčových slov: Uživatelé stezky, turistické dopady, vizuální dopady, ochrana zdrojů

Table of contents

1. Introduction.....	1
1. Literature Review	3
1.1 Ecotourism: Definition and concepts	3
1.1.1 Role of Ecotourism in Sustainable Development	5
1.1.2 Socio-economic impact of ecotourism.....	7
1.2 Cultural Trails: A system for accessing natural and cultural heritage.....	11
1.2.1 Sustainable Tourism Development in Cultural Paths	15
1.2.2 Visitors impact and management conditions	17
1.2.3 Importance of monitoring	18
1.3 Development of Ecotourism in cultural trails of Greece.....	22
1.3.1 The study case of the cultural trail “To the cannons” in Torone, Greece and aims of the thesis.....	23
2. METHODOLOGY: STUDY AREA AND DATA COLLECTION	25
2.1 Study Area: Torone, Chalcidice Peninsula Greece	25
2.1.1 Geographical Features.....	25
2.1.2 Biodiversity	27
2.1.3 Cultural heritage.....	29
2.1.4 Development of tourism.....	31
2.1.5 Cultural trail “To the Cannons” and its characteristics.....	33
2.2 Data collection.....	36
2.2.1 Visitor surveys	37
2.2.2 Local surveys	38
2.2.3 Interviews.....	39
3. Results.....	40
3.1 Visitor surveys.....	40
3.2 Survey of local inhabitants	46
4. Discussion.....	49
5. Conclusion	55
6. References.....	57
Appendix	66
Appendix I. (Visitor Survey).....	66

Appendix II. (Local Survey).....	71
Appendix III. Visitor Survey Results	75
Appendix III. a.....	75
Appendix III. b.....	77
Appendix III.c.....	79
Appendix IV. Local inhabitants survey results	82

1. Introduction

Tourism as an activity meets human needs stemming from various motivations. Until the last decades of the 20th century, it was mainly of a mass character. With the evolution of the tourism phenomenon and the segmentation of tourist interests, new sectors and values were promoted, creating "alternative" tourism products, able to meet more specific needs of modern visitors (**Makrigiorgou, 2016**).

Of all the alternative forms of tourism, ecotourism has been gaining an increasing share in the preferences of visitors the last decades and it is considered by the EU Member States as the most emerging, substantial and qualitative form of alternative tourism. The development of ecotourism is increasingly challenging for the interpretation of cultural and natural heritage. The process of searching for new ways which would address and appeal to adequate target segments of visitors is not always easy. However, the successful interpretation brings opportunities to raise emotions and facilitate experiences, creating a relationship between the cultural and natural heritage site and the visitor (**Jarolímková et al., 2020**). Being a low environmental impact activity - or non-consumptive - ecotourism, besides providing pleasure/enjoyment and knowledge/experiences to the visitor, maintains and enhances the well-being of local communities, which are considered an integral part of such an activity and development process. Regarding the content of ecotourism, and despite the fact that its given definitions vary, most people agree that its key elements are as follows: ecotourism promotes interpretation and education, is ecologically sustainable, includes cultural sensitivities and contributes to local communities.

Greece has been for a long time a place of attraction for tourists and visitors from all over the world because of its great cultural, historical and natural heritage. The development of tourism in the country started in the old decades to become one of the most important sources of income, both locally and nationally, since many regions have tourism as their main source of income. Besides, as research shows, some attractive elements that a country can offer to attract visitors are its natural beauties, its landscapes, and the variations that one encounters in the environment. The fact that Greece has a large and high-value cultural heritage, puts the country in an

advantageous position in terms of attracting cultural tourists and claiming a substantial share of the cultural tourism market.

In order to raise the awareness of local residents and visitors about the cultural and natural heritage of an area and at the same time develop a more sustainable type of tourism, the last decades have been started an effort of investigating and promoting cultural trails, where tourists can contact unique landscapes and habitats, endemic biodiversity, and local human heritage, that are all key components of any ecotourism experience. Although the degree of environmental impact caused by visitor use on trails is dependent on many factors such as ecosystem type, use intensity, timing of use, and type of visitor activity (**Hammitt, Cole, & Monz, 2018; Pickering, 2010**), understanding the spatial distribution of visitor use has been receiving increased attention in the literature recently (**Monz, Cole, Leung, & Marion., 2010; D'Antonio and Monz, 2016**).

Given this background, the objective of this thesis research is to conduct the first cultural, environmental, and economic evaluation of touristic activity along a historic cultural trail of 3km long located close to the village of Torone on the Chalcidice Peninsula in northern Greece. The overall assessment of this trail is significant as the area of Torone has been recognized as an Area of Archeological Importance with the presence of a medieval-byzantine castle and the remnants of a WW2 military installation; nearly all these unique features exist along and throughout much of landscape on the route of this cultural trail/pathway. As the creation of this cultural trail was mainly an initiative of the local villages as a means by which to attract tourism, there is a great need to better understand visitor use and preferences along the trail, determine the associated impacts from its visits, interpret the unique features that are present along the trail and provide guidance for how to include this location as part of a broader network of cultural and eco-tourism attractions. To date, not enough attention has been paid to the establishment of the trail and how to best market and attract both domestic and international visitors to this location. The usefulness of the research will benefit the relevant authorities, private entrepreneurs and local residents for further development, as well as visitors for new tourism activities.

The purpose of this research is to present the specific characteristics and features of this cultural trail, by identifying the most important problems and benefits of the trail

as perceived by locals and tourists, that will contribute through its promotion to the increase of visitations in the wider area. At the same time, with the assessment of the final results from the surveys and interviews that will be presented, suggestions for the improvement, management and promotion of the trail, based on the principle of sustainability and the satisfaction of the multiple needs of the residents of the area, will give a first direction on how to best convey the history and nature of this unique location to both locals and visitors.

1. Literature Review

1.1 Ecotourism: Definition and concepts

Over the last decades, tourism saw a continued growth and diversification representing one of the major businesses volume-worldwide (WTTC, 2019). Its special feature was that its functions were mostly associated with the internationalization of a large number of productive branches and branches providing economic services, which helps a country to develop different levels of income and employment positions. In the beginning of 1970, as the environmental movement focused on the protection and preservation of the environment, it was observed the development of a new touristic field called Ecotourism. By the early 1980s, specialized trips with its main aim being the observation of wildlife in areas that presented rich biodiversity or visit and engage with ethnocultural locations began to appeal to a specialized sector of the tourism industry. As a consequence of this new and unique form of experience and tourism/visitation based educational enrichment of the visitor coupled with economic benefit for the local cultures, the industry also began to observe the strengthening of environmental protection and better management of cultural amenities, mainly through economic support to local environmental organizations and others. Ecotourism became an official term in 1982 when it was recorded in the Oxford English Dictionary as “Tourism to areas of ecological interest (typically exotic and often threatened natural environments), especially to support conservation efforts and observe wildlife; spec. access to an endangered environment controlled so as to have the least possible adverse effect”). At the same time, it’s a tourism movement but also a sector of the tourism industry. Ecotourism guarantees the sustainable use of environmental

resources, while generating economic opportunities for the local people (**Farrell & Runyan, 1991; Bhattacharya, Chowdhury & Sarkar, 2011**). Until now there are many well-recognized definitions that expressed its core principles and ideas, some of which are indicatively cited in **Table 1**.

Ceballos Lascurain (1987) (Joshi, 2011)	Ecotourism is defined as travelling to relatively undisturbed natural areas with specific objective of studying, admiring, and enjoying scenery and its wild animals and plants as well as existing.
McCormick, 1994	Purposeful travel to natural areas to understand the culture and natural history of the environment, taking care not to alter the integrity of the ecosystem, while producing economic opportunities that make the conservation of natural resources beneficial to local people.
World Conservation Union (Brandon, 1996)	Environmentally responsible travel and visitation to relatively undisturbed natural areas, in order to enjoy and appreciate nature that promotes conservation, has low negative visitor impact and provides for beneficially active socio-economic involvement of local populations.
Weaver, 2001	Ecotourism is a form of tourism that fosters learning experiences and appreciation of the natural environment, or some component thereof, within its associated cultural context

Table 1. Significant definitions of ecotourism (**Kiper, 2013**)

Despite the existence of various definitions, there are some principles and guidelines for ecotourism that appear stable in the literature. **Diamantis (1999)** states that definitions appear to have some common elements such as orientation in the natural environment, environmental education and sustainable management.

According to **Chesworth (1995)**, Ecotourism has six basic characteristics:

1. It involves travel to relatively undisturbed natural areas and/or archeological-cultural sites
2. It focuses on learning and the quality of experience
3. It economically benefits the local communities

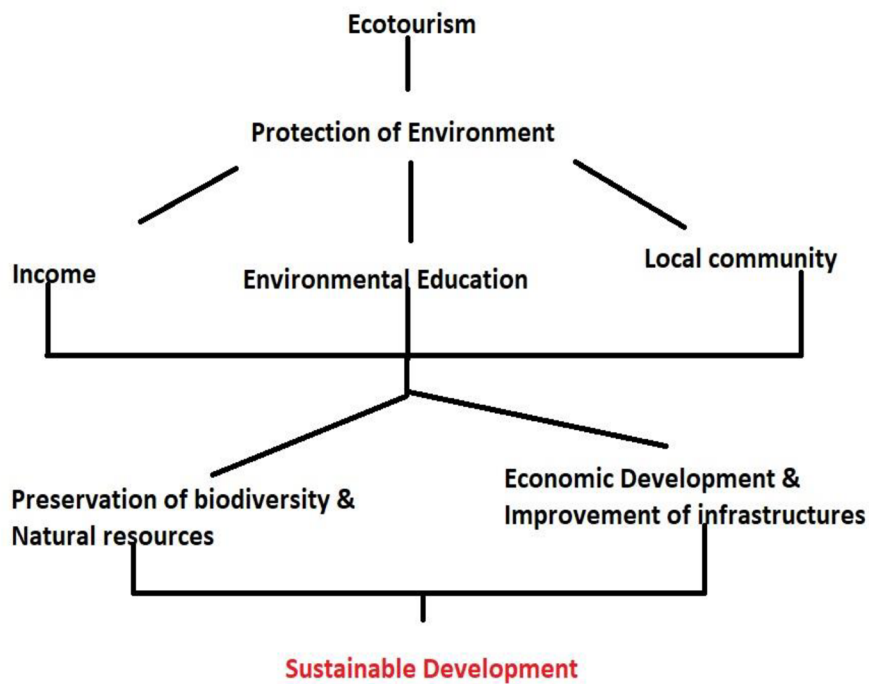
4. The ecotourists seeks to view rare species, spectacular landscapes and/or the unusual and exotic assemblages
5. Ecotourists do not deplete resources but even sustain the environment or help undo damage to the environment
6. Ecotourists typically will appreciate and respect local culture, traditions, etc.

In order an activity to be classified as Eco-touristic, it needs to be small-scale, take place in a remote and rare natural area and at the same time promote the protection of the environment and contribute to the preservation of the social aspect and the cultural environment. Moreover, the activity should include information and awareness on environmental issues, the involvement of the local community, the support of the local economy and the strengthening of primary production.

1.1.1 Role of Ecotourism in Sustainable Development

The term sustainable development was firstly introduced, or perhaps popularized, by the Brundtland Commission in 1987 as, “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (**World Commission on Environment and Development, 1987**), and it was later on redefined in the Rio International Conference (1992) as “the development that provides long-term economic, social and environmental benefits taking care of the needs of present and future generations”. Economic sustainability ensures that growth of an economy can support a defined level of economic production indefinitely, and that resources are used in such a way that they can support future generations. Social sustainability ensures that development gives people the right to control and regulate their lives, that it is compatible with the culture and values of the people affected by it, and that it preserves and strengthens the identity of the community. Environmental sustainability ensures that development is compatible with the preservation of ecological processes, biodiversity, and natural wealth (**McIntyre, 1993**). A suitable balance must be established between these three dimensions to guarantee its long-term sustainability. In general, sustainable development policies have as main goal the economic development of a country or a community, with the least consumption of natural resources and damages to biodiversity and environment. In a theoretical

context, the realization of the primary aims of ecotourism can be also viewed as a model for the control of the ideas of sustainable development within the context of visitation, management, education, and protection of natural and culturally significant places. Sustainable management of ecotourism development is essential in order to preserve conservation and maintain the biological resources of a specific place as well as ensuring the economic stability of the local people (**Bunruamkaew & Murayama, 2011; Bhuiyan et al., 2012**). According to **Hall (2008)**, sustainable development and tourism present the opportunity for change or transformation which refers to the movement from one state or condition to another. Transformation of one's experience and understanding of a place; transformation from our daily lifestyle based on new and unique experiences of that place; transformation of the personal conditions and sense of self of local indigenous cultures; transformation of local tour companies and hospitality providers; etc. As it was previously mentioned, ecotourism has as specific principles the protection and preservation and interpretation of the environment, conservation of the local culture and history, environmental education and sustainability. It is increasingly being lauded as a sustainable development option for rural communities, one that can spur economic development (**Vogt, 1997**) and instill environmental protection at the same time (**Cater, 2002**). However, there are concerns over whether eco-tourism will always have the capacity to sustainably support soft and balanced tourism development, as it is often proven that development, by itself, threatens the environment despite attempts to protect it. In order to avoid it, it is crucial to monitor both negative and positive impacts and present preventive measures whenever necessary. Ecotourism should maintain a high level of tourist satisfaction and ensure a meaningful experience to the tourists, by raising their awareness about sustainability issues and promoting sustainable tourism practices (**World Tourism Organization, 2001**)



Graph 1. Relationship of Ecotourism with Sustainable Development (Pipinos, 2015)

1.1.2 Socio-economic impact of ecotourism

As it was previously mentioned, ecotourism is a form of tourism that enhances the tourist's contact with nature and indigenous culture and implements values for preservation and protection of the environment, as well as for the development and longevity of existing resources. Small-scale investments promoted through ecotourism maintain control of tourism development by local residents and ensure increased economic benefits. At the same time, smaller businesses can integrate more easily into the existing socio-cultural and economic environment of the community, more effectively helping the sustainable development of a destination. The acceptance of tourism development by the inhabitants determines the success of tourism, as if there is hostility from the local community towards visitors, tourism will be significantly reduced. Although mass tourism has led to the underdevelopment or desertification of some regions, ecotourism can undo this, attracting tourists to less “popular” destinations, creating new jobs and incomes, raising the social awareness, and

educating people with environmental values and preventing the rush to urbanization (**Kosmopoulou & Karamanolaki, 2017**). From socio-economical aspect, development of ecotourism can bring a lot of benefit to the local community with economic growth, diversification, stabilization, job creation, expansion of local services, scope for integration of regional development strategies, decrease in emigration and depopulation, maintenance and improvement of public services and infrastructure, renaissance of local culture and identity, community empowerment, protection and improvement of the natural and built environment, increased local sense of pride, increased awareness of rural primacy and increased development capacity by policy-makers and economic planners (**Stronza & Cordillo, 2008**). Of course, that doesn't mean that the local community is financially stable and secure, as most of the times tourists are seasonal, which leads to unreliable income. From sociocultural point of view, ecotourism has the potential to have a negative impact upon local communities, largely due to the tendency of ecotourists to have a greater interest in the culture and nature of the areas they visit, as compared to mass tourists (**McMinn, 1997**). Sometimes, especially in areas of the developing world, indigenous cultures and inhabitants are treated by tourists as part of the tourist experience, which is not in keeping with the principles of ecotourism. The establishment of relations between locals and tourists, as well as the cultivation of respect for local cultures is a prerequisite for the strengthening of local society and the maintenance of autonomy and its authenticity after contact with different civilization and cultures (**Wearing & Neil, 1999**). The cultural differences and the discrete behavioral patterns between locals and tourists, can highly determine the magnitude of socio-cultural impacts. This cultural exchange was reported as "demonstration effect" where local people imitate tourists' behavior and their way of life to become more westernized like tourists (**de Kadt, 1979; Mathieson & Wall, 2006**). Scholars such as, **Cater (1987)** and **Wearing (2001)** strongly argued that longer the duration of tourist's stay in the destination, more will be the tourists' understanding of host community, and also accelerate the changes on the socio-cultural pattern of the host. It shows that the host-guest interaction either leads to an improved reputation and visibility of the host community among the ecotourists or it can also be overly intrusive and harmful despite the best of intentions among tourists (**Wearing, 2001**). Over the years, there have been examined several theories for studying the host perceptions and responses towards tourism development, the most predominant of which was proposed by **Ap (1992)**, revealing that local people

evaluate tourism in terms of expected benefits and costs obtained in return for their services that is social exchange (**Lee & Back, 2006**). Therefore, residents who perceive themselves as benefiting from tourism will be most likely to view it positively; while those who perceive themselves as incurring costs will be negative towards tourism (**Telfer & Sharpley,2008**).

1.1.3 Issues in the development of Ecotourism & Management

In an ideal concept of ecotourism development, the local community protects natural resources, and the development of tourism benefits them all through an interconnected symbiotic relationship, where each element contributes positively to the rest (**Ross & Wall, 1999**). Yet co-existence and co-operation between communities, tourism and the environment are not always as easy to be achieved. There are many cases observed where ecotourism seems to have the same impact as mass tourism, as it led to cultural degradation and damage of cultural heritage sites, high economic benefit leakage, disturbance of local biodiversity, pollution through waste and wastewater at popular ecotourism destinations etc. (**Pepin & Wynter, 2018**). Indicatively we can take as example the case of Indonesia, where ecosystems were not adequately protected, and local communities of three eco-tourist destinations benefited little from tourism development (**Ross & Wall, 1999b**). According to **Wallace & Pierce (1996)**, employment in the Amazon was improved by the creation of eco-tourist accommodation, which did not follow the principles of ecotourism and therefore made little contribution to the empowerment of residents and the protection of natural wealth. Nevertheless, the lack of negotiating skills and skills among residents meant that the community was not effectively involved in the ecotourism process (**Pepin & Wynter, 2018**). As we can see from the examples it is more than clear that the term ecotourism and its variations (eco-vacation, eco-tour, eco-adventure, eco-cruise, etc.) can often be introduced only as simply words-tricks to attract a wide range of tourists, without following any of the values of the original term.

More specifically, issues in the development of ecotourism are divided into two main categories: the ones caused by local community and the other caused by visitors. In the first case, the issues seem to focus on the activity of local ecotourism entrepreneurs

(travel agencies, hotel and accommodation owners), who in order to gain money and achieve a successful touristic season they don't hesitate to run activities that are going to make the areas more susceptible to environmental degradation and socio-cultural disruption. Increasingly, local communities are joining in partnerships with government agencies, nongovernmental organizations, and private tour companies to plan tourism strategies and develop new attractions for visitors (**Brandon, 1996**). Unfortunately, insufficient information from the locals about the values and correct behavior in the natural and cultural sites of the area of ecotourism interest, as well as lack of education and adequate planning for the protection of the environment results in a form of ecotourism that reminds more a proxy market designed to attract customers. Besides all the demonstration that ecotourism brings economic benefits to the local community, research related with the root causes to success and failure of ecotourism implementation, have shown that a lack of local community involvement in the ecotourism activities is the second most important reason for the failure of ecotourism projects worldwide (**Wondirad, 2019**). Over the last decades, there have been recorded many cases of local communities who were opposed to ecotourism and they were expressing their opposition by vandalizing infrastructure and by sabotaging ecotourism activities. **Bennett (1999)** described a case in Panama in which members of the Kuna protested outsiders' investment in tourism by burning a hotel twice and attacking one of the hotel owners.

On the other hand, from the tourist impact at the area of ecotourism development, we can say that the issues are mainly focusing on the carrying capacity of an area, that defines the natural, biological, social and psychological capacity of the environment to accept and support tourism activities without degrading its quality of or the satisfaction of visitors (**Lindsay J.J., 1986**). Over the years there have been recorded many cases where an ecotourist destination, due to its intense advertising, turned into a highly popular destination, attracting a high number of visitors that not only do not protect and respect the environment but also cause disturbances to the local community lifestyle. Excessive ecotourism, especially if it is uncontrolled and not regulated by specific legislation, can adopt characteristics of mass tourism, destroy natural areas and disrupt both the wildlife of the region and the balance of the local community (**Begley, 1996; Stronza, 2001**).

All in all, we can say that ecotourism is a source of sustainable nature-based tourism, which offers benefits for local residents, conservation, development and educational experiences (Fennell, 1999). As in every field, likewise in ecotourism development we can't avoid some degree of environmental and social impact, even if we deal with the most organized and favorable conditions. There are many cases that supports recognition that ecotourism is an elite-oriented tourism activity, that encourages travel to pristine and fragile ecosystems, and in some instances, it can be simply a forefront to mass tourism. In order to avoid the arousal of a new booming tourism industry that will lead to a potential threat for the local communities and ecosystems, it is crucial to create a management plan with monitoring and cooperation of the locals so that we can define the environmental, social and economic effects of ecotourism activities. Each case of ecotourism development is different and it is not enough to count the annual traffic in one area, but we need to take into consideration also other critical parameters (for example the seasonality of tourism, species of local flora and fauna, average length of stay of visitors, activities, the behavior and characteristics of the visitors, etc.) in order to determine the carrying capacity and the environmental quality (physical and social) of the area of ecotourism development (Brandon, 1996). Government officials and ecotourism operators should seek assistance from conservation groups and nongovernmental organizations that can provide startup funding, training, and technical assistance to projects related with ecotourism development. Last but not least it's important to involve locals as consultants or directors of community-based ecotourism projects, for effective development of ecotourism and its transformation into active supporters, protectors and defenders of the natural environment, resources and biodiversity of the region.

1.2 Cultural Trails: A system for accessing natural and cultural heritage

The definition of the term "Cultural Route" is quite complex and multidimensional, while it introduces and represents a qualitative contribution to the concept of heritage and environmental protection. Considering the fact that cultural networks link the cultural heritage with the environmental features of an area the idea of Cultural Routes' development arose in Europe. One of the first organizations that dealt with the issue of cultural heritage and the possibility of linking it with the development of each region

was UNESCO. This organization recognized the need to connect culture with the development process of countries worldwide and thus at the Mexico conference in 1982, the idea for the World Decade of Cultural Development (1988-1997) was proposed and implemented, in order to recognize worldwide, the importance of culture in the processes of development (**Zervaki, 2010**). In 1994 the first globally valid definition of Cultural routes was created and published after the meeting of UNESCO and ICOMOS. In 2006 the European Council defined cultural routes as cultural and economic exchange interaction networks, that promotes culture and creativity and incorporates the principles of sustainability, impartiality and inclusion, with broad partnerships and stakeholders based on solid institutional frameworks that encourages regional socio-economic development (**Zabbini, 2012**). Two years later, on 2008, the original definition of Cultural Routes is provided by the International Scientific Committee ICOMOS as “Any route of communication, be it land, water, or some other type, which is physically delimited and is also characterized by having its own specific dynamic and historic functionality to serve a specific and well determined purpose” (**ICOMOS, 2008**).

Cultural routes can be classified as follows (**ICOMOS, 2008**):

1. According to their territorial scope: local, national, regional, continental, or intercontinental.
2. According to their cultural scope: within a given cultural region or extended across different geographical areas that have shared or continue to share a process of reciprocal influences in the formation or evolution of cultural values.
3. According to their goal or function: social, economic, environmental, political, or cultural. These characteristics can be found shared across a multi-dimensional context.
4. According to their duration in time: those that are no longer used versus those that continue to develop under the influence of socio-economic, political, and cultural exchanges.
5. According to their structural configuration: linear, circular, cruciform, radial or network.
6. According to their natural environment: land, aquatic, mixed, or other physical setting.

The first European Cultural Route - a symbol of the new European construction and a foundation for future planning- was the religious route Santiago de Compostela. This route was certified in 1987 during the formulation of the CoE program “Cultural Routes of the Council of Europe”. The development of this program was primarily aimed at acquiring a common European identity and ensuring a common cultural heritage, as well as promoting it as a lever for economic and social development, through cultural tourism and its rational management (**Richards, 2005**). Today, the CoE's certified Cultural Routes are 33 and they are characterized by thematic diversity and geographical dispersion of 53 countries (**Table 2**). The Cultural Routes constitute one of the most widespread tourism management tools and identify a demarcated course in natural and cultural heritage monuments, within a defined thematic, historical or conceptual framework. The delineation of a cultural path or the setting up of a methodology for its design is a selective process for the completion of which theory, targeting, knowledge of the subject and observation as a creative process for the production of the objective is required (**Karavasili & Mikelakis, 2000**).

Cultural Routes of the Council of Europe	N° of new network members	Countries
The Hansa	3	Germany (1), Russia (1), United Kingdom (1)
Viking Routes	8	France (1), Norway (3), Sweden (3), United Kingdom (1)
Via Francigena	11	Italy (8), France (2), Switzerland (1),
European Mozart Ways	2	Germany (1), Ukraine (1)
European Route of Jewish Heritage	8	Belarus (1), Bosnia and Herzegovina (1), Czech Republic (1), Croatia (1), Poland (1), Serbia (1), Turkey (1) United Kingdom (1)
Phoenician's Route	13	Italy (9), Lebanon (1), Spain (2), Tunisia (1)
VIA REGIA	9	France (1), Germany (5), Poland (1), Russia (1), Ukraine (1)
Cluniac Sites in Europe	4	France (3), United Kingdom (1)
Routes of the Olive Tree	14	Croatia (6), Greece (3), Republic of North Macedonia (1), Slovenia (3), Spain (1)
Saint Martin of Tours Route	1	Austria (1)
Iter Vitis Route	4	Croatia (1), Cyprus (1), Greece (1), United Kingdom (1)
European Cemeteries Route	3	Belgium (1), Germany (1), Italy (1)
Prehistoric Rock Art Trails	3	Finland (1), Portugal (1), Spain (1)
European Route of Historic Thermal Towns	2	Poland (1), Turkey (1)
Route of Saint Olav Ways	2	Finland (2)
European Route of Megalithic Culture	3	Germany (1), Italy (1), Spain (1)
ATRIUM – Architecture of Totalitarian Regimes of the 20th Century in Europe's Urban Memory	2	Italy (1), Romania (1)
Roman Emperors and Danube Wine Route	8	Albania (2), Bosnia and Herzegovina (1), Montenegro (2), Republic of North Macedonia (3)
Destination Napoleon	4	Croatia (1), France (2), Italy (1), United Kingdom (1)
Via Charlemagne	4	Germany (1), France (2), Spain (1)
Impressionisms Routes	6	Croatia (1), France (5)
European Route of Industrial Heritage	24	Austria (1), Germany (3), Hungary (1), Italy (3), Latvia (1), Netherlands (1), Poland (1), Serbia (1), Spain (4), Ukraine (1), United Kingdom (7)
Le Corbusier Destination: Architectural Promenades	1	Germany (1)
Liberation Route Europe	18	Belgium (3), Germany (1), Italy (2), Netherlands (10), Sweden (1), United Kingdom (1)
Routes of Reformation	12	Austria (6), Germany (5), Slovenia (1)

Table 2. Cultural Routes of the Council of Europe (CoE, 2019)

During the years that followed, the term Cultural Routes has been further developed, with the terms cultural paths or trails make their appearance. The main objective of these terms was again the relation between tourism, culture and the environment in each region, in order the visitor to come into contact with the history, culture and local tradition of the region and gain a sense of responsibility for the protection of its natural and cultural heritage, while enjoying in terms of entertainment the nature. This combination contributes positively to development of walking tourism in different areas, as the trails can be a source of well-hidden or unobserved elements, by further highlighting environmental perception, spatial practices and local architecture and

structures of each region (Kusenbach, 2003)

1.2.1 Sustainable Tourism Development in Cultural Paths

A determining factor that could play an important role in the promotion and preservation of the cultural and natural heritage of a region is sustainable development. In recent years, an internationally evolving an important initiative of governments, organizations, and societies, is the research for the right variant solutions for the achievement of sustainable development, with main aim to highlight and promote an eco-friendly and at the same time educational side of the tourism. The evolution of global environmental governance in last few decades, following the Stockholm Conference in 1972, focused largely on the concerns of the governments related with the implementation of sustainable development for a cleaner environment, without a direct reference to the preservation of cultural heritage features. In 2002 the Johannesburg Summit, further changed the content of the term "sustainable development", which has evolved since the mid-1980s under the influence of the Brundtland Commission, underlining the importance of the identity and culture of local communities as well as the importance of supporting and preserving them with new governmental legislation, plans and programs. According to the Policy for the Integration of a Sustainable Development Perspective into the Processes of the World Heritage Convention, States Parties have the duty "of ensuring the identification, protection, conservation, presentation and transmission to future generations of the cultural and natural heritage, as well as "to adopt a general policy which aims to give the cultural and natural heritage a function in the life of the community and to integrate the protection of that heritage into comprehensive planning programs" (UNESCO, 201).

In order to achieve a successful sustainable tourism development in cultural trails, it is first necessary to combine a high level of tourist satisfaction, based on raised environmental awareness and promotion of sustainable tourism practices, with a high level of contribution of the local inhabitants and NGOs. All the sustainable tourism development principles and models emphasize the importance of a balanced interaction between site, locals, and tourists as a prerequisite to achieve sustainable tourism development in historical areas. Cultural trails must respond to the interaction

among the different areas important to cultural tourism: conservation and rehabilitation, interpretation, and local-economic development (**Al-hagla, 2010**).

Sustainable tourism development led to a Sustainable Marketing Strategy Development, capable to handle the diversity between social, economic, and environmental needs. Achieving sustainable tourism development is a continuous process and it requires constant monitoring of impacts, introducing the necessary preventive and/or corrective measures whenever necessary (**UNEP & WTO, 2005**). As an attractive tourist product, cultural trails should respect the social and environmental structure of an area and at the same time offer relative autonomy for the visitor and provide tours with little or minimum use services related with organized tourism. Cultural trails increase their competitiveness when their impact is small for the environment and contain minimal of any negative impact for the local population. In particular, cultural trails in rural areas rich in environmental and cultural resources should be responsive to the basic principles of sustainability, through the feedback of development and protection of the natural environment. Furthermore, **Hassan, Trafford and Youssef (2008)**, in their article “Cultural Heritage and Development in the Arab World”, clarify that in order for any development to occur in the local community due to cultural heritage and cultural tourism, the following three principles should be followed:

- (a) Rephrase of the goals of development in vernacular terms and situate them within traditional concepts to ensure their acceptability and viability among the public.
- (b) Introduction, information and education of local communities and the implementation of management for the positive exploitation of cultural and natural heritage.
- (c) Encouragement for citizen participation in development policy and cultural management with a view to personal and wider economic and social benefit.

1.2.2 Visitors impact and management conditions

Traditionally located in peripheral areas, cultural trails can represent unique tourist attractions (**Bushell & Eagles, 2007; Wall Reinius & Fredman, 2007**) and may therefore serve as rare engines of economic development in otherwise often weak regional economies by attracting spending from outside the region. As it was previously mentioned, the development of sustainable tourism in areas with cultural and natural heritage can be a wealthy source of economic diversification and employment opportunities, while at the same time can be the reason for the increase of available services and the improvement of the existing infrastructure. Declaration on Tourism and Culture calls for governance structures that link nature, culture and tourism to ensure benefits to visitors and travelers, while maintaining a healthy balance between tourism development and heritage and nature conservation and safeguarding (**ICOMOS, 1999**). When sustainably managed, this cultural tourism leads to the development of further cultural offers, facilities and destinations, the growth of cultural industries as well as to the development of new policies on heritage and nature protection. In other words, tourism is a vehicle for cultural and nature development and vice versa (**European Commission and Council of Europe, 2020**).

While the benefits from the development of this type of tourism in cultural trails are significant, it seems that there are a lot of adverse impacts caused by visitors as well. Negative effects include the commercialization of wildlife and cultural heritage, which can lead to nature and cultural degradation, increase of forest fires, trampling problems which usually result in vegetation loss, soil compaction and erosion (**Li, Ge & Liu, 2005**), increase in the prices of goods and services (e.g. houses, labour around tourist destination) and exceeding of the carrying capacity of the trail. By the term carrying capacity (CC), we define the maximum number of visitors may visit a tourist destination at the same time, without causing destruction of the physical, economic, socio-cultural environment and an unacceptable decrease in the quality of visitors' satisfaction (**UNEP, 1998**). One of the main criticisms of applying carrying capacity is the difficulty to determine how much impact or change should be allowed (**Manning et al., 2005; Papageorgiou & Brotherton, 1999**). In general, the concept of carrying capacity is one, which exemplifies the need to maintain development and activities at

a level that is both ecologically and socially sustainable and activities beyond which environmental degradation occurs (**Getz, 1982; Hovinen, 1982**).

It is more than clear that sustainable tourism impact on cultural trails brings more benefits than mass tourism. However, the growing influx of visitors may exert strong pressures on fragile ecosystems and can lead to their degradation with a consequent loss of nature and cultural heritage (**Masum et al., 2013**). In order to avoid or eliminate the negative impacts of sustainable tourism on cultural trails it is crucial first of all to increase the awareness of tourists and the local population of the socio-cultural features of an area. The sustainability of cultural trails and its right management depends on a fluid communication, guidance and agreement between all involved actors and their capacity for networking (**Ochoa et al., 2016**). Moreover, its important the preparation of a visitor management plan by the local authorities and NGOs, to regulate the number of visitors based on the carrying capacity of the trail and use temporary or seasonal visitor use restrictions or area closures to protect sensitive wildlife habitat and sensitive wildlife behavior or life stages from trail use (**Whiskeytown National Recreational Area, 2007**). At the same time, in order to avoid and control soil erosion from visitor activity, control features as rock walls and rolling dips should be used where appropriate. Finally, for a successful management plan which will minimize the negative impact of tourism to the cultural and natural heritage of the trails, there is a need for creation of educational and interpretive programs that will inform visitors about the importance of the cultural and natural features of the area, as well as about the responsible behavior that visitors should have (gathering of trash, respect nature and cultural heritage).

1.2.3 Importance of monitoring

According to the United Nations the term monitoring can be defined as “a continuing function that aims primarily to provide management and main stakeholders of an ongoing intervention with early indications of progress, or lack thereof, in the achievement of results. An ongoing intervention might be a project, programme or other kind of support to an outcome” (**UNDP, 2002**). Monitoring helps in the progress assessment of short and long terms goals, and it allows to plan and take management

actions ensuring that standards of quality are maintained (**Manning, 2002**). Monitoring has been proven to be an essential procedure for the management of cultural or protected areas, as it is a primary source of information about the potentials and the weak sides of an area, as well as of the impact that tourism has on it. More specifically, monitoring can help us assess current activities and their impact, pay particular attention to sensitive sites and species through specific indicators (as water quality, soil quality, Minimum Population Viability of target species etc.) and determine and manage current trends and risks, as well as the carrying capacity of a site, which contributes to the maintenance of a health environment and to the landscape integrity, to the quality of visitors experience, as well as to a peaceful contact with the local community (**Fambri, 2020**). Generally, monitoring procedures about tourism aspects in protected areas are carried out through assessment processes collecting information with tools like surveys, interviews, video, data from public and private agencies (**Chiou et al., 2018; Moore and Polley, 2007; Muhar et al., 2002**).

In the case of cultural routes, in order to guarantee their long – term perspective, a need for the creation of a monitoring cycle that will identify sustainability indicators has been developed (**European commission, 2014**). Subsequently based on the characteristic of chosen types of tourism destinations, a set of indicators creating the monitoring system should be proposed to achieve the best possible sustainable development with the less negative effects. The first step of this monitoring cycle consists of the information and data collection, in order to define and collect the appropriate indicators. To do so, it is necessary the use one of the monitoring tools mentioned above as videos, literature reviews, questionnaires, and interviews. Defining clear indicators and being able to know how to change them, is important for a successful monitoring plan. This monitoring might be either at the level of direction and evaluation of performance or simply in characterization of evolutionary trends (**Rocha, 2008**). At this first stage it's important to consider the opinion of tourist/visitors, people who get some benefit (financial or not) from this route and local authorities. Based on the results we can continue to the second stage in which we are trying to find the best fit analytical models, that will evaluate the selected indicators of the cultural route. Lastly, we are evaluating the results and focusing on the main advantages and disadvantages of the route, as well as on the most applicable solutions

in order to create a more sustainably developed, visitor friendly and respectful to the local environmental needs route.

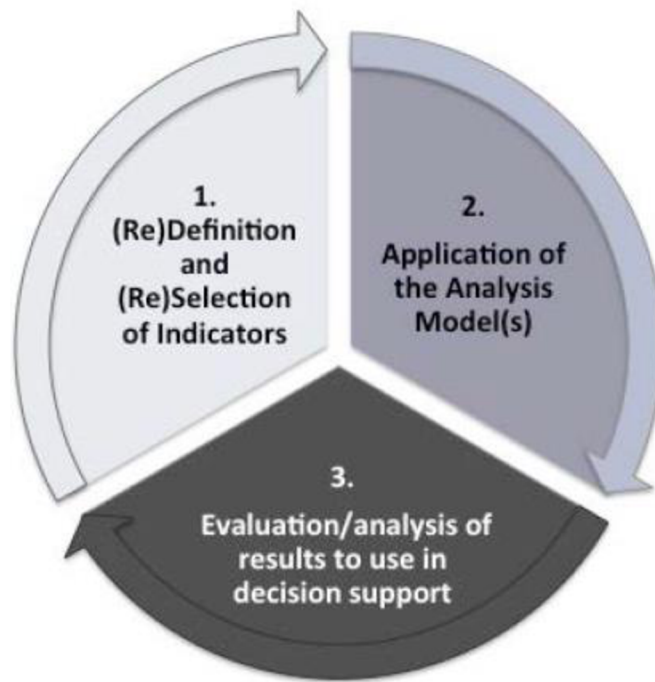


Figure 1. Monitoring Cycle (Duarte et al., 2013)

It is only possible to define and correctly select the set of indicators and models to be applied to each case after a correct characterization of the system to be monitored (Duarte et al., 2013).

Based on common features of cultural routes with respect to cultural tourism in general, a set of sustainability indicators is designed for better sustainable measurement. The following table (Table 3) assigns indicators for cultural routes according to different existing methodologies (Jurigová & Lencsésová, 2015):

ENVIRONMENTAL INDICATORS	ECONOMIC INDICATORS
<ul style="list-style-type: none"> • Percentage of tourists and same day visitors using different modes of transport to arrive at the destination • Percentage of tourism enterprises involved in climate change mitigation schemes– such as: CO₂ offset, low energy, etc. • Volume of waste recycled (percent or per resident per year) • Fresh water consumption per tourist/night • Level of contamination of bathing water per 100 ml that is near cultural route • Number of artefacts and built sites on trail and % maintained • Loss of flora and fauna due to tourism activity on the route • Average travel (km) by tourists from the previous destination to current destination • Energy consumption per tourist night compared to general population energy consumption per person per night • Number of tourists on trail, at one time, in a given time period or season, per year 	<ul style="list-style-type: none"> • Number of tourist nights per month • Direct tourism employment as percentage of total employment • Number of newly created jobs related to the route • % of travel agencies offering cultural routes • Annual profit of tourism businesses near the route • % of tourists participated on the route per month or season • Daily spending per tourist and same day visitor in the area of cultural routes • Relative contribution of tourism to the destination's economy based on visited cultural routes • Number of guides • Number of business offering trail walks • Revenue from local craft and souvenir sales per year • Revenue from accommodation/ year • Visitor fees
<ul style="list-style-type: none"> • % of trail and margins degraded • % of buildings considered in degraded condition • % of old buildings on the route designated at local, national and/or World Heritage levels • Tourist perception of cleanness in the area of routes • Quality of natural landscape • % of area covered by infrastructure • Length of trails • Existence of signage • Interpretative materials along the trails • % of environmental friendly transport alternatives • Existence of recycling facility • % of land used designed for further tourism development • % of area damaged, or in degraded condition visible from viewpoints 	<h4 data-bbox="868 969 1171 1003">SOCIAL INDICATORS</h4> <ul style="list-style-type: none"> • Number of tourists/visitors per 100 residents) • Percentage of men and women employed in the tourism sector with respect to cultural routes • Percentage of visitor attractions that are accessible to people with disabilities and/or participating in recognised accessibility schemes – on the route • Number of artefacts and built sites on trail and % maintained • % of local residents who believe they benefit from the trail • Number of complaints/compliments per year from tourists participated on cultural route • % of visitors satisfied with the transport accessibility to route (bicycle, foot, car) • Number of historical sights available and open for visitors at the route

Table 3. Suggested monitoring indicators of cultural destinations (Jurigová & Lencsésová, 2015)

1.3 Development of Ecotourism in cultural trails of Greece

Greece is a country where most of its territory is mountainous and semi-mountainous, which in combination with its recorded and long cultural history it can be used as a beneficial feature for the development of ecotourism. Beside the existence of multiple habitat types, rich and unique biodiversity, and plethora of cultural heritage, Greece seems to have several elements, such as a variety of cultural trails, that testify to the long-lasting presence of human presence in this geographical area for thousands of years. For many years these trails were the only terrestrial network for the service of communication and transport between rural and urban areas. With the development of modern society, the practical significance of these paths has been significantly reduced and today many of them, which have not been destroyed by other forms of development (forestry, agriculture, residential and commercial development), have been substantially covered by vegetation or destroyed by landslides (**Charakida, 2005**). In general, there are a variety of unique and interesting trails - from the aspect of nature and cultural heritage - that are either not properly developed and managed to attract tourism or have yet to be documented and interpreted. The three main reasons why ecotourism activities are not well developed and organized in Greece as in the rest of European countries are: 1. differences in the scale and quality or variety of wildlife, 2. social and cultural differences in the way that local communities react towards visitors, and 3. insufficient financial support from the government.

During the last few years, some limited efforts have been made to enhance the expansion of ecotourism that takes advantage of the cultural trails that are situated all over the country. The main aim has been to promote rural areas with significant nature and cultural heritage, while at the same time developing programs and actions in order to preserve the unique nature and cultural significance of these cultural trails. The human influence upon this effort are reflected in actions by local authorities and communities, the support of Environmental Education programs, the promotion through social networks and the creation of groups or associations of actions for recording and highlighting the trails. In addition, there are several valuable web pages that promote ecotourism in various ways through exploring cultural trails, some of which are selected to be indicatively mentioned below:

1. **Hellaspath.gr**: this site is an initiative from local communities, NGOs, and tourist to record trails in the Greek mountains, by creating an online GPS database which is projecting important information about cultural routes and sites that are freely available to everyone. This online database contains so far 113 mountains and 562 recorded trails. It is also necessary to mention that it contains photographic material, which is constantly renewed, that shows all the cultural and natural heritage features of each region (**Hellaspath.gr, 2022**).
2. **Pathsofgreece.gr**: The Social Co-operative Enterprise Paths of Greece was founded in 2010 with the vision to help Greece become one of the top 10 hiking and ecotourism destinations in the World. What they do is that they bring back to life the old footpaths in different localities, in manner that it fully responds to the needs of the modern hiker. They clear the trails, signpost them and promote them in Greece and internationally, while at the same time they support the local society by transferring knowledge about the management of hiking trails. Paths of Greece has been solicited by individual donors, Associations, Companies, Municipalities and Regional Authorities (**Pathsofgreece.gr, 2022**)

The overall effort to develop ecotourism in Greece, based on the already recorded cultural trails, has led to the existence of the first Internationally Certified Cultural Trail in Greece named Menalon Trail which is located at the western part of Arcadia, Peloponnese, Greece (**Menalontrail.eu, 2022**). This certification has been given by the European Rambler's Association (ERA), following the assessment of 41 measurable, qualitative, and technical criteria, as it was ranked among the leading quality trails.

1.3.1 The study case of the cultural trail “To the cannons” in Torone, Greece and aims of the thesis

The objective of this thesis research is multi-purposed. The present study intends to conduct the first cultural, environmental, and economic evaluation of touristic activity along a historic cultural trail of 3km long located close to the village of Torone on the Chalcidice Peninsula in northern Greece. This location is significant as the area of

Torone has been recognized as an Area of Archeological Importance with the presence of a medieval-byzantine castle and the remnants of a WW2 military installation; nearly all these unique features exist along and throughout much of landscape on the route of this cultural trail/pathway. As the creation of this cultural trail was mainly an initiative of the local villages as a means by which to attract tourism, there is great need for providing guidance and a clear direction for how to best interpret the unique features that are present and provide guidance for how to include this location as part of a broader network of cultural and eco-tourism attractions. In order to achieve that, it is crucial to clarify and identify what are the rare and sensitive landscape features (plants, animals, viewsheds, cultural icons) that should be carefully interpreted and protected, who is responsible for site management and how to best market and attract both domestic and international visitors to this location.

All the research is based on two central themes; on the one hand can this cultural trail can be sustainably managed or not in order ecotourism activities to be adapted, by identifying the most important problems and benefits of the trail as perceived by locals and tourists. On the other hand might the suggestions of residents about how to best convey the story and nature of this unique and rare location can be promoted by the local administrative authorities, NGOs. In theory, many of these important changes are based upon the four pillars of sustainable development (economy, society, environment, politics / governance).

Although the research was conducted with a proportionally stratified sampling method using both printed and online questionnaires, the results should be generalized with precaution as the number of samples was relatively small and the seasonal and social conditions of the period of sampling had several particularities. At this point it should be noted that this research was carried out in the context of research for the author's master thesis (for non-profit purposes); similar research has never before been conducted at this study location – the trail to the Canons – and for that reason, the results and conclusions couldn't be compared with other similar studies. Further relevant studies and monitoring activities should be carried out in order to reach more precise conclusions.

2. METHODOLOGY: STUDY AREA AND DATA COLLECTION

This chapter will introduce and present the selected study area of Torone in Chalcidice peninsula, Greece, the methods used for the data collection, and how the analysis of the data was performed. For this thesis research, in-the-field documentation of the trail to determine its flora, fauna and archeological features was conducted. In addition, extensive trail mapping and directional marking of the trail with handmade wooden signage was performed in collaboration with the Greek NGO “Trace Your Eco”. In addition, surveys of visitors and local people and interviews of NGOs, and local authorities was conducted beginning in September of 2021 and concluding in the end of December 2021.

In the first section, I describe the study area by illustrating the natural and cultural main features, a brief reference about the history of the tourism activity of the area, and some important information about the demographic characteristics of the trail users. In the second section, I present the tools used for the data collection, while in the third section methodologies of the analyses are presented for each single source of data.

2.1 Study Area: Torone, Chalcidice Peninsula Greece

2.1.1 Geographical Features

Torone is a village located at the southwestern tip of the Chalcidice peninsula in northern Greece (between Toroneos Gulf and the Aegean Sea) and it is part of the Peninsula of Sithonia. Its history begins very early as it is referred as a colony of Chalcidian in the late 8th century BC. It was one of the richest cities of Chalcidice Peninsula, and its name often rises both in Xerxes’ campaign in southern Greece in 480 BC and during the Peloponnesian War (**Halkidiki.com, 2022**). The under-study area is coastal to semi-mountainous, where temperate and dry Mediterranean climates meet, with humid and dry summers and cold winters with temperatures averaging between 3-7°C. The annual average rainfall is estimated to be 494.3 mm, while the higher average monthly prices were detected on January, February and March with 77

mm, 63.1 mm, and 73.6 mm respectively. In general, the landscape of this area is covered with vineyards, forests, grasslands, shrubland and low altitude mountains (Wikipedia, 2022). Approximately 750 km² (23% of the study area) of Chalkidiki are privately owned agricultural lands (Figure 2). These lands are often mixed with wild vegetation due to land abandonment in areas around villages (Palaiologou et al., 2018). In the wider study area, the arable agricultural land occupies only the 12,7% of the total area, as most of the fields are fallow (Paratsikidou, 2001).

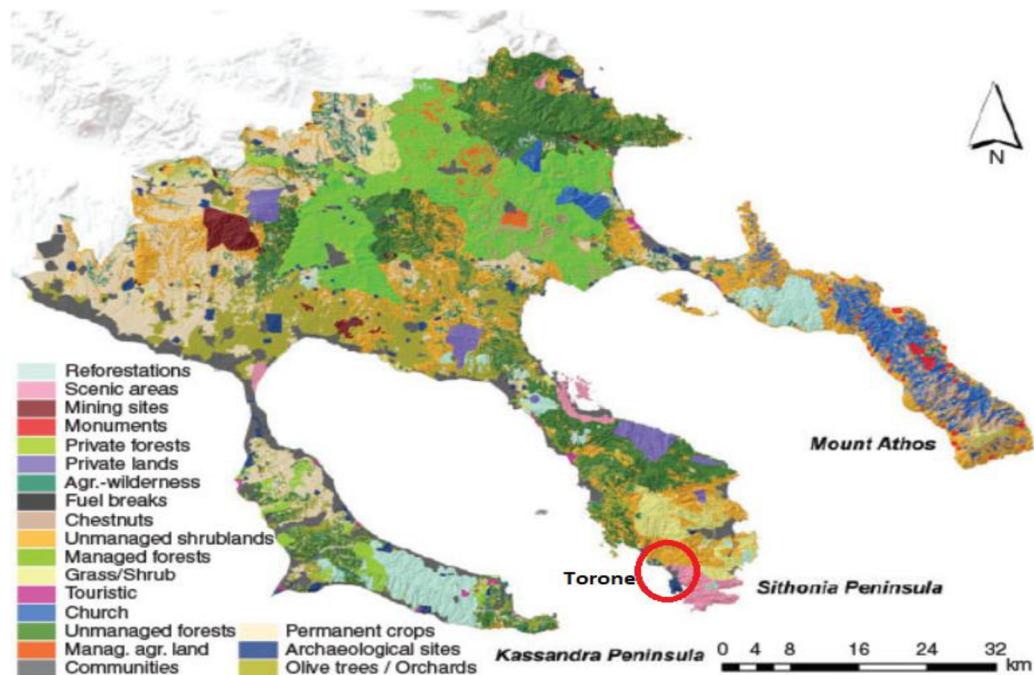


Figure 2. Map of Chalcidice Peninsula with its land use or land cover classes (Palaiologou et al., 2018)

The whole peninsula of Sithonia is considered to be part of the so-called Serbo-Macedonian Massif (Figure 3), whereas, in some other respects, parts of the peninsula are estimated to belong to the Axios zone (Dasgupta & Sapountzis, 1976). Most of the area is dominantly covered by sedimentary rocks from Miocene and Pliocene period, while there is a significant percentage of white limestone layered by calcareous psammites and red clay. While the central mountainous areas of the peninsula of Sithonia are mostly covered by Aleppo pine and Black pine forests, the lowlands at the southwestern part of the peninsula are covered by extensive scrubland and phrygana due to dry climate, successive fires, and extensive grazing. Important

features of Torone are the coastal rocky areas, which offer suitable breeding sites for raptors (Votaniki.gr, 2022).

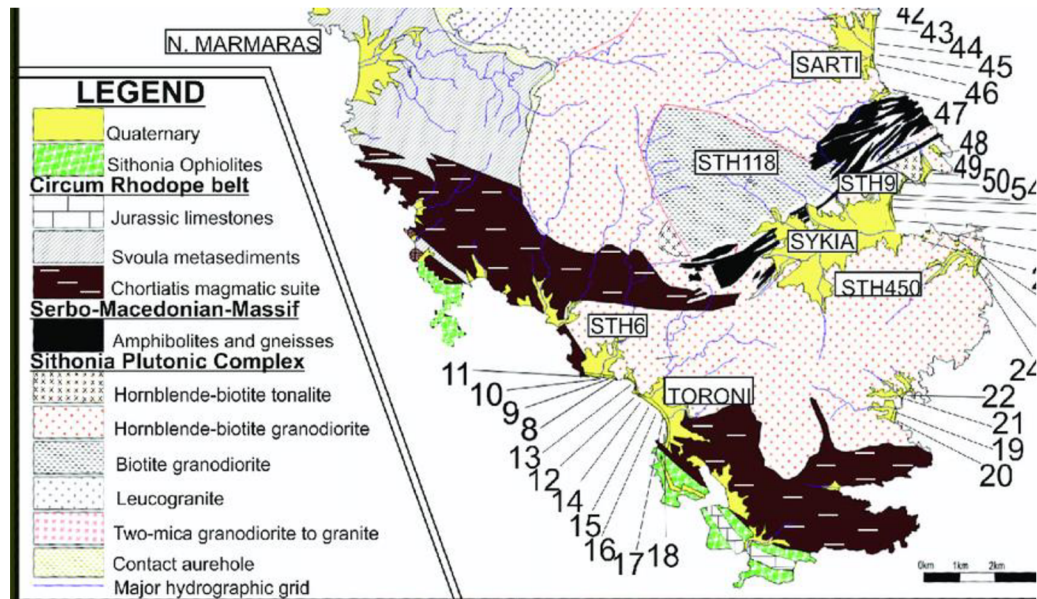


Figure 3. Geological map of Sithonia Peninsula (modified map after Christofides et al., 2007)

2.1.2 Biodiversity

The vegetation of Sithonia belongs to the phytosociological sub-zone of *Oleo Cerantonion* and more specifically in the growth area of *Oleo Lentiscetum - Euphorbietosum*, which is characterized by spring and autumn rainfall between 250-550 mm per year and a long lasting (4-6 months) dry season. Current vegetation of the area was evolved through various stages, until it was completely harmonized and balanced with the ecological features of the region (climate, soil). More specifically the structure and composition of the vegetation of the under-study area is typical for Mediterranean zone, with all the characteristics attached to its type of vegetation. The vegetation of the Torone is a diverse mixture of pine woodlands (*Pinus halepensis*, *P. nigra* and *P. pinea*), evergreen broad-leaved species (*Quercus coccifera* (Figure 6), *Erica arborea*, *E. manipuliflora*, *Arbutus unedo*, *A. adrachne*, *Phillyrea latifolia*, *P. media*, *Pistacia lentiscus* (Figure 5)), and phrygana (e.g., *Cistus salviifolius*, *C. creticus*, *C. monspeliensis*, *Sarcopoterium spinosum*). These are supplemented by nitrophilous, halophytic vegetation (mainly members of the *Chenopodiaceae* family),

grazed meadows, cultivated fields, and olive groves where a variety of ruderals and weeds can be found intermixed between the different land-use types (**Figure 4**).



Figure 4. Intermixed vegetation in Torone's trail, with olive groves and shrublands (Kumble, 2021)



Figure 5. *Pistacia lentiscus* (Kumble, 2021)



Figure 6. *Quercus coccifer* (Kumble, 2021)

As from the aspect of fauna, in the wider region of Torone we can find a high diversity of mammals, like fox, jackal, wild boar and hare, and reptiles, as snakes, lizards and turtles. Moreover, the area is well known mainly for breeding raptors and migrating avifauna species, as well as for species of open arid and coastal areas. Priority avifauna species include: *Phalacrocorax aristotelis*, *Hieraaetus pennatus*, *Hieraaetus fasciatus*, *Falco biarmicus*, *Motacilla flava* and *Emberiza hortulana*. Lastly, it is also worth mentioning that from the aspect of entomology, Coleoptera, Lepidoptera and Hymenoptera taxa represent a great biodiversity value of the area.

2.1.3 Cultural heritage

Torone is considered to be one of the oldest settlements in the southern Sithonia, with its history starting with its colonization by the seafarers from Chalcis in VIII BC. Throughout the centuries, this area covered an important role in Greek history, as the residents of Torone took part in the Greek-Persian Wars and in the Peloponnesian War, where Torone was “the apple of discord” for Athens and Sparta. In 348 BC, Torone became the part of the empire of King Philip II and in 168 BC, it was conquered by the Romans after it survived the battle of Pindus and the fall of the Macedonia Empire. Most of the ruins of the ancient constructions were destroyed by the Turks in XIX. The granites and stones, which managed to stay undamaged, were used for the construction of central streets in Thessaloniki (Northern Greece) and Istanbul (<https://aktis.app/en>, 2022). Today the ruins of the ancient city of Torone are vast and run clear up to the summit of the mountain. In the cape of Lekythos, that is at the base of the mountain, forms the modern harbor and is the starting point of the cultural trail to “To the cannons”, situated adjacent to the ancient ruins of the Lekythos Byzantine Castle (**Figure 7**). These castle ruins have been under excavation since 1975 by the Ephorate of Antiquities of Chalcidice and Mount Athos and today the visitor can see part of the town's walls and ruins from the acropolis, a high mountain lookout situated adjacent to the harbor area. The docks of the harbor, made of huge granite stones, were discovered at the bottom of the sea, along with remainders of stonewalls, which continue on the shore and were probably the town's warehouses. Earthquakes

and the rising of sea levels may be the reason why these sea walls are now covered with water (Visit-halkidiki.gr, 2022).



Figure 7. Ruins of Lekythos Byzantine Castle in Torone, Greece ([Kumble, 2021](#))

By following the cultural trail “To the cannons”, through a route of 3 km full of olive trees and shrublands along the coast, a visitor can observe how the crest is literally covered with scattered stone building blocks that were once used to build the ancient city of Torone, as well as ruins of an empty water cistern, that is undeniable evidence of a former ancient settlement (Sitoniagreecce.com, 2022). Upon reaching the end of the trail, remnants of WW2 German military installation (**Figure 8**) will appear with underground galleries, observatories, and cannon positions, some of which are in very good condition (Rthess.gr, 2020). Across the first cannon base, there is a small island on the right, called Peristeronisi (**Figure 9**), in which there are ruins of an early Byzantine church. Last but not least, it’s important to mention that in the wider area of Torone there are ruins of the Basilica of Saint Athanasios, which was built in the 6th century AD.



Figure 8. Second Cannon Base



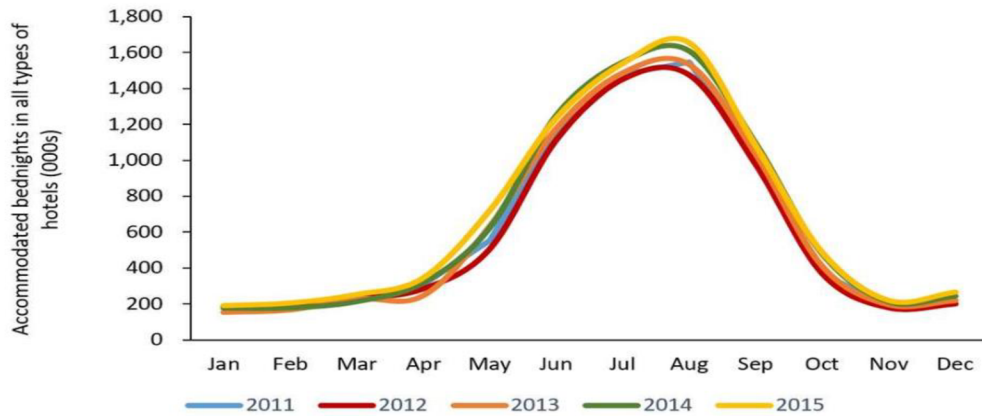
Figure 9. Peristeronisi island

2.1.4 Development of tourism

Tourism is one of the most important economic sectors of Sithonia Peninsula, as this labor-intensive sector contributes to the creation of new jobs, the attraction of new investments and the direct and indirect creation of local products (e.g. production and consumption of local products). Sithonia experienced a sharp growth in tourism after the 1960s with the change in the habits of holiday-tourism, i.e. the shift towards recreational sea tourism. This fact created huge growth potential for the peninsula, that concluded in the construction of large tourist accommodation establishments with whom the tourism market of Chalcidice Peninsula started to become known also abroad until the beginning of 1970s (**Labrianidis & Papagiannakis, 1995**). In the period 1986-2005, the percentage of overnight stays of foreign tourists in Sithonia was consistently above 50% in the whole region, making the peninsula the most important attraction for foreign tourists in Northern Greece (**Triadafyllos, 2007**). Meanwhile, as the period from 1985-2005 was a period of financial development and economic growth for the country, many of the people who were living in the Northern part of Greece bought their summer residence in Sithonia, something that contributed also to

the touristic development of the area and the greatly increased income of the locals. From then till now overnight stays of foreign tourists in Sithonia show fluctuations, with the most significant drop occurring between 2001 and 2003, possibly due to the war in Serbia.

More specifically, in the case of our study-area, Torone is strategically located between the peninsula of Kassandra and the monastic retreat of Mount Athos, so it is no surprise that the study site attracts a huge amount of tourist every year; it combines sea, mountain and cultural tourism activities, with the existence of vast highlands, virgin coastal areas, lush forests, rocky outcrops and archeological sites. Since the start of the big tourist boom in the 1970s, the whole region has become a destination for many European tourists (mainly Germans and British), but also it has been a central point of attraction for visitors originating from countries close to the northern borders of Greece who gain access to the region using their personal automobiles. Torone is also a popular destination amongst Christian Orthodox populations (e.g. Serbians, Ukrainians, Russians, etc.) because of its proximity to the monastic community of Agion Oros and its monasteries (**Boussia & Papadimitriou, 2017**). Because most of the tourism activity in this region is concentrated in the peak summer months of July and August, this means that there is a high degree dependency by seasonality (**Graph 2**) (**Dermetzopoulos, 2013**). From 2008, there have been an effort from some local entrepreneurs and cooperatives to promote the natural and cultural heritage of the area, by creating small groups for mountain bike, hiking, scuba diving and fauna and flora observation or by volunteering for the opening and marking of trails. Significant examples of this initiative are the donation of “Blue Sea Hotel” of Torone, in order to open, clean and mark the cultural trail “To the cannons”, which is starting from Lekythos Byzantine Castle and concludes to the WW2 German Settlements, as well as the creation of first local hiking cooperative. However, the sharply declining economic performance of the recent years, clearly indicates the need for structural changes and the development of an ambitious long term regional strategy plan, in order to face economic challenges, explore new market opportunities, promote sustainable management plans and robust the existing regional competitive advantages (**Avdimiotis & Tilikidou, 2019**).



Graph 2. Influence of seasonality in the tourism activity in Torone 2011-2015 (Hellenic Statistical Authority)

2.1.5 Cultural trail “To the Cannons” and its characteristics

The cultural trail “To the Cannons”, which is the subject of research of this diploma thesis, is a trail that was created mainly as an initiative of the local villages as a means by which to attract tourism and promote the natural and cultural heritage of the area. The trail was initially a path that was used by the grazers, so that they can feed their goats, but in 2012 with an initiative of some local inhabitants it was cleaned from branches and weeds, and it was signed with plastic signs (**Figure 10**) so that it can be used as a hiking trail. The name “To the Cannons” was given by the Koutliani brothers, who are the owners of the “Blue Sea Hotel” in Torone and they were among the first people who contributed to the creation of this trail. From 2012 till now, besides the intense arguments between the locals and the competent authority in order to better manage and promote it as a cultural trail, little has been done mainly because the area is recognized as an Area of Archeological Importance and permission from the Ephorate of Antiquities of Chalcidice and Mount Athos is needed, so that the trail can be officially recognized as cultural. Some basic characteristics of the trail are provided in **Table 4**.



Figure 10. Initial plastic signs, used for marking the trail “To the Cannons” in Torone (Kumble, 2021).

Trailhead/ Starting Point	Lekythos harbor/ Lekythos Byzantine Castle
Ending point	WW2 German Cannon Base
Maximum altitude of the trail	130m
Total distance	2.7km
Duration	~1h
Difficulty	Easy to Medium
Soil type	Clay and rocky
Vegetation	Mentioned in 3.1.2

Table 4. Characteristics of the cultural trail “To the Cannons” in Torone.

In order to contribute and enhance the effort of the locals for better management and promotion of this trail, a five-day workcamp, with the collaboration of the Czech University of Life Science, Faculty of Environmental Sciences, the department of “Forestry and Natural Environment” of the Aristotle University of Thessaloniki, Greece, and the environmental NGO “Trace Your Eco was organized, in the framework of my research for my diploma thesis. The main aim of this workcamp was first to clean the trail from weeds and branches, record the fauna and flora of the trail (Figure 11), and mark the trail with new handmade wooden signs and white-red colors (Figure 12,13,14) in the trailhead and along the trail, as well as to investigate the tourist activity and the user preferences along the trail. The municipality of Sithonia and the archeologist Nikolaos Mertzimekis from the Ephorate of Antiquities of Chalcidice and Mount Athos also contributed to this combined operation.



Figure 11. Recording of fauna and flora of the cultural trail (Kumble, 2021).



Figure 12. Creation of the handmade wooden signs for the marking of the trail (Kumble, 2021).



Figure 13. Using red-white colors for marking of the trail (Kumble, 2021).



Figure 14. The new wooden signs, placed in the trailhead of the trail (Kumble, 2021).

2.2 Data collection

Interviews and surveys were conducted over a period of four months (September-December 2021). From these, it has been deduced (i) a socio-demographic analysis of visitors, (ii) an evaluation of the cultural trail from the aspect of difficulty, sensitive features, satisfaction rate and available services and amenities, (iii) management suggestions in order to better promote and improve visitor's experience on the trail, by collaborating with local community and local authorities, and (iv) evaluation of the role of NGOs and government in the preservation and management of the trail.

By gathering this type of information with the above-used methods, we will be able to establish site-specific baseline data, and upon analyzing the data, to make conclusions about present and future site operations, planning, and design (Wiberg, 2009).

2.2.1 Visitor surveys

The development of this survey was based upon previous visitor surveys (i.e. surveys developed for Monitoring of Socioeconomic aspects on tourism management of Škocjan Caves Park- Slovenia (**Fambri, 2020**) and I was guided for the form and type of the questions by the survey research conducted in Mountain Pine Ridge Forest Reserve, Belize (**Kumble, 2009**).

The visitor survey is anonymous and composed of 27 single or multiple choice and rating scale questions and two open-ended ones. For the rated scale questions related with the rating of the overall care and maintenance of the hiking trail and the satisfaction level of the locals after visiting it, the scale had been five level coded with the use of different emojis, which for easiest written representation I'm going to replace with numbers from 1-5.

The survey starts investigating socio demographic characteristics of the visitors, such as gender, nationality, age, level of education. It then shifts to questions about the visit: source used to find the area, with whom visitors travel, means of transportation, times of visit, reasons, period of stay, usual activities during the day and tourist attractions. The survey continues with specific questions about the cultural trail, with a rating section about what features of the trail were most appealing, comments about flora and fauna and available facilities that were observed, rating of its level of safety and difficulty and information about degradation of historic/natural features. It concludes investigating the ranking of the overall care and maintenance of the trail, satisfaction level after the visit, likelihood of revisiting and recommend a visit to this trail and suggestions for its better management and promotion in the future.

The survey was conducted online with the use of QR codes, that were printed in 50 A3 posters (**Figure 15**), while at the same time the survey was provided by the municipality and local hotel units to the visitors through email. The A3 posters were placed on an interpretive signed wooden box positioned at the trail head entry point. Since Torone is an internationally known destination, the survey was offered both in English and Greek version. The English version of the survey is given in Appendix I.

The survey was administered during autumn 2021, from September to December; the participation to the survey was limited as these months are not considered high season months for tourism in the area.

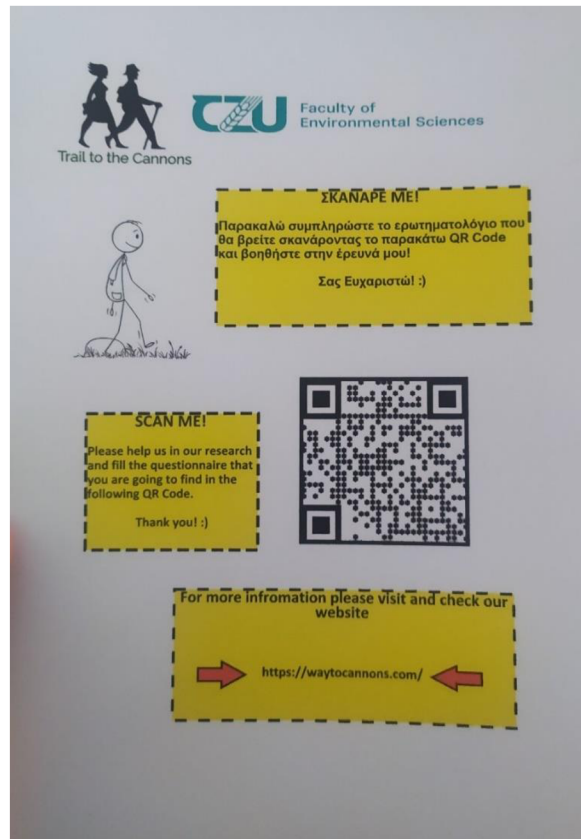


Figure 15. The A3 size posters with the survey's QR code.

2.2.2 Local surveys

For the survey for locals, I used the same pattern as the one in the visitor survey mentioned above, with the preparation of 26 checkbox and rating scale questions and one open-ended question. For the rated scale questions about the rating of the overall care and maintenance of the hiking trail and the satisfaction level of the locals after visiting it, the scale had been once again five level coded with the use of different emojis, which for easiest written representation I'm going to replace them with numbers from 1-5.

The survey starts again by investigating socio demographic characteristics of the locals, such as gender, time and reasons of residency in the area, age, level of education. It then shifts to questions about the impact of tourism in the area's development and in the local's lifestyle. The survey then includes some questions

which asks how familiar the locals are with the nature and cultural heritage of Torone and more specifically with the existence of this cultural trail. As stated above, the survey actually contains two variations, one for visitors and one for local inhabitants, with some specific questions targeted at either group. When beginning the survey, the respondent can select if they are a visitor or a local inhabitant. The survey continues with questions focusing on the frequency of visits, the preferred season for visiting the trail, reasons for visiting it and its most appealing features. Like in the visitor's survey, questions about flora and fauna and available facilities that were observed, rating of its level of safety and difficulty and information about degradation of historic/natural features was conducted. It concludes by asked the respondent to state their observations regarding the overall care and maintenance of the trail, their level of satisfaction after the visit, their likelihood of revisiting and recommend a visit to this trail, and finally suggestions for its better management and promotion in the future.

Again, the survey for the locals was conducted and administered in the same way as for the visitors and even if it was mainly oriented towards Greek people, it was offered also in English version that is given in Appendix II.

2.2.3 Interviews

In order to evaluate the tools and plans that are used for the promotion and management of this cultural trail, an interview was conducted with the Deputy Mayor of Tourism of the Municipality of Sithonia, Maria Lathouri-Parga. Moreover, the founding member of the NGO "Trace Your Eco", Stelios Tsialikis, who helped me also in the opening and marking of this cultural trail "To the Cannons", contributed with his interview to gain a better understanding of how volunteer programs related with the protection of the cultural heritage and natural environment and development of ecotourism activities work. The interviews sent via mail ask from four to seven opened-end questions in Greek. The answers from these interviews helped in the evaluation of the final survey results and in drawing some conclusions.

3. Results

In this chapter, the results from visitors' and locals' surveys collected in autumn of 2021 are presented. All the answers from the survey's questions have been collected and separated into two different excel files (one for visitors and one for locals). Then from this data, I assembled graphs and tables illustrating the results from the single and multiple questions, as well as from the rating questions.

3.1 Visitor surveys

In total only 36 completed questionnaires were obtained from visitors during the autumn of 2021 (September- December). As mentioned above, due to the Covid-19 pandemic and the lower-than-normal number of visitors or tourists during the year (2021) that this research was conducted impacted the level of participation of the visitors; the number of samples collected is not high. Again, the restrictions on international travel has had an impact on tourism and mobility world-wide and consequently the number of visitors to the study location was lower than in prior years. It is important to note that the actual number of visitors to the hiking trail To the Cannons was likely much greater than 36; these were the completed surveys by those choosing to voluntarily participate.

In order to avoid any confusion and misunderstanding in the analysis of the results, the final results were divided into three main categories:

1. **General Data:** socio-demographic characteristics of the visitors (gender, age, nationality, and level of education) and some basic information about visitors, as the source used to find the area, frequency of visits, reasons to be a return visitor, period of stay and preferred activities during the day.
2. **Site Questions:** information about how the visitors found about the trail, its most appealing features, available facilities and degradation spots that were observed and rating of its level of safety and difficulty.
3. **Satisfaction Rate:** information about the ranking of the overall care and maintenance of the trail, satisfaction level after the visit, likelihood of

revisiting and recommend a visit to this trail and suggestions for improvement of its services and amenities, as well as of its better management and promotion in the future.

Graphs and tables are attached in Appendix III. Selected results are presented in the text.

A) General Data

Socio-demographic data are presented below in **Table 5**. Results on the source used to find the area, frequency and motivation of visit, period of stay and preferred activities during the day are given in **Table 6**. The question number from the questionnaire is mentioned in parentheses.

Question	Appendix	General outcome
Gender (1)	III.a	51% of surveyed visitors are male.
Nationality (2)	III.a	A total of 10 different nationalities were recorded. European countries represent the majority (80%), while Greece, Germany, and Serbia are the leading countries.
Age (4)	III.a	For males, who were the main surveyed gender, the main category of age is 18-26 (47%).
Level of education (5)	III.a	42% possess an undergraduate degree, 42% have completed a graduate degree or hold a PhD title, while 17% have diploma from high school or less.

Table 5. Main results from questions n. 1, 2, 4 and 5 of the visitor survey.

Other information about the visitor:

Question	Appendix	General outcome
Preferred activities in Torone (7) (multiple answer)	III.b (a)	The top 3 preferred activities by surveyed visitors in Torone are hiking (67%), water activities (47%) and sunbathing (39%).
Frequency of visits (8)	III.b (b)	Most of the surveyed visitors (33%) have been more than 10 times in Torone (mostly men).
Reasons to be a return visitor (open-ended answer)	III.b (c)	Different opinions are presented.
Source of information for Torone (9) (multiple answer)	III.b (d)	Surveyed visitors have been mainly informed about the area from family/friends (43%).
Period of stay (11)	III.b (e)	72% of the surveyed visitors answered that they stayed in Torone for more than two days.
Sites visited while in Torone (12) (multiple answer)	III.b (f)	69% of the surveyed visitors have been visited Torone's beach and 61% Porto Koufo, as the most visited sites in Torone.

Table 6. Summary of the answers given in questions number 7, 8, 9, 11 and 12 of the visitor survey.

B) Site Questions

The purpose of the “Site Questions” section is to develop a better understanding of how a visitor first learned about the site, their reasons for coming to experience it, and their experience and observations after visiting the site. Answers to these questions will inform site managers about the effectiveness of marketing efforts and how to improve them in the future, how items outside management’s control affected visitor experience, and number and quality of recreational opportunities offered at the site

(Wiberg, 2009). Results from these types of questions are presented in **Table 7**. The question number from the questionnaire is mentioned in parentheses.

Question	Appendix	General outcome
Source of information about the trail (13) (multiple answer)	III.c	Surveyed visitors have been mainly informed about the trail from family/friends (48%).
Purpose of visiting (14) (multiple answer)	III.c	The top 3 preferred reasons for visiting the trail are general sightseeing (67%), Exercise (53%) and Leisure (45%).
Most appealing features (16) (multiple answer)	III.c	The most appealing features of the trail are the Scenic Beauty/nature (38%), Historic Ruins (27%), Beaches (22%) and Flora (13%).
Rate of safety (17)	III.c	The trail is rated as “Safe” or “Very Safe” by most of the surveyed visitors (97%).
Rate of difficulty (18)	III.c	The trail is ranked as “Easy” by most of the surveyed visitors (64%).
Available facilities (20) (multiple answer)	III.c	The majority of the surveyed visitors recorded as available facilities along the trail Signage (81%), Trash bins (25%)

		and Historical Info/ Flora and fauna Info (22%).
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Table 7. Summary of the answers given in the site questions number 13, 14, 16, 17, 18 and 20 of the visitor survey.

C) Satisfaction Rate

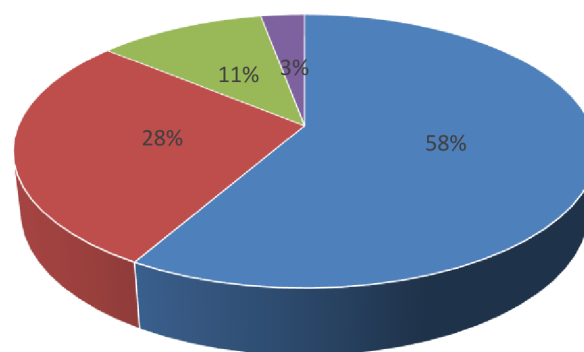
Lastly, this section is prepared so that we understand visitor’s general satisfaction level after visiting the trail, as well as the ranking of its overall care and maintenance. At the same time by asking the visitor to identify expectations they had after visiting the site and suggestions so that the site can be better improved in the future, site managers can better understand what people expect or hope to find and experience while they are visiting the trail. At this section, they are included the 2 open-ended questions, one for the things that will discourage a visitor to be a return visitor in this trail and one for suggestions in order the experience of a visitor at this trail to be upgraded and improved in the future.

The results have shown that the average ranking of the overall care and maintenance of the hiking trail is 3, while the average satisfaction level is rated as 4 on a scale from 1 to 5 (1 is the lowest, 5 is the highest). These results prove that, even if the trail doesn’t completely satisfy the requirements of a well-managed cultural trail and even if more effort from locals and the competent authority is needed for its promotion and management, there is a high level of satisfaction which is derived from its scenic natural beauty and its cultural sites. For the likelihood of revisiting the trail, 50% of the surveyed visitors answered, “Very likely” and 44% answered “Definitely”, while for the likelihood of recommending this trail to others, 58% of the surveyed visitors answered “Definitely”. As for the reasons that would discourage a visitor to return and visit this trail and the suggestions for the improvement of the trail’s services and amenities, as well as of its better management and promotion in the future, results are presented in **Table 8 and Graph 3.**

1. Better preservation, cleaning and signing of the trail (signs with information about the length, duration and difficulty of the trail, fauna and flora of the area, historic information, as well as cleaning and marking of paths which lead to isolated bays and beaches alongside the trail)
2. Creation of a web page with information about the nature and cultural heritage of the cultural trail and promotion of it in social media.
3. Creation of more trails (ideally of different difficulty levels- easy, medium, hard), an extension of the existed trail to Vigla's Top.
4. Promotion of the trail with the organization of local festivals, guiding and hiking tours, educational programs etc.
5. Found a well-structured local organization that promotes the preservation of the area and creates awareness campaigns on the protection of its naturalistic and cultural heritage.
6. Supplementation of the trail with trash bins and benches (trash bins should be emptied twice per week) and design of platforms for landscape/wildlife viewing.

Table 8. Visitor's suggestions for improvement of services and amenities and better management and promotion of the trail.

Graph 3. Reasons that will discourage a visitor to return and revisit the trail "To the Cannons".



■ Abandonment and degradation of the area
 ■ Bad accessibility and absence of signage
■ Overtourism
 ■ Other

3.2 Survey of local inhabitants

In total only 23 completed questionnaires were obtained from local inhabitants during the autumn of 2021 (September- December). The reasons behind this low number of samples are estimated to be either the inability of people to connect to the survey with the use of the QR code or by mail, as the majority of Torone's population are elders, or they may lack of knowledge about the existing trail. Moreover, as mentioned above, the Covid19 pandemic was a restricting factor for conducting some face-to-face surveys. Since the number of official residents of Torone is 213 (based on 2011 statistics), the questionnaires represent approximately a 11% of the entire population.

As in the case of the results from the visitor survey, in order to avoid any confusion and misunderstanding in the analysis of the results, the final results were divided, as in the visitor survey, into three main categories:

1. **General Data:** socio-demographic data (gender, age, period of residence, reasons and level of education), as well as some basic information about how much Torone has changed the more recent decades due to tourism and what impact does this development of tourism have on the quality of life of a local inhabitant.
2. **Site Questions:** data about the knowledge level of locals for the cultural and natural sites of Torone and the existence of the trail "To the Cannons", frequency of visits, the appropriate season for visiting the trail, purpose of visiting, its most appealing features, available facilities and degradation spots that were observed and rating of its level of safety and difficulty.
3. **Rating Scale Statements:** information about the ranking of the overall care and maintenance of the trail, satisfaction level after the visit, likelihood of revisiting and recommending a visit to this trail and suggestions for improvement of its services and amenities, as well as of its better management and promotion in the future.

Graphs and tables are attached in Appendix IV. Selected results are presented in the text.

A) General Data

Aspect	Results
Gender	57% male, 43% female.
Average Age	Ages 27-45 appear more often in both genders.
Period of residence	The period of residence for both surveyed genders is 21-30 years.
Reasons for residence	The main reason for permanent residence in Torone is because it is the birthplace/ or place of origin of the surveyed local inhabitants (70%).
Level of education	56% have a diploma from high school or less, 35% are undergraduate, while only 8% have graduate degree or PhD title.

Table 9. Main results from the sociodemographic questions of the local survey.

For the questions related to how much Torone has changed the last decades due to tourism, almost 90% of the surveyed local inhabitants answered that Torone has developed and changed a significantly, with better accommodation and services amenities and with more available activities for the visitors, while about the impact that tourism has on local's life, 52% answered that it "Significantly affects them".

B) Site Questions

Aspect	Results
Knowledge of local inhabitants for the historical/natural sites of Torone	Most of the surveyed local inhabitants answered that they are "A lot" or "Quite familiar" with the historical/natural sites of Torone (65%).
Awareness about the existence of the trail	Almost all the surveyed local inhabitants know about the existence of the trail (21/23 answered "Yes").

Frequency of visits	87% answered “Infrequently”.
The preferable season for visiting the trail	44% answered Spring because it’s not crowded, the weather conditions are ideal, and nature is at its finest.
Purpose of visiting (multiple answer)	Hiking/exercise (61%), General sightseeing (56%), and Photography (56%).
Most appealing features (multiple answer)	Scenic beauty/ nature (83%) and Historic ruins (56%).
Available facilities along the trail (multiple answer)	Signage (78%) and Trash Bins (30%).
Degradation/ Trash spots	56% of the surveyed local inhabitants answered “No”, but it was also observed trash nearby the first cannon base.

Table 10. Summary of the answers given in the site questions of the local survey.

C) Rating Scale Statements

As in the case of the visitor survey, the results from the local survey have shown that the average ranking of the overall care and maintenance of the hiking trail is 3, while the average satisfaction level of the local inhabitants is rated as 4 on a scale from 1 to 5 (1 is the lowest, 5 is the highest). For the likelihood of revisiting the trail, nearly 65% of the surveyed local inhabitants answered “Definitely”, while for the likelihood of recommending this trail to others, 73% answered “Definitely”. Lastly, information about the amenities and services that should be better managed or improved on the trail as well as about local’s suggestions for its better management, improvement and promotion in the future are presented in **Table 11 and Graph 4**.

Voluntary actions for cleaning and annual opening of the trail, organized and supported by local authorities and NGOs.

More often cleaning of the trail from branches and weeds, emptying the trash bins twice per week.

Signs with information about the historical background of the area and the archeological sites.

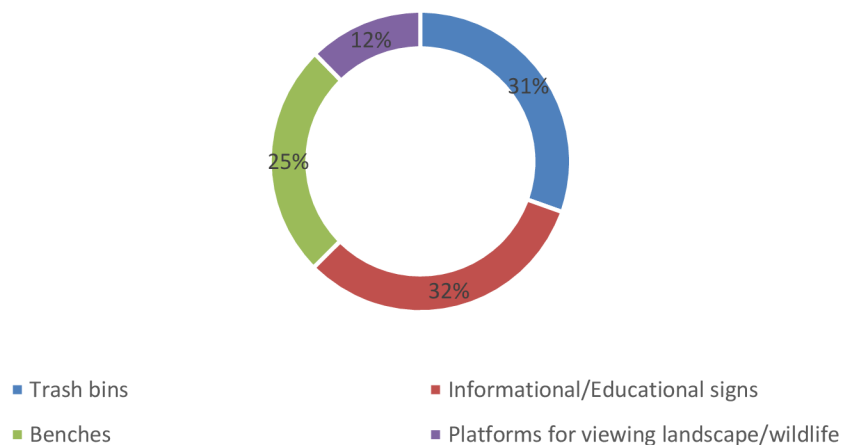
Promotion of the region and the cultural path from the municipality in sites and travel agencies.

Restoration of the Lekythos Byzantine Castle and official permission for entering the area by the Ephorate of antiquities in Chalcidice peninsula and Mount Athos.

Ticket fee for entering the castle ruins, this money will be used from the component authority for improvement and promotion of the area.

Table 11. Suggestions of local inhabitants for improving the visitor’s experience on the trail “To the Cannons”.

Graph 4. Services and amenities that should be better managed or improved in the trail "To the Cannons", based on the local survey.



4. Discussion

The purpose of this diploma thesis was the emergence of Torone’s cultural and natural heritage through a cultural trail in order to develop, maintain and protect its heritage features, while at the same time increase the annual number of visitors and strengthen the local economy. The literature review research, as well as the interviews with the local authorities and environmental NGOs, helped in the analysis of the survey’s data and their connection to the establishment of sustainability in the area. Tourism is the

driving force of civilizations, regions and landscapes and thanks to its growth potential with the implementation of special forms of tourism, it also contributes to the preservation and protection of its cultural and natural heritage.

Ecotourism is a form of tourism that contributes to the sustainable development of local communities, while at the same time contributing to the promotion and preservation of the cultural and natural heritage of the areas. Its development by each country must be carried out with due consideration and respect for the environment, avoiding possible uncontrolled damage and negative impacts caused by tourism. As it was mentioned in the international examples, the development of ecotourism along cultural trails is a specific type of tourism and is appropriately active for the preservation and the promotion of cultural and natural features of the trail. The effectiveness of this type of tourism works positively and is an important factor in the development of tourism in areas with cultural and natural heritage, as well as for the creation of new job opportunities for the locals. Moreover, it's contributing to the increase of local inhabitant's awareness for the local cultural and natural heritage and stimulate an interest in its conservation.

In Greece, the creation and development of cultural trails, as well as promotion of ecotourism activity on them, is a very new field that is constantly acquiring a different dynamic, since the benefits for local communities and Greek society collectively are numerous. The interdependence of many different sectors with that of culture and the need to use interdisciplinary tools has become clear, requiring consistency, seriousness, planning and organization in order to achieve the individual objectives of such projects. An important prerequisite for the development and promotion of ecotourism in cultural trails is the cooperation of the competent authorities, the people who work in the tourism industry, tourists and local inhabitants.

More specifically, for the case of development and promotion of Torone's cultural trail "To the Cannons", the results of the surveys and interviews addressed some important information and problems that need to be solved in order to achieve a higher degree of international visibility and financial support. It is generally accepted that there is saturation in most tourist destinations in the country. On the contrary, in our study area, which is very much a tourism-dependent location, the tourist activity seems to be stable each year, offering a fixed annual income to the local community. The hospitality industry which comprises hotels, camping installations, food and beverages

and water activities is a key component of Torone's economy. As we saw from the results of the visitors survey the majority of tourists are coming from Greece (especially from the Northern part of Greece) and most of them are return visitors in the area, something that shows that every summer Torone is a highly preferred destination for vacation. Important is also the healthy growth rates of mainly regional (neighboring countries, Germany and Russia) inbound tourism (**Boussia & Papadimitriou, 2017**). However, during the last two years the tourism movement has been heavily hit by the Covid-19 pandemic, which caused a sharp decline in tourist mobility across borders.

Based on the results from both local and visitor surveys, as well from the information that was collected from the interviews, it seems that the advantages that emerge from the cultural and natural heritage of the area are of enormous importance for its viability, as well as for the permanent establishment of youth residents in the region. One of the characteristic features of the area is the seasonal variation of the population. During the summer period, the inhabitants of Torone, who mostly live permanently in large urban areas or in the bigger villages of Sithonia (like Sykia, Nikiti etc), return to their place of origin for seasonal work, cultivation and harvest of their fields, or simply for holidays. The establishment of new European or National funded programs and new sustainable management plans that will promote the sites of cultural and natural interest can be used as the intercessor for the creation of employment opportunities for the youth in order to stay in Torone permanently.

From the interview with the Deputy Mayor of Tourism of the Municipality of Sithonia, Maria Lathouri-Parga, it seems that the local authorities and other local stakeholders have little involvement and participation in the development of marketing strategies and management of the local cultural and natural heritage, mainly because of inadequate budgeting, insufficient qualified administrative staff and lack of communication with the citizenry. For this reason, it's crucial that all stakeholders can make a decisive contribution and benefit from the sustainable development of Torone, by taking actions and measures before planning, based on the different levels of administration (local, regional, national), as well as by ensuring cooperation and consensus between the state mechanism, local businesses and the local community and authority. The expressed need for the creation of a single administrative body that will organize, coordinate and supervise cultural tourism issues and would have the role of

the missing link between the municipalities, the State and the EU, has to be taken into account for the future tourism development plan of the area.

More specifically for the cultural trail “To the Cannons”, the following operations should be carried out for its better management, legal establishment and promotion in the future:

1. Cleaning of the trail once per month from branches and constant growing weeds, especially in the spring and summer months.
2. Better interpretation of the flora and fauna of the trail and adjustment of wooden signs or metal plaques with information about it, as well as with historical information about the archeological sites along the trail. Signs with information about the length, duration and difficulty of the trail at the trailhead would be also useful.
3. Open and mark small paths that lead to hidden beaches and bays along the trail, for the enrichment of the user experience (**Figure 16**).



Figure 16. Hidden beach of Antikufos along the trail “To the Cannons” (**Kumble, 2021**).

4. Installation of facilities like trash bins, benches for sitting and platforms for landscape and wildlife observation, as well as emptying of the trash bins twice per week, in order to avoid trash accumulation (**Figure 17**). Maintained constructions can help in limiting vegetation trampling and soil erosion, stabilizing slopes or even casting water away from the trail, which facilitates hiking, but without altering the wild animal’s behavior and moving pattern (**Marion et al., 2007; Mende & Newsome, 2006**).

5. Creation of more trails (ideally of different difficulty levels- easy, medium, hard), an extension of the existed trail to Vigla's Top, with cleaning and appropriate marking.
6. Installation of a wooden box at the trailhead of the trail, where brochures with an attached map and basic information about the trail, as well as with a QR code that the visitor can scan after the end of the visit and find complete info about the cultural and natural features of Torone and the trail.
7. Creation of certified guides that will inform the visitor about regulations for appropriate behavior, in order to avoid degradation issues (i.e vandalism, littering). Essential is also the need for a detailed recording of the natural and economic resources of the area must, in order to accurately determine the carrying capacity of the trail.
8. Better management of the historical site (Lekythos Byzantine Castle) by the implementation of signs with historical information and entrance ticket. The money from the entrance ticket can be used for maintenance operations and for the overall improvement of the visitor experience.
9. Regular monitoring for assessment of site conditions.



Figure 17. Accumulation of trash in the only trash located at the first cannon base along the trail (Kumble, 2021).

For the legal establishment of the trail, there is a need for collaboration between the local competent authority and the Ephorate of Antiquities of Chalcidice and Mount Athos, which is responsible for the archeological sites of the area. In addition, it's

essential that owners and residents who live along an intended route to be notified of the proposal to establish a heritage trail, in order to avoid misunderstandings and disagreements and to seek their support (**Galt, 1994**).

From the aspect of activities and programs for raising the awareness of the local residents and visitors and promoting internationally the trail, the following actions are suggested with the contribution of Stelios Tzialikis, the head of the environmental NGO “Trace Your Eco”.

1. Involvement of students from the Aristotle University of Thessaloniki or other Greek Universities from different departments related to topography, geology, and environmental sciences in volunteer actions from the promotion of ecotourism and preservation of the natural and cultural heritage of rural areas. Collaboration with other EU Universities and funded programs, for the better promotion of the trail. At this point it is important to be mentioned, that after the collaboration for the research in the study area, an MOU agreement was signed between the Czech University of Life Sciences and the NGO Trace your Eco for further organization of future researches and training programs.
2. Organization of guided tours and educational programs for raising local awareness about the natural and cultural heritage area. Cooperation between the public and private sectors (tourism businesses, hotels and municipalities) in the field of culture and tourism is concerned, for the better organization of cultural events sponsored and advertised by private operators. This can contribute also to funding more scientific research and studies related to the heritage of the area and encourage the development of tourism activity not only in the summer season, as usual, but also in other seasons as well, considering that seasonality may allow dispersing tourists throughout the year, thus relieving the impacts caused by mass tourism (**Santarém et al., 2015**).
3. Creation of seminars for certified interpretation guides, that will offer new job opportunities for the youth residents of Torone and will educate them about the cultural and natural background of their place of origin.

4. Promotion of the trail in the media (Web and print), in tour guides related with Sithonia Peninsula and in sites that promote ecotourism and cultural trails in Greece such as:

- <https://www.monopatiapolitismou.gr>

- <https://www.ellet.gr/project/programme-greek-paths-of-culture>

- <https://www.pathsofgreece.gr/>

5. Conclusion

Cultural Routes have been significantly developed through the years, as they are the missing link between tourism, culture and environment in each region. This thesis presented the study case of Torone's cultural trail "To the cannons" in Chalcidice Peninsula, Greece, by investigating its natural and cultural features, the overall quality of its amenities and facilities and the rate of satisfaction of the residents and visitors. This work provided also, by survey results and interviews, significant knowledge to trail developers and managers, especially in terms of evaluating and enhancing trail system sustainability. Moreover, local authorities and managers, as well as NGOs and local entrepreneurs will find a tool here to promote and contribute to the better management of trail and to ensure that carrying capacity is not exceeded (by spreading tourist activity throughout the year). For the promotion of the region and the trail, it's essential the need for use of social media platforms as means to attract nationals and internationals visitors, while collaborations with nationals and EU funded programs would contribute to its better management and preservation of its natural and cultural heritage in the future.

The survey research is a very valuable source that can be used as a first interpretation of the features of the cultural trail "To the Cannons" in Torone, as well as for the determination of user (locals or visitors) preferences and suggestions on its better advertisement and management in the future. Due to the low numbers of those who completed the survey- due to the time of year that the survey was administered and COVID-19 Pandemic limits on visitation and travel - this research should be considered a good Beta test of the hypothesis and methodology and provide a useful

data for following studies and research in the future initiated by the local authorities or businesses and by NGOs, like Trace Your Eco. In addition, this research provided data about residents and visitors, but did not investigate the attitudes and perceptions of members of other groups such as authorities and tourism stakeholders and for that reason, it is necessary to collect data from a larger section of the population to explore the variation in responses according to socio-demographic factors.

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<http://npshistory.com/publications/whis/nrr-2007-008.pdf>

Appendix

Appendix I. (Visitor Survey)

Questionnaire

This research project is conducted as a master thesis project from the Czech University of Life Sciences, Prague. My name is Magda Mertzimeki and I am an MSc student of the master program "Nature conservation", that I'm running my diploma thesis under the coordination of Professor Peter Kumble from the department of Landscape and Urban Planning of the faculty of Environmental Sciences at the Czech University of Life Sciences in Prague. Please answer all the relevant questions. All the answers will remain confidential. This survey will approximately take ten minutes to complete. More details about our research project can be found on our research project page. Please click the appropriate button below to continue with the questionnaire:

1. Gender: Male Female Prefer not to say

2. Nationality:

3. Country of residence:

4. Age: Less than 18 18-26 27-45 46-60 More than 60

5. Level of education: High school or less Undergraduate degree Graduate degree or higher

6. With whom are you travelling?: Alone Family Couple Friends Organized group

7. What kinds of activities do you like to experience during your vacation? (Check as many as applicable):

Hiking

Wildlife/flora observation

Water activities

Bicycling

Sunbathing

Off-road driving

Other

If you selected 'other' please specify in the space below:

8. How many times have you visited Sithonia?: First time 2-5 6-10 More than 10

If you are a return visitor, please describe why in the space below:

9. How did you find out about Torone? (Check as many as applicable):

- Self/personal discovery
- From friends/family
- From social media
- From guided tours
- From television shows/print/electronic News
- From printed maps/brochure
- From Google maps/similar
- Other

If you selected 'other' please specify in the space below:

10. How did you arrive in Torone? (Check as many as applicable):

- By car/rental cars
- By motorbike
- By bicycle
- By boat
- By public bus/taxis
- By camping caravan
- By tour vehicle
- Other

If you selected 'other' please specify in the space below:

11. For how long have you been staying in Torone?: Day trip Overnight More than 2 days

12. Which places you did you visit while you are in Torone? (Check as many as applicable):

- Toroni's ancient Basilica
- Lekythos Castle
- Hiking trails (to the Cannons, Acropolis)
- Porto Koufo
- Torone's beach
- Tristinika's beach
- Other

If you selected 'other' please specify in the space below:

13. How did you become aware of the hiking trail "To the Cannons"?:

- From Friends/Family
- From social media/internet
- From tour book
- From the locals
- Part of tour packages
- By accident
- Other

If you selected 'other' please specify in the space below:

14. For what purpose did you visit the hiking trail?

- General sightseeing
- Exercise
- Wildlife/Flora observation
- Swimming
- Leisure
- As part of an organized tour
- Research/academic purposes
- Educational purposes
- Business

Other

If you selected 'other' please specify in the space below:

15. What kinds of flora and fauna did you observe while you were on the hiking trail? (Check as many as applicable):

Olive trees

Oak trees

Herbs

Birds

Lizards

Snakes

Mushrooms

Other

If you selected 'other' please specify in the space below:

16. What features appeal to you the most while you are on the hiking trail?:

Historic ruins

Scenic beauty/nature

Beaches

Easily accessible

Flora and fauna

Other

If you selected 'other' please specify in the space below:

17. How safe did you feel while you were on the hiking trail?: Very safe Safe
 Somewhat safe Unsafe

Briefly explain the reasons behind your answer above:

18. How would you rate the hiking route, from the aspect of difficulty?: Easy
 Difficult Hard

19. Is the information about appropriate visitor behavior clearly available on the hiking trail?: Yes No No information was present

20. Please choose the available facilities that you observed while you were on the hiking trail:

- Toilet Facilities
- Trash bins
- Historical info, flora and fauna
- Signage
- Other

If you selected 'other' please specify in the space below:

21. While you were on the hiking trail, did you notice any trash?: Yes No

If you selected 'yes', specify where:

22. While you were on the hiking trail, did you notice any degradation of historic/natural features?: Yes No

If you selected 'yes', specify where:

23. Please rank the overall care and maintenance of the hiking trail:

1 2 3 4 5 6

24. How likely are you to return to this hiking trail in the future?: Definitely
 Very likely Somewhat likely Unlikely

25. What things will discourage you from returning to this hiking trail?:

26. How likely would you recommend to your friends/family to visit this hiking trail?: Definitely Very likely Somewhat likely Far from it

27. Please rate your satisfaction level after your visit to this hiking trail:

1 2 3 4 5 6

28. What kind of services and amenities should be better managed/improved on this hiking trail? (Checked as many as applicable):

- Trash bins
- Informational/educational signs
- Benches for sitting
- Platforms for viewing landscape/wildlife
- Parking

Other

If you selected 'other' please specify in the space below:

29. What other suggestions do you have for improving the visitor experience on this hiking trail?:

Appendix II. (Local Survey)

1. Gender: Male Female Prefer not to say

2. Age: Less than 18 18-26 27-45 46-60 More than 60

3. I have been living here for: under 10 years 11-20 years 21-30 years More than 30 years

4. Level of education: high school or less undergraduate degree graduate degree or higher

5. Why did you choose Torone as your permanent residence? (Check as many as applicable):

Birthplace/ Place of origin

Marriage/Relationship

Workplace

I came here for vacation a couple times

For research purposes

Other

If you selected 'other' please specify in the space below:

6. Do you feel as though Torone has changed the last decades due to tourism?:

Yes No It doesn't concern me

If 'yes', in what way do you believe it has changed (eg. bad, good). Please give some examples:

7. How does tourism affect your daily life?: It does not affect me Significantly
 A lot

8. How familiar are you with the historical/natural sites of Torone?: A lot
 Quite familiar Somewhat familiar Not at all

9. Did you know about the hiking trail "To the cannons"?: Yes No

10. How often do you visit this hiking trail?: Once a week Daily Infrequently
Never

11. With whom do you usually prefer to visit this hiking trail?: Alone Couple
Family Friends Organized group

12. During which of the four seasons do you prefer to visit this hiking trail?:
Winter Spring Summer Fall

Briefly explain the reasons behind your answer above:

13. For what purposes are you usually visiting this hiking trail? (Check as many as applicable):

- General sightseeing
- Foraging
- Swimming
- Wildlife/Flora observation
- Leisure
- Photography
- Research/academic purposes
- Educational purposes
- Business
- Other

If you selected 'other' please specify in the space below:

14. What features do you like the most from this hiking trail? (Check as many as possible):

- Historic ruins
- Scenic beauty/nature
- Beaches
- Easily accessible
- Flora and fauna
- Other

If you selected 'other' please specify in the space below:

15. What kinds of flora and fauna did you observe while you were on the hiking trail?:

- Olive trees
- Oak trees
- Herbs
- Birds
- Lizards
- Snakes
- Mushrooms
- Other

If you selected 'other' please specify in the space below:

16. How safe did you feel while you were on the hiking trail?: Very safe Safe
 Somewhat safe Unsafe

Briefly explain the reasons behind your answer above:

17. How would you rate the hiking route, from the aspect of difficulty?: Easy
 Difficult Hard

18. Is the information about appropriate visitor behavior clearly available on the hiking trail?: Yes No No information was present

19. Please choose the available facilities that you observed while you were on the hiking trail:

- Toilet Facilities
- Trash bins
- Historical info, flora and fauna
- Signage
- Other

If you selected 'other' please specify in the space below:

20. While you were on the hiking trail, did you notice any trash?: Yes No

If you selected 'yes', specify where:

21. While you were on the hiking trail, did you notice any degradation of historic/natural features?: Yes No

If you selected 'yes', specify where:

22. Please rank the overall care and maintenance of the hiking trail:

1 2 3 4 5 6

23. What things will discourage you from returning to this hiking trail?:

24. How likely would you recommend to your friends/family to visit this hiking trail?: Definitely Very likely Somewhat likely Far from it

25. Please rate your satisfaction level after your visit to this hiking trail:

1 2 3 4 5 6

26. What kind of services and amenities should be better managed/improved on this hiking trail? (Checked as many as applicable):

Trash bins

Informational/educational signs

Benches for sitting

Platforms for viewing landscape/wildlife

Parking

Other

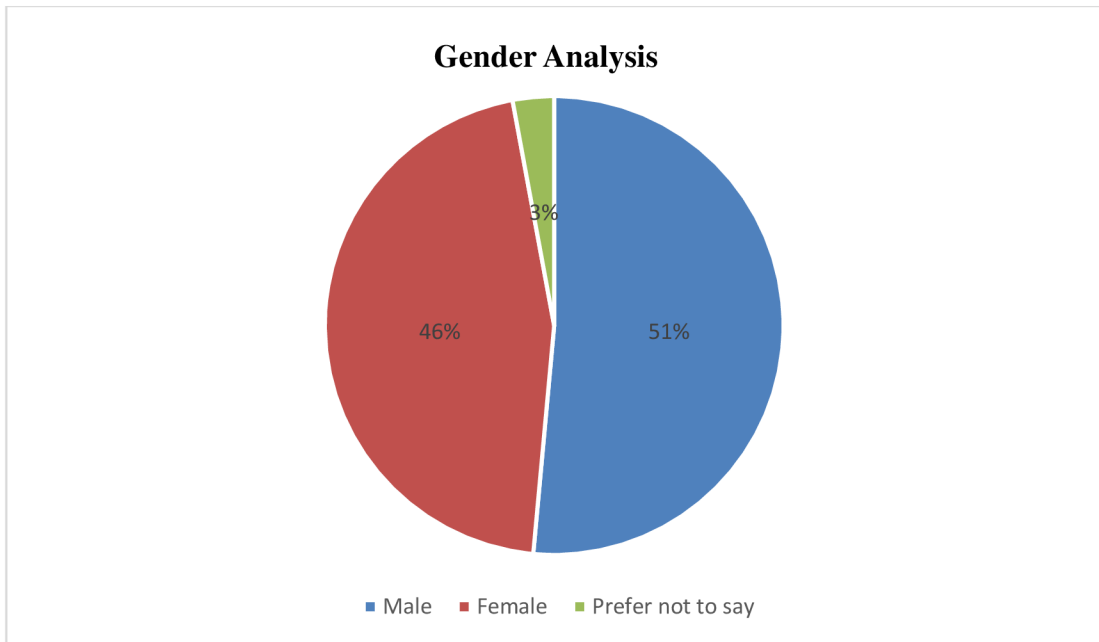
If you selected 'other' please specify in the space below:

27. What other suggestions do you have for improving the visitor experience on this hiking trail?:

Appendix III. Visitor Survey Results

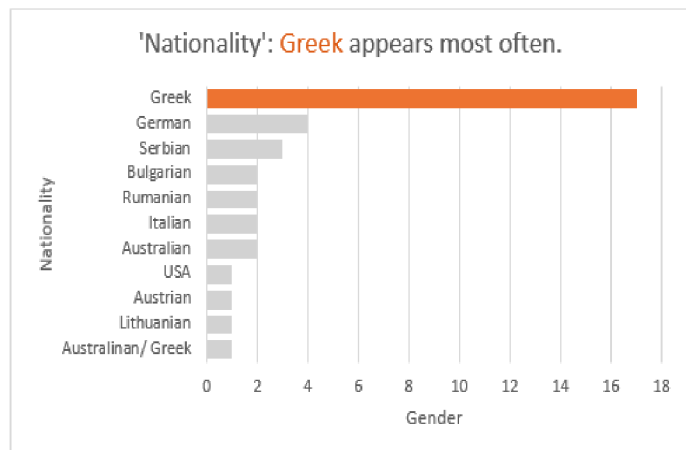
Appendix III. a

Gender

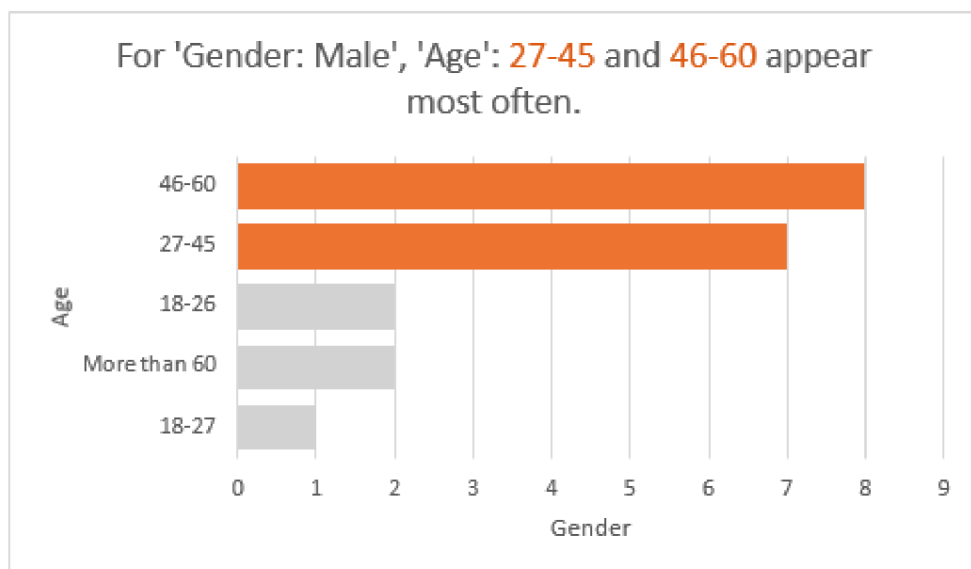
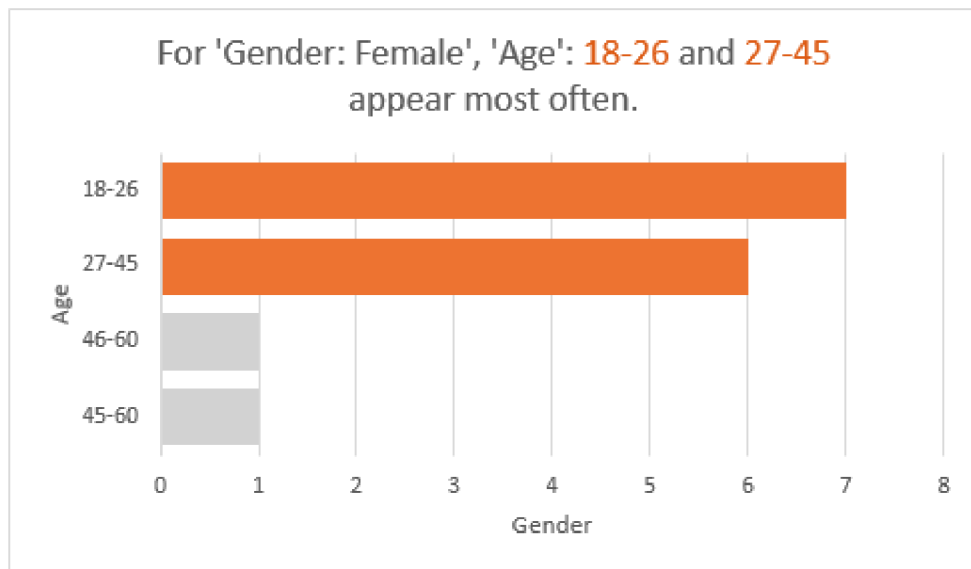


Nationality

Row Labels	Count of Gender
Greek	17
German	4
Serbian	3
Bulgarian	2
Rumanian	2
Italian	2
Australian	2
USA	1
Austrian	1
Lithuanian	1
Australinan/ Greek	1
Grand Total	36

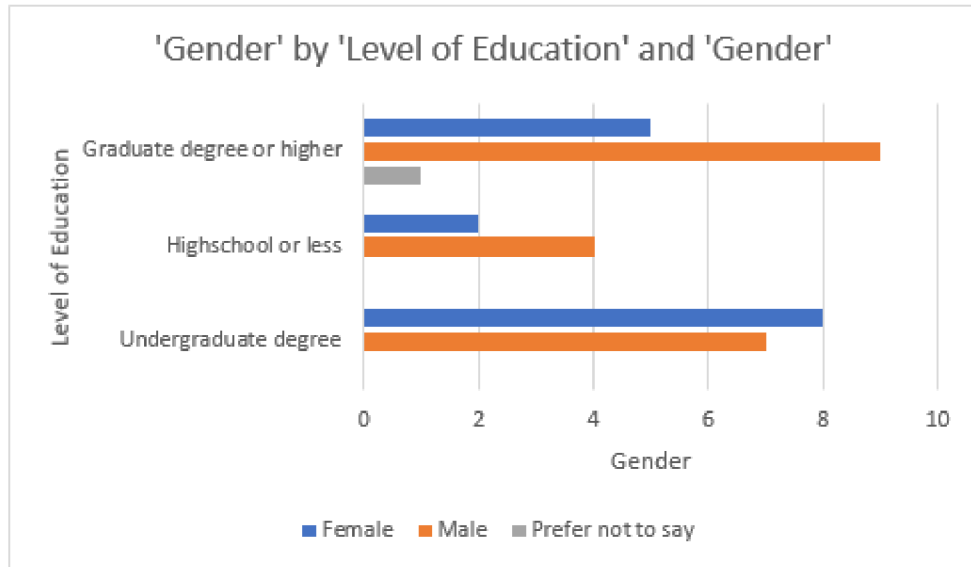


Age



Level of education

Count of Gender	Column Labels				
Row Labels	<input type="checkbox"/> Graduate degree or higher	<input type="checkbox"/> Undergraduate degree	<input type="checkbox"/> Highschool or less	<input type="checkbox"/> Grand Total	
Male	9	7	4	20	
Female	5	8	2	15	
Prefer not to say	1			1	
Grand Total	15	15	6	36	

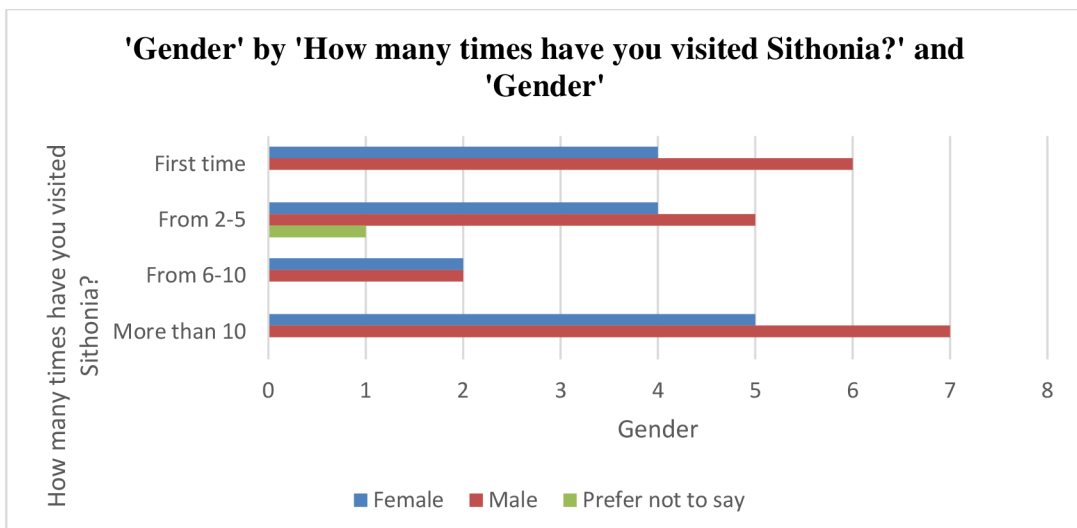


Appendix III. b

(a) Preferred activities in Torone

Activity	Answers from visitors
Hiking	24 (67%)
Water Activities	17 (47%)
Sunbathing	14 (39%)
Flora/Fauna observation	13 (36%)
Bicycling	11 (30%)
Off-road driving	8 (22%)
Visiting archeological sites/ Investigation or archeological ruins	1 (3%)

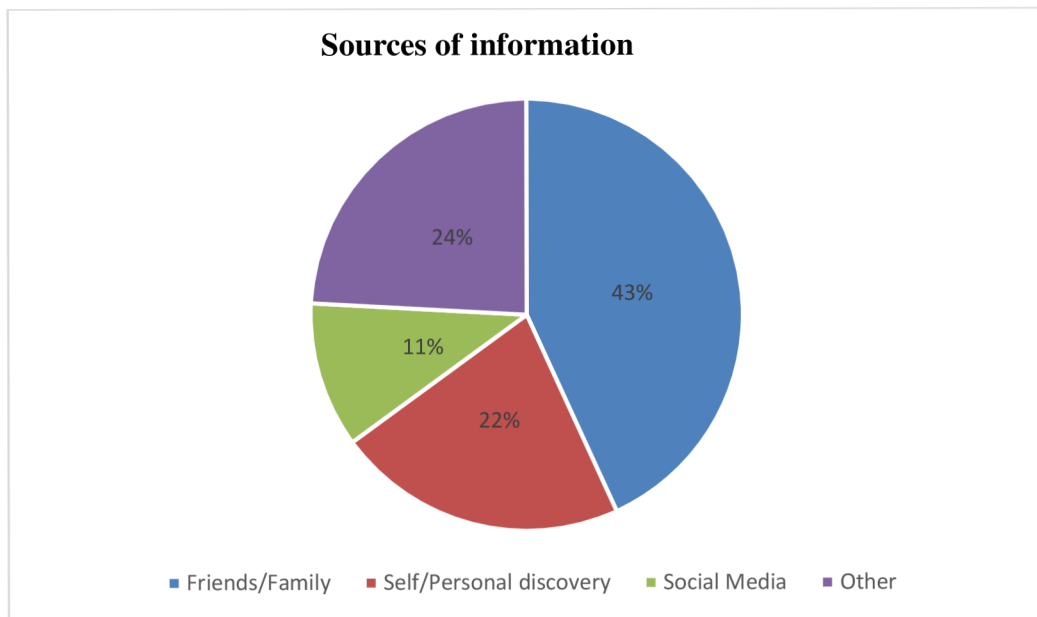
(b) Frequency of visits



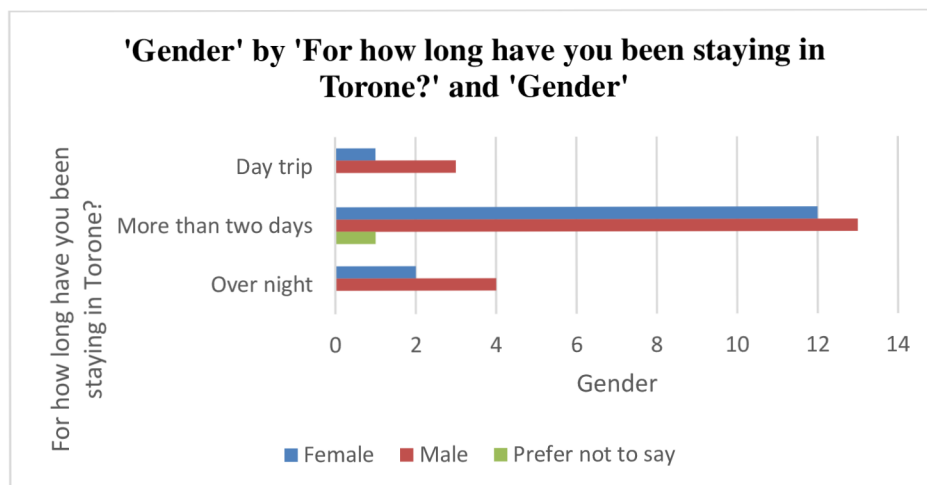
(c) Reasons to be a return visitor

1. Ideal location for all year round
2. Leisure, Vacation
3. Place of origin
4. Local hospitality, affordability, wild nature and beaches
5. Working on underwater excavations
6. Investigation of archeological remains

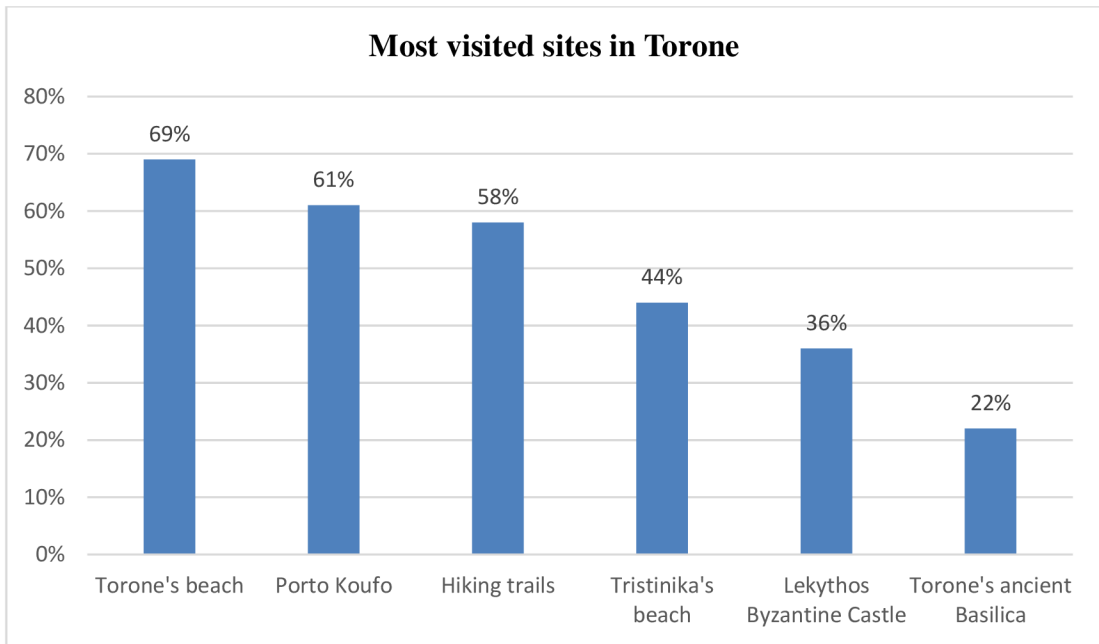
(d) Source of information for Torone



(e) Period of stay

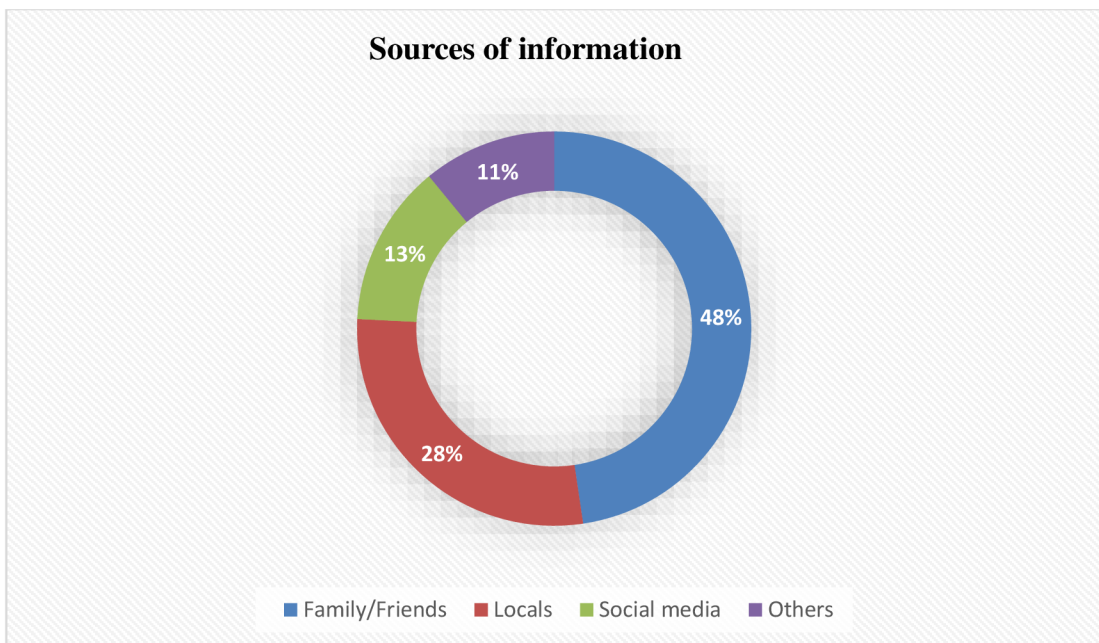


(f) Sites visited while in Torone

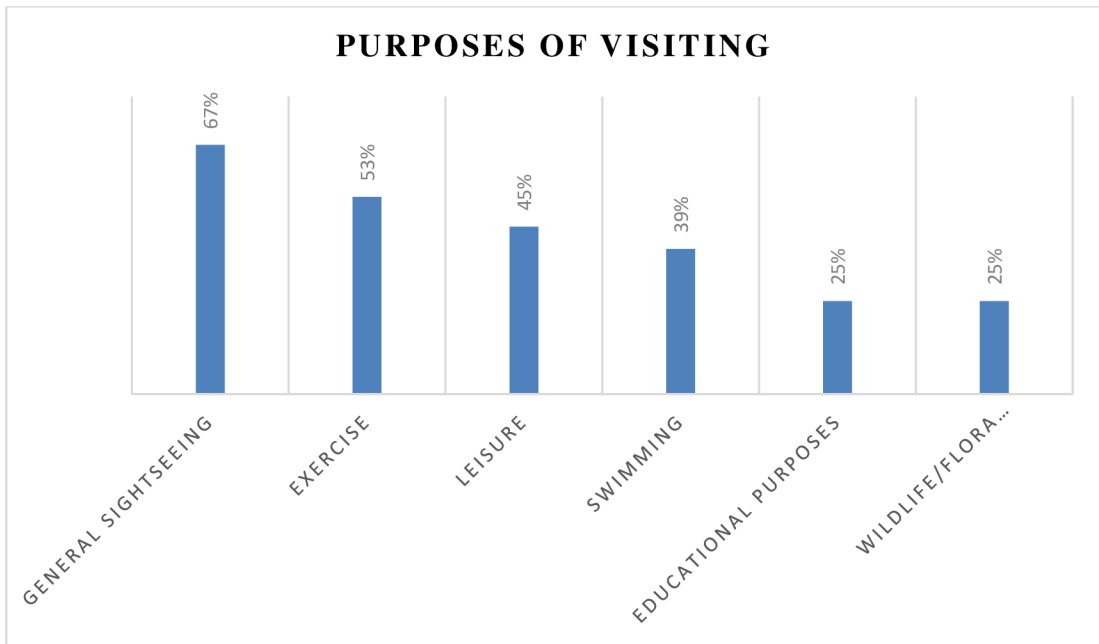


Appendix III.c

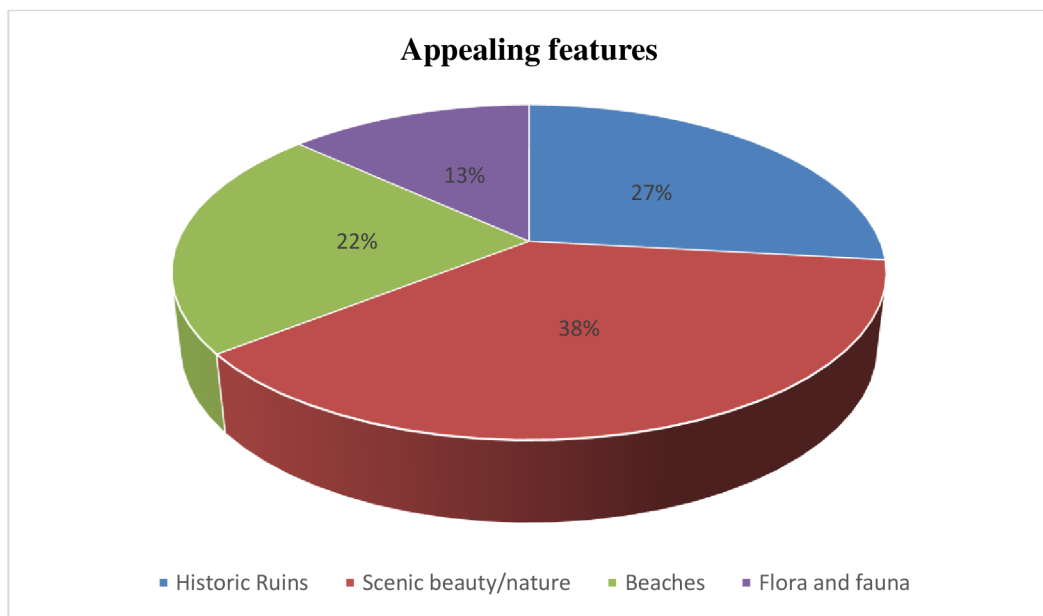
Source of information about the trail



Purpose of visiting the trail



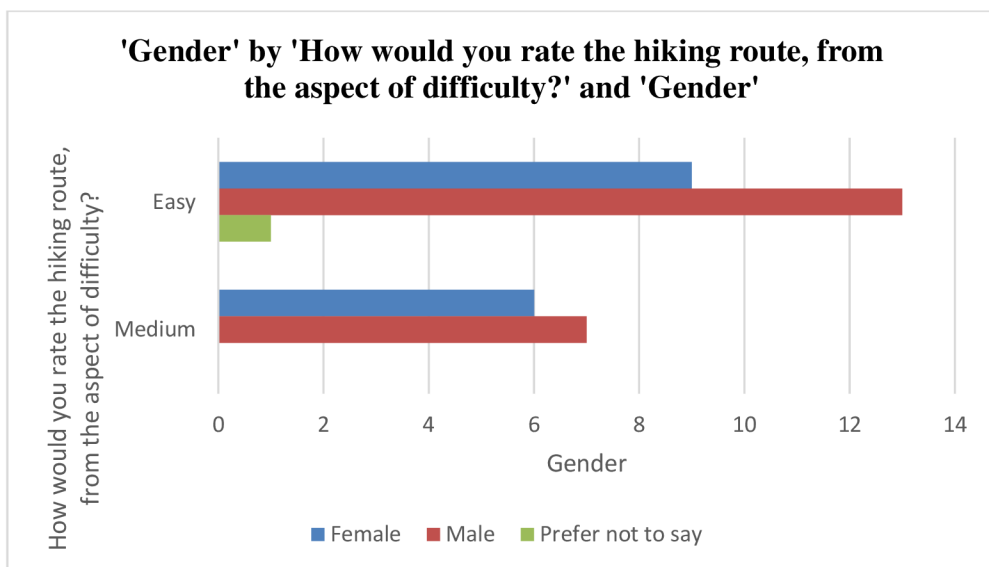
Most appealing features of the trail



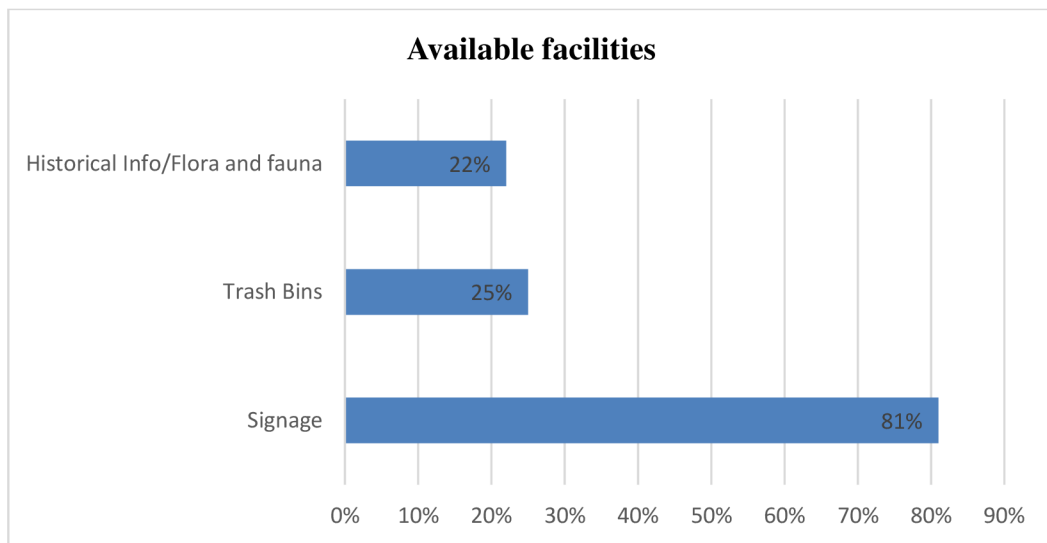
Rate of safety



Rate of difficulty



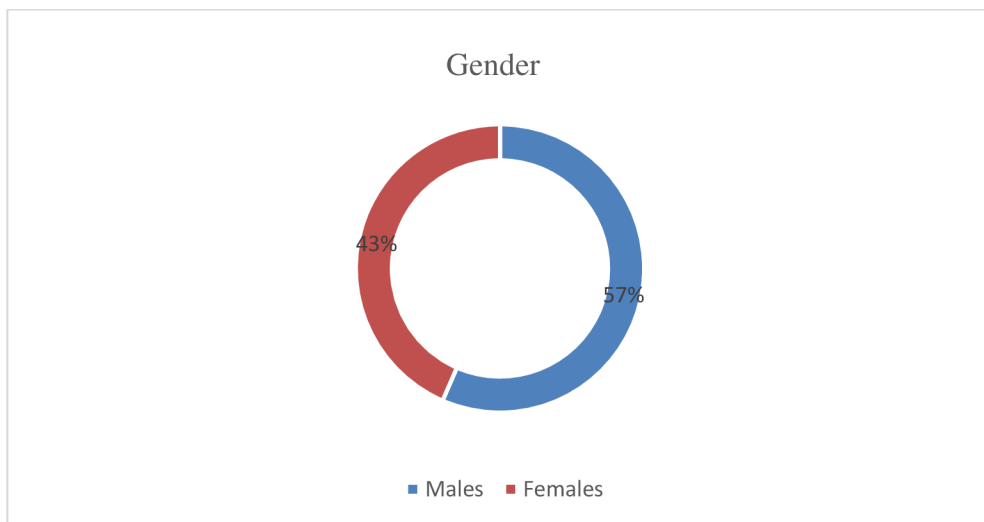
Available facilities along the trail



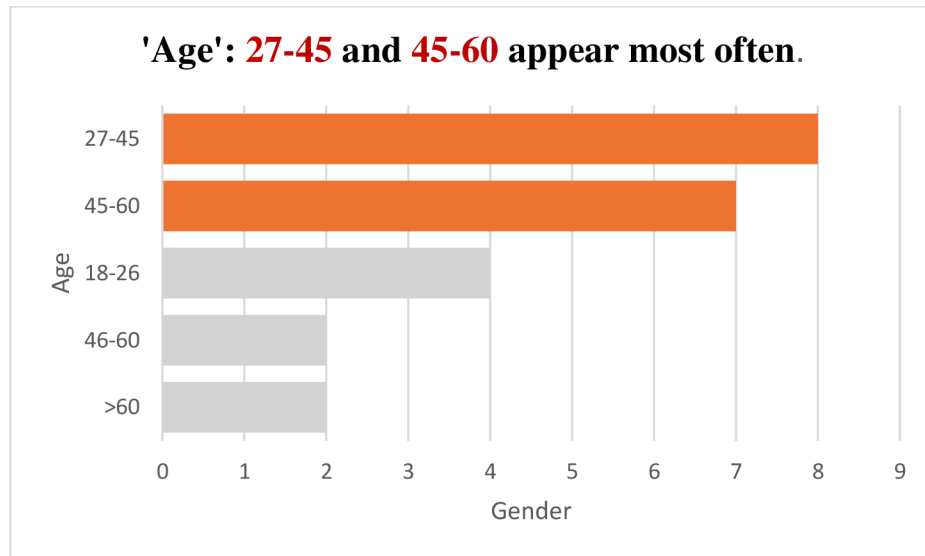
Appendix IV. Local inhabitants survey results

A) General Data

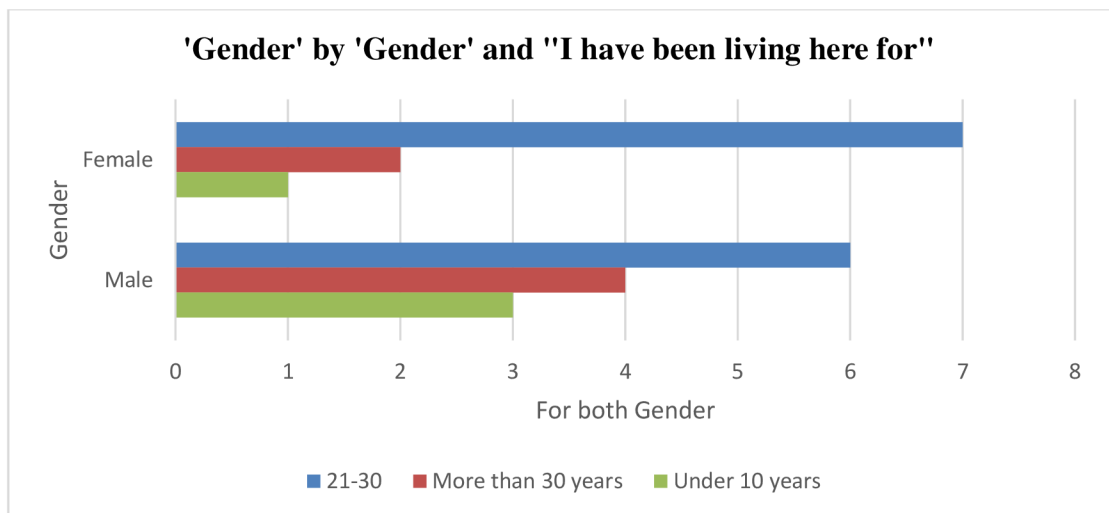
Gender



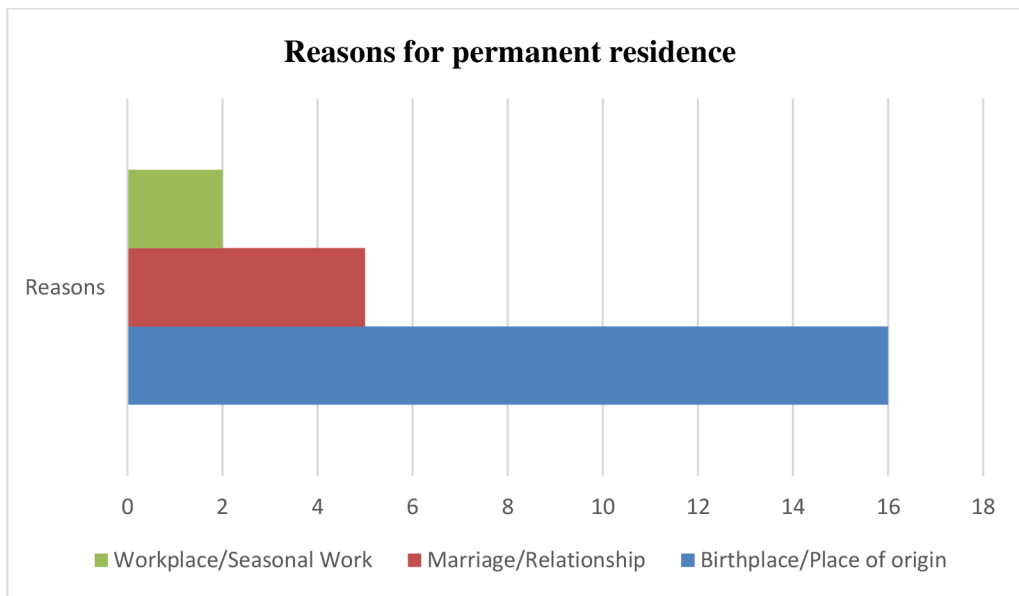
Age



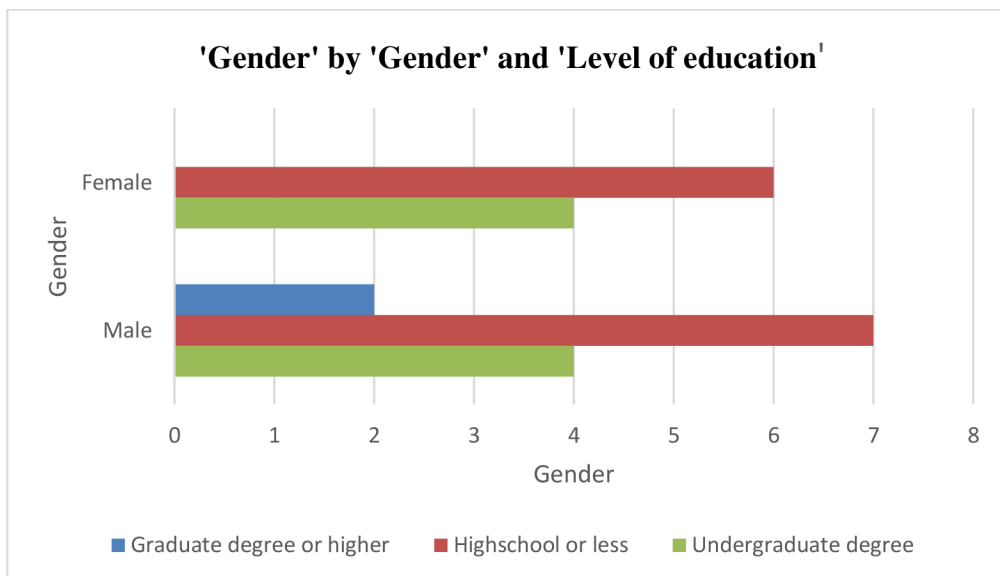
Period of residence



Reasons for permanent residence

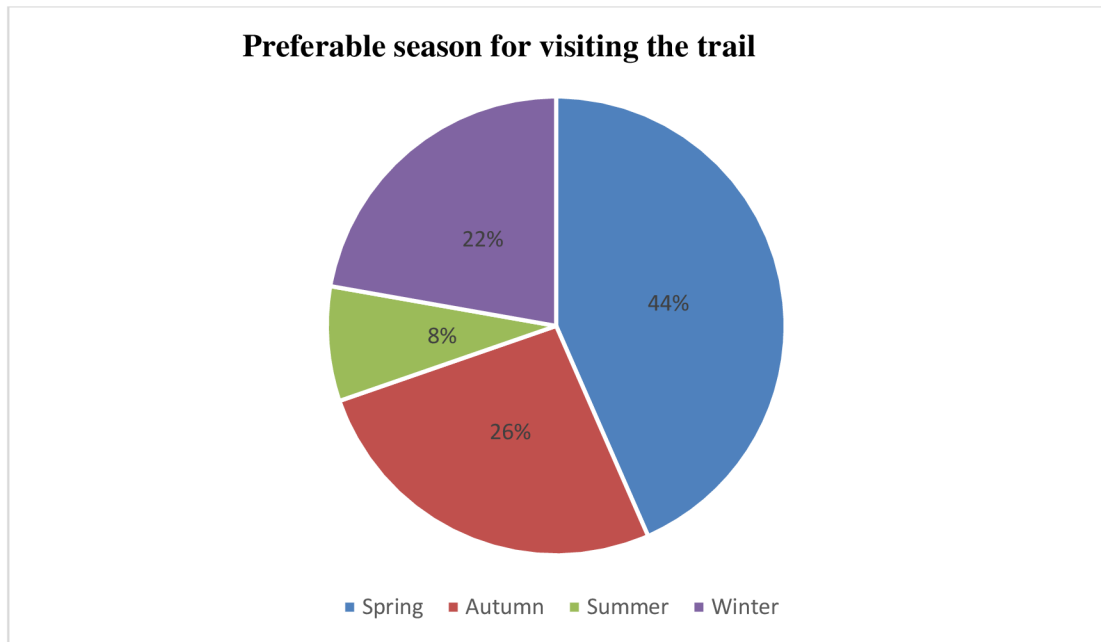


Level of education

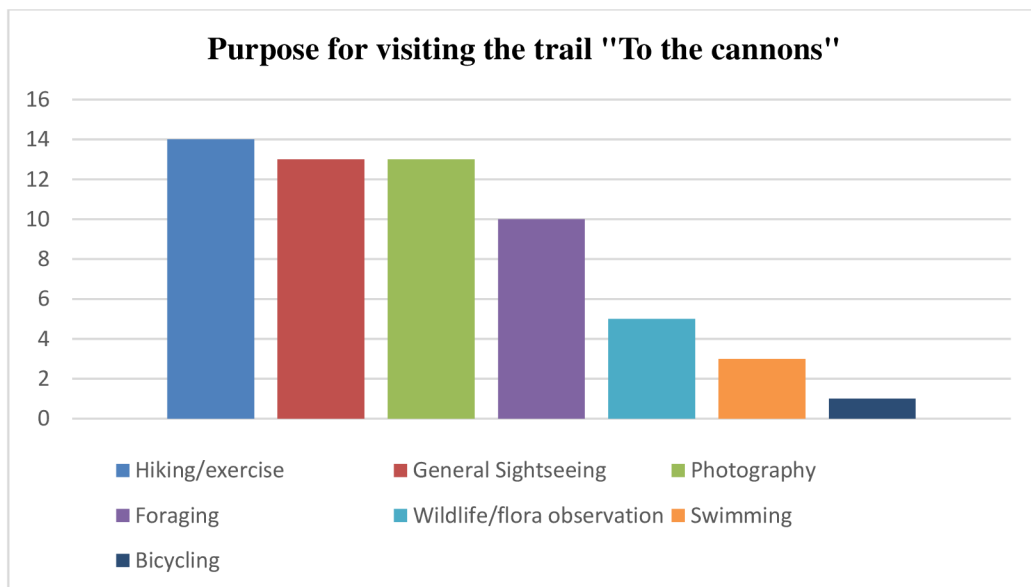


B) Site Questions

Season



Purpose of visiting



Most appealing features in the trail

