



Trails of History and Nature

Developing ecological & cultural materials for an ecotourism network on the Aegean Island of Naxos

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Abstract

The Cycladic Islands of Greece are a world-premier ecotourism destination that is, unfortunately, experiencing the unfettered impacts of mass tourism, and yet could be an ideal site for more sustainable ecotourism. Specifically, the island of Naxos is located within a major global biodiversity hotspot. It offers a beautiful, topographically diverse landscape, numerous endemic species, various cultural and historical resources, and opportunities for hiking ecotourism along ancient trails across the island. Despite these rich resources, hiking tourism and its potential benefits for the local communities still need to be developed on Naxos, mainly because little information is publicly available to entice, inform, and guide visitors. Thus, to increase hiking ecotourism, this project created effective educational materials that not only allow for improved navigation of the trails but also feature the ecological, cultural, and tourism resources along the trail - from characteristic flora and fauna to Byzantine churches to restaurants and lodging along the way. Increased trail use then supports local vendors, allowing for more sustainable land use than livelihoods based on destructive coastal tourism or overgrazing by sheep, both typical on different parts of the island. The ten trail maps, descriptions, and supporting material we produced will be used in an existing mobile device application supported by the Hellenic Society for the Environment and Cultural Heritage and will contribute to producing a guidebook that visitors can purchase for self-guided hikes. This project provides a model for other ecotourism efforts in the Mediterranean and worldwide, where sustainable hiking activities can protect the rich cultural and ecological diversity that they feature while benefiting the people who offer services and goods to visiting hikers.

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Pictured from left to right: Sagarika Kaushik, Rachel Mallet, Jessica Villarreal, Dr. Sheila Schueller, Madison Parrish, Jasmyn Noel, Daly Kleaveland, and Dr. Johannes Foufopoulos.

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Chapter 1: Introduction and Project Rationale

I. Ecotourism in Greece: Benefits and Lessons for Effective Implementation

Tourism Trends in Greece

In 2017, tourism contributed 6.8% of Greece's total GDP, although this percentage has reached up to 25% in recent years. By 2018, the tourism sector employed nearly 400,000 Greek people, totaling 10% of total employment in the country (UNWTO, n.d.). In 2019, the number of visitors to the country reached an all-time high of 33.1 million, generating an impressive \$18.3 billion USD in national revenue. Post-pandemic, in 2023, Greece is again experiencing a record-breaking tourist season, with officials forecasting revenues of over \$20 billion USD and expected visitors surpassing 2019 values (UNWTO, n.d.).

While tourism can bring significant economic benefits to a country, it can also precipitate non-trivial negative consequences for the environment and biodiversity. The massive influx of transient travelers and their needs can lead to increased pollution, depletion of natural resources, and loss of biodiversity and associated habitats. The United Nations Environment Programme (UNEP) estimates that maintaining the current "business-as-usual" tourism industry across the world will result in a "150% increase in energy consumption, 131% in greenhouse gas emissions, 152% in water consumption, and 251% in solid waste disposal" by 2050 (UNEP, n.d.). Tourism is an important element of economic growth in almost any country, although for some countries such as Greece, tourism activities constitute a fundamental pillar of the national economy. With 18 UNESCO World Heritage sites, Greece is an international tourist destination visited annually by millions seeking to experience its rich history and culture, many islands and beaches, and amazing food and hospitality. The challenges and impacts of mass tourism on the environment, have become increasingly apparent across Europe, including Greece. In response to these challenges, Greece has recognized the importance of developing ecotourism as a sub-sector of the tourism industry that supports sustainable development by focusing on the value of natural resources of the country. To further support this goal, Greece has included sustainability as a key priority in its National Tourism Strategic Plan, citing three critical pillars (OECD, 2020):

1. "Respect for **sustainability** principles;"
2. "Better management of the **tourism experience**, to increase the quality and attractiveness via a focus on **sustainable destination management** and **tourism education**;"
3. "Redesign of the tourism product, and redefinition of the brand and communications to reflect the focus on quality, authenticity, resilience, **sustainability**, and value for money."

Developing tourism activities with a low environmental footprint is essential to achieving these goals.

The Benefits of Ecotourism

Ecotourism is a branch of tourism that benefits not only visitors but also local communities and the natural environment. Created as a result of the ecological movement and growing dissatisfaction with mass tourism, ecotourism is defined by the International Union for Conservation of Nature and Natural Resources as the act of “visiting relatively unspoiled natural areas to enjoy and appreciate nature in an environmentally responsible way that promotes conservation” (Hector Ceballos-Lascurain, 1996). It should also provide for beneficially active socio-economic involvement of local populations (Hector Ceballos-Lascurain, 1996). The International Ecotourism Society (2017): further defines ecotourism activities into three distinct categories:

1. **Conservation** – long-term economic incentives that encourage nature and cultural heritage protection
2. **Communities** – empowering and enriching local communities through employment, education, and economic development opportunities through tourism
3. **Interpretation** – offering educational opportunities for visitors to learn about local culture, heritage, flora, fauna, and natural habitat.

Ecotourism encompasses a wide range of activities from adventure sports like mountain biking, rock climbing, and whitewater rafting, to nature-based activities such as hiking, birding, and eco-lodging. It can also extend to agritourism and culinary tourism. Cultural and volunteer ecotourism involve learning about different cultures and traditions by visiting ancient ruins or volunteering for community projects (Times Agriculture, 2022).

Unlike mass tourism, ecotourism has emerged as an opportunity for sustainable development, economic growth, and environmental conservation with benefits for local communities and tourists. Operating on a smaller, regional scale, ecotourism provides visitors with a more personalized, authentic, and sustainable experience. It offers a unique and enriching opportunity to learn about the local culture, history, and traditions, as well as environmental topics. Moreover, positive ecotourism experiences can increase tourists' appreciation of the natural environment and biodiversity within an associated cultural context, and even raise their environmental consciousness and value of conservation and protection (Kiper, 2013).

Hiking ecotourism is a particularly popular form of adventure ecotourism that involves tourists walking or trekking on existing hiking trails and observing the natural landscape, ecological features, and cultural or historical sites along the trail. Hiking ecotourism benefits not only hikers through physical activity, but also through personal experiences with nature. Hiking treks often involve recreation and wildlife observations and interactions, which can deeply enhance a hiker's appreciation for the environment, as well as enhance a hiker's understanding of the importance of the ecological and cultural features of a trail. Overall, hiking ecotourism presents a unique opportunity to combine aspects of environmental and ecological education with local culture and history in a way that mass tourism cannot. Greece is an ideal destination for hiking ecotourists as

over 80% of the country is covered by hills, mountains, breathtaking coastlines, and diverse landscapes (Sawe, 2019). Furthermore, Greece is also exceptionally rich in ancient history and mythology, as well as a vibrant culture. Hikers can discover all of these benefits while hiking the footpaths throughout the country. Many well-maintained and well-marked hiking trails are available on mainland Greece and its islands, providing broad accessibility to hikers of any age and ability.

Ecotourism often centers on remote locations, where it is frequently the main contributor to the local economy. Typically, local residents, such as hotel owners, restaurateurs, craftspeople, and tourism site managers, provide services to visiting tourists while benefiting financially from their visit. Research has shown that the income generated from ecotourism significantly improves the quality of life and increases economic activity for local communities (Stronza, 2007; Stronza, et. al., 2019). For example, Stem et al. (2003) found that income from ecotourism in Costa Rica was spent on 'family well-being', including basic needs, healthcare, education, and home improvements. In addition, there is also less reliance on natural resources when diversifying their livelihoods to include ecotourism. Langholz (1999) found that ecotourism in Guatemala's Maya Biosphere Reserve led to a reduced reliance on income from commercial agriculture, logging, and other natural resources. Ecotourism's income and employment opportunities also incentivize local communities to engage in conservation and encourage sustainable practices that entice tourists, such as responsible waste management and recycling (Fitzgerald & Stronza, 2016; Troëng & Drews, 2009).

Challenges and Solutions to Effective Ecotourism Implementation

Despite the significant potential of ecotourism to contribute to sustainable development, it is often not well implemented, especially in areas with higher incidence of mass tourism. A number of factors contribute to this challenge. Firstly, ecotourism typically requires the collective participation of multiple stakeholders to be successful. Specific stakeholders include local communities, government, public and private sector businesses, non-governmental organizations (NGOs), tourism operators and site managers, and academic researchers. These stakeholders may play very different roles in ecotourism initiatives depending on the type of project and the necessary level of local participation required (Gumede & Nzama, 2021). Therefore, just identifying an ecotourism opportunity is not enough to achieve successful implementation. Effective collaboration among participating stakeholders is critically important for the success of any ecotourism effort.

A second factor critical to the successful implementation of ecotourism is community participation. Since ecotourism is strategically designed to support the local communities and economies, it is also critical to gain explicit support and involvement from these very communities by building strong relationships and rapport with key stakeholders. In the context of ecotourism, community participation describes a process whereby local residents are voluntarily engaged in ecotourism development within their communities (Gumede & Nzama, 2021). By including the local communities in the planning and decision-making process, ecotourism initiatives can build local

community well-being, which is defined as “the totality of efforts towards social resilience of local residents inhabiting communities adjacent to ecotourism sites through minimal external control and provisioning of alternative livelihood strategies” (Eshun et. al, 2015). By participating in ecotourism development, local communities also gain skills in self-governance and collaboration during the planning and management process, which in turn, affords them greater control over issues that affect their well-being.

Gaining support from local communities for ecotourism development can be challenging, despite it serving as a central requirement for ecotourism development. That is, just because an ecotourism opportunity exists, it does not mean it will be supported by the local people. Community well-being is deeply embedded within the social exchange theory, which suggests that local communities most often trade their support for ecotourism projects in exchange for the benefits that they stand to gain from the activity (Nkemngu, 2015). Research has revealed that participation from local communities in ecotourism development has been very limited or lacking in many parts of the world. Even though most ecotourism activities occur in marginalized and/or impoverished communities, many ecotourism site managers are not as much concerned with community well-being as with the conservation and protection of natural resources, since they constitute the reason for the whole enterprise (Gumede & Nzama, 2021). Inequitable distribution of the benefits of ecotourism can cause conflicts within the local communities and lessen the overall impact of ecotourism. Other challenges to engaging local communities include centralization of public administration of ecotourism development, lack of coordination between stakeholders, and poor dissemination of information and education to communities located near ecotourism sites. Local communities may also feel that some ecotourism activities cause cultural degradation. For example, some local communities may see ecotourism activities as undesired commercialization of their religious and cultural assets (Jain & Chetty, 2021).

Beyond the challenges of coordinating multiple stakeholders and gaining community support, successful ecotourism implementation can be hindered by its own economics. Ecotourism development initiatives can be more complex, costly, and harder to adopt than mass tourism practices. Lack of financial capital can prevent many local communities from implementing ecotourism. Moreover, while ecotourism creates a wealth of jobs for locals, the high-skill and oftentimes better-paying employment opportunities are primarily given to foreigners. In this regard, local residents face language barriers, low education levels, and busy daily routines that leave little time for job training (Kim et al., 2014). Ecotourism is also a highly seasonal industry and can create risks associated with volatility in political and financial markets based on this dependency. Local communities may lack capacity or skills constraints related to ecotourism activities, such as business knowledge and management skills. Furthermore, as the capacity for ecotourism development is mainly built by NGOs and is fund-dependent, long-term benefits to the communities are not assured, decreasing the local community's social-cultural empowerment (Jain & Chetty, 2021). Many communities also lack the motivation to participate in ecotourism development due to the aforementioned challenges. Ecotourism can also lead to increases in unhealthy economic competition, which, in turn, expands the income gap among local residents. Additionally, a lack of government support for ecotourism development puts financial weight on

local communities, who become dependent on foreign investors or otherwise have to bear the financial burden of ecotourism initiatives themselves (Loon & Palakow, 2001).

Lastly, poor planning and execution of ecotourism development can also negatively impact the environment. Left unchecked and with little governmental policy implementation, ecotourism can quickly devolve and cause the degradation of habitats, disturbance to wildlife, increases in pollution, and contribute to the mass commercialization of natural resources (Neth, 2008). For example, the Valley of Butterflies on Rhodes Island, Greece, has seen a decrease in the butterfly population due to an influx of tourists that trample on vegetation along paths (Spanou, et. al., 2012). Such issues highlight a lack of proper visitor management strategies and education for visitors on the importance of responsible behavior when visiting. Improved visitor management strategies would include educating visitors about responsible behavior while hiking along paths and providing hiking tips as guidance to the hikers. These tips can include but are not limited to avoiding stepping on flora and fauna along the trail, following the paved or well-trodden path on each trail, and disposing of trash and recyclables in designated areas along each trail. See Appendix II: General Trail Information for a list of suggesting hiking tips for the ancient trail network on Naxos. Furthermore, because many ecotourism sites are in remote areas, traveling to these locations can be a barrier for tourists and conversely, can increase carbon emissions and the hiker's personal environmental footprint in some cases.

Despite these daunting challenges, many strategies exist for improving the implementation of ecotourism. The first strategy is to **develop a framework for controlling, managing, and funding ecotourism projects** (Gumede & Nzama, 2021). By adequately funding and managing these initiatives, local municipalities can have greater control over their success and implementation. This strategy requires that all stakeholders involved in the project collaborate and cooperate with each other. Controlling and managing the projects would also help ensure successful impact of ecotourism and protection of the natural environment. The second strategy is to **focus ecotourism activities to prevent environmental damage to the ecotourism site and beyond**. This strategy is critical for decreasing pollution, biodiversity loss, and environmental degradation of the ecotourism site. It also prioritizes educating hikers about responsible hiking behavior and inspires hikers to appreciate the natural environment and flora and fauna along each trail. The third strategy for improving implementation of ecotourism is to **ensure that ecotourism initiatives enhance the socio-economic well-being of the local communities** by utilizing an inclusive and participatory ecotourism development approach (Gumede & Nzama, 2021). A participatory approach should focus on empowering the community, linking it to the environment and conservation, and involving the local people in ecotourism development. Other indicators of successful community participation include empowering the local community to support and encouraging leadership within ecotourism initiatives (see **Figure 1**)(Gumede & Nzama, 2021).

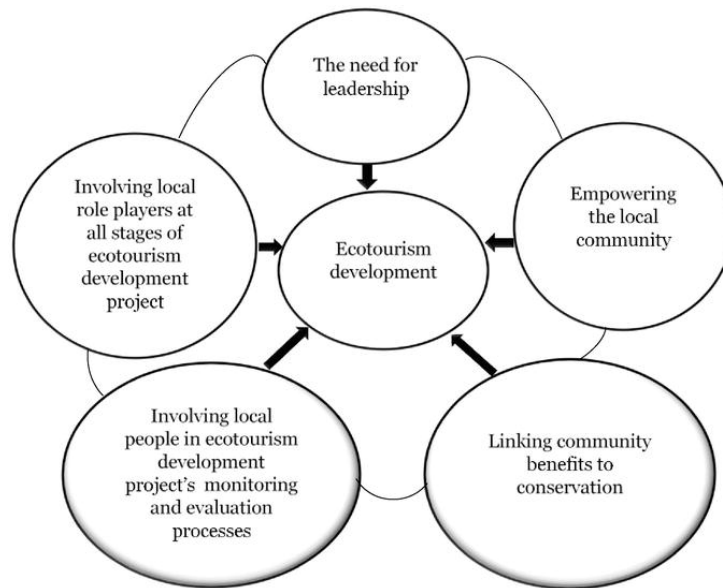


Figure 1. Indicators for successful community participation in ecotourism. Source: Gumede & Nzama, 2021.

To enhance participation and inclusivity, ecotourism strategies should **incorporate traditional ecological knowledge or indigenous cultural knowledge of the local people who reside near the ecotourism site**. Research has shown that indigenous knowledge is intricately linked to promoting ecotourism and ecotourism-based livelihoods for local communities (Mbaiwa et. al., 2008). Mbaiwa et. al. indicate that communities in the Okavango Delta, Botswana, use their traditional knowledge of river waterways to transport tourists in *mekoro* (dug-out canoe). Similarly, other communities in the Delta region produce baskets to sell to tourists. Basket production and *mekoro safaris* are two ways local communities use their indigenous knowledge to enhance and benefit from the ecotourism industry, which, in turn, promotes the development of community well-being and ecotourism-based livelihoods (Mbaiwa et. al., 2008). Indigenous knowledge, including mythology, cultural history, and traditions, can also help tourists connect to the land they are visiting, helping to build a deeper appreciation for environmental conservation and protection.

In addition, a key strategy for improving the implementation of ecotourism is to **train the local community** on the needs of the visiting tourists and, conversely, **educate the tourists** about the local community's needs and customs. Furthermore, the attitude and perception of the local people towards ecotourism should be prioritized and measured frequently (KC et al., 2017). In this way, the stakeholders can ensure that the benefits derived from ecotourism are distributed equitably.

II. Naxos: A Greek Cycladic Island with Ecotourism Potential

Tourism trends on Naxos

Naxos is the largest and one of the most historically, culturally, and ecologically rich of the Cycladic Islands – a group of more than 200 Mediterranean islands located in the Aegean Sea, Greece (see **Figure 2**). Naxos has an extremely long record of human occupation, spanning over 30,000 years, with evidence of prehistoric settlements, ancient Greek temple sanctuaries, Byzantine churches, Venetian fortifications, and traditional Cycladic architecture, all remnants of the various civilizations that have inhabited the island. For millennia, humans have modified most natural habitats on the island through agriculture or terracing (Sfenthourakis et al., 2017). At the same time, the island remains a major global biodiversity hotspot with over 12,500 endemic species (Kougioumoutzis et al., 2021). Today, Naxos is a popular tourist destination known for its sandy beaches, crystal-clear waters, and picturesque villages. The island is filled with archeological, historical, and cultural sites and ancient footpaths, all available for interested visitors. Tourists can view sacred Paleolithic cave sites, submerged Minoan-age settlements, Classic Era temples, Hellenistic fortresses, Byzantine chapels, Turkish baths, and beautiful neoclassical buildings, often within a stone’s throw from each other (Lamont et al., 2019).



Figure 2: Map of the Cyclades; Cyclades © Cplakidas, CC-BY-3.0.

While remaining a premiere tourism destination, the Cycladic Islands, also called the Cyclades, have been experiencing the unfettered impacts of mass tourism as well as livestock overgrazing over the past few decades. On Naxos, tourism is over-concentrated on the western part of the island, which increases environmental pressures due to rapid expansion to meet tourist demand for accommodations, dining, and entertainment (Leka et. al, 2022). Of particular concern is the pressure this growth has placed on Naxos’ coastal habitats due to expanding tourism construction and the rapidly rising demand for fresh water and land resources (Leka et. al., 2022). The increasingly negative impact of mass tourism has caused direct damage to several island ecosystems. It has depleted the limited water reserves of the islands, exacerbating the general aridity problem across the Cyclades. Large transient tourist populations and the need to feed them have led to the intensification of farming and overgrazing on many islands, which in turn has accelerated desertification. Mass tourism has also caused dramatic social changes in local communities on Naxos, with traditional occupations, such as agriculture, fishing, and non-intensive animal husbandry, have significantly declined or abandoned (Elliniki Etairia, 2017). In addition,

tourism on Naxos has focused on environmentally damaging practices such as fossil fuel-based two-wheelers and concentrating visiting tourists to mainly coastal sites. These common practices have increased coastal development, carbon emissions, pollution, and waste generation in the capital and surrounding villages.

Due to the concentration of mass tourism in Chora, Naxos' capital, other island areas are impoverished and relatively unknown to tourists. Without the economic benefits of tourism, the mountainous villages in Naxos do not have well-maintained roads and infrastructure (Kuttler & Moraglio, 2020). Therefore, residents primarily rely on traditional agriculture practices and especially grazing livestock for their livelihood. Livestock husbandry is, however, presently conducted in an environmentally detrimental manner, as an overpopulation of sheep and goats is denuding the native flora. This has led to fundamental shifts in local vegetation and rampant soil loss, which in turn has had negative repercussions on native biodiversity and is leading to the progressive desertification of the island (Papanastasis, et. al., 2003). However, increasing tourism in these forgotten areas could provide economic opportunities for the local communities and residents that hence alleviate this need for reliance on livestock, thus mitigating the resulting environmental harm and creating sustainable livelihoods.

Ancient Trail Network for Ecotourism

The municipality of Naxos has explored using ecotourism strategies in recent years to promote tourism island-wide, especially hiking ecotourism through the revival of a network of ancient dry stone-carved footpaths crisscrossing the island. Dry-stone buildings, walls, and paths are common across the Aegean and represent the 'trademark' of the Cyclades, connecting villages and agriculture (see **Figure 3**) (Antypas, et. al., 2017). Naxos has at present 18 recognized hiking trails/footpaths, which were once the primary means of access, communication, and transportation from one village to another until the 1960s (Naxos and Small Cyclades, 2019). Along these trails, one can experience archeological sites, an abundance of native flora and fauna, and culturally rich traditional villages, churches, and dry-stone structures. Currently, the footpaths are advertised by the Municipality as "trails of cultural interest" that provide hikers with the opportunity to admire a beautiful natural environment and "acquaint themselves with the island's history and culture" (Naxos and Small Cyclades, 2019). The paths also provide insight into the life of the past and present residents of Naxos.



Figure 3: Dry, old stone walls are common on Naxos.

The ancient trails of Naxos have strong cultural significance and offer a diversity of experiences for tourists of all ages and hiking abilities. While walking on one of the trails, a visitor can experience the island's changing landscapes and different habitats. Additionally, hikers can discover the unique native species of flora and fauna, while also visiting historic Byzantine churches, ancient ruins, and many other cultural highlights such as monasteries, complex agricultural terraces and remote fortresses. A visitor can even visit Mount Zas and see the cave where, according to legend, the Greek god Zeus was born. Many ancient trails pass through quaint, quiet villages with rich histories and rural agricultural land that tell a different story of ancient life in Naxos. Walking these trails, hikers obtain insights into rural life on Naxos and can relive the experiences of the ancient island residents while immersed in the same exotic island environments.

In addition to providing such a unique experience, hiking ecotourism is also an environmentally sustainable way to channel funds toward the island's history-rich but economically impoverished backcountry (Rinzin et al., 2007). By revitalizing and promoting the trail network, the municipality can direct tourist income for the inland villages and communities. In turn, more income from ecotourism could reduce the pressure on local farmers to rely on non-sustainable overstocking of goats and sheep for their livelihoods.

Hiking Ecotourism Efforts and Gaps

Despite the ecological and cultural significance and ecotourism potential of this ancient trail network, it has remained largely unused for a multitude of reasons. Firstly, mass tourism still dominates the tourism activities in Naxos, especially in Chora. The shift to ecotourism is advancing, but progress and interest in this new form of tourism are slow. Secondly, little information about the trail system has been made available to inform and guide visitors. Tourists' lack of knowledge of the island's culture, history, and nature has also emerged as a significant obstacle to developing sustainable ecotourism in the region (Bechard & Whelan, 2021). Thirdly, the ancient trail network can be confusing to navigate and would benefit from better navigational markers, better maintenance, and more specific information on the many cultural gems that hikers experience along any given trail.

The Municipality of Naxos and the Small Cyclades has made strides to alleviate some of these obstacles by creating a website describing the trails and a handful of cultural features along each (see **Figure 4** below). They also published a tourism book called *Naxos: A World to Experience* in 2018 that also describes each trail in detail (see **Figure 5** below). While these resources are helpful, they are difficult to find and are not inclusive of all of the trails on Naxos. They also do not include effective trail navigational descriptions or ecological information and severely lack cultural details.

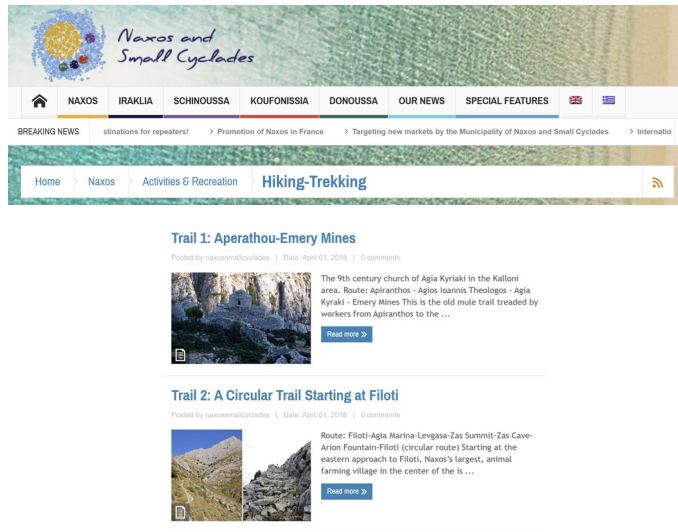


Figure 4. Naxos and Small Cyclades website featuring a webpage on Hiking-Trekking. Source: Municipality of Naxos and Small Cyclades.



Figure 5. Naxos tourism book, *Naxos: A World to Experience* (2018). Source: Municipality of Naxos and Small Cyclades.

Local and national non-governmental organizations, like Elliniki Etairia (Society for the Environment and Cultural Heritage) in Athens, have supported Naxos' ecotourism efforts as well. Elliniki Etairia developed the "Greek Paths of Culture" program in recent years with the hopes of giving new life to the paths of particular natural beauty and historical importance. This program is implemented in cooperation with the local government municipalities across Greece and with the active involvement of local schools, cultural organizations, and volunteers. Through the program, many of the abandoned ancient paths of Greece have been revitalized and made accessible again to tourists, thus promoting hiking ecotourism which stimulates the local economy and creates an authentic, environmentally sustainable experience for visiting hikers (Elliniki Etairia, 2022). This program has already been implemented in 12 areas throughout Greece. However, Naxos and its trail network have yet to be included in the program. In addition, local hiking and trekking guides provide specific guided hikes for those tourists interested in guided hikes. These local guides are another existing resource for promoting ecotourism on Naxos. However, it is often difficult to find information about these resources, and they are only available for a specific group of visiting tourists.

There is an urgent and significant need to facilitate and promote meaningful, sustainable ecotourism and development in Naxos, specifically by elevating awareness of the ancient trail network and enticing hikers to visit the island and the trails during their stay. A notable education gap also exists between the visiting tourists, the currently available resources, and the availability and accessibility of information about the trails. Lastly, the quality and strength of the current information available to hikers are not enough to entice many visitors to the trails to promote ecotourism. By providing the missing ecological, historical, and cultural information associated with the trail system, we can entice hikers in a new way and support sustainable development and the

impoverished and underserved communities in Naxos. Thus, our project fills a niche demand area that is not already occupied and needed for the benefits of ecotourism.

III. Project Goals and Approach

Our project seeks to support the promotion of the ancient hiking network on Naxos as an ecotourism strategy for the Naxos Municipality by acquiring, developing, and organizing critical missing ecological, historical, and cultural information about the trails. Specifically, we aimed to create materials that achieved three main goals:

1. **Entice** hikers to visit the ancient hiking network on Naxos
2. **Educate** visiting hikers about the ecological and cultural features of each trail
3. **Guide** visiting hikers by improving navigability and increasing overall interest

By achieving these goals, our project materials can improve the overall hiking experience in Naxos. Furthermore, our project materials fill the urgent need to promote ecotourism, sustainable development, sustainable livelihoods, and increased community well-being in Naxos and beyond. In this way, it also directly supports the goals of Greece's National Tourism Strategic Plan to execute "better management of the tourism experience, to increase the quality and attractiveness via a focus on sustainable destination and management and tourism education." To accomplish this, we collected species information for flora and fauna that we observed alongside each trail. Using GPS data, we also mapped the trails and created supplementary trail descriptions to help hikers navigate poorly marked trails. We partnered with the following organizations to increase the impact and usefulness of our work:

- **Elliniki Etairia: Society for the Environment and Cultural Heritage (EE):** EE is a non-profit organization based in Athens, Greece, working in cross-functional teams to protect Greece's environment and cultural heritage and provide tourists with knowledge about the crucial flora and fauna native to the country. EE also works with the Greek education system and local teachers to help school children learn about and engage with the natural environment in Greece.
- **Cyclades Preservation Fund (CPF):** CPF is a non-profit that supports sustainable initiatives and supports the conservation of the Cyclades. It is developing alternatives to counter tourism's negative effects on water, energy usage, waste management, carbon footprint, and overall environmental degradation while addressing the lack of environmental education amongst locals and tourists.
- **The Municipality of Naxos and Small Cyclades:** The municipality actively works on developing policies and regulations in environmental protection issues through partnerships with local businesses, non-profit organizations, and university teams worldwide. It also manages all of the ecotourism efforts on Naxos in partnership with other stakeholders, such as EE and CPF. Lastly, it maintains and supports all 18 trails within the ancient trail network on Naxos.

The data we collected will contribute to a more expansive mobile device application, henceforth referred to as an “app,” that includes information about the island of Naxos and the various species of flora and fauna we observed along the hiking paths, including the rare species that are endemic to Naxos. The app will be accompanied by detailed spatial data that provides the user with navigational directions, detailed descriptions of trails, and ecological information specific to the paths they walk on. Historically, Naxos’ hiking paths have been characterized by confusing navigational directions and minimal cultural and ecological information. We believe that including information on key features of the trails will entice more hikers to visit the hiking trails. This information will also contribute to a guidebook with more in-depth detail on Naxian plants and animals. These tools will allow visitors to the island to engage with the island’s cultural heritage and biodiversity. This project provides a model for other ecotourism efforts in the Mediterranean and worldwide. Sustainable hiking activities can protect the rich cultural and ecological diversity they feature while benefiting the people who offer services and goods to visiting hikers.

Chapter 2: Research Methods and Resources

Of the 18 ancient trails maintained by the Naxos municipality, only 15 are officially marked (Trail #1 - 15). Our team focused on collecting data for eight trails (Trail #1 - 7 and #10) on Naxos during our fieldwork between May 6th and June 12th, 2022. We chose these particular paths by consulting the Naxian tourist book, *Naxos: A World To Experience* (2018) in the *Walking trails of cultural interest* section. Specifically, these trails represent different ecosystem types, cultural highlights, and accessibility across the island. Additionally, we included trails most commonly visited by Naxos' past hiking tourists. We included Trail 10 to expand our research to Northern Naxos. All trails and data collection methods were agreed upon with our main client, Elliniki Etairia, before beginning our fieldwork.

I. Trail Scoping and Data Collection

We used a diversity of resources to navigate the existing trails across the island. The Naxos municipality has marked trails in various ways, from official signage to red spray-painted numbers or markers (**Figure 6**) which allowed for a basic level of navigation while hiking on the trail. We also referred heavily to *Naxos: A World To Experience* (2018) and two official footpath network maps, *Naxos Hiking Map* by Nakas Road Cartography (Road Editions, 2018) and *Naxos & Small Cyclades Topo Islands Hiking Map* by Anavasi (Anavasi, 2021). When parts of the path were especially confusing or unmarked, we consulted the only two widely published hiking guidebooks for Naxos:

1. *Walking on Naxos: Hiking and Swimming for Island Hoppers* by Dieter Graf (2011) and
2. *Walking on the Greek Islands: The Cyclades: Naxos and the 50km Naxos Strada, Paros, Amorgos, Santorini* by Gilly Cameron-Cooper (2020).

The guidebooks often relied on features such as door colors, boulders, or fences to orient the reader because navigational features can change over time or further confuse hikers. Hence, we realized it was imperative to draft more in-depth trail descriptions, including more permanent structures and clear navigational directions. This was essential for parts of the path that were not officially marked, existed on privately owned land, or included changing landscapes, making the paths difficult to navigate.



Official Trail Marker



Unofficial Trail Marker

Figure 6. Our team classified trail markers into *official* (left) and *unofficial* (right) categories. Unofficial markers are denoted by red spray paint in the form of an arrow, dot, or number and are found on trail landscapes. Official markers are found on trail signage.

To capture accurate navigational data, we collected geospatial data using the *ArcGIS Field Maps* phone application while walking on each trail. The Field Maps app required us to manually create and configure a map before data collection. This involved creating empty point and line feature class layers for the data we wanted to collect and setting up a map study area and its base layers. We created a trail layer distinguished by trail number for each trail as we walked. In addition, we created a point layer to map trail start and end points, areas of intersection with unclear markings, areas of interest, and official and unofficial trail markers (see **Figure 6**). Through the application, we downloaded the map online, then collected the line and point data offline. In addition to the data, we could mark the date, time, and spatial accuracy and take spatially tagged photos for all collected data. Once we returned to an area with internet access, we uploaded our offline data to an online cloud through the app. Due to variations in reliable cell phone service which interrupted data collection using the Field Maps app (see **Figure 7**), we also measured GPS data using a Garmin GPSMAP 64Sx.

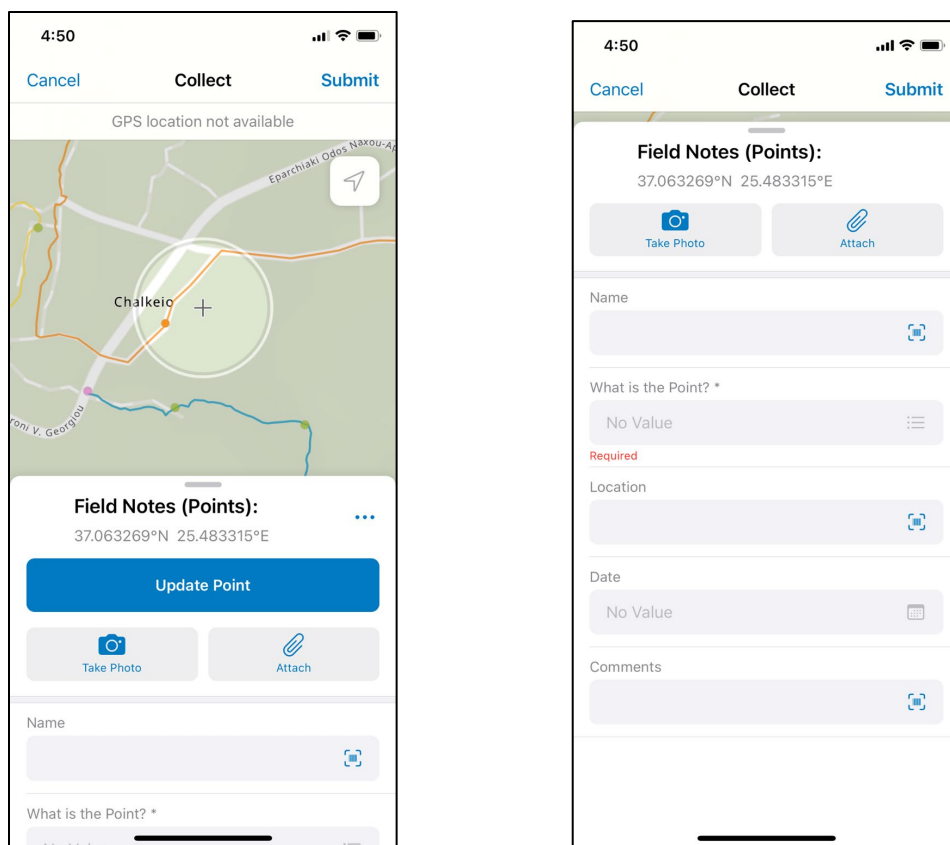


Figure 7. Screen capture of the *Collect* function on the Field Maps application. The *Collect* function allows manual data collection using GPS (left). There is also a configuration option to add additional information such as taking a photo, adding a name, date, general comments, and any other data fields of interest (right).

In addition to geographic spatial data collection, we also captured in-depth notes on each trail, including directions for navigating the trail, ecological features, and cultural sites. This involved going beyond simple directions and including potential trail obstacles and hazards, such as livestock gates, construction, and overgrown vegetation. We also noted places of cultural significance and interest along the trails, such as Byzantine churches, ancient ruins, water fixtures, restaurants, and shops. We captured information on flora and fauna found on each trail by taking high-quality photographs and drawing sketches of each species in our field notebooks. We later identified specific ecological species using books such as *Greek Wild Flowers and plant lore in ancient Greece* (Baumann, 1993) and *Studien zur landschaftsökologischen Raumgliederung auf der mediterranen Insel Naxos* (Griechenland) (Böhling, 1994). A full list of the resources used is in the *Literature Cited* section of this report.

Species information was compiled in a Microsoft Excel spreadsheet with numerous reference columns (see Appendix V: Species Descriptions). We also noted habitat and terrain types encountered on each trail to complement the species information and detailed trail descriptions. Naxos' various habitat types are further defined in Appendix II: General Trail Information. **Table 1**

displays the full list of data types collected during fieldwork. We believe all of the data that we collected will create a robust knowledge base for hikers visiting Naxos and will entice them to visit the trails based on their ecological and cultural features, thus, promoting ecotourism and more sustainable livelihoods across the island.

Table 1. Full list of data collected while walking each trail.

<ol style="list-style-type: none"> 1. Geographical Spatial Data <ol style="list-style-type: none"> a. Field Maps Application <ol style="list-style-type: none"> i. Point Data <ol style="list-style-type: none"> 1. Trail Markers 2. Trail Start 3. Trail End 4. Areas of intersection with unclear markings 5. Areas of interest (including churches, ruins, tavernas, etc.) 6. Date and time 7. Spatial Accuracy 8. Spatially Tagged Photos ii. Line Data of Trails b. Garmin GPSMAP 64Sx <ol style="list-style-type: none"> i. GPS Line and Point Data 2. Photographs of plants, animals, trail markers, cultural sites, etc. 3. Field Notes <ol style="list-style-type: none"> a. In-Depth Navigational Directions b. Sketches of Flora and Fauna c. Habitat Types d. Terrain Types e. Cultural and Natural Points of Interest (e.g., shops, restaurants, ruins, churches, etc.)
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In addition to collecting geographic spatial data, detailed field notes, and species and trail photographs as we hiked the trails, our deliverables were informed by informal conversations with key experts and stakeholders related to Naxos, Greek culture and history, and ecotourism. Stakeholders that we spoke with include:

- **Mayor Dimitrios Lianos and Yiota Aggeli**, Department of Development and Tourism at the [Municipality of Naxos](#). The Municipality stakeholders graciously supported our efforts by welcoming us to the island and sharing key information on the status of the hiking paths and past ecotourism strategies conducted across the island.
- **Katerina Stebili**, Communication Officer at [Elliniki Etairia, the Hellenic Society for the Environment and Cultural Heritage](#). Stebili was our primary client contact and shared expertise around project scope, deliverables, and overall purpose and impact. Stebili supported our cultural and project training during our fieldwork in Athens and Naxos.

- **Anni Mitropoulou**, Executive Director at the [Cyclades Preservation Fund](#). As a Naxos resident, Ms. Mitropoulou shared critical information on the ecotourism sector, and its application within Naxos. She also connected us with Yiota Margariti.
- **Yiota Margariti**, Geologist, certified guide, and cofounder of [Naxos Trekking](#). Naxian-born, Margariti gave crucial insight into the business side of hiking tourism on Naxos. She also took the team on a shortened hike of Trail 6.
- **Dr. Veronica Kalas**, Art historian and archaeologist with the [Smithsonian Journeys program](#). Dr. Kalas brought special expertise related to the Byzantine period structures, churches, and general architecture during our summer fieldwork.
- **Numerous hikers encountered on the trails**, notably of German, British, American, or French heritage. During each hike, we spoke with hikers visiting Naxos and inquired on their motivation to visit Naxos specifically, what they liked about hiking the trails, and how existing trail information shared with tourists can be improved. These informal conversations enhanced our understanding of reasons to visit Naxos, hiking and trail experience, as well as desired improvements to existing trail information.

II. Trail Materials Produced

Based on the data we collected from the trails and other sources and the need to provide information that would entice, educate and guide hiking ecotourists on the trails of Naxos, we produced several deliverables, which can be found in the following appendices:

Appendix I: Mobile Application Template Comparison Chart

Table comparing existing application fields to full Trail Description field we have provided including suggested new features (see below for more information on mobile application)

Appendix II: General Trail Information

- I. Geology & Landscape of Naxos
 - Overview of different geological features and landscapes on Naxos
- II. Climatic Conditions
 - Temperature and weather conditions expected at different times of the year
- III. Habitat Types
 - Overview of habitats on Naxos in eleven distinct categories, each with their own description, examples, and photos
- IV. Flora & Fauna Species Across Naxos
 - Introduction to the flora and fauna found on Naxos and impacts of human activities, including endemic and common species and species indicative of or responsible for overgrazing
- V. Culture & History of Naxos
 - Information about the main historical periods on Naxos with brief descriptions
- VI. Trail Content & Features
 - List of content in each trail description

- VII. Suggested Gear
 - List of hiking gear, including clothing, essentials, and other items
- VIII. Tips
 - List of tips for hiking the trails on Naxos
- IX. Helpful Phone Numbers
 - Useful local and national phone numbers for Naxos authorities
- X. Map: Overview of All Trails
 - Map of Naxos with each trail currently documented by the project

Appendix III: Trail Descriptions

Full trail information (summary, maps, highlights, and navigational descriptions) for trails 1-7 and 10

Appendix IV: Hiker Trail Selection Tool

Tool to assist hikers in selecting a trail based on their desired hiking experience, hiking ability, trail difficulty, time in Naxos

Appendix V: Species Descriptions

Descriptions of flora (82 flowering plant species) and fauna (47 species, including birds, reptiles, and insects) with physical characteristics, behavior, habitat, and other interesting information

Appendix VI: Species Cultural Significance

Species from Appendix V with cultural significance or associated mythology

III. Delivery Platforms

The deliverables we produced can be shared on different platforms. Here we describe their specific intended use within an existing mobile device application and a future printed guidebook.

Mobile Application Development

Our primary client, Elliniki Etairia (EE), has an existing mobile application titled “Greek Paths of Culture in Thrace” that provides information on ten trails throughout the Rhodope mountains in the Thrace region of Northeastern Greece. For each trail, the application provides information regarding trail mileage and time, a basic map and description, key characteristics, cultural sites, trail photos, information on surrounding accommodations, and useful phone numbers. In addition, the map provides a list of flora and fauna for the entire network and an index with important general information for hikers. The index includes sections on locations and numbers for emergency services and transportation and detailed information on sights, restaurants, and accommodations. See **Figures 8 - 11** for screenshots of the existing “Greek Paths of Culture in Thrace” mobile application.

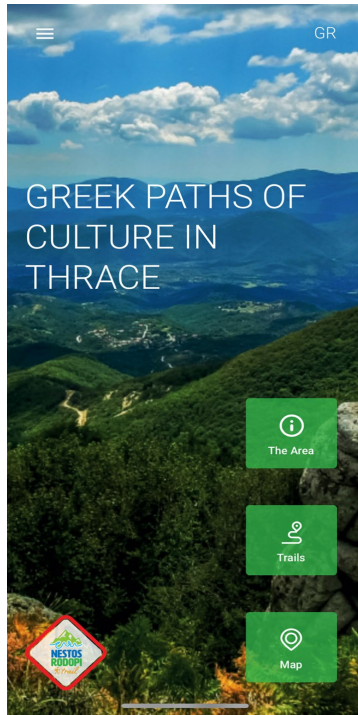


Figure 8. Home screen of the Greek Paths of Culture in Thrace mobile application.

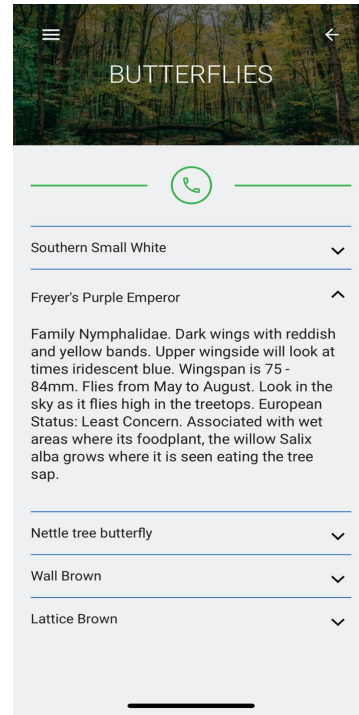


Figure 9: Screenshot of the butterfly species section in the Greek Paths of Culture in Thrace mobile application.

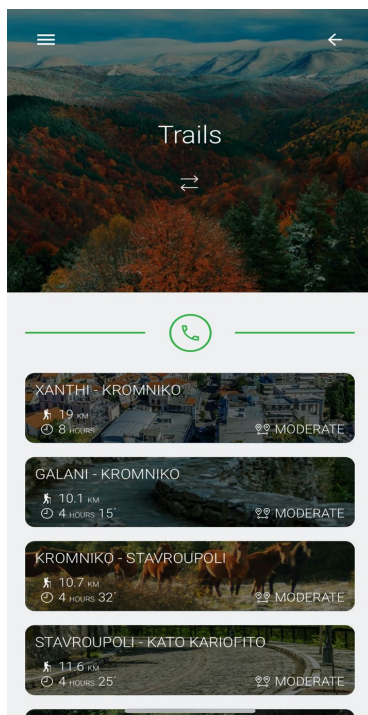


Figure 10: Screenshot of the Trails section in the Greek Paths of Culture in Thrace mobile application.

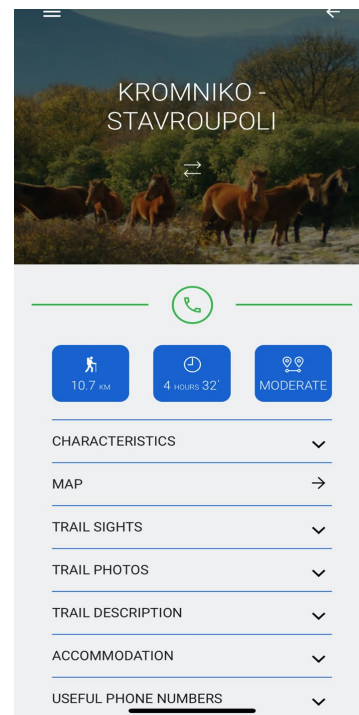


Figure 11: Screenshot of the Kromniko - Stavroupoli trail information layout on the Greek Paths of Culture in Thrace mobile application.

Based on this application, our client tasked us with providing similar information for the Naxos footpath system to include in the existing application. In addition, we provided a potential new set of fields and features to improve the application with supplemental information (for comparison of the existing and new app fields, see Appendix 1). These recommended additions to the app are based on the needs revealed by informal conversations with tourists, as well as documented strategies to implement ecotourism effectively (see Chapter 1):

Trail Map

- Replace static trail map with an interactive map with its own GPS capabilities that enable users to visualize where they are located along the trail and where to go when the path navigation is unclear. This addition makes trail navigation more accessible to a diverse audience of hikers of varying levels of experience hiking and with the Naxos landscape. Informal conversations with hikers encountered on the trail revealed a dichotomy between avid hikers who walked the entire trail and those who only were interested in a section of the hike near a tourist attraction. Clarification on the trail location also reduces off-trail trampling that may degrade the site.

Cultural Significance

- Include specific cultural stories and experiences for places of interest in the town to promote local business and ecotourism activities (e.g., menu items at restaurants, conversations with business owners, historical and cultural attractions). These are critical for hikers to actually support the socio-economic well-being of the local communities, an essential component of ecotourism.

Ecological Significance

- Detail the significance of fauna, flora, and habitat types encountered along the trail. Several informal discussions during our fieldwork exposed common questions held by hikers, such as, What does this plant signify about the healthiness of the ecosystem, and how is it used in everyday lives? How have these ecosystems changed over time, and why? What is the cultural significance of this plant or animal? Providing more ecological information will not only build visitor knowledge and awareness but lead to positive ecotourism experiences that also foster environmental ethics and support of conservation (see Chapter 1).

General Information and Tips

- Include a section on suggested tips and gear to inform potential tourists of what to expect on each trail regarding signage, trash, shade availability, accommodations, shops, etc. Some of this information is also critical to ensure that hikers avoid environmental degradation along trails during use.

We created eight trail descriptions (see Appendix III: Trail Descriptions) with information that could be added to the existing application format. Each trail description includes trail length, time, difficulty level, elevation gain, and elevation loss using our GPS information and experience hiking the trails. Additional informational categories included a short trail summary, cultural and natural

highlights, a detailed trail description, and a logistics section with accommodations and transportation details.

Three maps (Satellite, Terrain with Hillshade, and Contour) and an elevation profile are included with each trail description, highlighting points of interest and directional tips attributable to the description, nature, and culture sections. We decided to provide three different maps to provide information useful to hikers. The terrain map shows the trail with a plain background and hillshade, while the satellite map uses aerial imagery. Alternatively, the contour map provides a colored 2D visualization of elevation changes. The maps were created in ArcPro using the Terrain imagery layer (Esri, 2013), and the Topographic, World Terrain with Labels, World Hillshade, and Imagery Hybrid basemap layers (Esri, 2015 & Esri, 2016).

Guidebook Development

Beyond the mobile application, our collected information will contribute to a published educational and tourism guidebook. EE created a similar book that spotlights the Lesser Cycladic islands titled *The Lesser Cyclades—Biodiversity on Greek Paths of Culture in the Lesser Cyclades* (2021) and has expressed interest in creating a more comprehensive book for Naxos. The Naxos guidebook will contain information similar to the previous book, such as key species' descriptions, a brief history of the island, and the geography of the island. Additionally, with our deliverables, it will feature detailed trail descriptions, maps, and flora and fauna information that can help entice hikers to visit each trail and orient themselves along the way. Such a publication could be used by a broad tourist audience that seeks more information and visuals than the mobile device application can provide.

Chapter 3: Guidance for End-Users and Editors of Trail Materials Produced

I. Implications for Learning and Intended Audiences

Our project aims to entice, educate, and guide tourists visiting Naxos through a guidebook and mobile device application that will, in turn, increase hiking ecotourism on the island and benefit the local economy. Ultimately, our project will promote sustainable livelihoods within Naxian communities and sustainable development across the island. Our project achieves the compilation of existing resources with new cultural and ecological materials to create valuable content for hikers. The provided information in our trail materials focuses on flora and fauna, as well as different habitats on Naxos, particularly along the ancient trails. Additionally, local businesses, including restaurants, inns, and shops, should be incorporated into the materials to promote ecotourism and its economic benefits further inland. If this ecotourism strategy is implemented successfully, it will benefit those Naxian residents who suffer from the negative impacts of livestock overgrazing today. Additionally, local trail tour guides can utilize the guidebook as a program resource for their livelihoods. From our conversations with a local Naxos guide, there is little fear of them losing business from creating this kind of guidebook or application, as tourists interested in using it for self-guided hikes are not their target clientele. However, these guides have a stake in maintaining the trails and general interest in the island.

Our guidebook will allow tourists to delve deeper into the culture and history of individual villages, businesses, and communities that may not be easily accessible otherwise. Locals of Naxos that want to participate in and benefit from the guidebook and ecotourism may view this as an opportunity to increase visitors to less visited villages and their businesses. By strengthening the local economy, there is potential to reduce the reliance on livestock ownership in favor of tourism-related activities, businesses, etc. As over-grazing is a major threat to endemic flora species, a switch to revenue streams from ecotourism could alleviate this ecological stress. Additionally, we want to encourage the protection of endemic species to allure ecotourists to Naxos to discover and experience these unique and rare species.

The immediate users will be tourists interested in self-guided hikes. They can use the trail descriptions to decide which trails to hike based on difficulty, location, elevation, and cultural sites of interest. Habitat and species information and cultural site descriptions can further enhance their hiking experience and understanding of the environments they traverse. This approach is valuable not only for Chora, the main city where most tourists will stay, but it also encourages tourism to the less visited towns throughout the island that do not see many tourists. By design, most of the trails wind through several villages. The trails provide an opportunity to increase local tourism in those places by bringing hikers through different restaurants, hotels, and artisan shops. This information will then be highlighted in the guidebook and the hiking app, which is the favored format for tourists not interested in using a guidebook. From our conversations with hikers on the Naxos trails, we learned that there is a strong interest in more detailed maritime, cultural, and ecological information for the trails and increased trail signage. We also learned that some hikers prefer a

book for information on culture and nature, while most prefer an application for navigation. All of the hikers we encountered on the trails were interested in learning more about the flora and fauna along the trails and being able to identify specific species and their uses while hiking. Hikers suggested including a photo of the species, a description, and a story of the species' connection to Greek folklore or mythology in the guidebook or application.

More broadly, this project can be used as a template by the Hellenic Society for the Preservation of Nature (EE) and the Cycladic Preservation Fund, which may want to replicate the guidebook for other nearby islands and areas on the mainland that also have marked trails. Many flora and fauna will be common on other islands, where the information can be directly used. This approach can create an opportunity to promote island hopping hiking tourism with nearby islands that are not as visited as Naxos. For example, Amorgos, the neighboring island to Naxos, does not benefit from tourism to the same extent. However, it is only a 1.5-hour ferry ride and has an extensive hiking trail network.

II. Client Recommendations

After conducting extensive research and analysis, we developed a series of recommendations for our clients to enhance the trail and hiking experience for visitors to Naxos. To achieve this, we propose a range of initiatives, including collaborating with local guides, such as Naxos Trekking, and improving trail markings and maintenance.

Our overall recommendation to our clients is to create an extensive advertising campaign for the ancient trail network and Naxos' ecotourism efforts, which requires extensive planning and significant implementation time. Therefore, we recommend prioritizing the heavily trafficked and popular paths, such as Trail 2 to Mount Zas and Trail 7 to the Temple of Demeter (see Appendix IV: Hiker Trail Selection Tool). To achieve this goal, we believe simplified marketing materials should be produced and distributed in restaurants, hotels, and other local businesses as a first step to raise awareness and generate interest in self-guided hikes on the ancient trails.

To achieve our proposed initiatives, we recommend the following critical actions Municipality of Naxos and Small Cyclades:

- 1. Improve trail markings and maintenance to facilitate smooth navigation of the trails.** This recommendation is essential in areas that intersect with other roads and paths in the trail network or in areas difficult to identify and traverse due to overgrown vegetation.
- 2. Partner with local guides such as Naxos Trekking and local Naxian communities to conduct regular interest meetings to gain insights on improvements and challenges with the trail network.** Local guides have unique knowledge about the trails, and their real-time experience could alleviate the burden of hiring municipality representatives to assess the trails. In this reciprocal arrangement, the Naxos municipality should include local guide information in the guidebook, the municipality website, and the app.

3. **Expand trail information on the Naxos municipality website to include more details on local tourist businesses to benefit the local economy.** This information should be included in the guidebook, app, and website. Despite our team's effort to seek out local businesses, we will inevitably miss many businesses that could be important beneficiaries of ecotourism. Furthermore, the municipal website should also offer specific information on bus routes, parking near trailheads, water spigots, and designated trash areas on each trail. In this way, the Naxos municipality can educate the visiting tourists and train the local community on their needs while implementing ecotourism strategies. Both of these steps are critical to ensuring that the benefits from ecotourism are distributed equitably amongst business owners and larger communities.

Furthermore, to achieve our proposed initiatives, we recommend the following recommendations for Elliniki Etairia (EE) and the Cyclades Preservation Fund (CPF):

1. **Evaluate the information and materials completed in this report and relay suggested improvements or additions to the next student team that will continue this work.** This is an important evaluation step as the second student team will be continuing the next phases of our project, and editing the trail materials will be an iterative process.
2. **Begin translating the materials produced into Greek, German, and French to format the guidebook and app.** As Greek is the national language and many hikers encountered on the trail were German or French, translation is a critical step for moving forward towards publishing both the guidebook and app within the next few years.
3. **Evaluate ecotourism implementation strategies for managing and funding the Naxos ancient trail network, focusing on preventing environmental damage and supporting local community well-being through a participatory approach.** As the most important recommendation, it will be key for EE and CPF to evaluate ecotourism strategies implemented in Naxos continuously. These strategies should focus on developing a framework for controlling, managing, and funding ecotourism projects, preventing environmental damage to the ecotourism site and beyond, and ensuring that ecotourism efforts engage and include the residents of Naxos and enhance the socio-economic well-being of their local communities. If an ecotourism implementation strategy is deemed effective, it will have a lasting impact on Naxos and its people.

III. Next Steps for Continuing Master's Project Team

Continue Field Data Collection

The next project team is scheduled to travel to Naxos in May 2023. We anticipate they will complete trails 8, 9, and 11-15, including GIS mapping and continuing documentation of information about the local habitat, flora, and fauna. They should review the data submitted by the first group and determine if any data gaps need to be filled. This could include following group

one's trail descriptions and evaluating if there is enough detail to traverse the trail without map guidance. While there, they should also look at our species list and find representative pictures for the species that are currently missing photos (see Appendix V: Species Descriptions). They may also decide to add more points to the GIS maps to clarify forks in the trail, add more landmarks of interest or point out areas that require extra caution or care. Specifically, based on the experience of group one, the next team should utilize a Garmin GPS to plot points of parking, water spigots, forks in the trail, and wayfaring or cultural landmarks or any other important points with accompanying photos. The team should develop a general agenda of what trails to do on what day and incorporate time to work on data inputting and processing after every trail visit and hike. It is essential to begin trail descriptions while on Naxos. Completing this step provides an opportunity to address parts of a trail that might need additional wayfare points, clarify forks in the path and habitat changes, or collect additional information that may have been missed on the first pass while the team is still on the island.

Engage with Stakeholders in Naxos

The second team should also continue cultivating relationships with the Naxos municipality and evaluate their impressions of the completed trail materials and areas for improvement. Some information that would be useful to obtain from the municipality includes a map of where potable water can be found throughout the island and highlighting any specific cultural landmarks or experiences along each trail.

The second team can further augment the application's usability by utilizing hiker communication and engagement strategies. During their hikes, the team can interact with tourists and hikers to gather feedback on improving future efforts for promoting ecotourism on the island. Additionally, they can leverage social media and online platforms to promote the benefits of ecotourism and the application by sharing pictures, videos, and testimonials from satisfied hikers. They can further collaborate with local tour operators, travel agencies, and hiking guides to promote environmentally-focused tours and activities, creating a network of like-minded partners who are committed to sustainable tourism. This collaboration can also provide opportunities for educational activities, such as guided hikes and workshops, to increase public awareness and appreciation for the island's unique natural environment and cultural heritage. Engaging with local stakeholders, including businesses, government authorities, trekking guides, tourists, and residents, will foster strong relationships and raise awareness of the importance of ecotourism, leading to a shift away from mass tourism and towards a more sustainable approach. An inclusive and participatory ecotourism approach where the local community is empowered to lead decision-making around ecotourism initiatives is more effective for implementing ecotourism and ensuring its long-term success.

The second team should also focus on learning more about the traditional ecological knowledge (TEK) and indigenous cultural knowledge of the people of Naxos. TEK is important information to capture for the next phase of the project because this information is linked to promoting ecotourism and sustainable livelihoods. Incorporating TEK and indigenous knowledge into future trail materials not only entices and educates hikers but also enhances the participation and inclusivity of the local community in the ecotourism implementation process. Furthermore, this

knowledge can be used to ensure equitable distribution of the benefits of ecotourism and to build a deeper appreciation of the natural environment and Greek culture for all.

Lastly, the second team should focus on expanding our flora and fauna species lists and species of cultural significance while in Naxos. They should obtain high-quality photos of each species, document where each flora and fauna were found, and note their cultural significance.

Data and File Sharing Location and Protocols

We suggest the collected data and materials, including all photos, trail descriptions, GIS maps, and any other pertinent information, be shared with the clients through [Google Drive](#). We will transfer the management and ownership of this drive to the next Naxos team, who will be responsible for facilitating client access. Client access will be available until the end of the 2024 school term or a date determined by the subsequent team. The client will be responsible for downloading and saving any pertinent data for use in the guidebook and app. The client is also responsible for funding the publication of the guidebook and the next phase of the app.

Literature Cited

- Anavasi. Naxos & Small Cyclades Topo Islands Hiking Map 10.28. Anavasi, 2021.
- Antypas, M., Gavalas, J., Karameta, E., Konstantinidis, Th., Legaki, Eir., Bazos, I., Pafilis, P., Foufopoulos, J. (2017). *Biodiversity on Greek Paths of Culture in the Lesser Cyclades*. Carras, C., Lazoglou, M., Pafilis, P., Stebili, K., Foufopoulos, J. (eds.). Foundation A.G. Leventis.
- Baumann, Hellmut. *Greek Wild Flowers and Plant Lore in Ancient Greece*. 1982. Translated by William T. Stearn and Eldwyth Ruth Stearn, The Herbert Press Ltd, 1993.
- Bechard, K & Whelan, J. (2021). Greek paths of culture: Reimagining ancient trails in the Rhodope Mountains. Deep Blue Repositories.
<https://deepblue.lib.umich.edu/handle/2027.42/167373>
- Böhling, N. B. (1994). *Studien zur landschaftsökologischen Raumgliederung auf der mediterranen Insel Naxos (Griechenland) unter besonderer Berücksichtigung von Zeigerpflanzen*. Balogh Scientific Books.
- Brock, P. D. (2017). *A Photographic Guide to Insects of Southern Europe & the Mediterranean*. Pisces Publications.
- Cameron-Cooper, Gilly. *Walking on the Greek Islands - The Cyclades: Naxos and the 50km Naxos Strada, Paros, Amorgos, Santorini*. Cicerone Press Limited, 2020.
- Ceballos-Lascuráin, H. (1996). Tourism, Ecotourism and Protected Areas: The State of Nature-Based Tourism around the World and Guidelines for Its Development. IUCN Publications, Cambridge, 301.
- climatestotravel.com. "Naxos Climate: Weather by Month, Temperature, Precipitation, When to Go." *Www.climatestotravel.com*, Climates to Travel World Climate Guide,
www.climatestotravel.com/climate/greece/naxos.
- Elliniki Etairia: Society for the Environment & Cultural Heritage. (2017). Greek Paths of Culture Program. <https://www.ellet.gr/en/project/greek-paths-of-culture-programme/>
- Eshun, G., Adjei, P., & Baah, A. (2015). Where is community quality well-being in ecotourism research in Africa? A case from Ghana. *African Journal of Hospitality, Tourism and Leisure*, 4, 1-12.
- Esri. (2015). Imagery Hybrid. Basemap. Scale Not Given.
<https://www.arcgis.com/home/item.html?id=28f49811a6974659988fd279de5ce39f>
- Esri. (2013). Terrain. Imagery. Scale Not Given.
<https://www.arcgis.com/home/item.html?id=a52ab98763904006aa382d90e906fdd5>
- Esri. (2016). Terrain with Labels. Basemap. Scale Not Given.
<https://www.arcgis.com/home/item.html?id=a52ab98763904006aa382d90e906fdd5>
- Esri. (2015). Topographic. Basemap. Scale Not Given.
<https://www.arcgis.com/home/item.html?id=67372ff42cd145319639a99152b15bc3>
- Esri. (2015). World Hillshade. Basemap. Scale Not Given.
<https://www.arcgis.com/home/item.html?id=f47a5a35be8c41f7890c1763f65a6d9f>
- Fitzgerald, L. A. & Stronza, A. L. (2016). In defense of the ecotourism shield: a response to Geffroy et al. *Trends in Ecology & Evolution*, 31(2), 94-95.
<https://doi.org/10.1016/j.tree.2015.11.002>.
- Graf, D. (2011). *Walking on naxos hiking and swimming for island-hoppers; 25 walks with GPS data; 25 walks updated*. Graf Editions.
- greekflora.gr*. (n.d.). <https://www.greekflora.gr/el/Default.aspx>.
- Gumede, TK., & Thandi Nzama, A. (2022). Approaches toward Community Participation Enhancement in Ecotourism. *Protected Area Management - Recent Advances*.
<https://doi.org/10.5772/intechopen.100295>

- Jain, R. & Chetty, P. (2021). Challenges in the implementation of ecotourism model and practices. Knowledge Tank; Project Guru. <https://www.projectguru.in/challenges-in-the-implementation-of-ecotourism-model-and-practices/>
- K C, A., Ghimire, S. & Dhakal, A. Ecotourism and its impact on indigenous people and their local environment: case of Ghalegaun and Golaghat of Nepal. *GeoJournal* 86, 2747–2765 (2021). <https://doi.org/10.1007/s10708-020-10222-3>
- Kim, S., Park, E., & Phandanouvong, T. (2014). Barriers to Local Residents' Participation in Community-Based Tourism: Lessons from Houay Kaeng Village in Laos. *SHS Web of Conferences*, 12, 01045. <https://doi.org/10.1051/shsconf/20141201045>
- Katsourou, Sophia A., and Constantinos A. Katsourou. *Naxos and the Minor Cyclades Today and Yesterday*. Michael Toubis Publications S.A., 2001.
- Kiper, T. (2013). Role of Ecotourism in Sustainable Development. *Advances in Landscape Architecture*. <https://doi.org/10.5772/55749>
- Kougioumoutzis, K., Kokkoris, I. P., Panitsa, M., Kallimanis, A., Strid, A., & Dimopoulos, P. (2021). Plant Endemism Centres and Biodiversity Hotspots in Greece. *Biology*, 10(2), 72. <https://doi.org/10.3390/biology10020072>
- Kuttler, T & Moraglio, M. (Eds.). (2020). *Re-thinking Mobility Poverty: Understanding Users' Geographies, Backgrounds and Aptitudes* (1st ed.). Routledge. <https://doi.org/10.4324/9780367333317>
- Lamont, T. N., Searle, M. P., Waters, D. J., Roberts, N. M. W., Palin, R. M., Smye, A., Dyck, B., Gopon, P., Weller, O. M., & St-Onge, M. R. (2019). Compressional origin of the Naxos Metamorphic Core Complex, Greece: Structure, petrography, and thermobarometry. *GSA Bulletin*, 132(1-2), 149–197. <https://doi.org/10.1130/b31978.1>
- Langholz, J. (1999). Exploring the effects of alternative income opportunities on rainforest use: Insights from Guatemala's Maya Biosphere Reserve. *Society & Natural Resources*, 12(2). <https://doi.org/10.1080/089419299279803>.
- Leka, A., Lagarias, A., Panagiotopoulou, M., & Stratigea, A. (2022). Development of a Tourism Carrying Capacity Index (TCCI) for sustainable management of coastal areas in Mediterranean islands – Case study Naxos, Greece. *Ocean & Coastal Management*, 216, 105978. <https://doi.org/10.1016/j.ocecoaman.2021.105978>
- Loon, R. M., & Polakow, D. (2001). Ecotourism ventures. *Annals of Tourism Research*, 28(4), 892–907. [https://doi.org/10.1016/S0160-7383\(00\)00079-7](https://doi.org/10.1016/S0160-7383(00)00079-7)
- Mbaiwa, J. E., Thakadu, O. T., & Darkoh, M. B. K. (2008). Indigenous Knowledge and Ecotourism-based Livelihoods in the Okavango Delta in Botswana. *Botswana Notes and Records*, 39, 62–74. <http://www.jstor.org/stable/41236634>
- Milano, C., & Koens, K. (2021). The paradox of tourism extremes. excesses and restraints in times of covid-19. *Current Issues in Tourism*, 25(2), 219–231. <https://doi.org/10.1080/13683500.2021.1908967>
- Nakas Road Cartography. Naxos Hiking Map. Road Editions, 2018.
- naxos.net. "The Weather on Naxos." *Naxos Greece Travel Guide*, 2019, www.naxos.net/weather.php. Accessed 13 Apr. 2023.
- Naxos and Small Cyclades. (2019). Hiking-Trekking on Naxos Island. <https://www.naxos.gr/category/naxos/activities-recreation-en/hiking-trekking/?lang=en>
- Naxos Trek. (2021). A helpful guide to hiking in Naxos, Greece. <https://www.naxostrek.com/en/trails/>
- Neth, B. (2008). *Ecotourism as a Sustainable Rural Community Development and Natural Resource Management*. Kassel University Press.
- Nkemngu, A. - A.P. (2015). Quality of life and tourism impacts: A community perspective. *African Journal of Hospitality, Tourism and Leisure*, 4(1), 1-12.

- Organisation for Economic Cooperation and Development (OECD). (2020). OECD Tourism Trends and Policies 2020, OECD Publishing, Paris.
<https://doi.org/10.1787/6b47b985-en>.
- Papanastasis, V. P., Kyriakakis, S., Kazakis, G., Abid, M. & Doulis, A. (2003). Plant cover as a tool for monitoring desertification in mountain Mediterranean rangelands, 14(1), 69-81.
<https://doi.org/10.1108/14777830310460397>
- Rinzin, C., Vermeulen, W. J., & Glasbergen, P. (2007). Ecotourism as a mechanism for sustainable development: The case of bhutan. Environmental Sciences, 4(2), 109–125.
<https://doi.org/10.1080/15693430701365420>.
- Sawe, Benjamin Elisha. “The Geography of Greece.” WorldAtlas, 14 Aug. 2019,
www.worldatlas.com/articles/the-geography-of-greece.html.
- Sfenthourakis, S., Triantis, K.A. (2017). The Aegean archipelago: a natural laboratory of evolution, ecology, and civilisations. J of Biol Res-Thessaloniki 24(4).
<https://doi.org/10.1186/s40709-017-0061-3>
- Sfikas, G. (1993). *Wild Flowers of Greece*. Efstathiadis Group/Bay Foreign Language.
- Spanou, S., Tsegenidi, K. & Georgiadis, Th. (2012). Perception of Visitors’ Environmental Impacts of Ecotourism: A case study in the Valley of Butterflies protected area, Rhodes Island, Greece. International Journal of Environmental Research, 6(1), 245-258.
doi:10.22059/ijer.2011.490.
- Stem et al. (2003). How ‘Eco’ is Ecotourism? A Comparative Case Study of Ecotourism in Costa Rica. Journal of Sustainable Tourism, 4. <https://doi-org.proxy.lib.umich.edu/10.1080/09669580308667210>.
- Stronza, A. (2007). The Economic Promise of Ecotourism for Conservation. Journal of Ecotourism. <https://doi-org.proxy.lib.umich.edu/10.2167/joe177.0>.
- Stronza, A. L., Hunt, C. A. & Fitzgerald, L. A. (2019). Ecotourism for Conservation? Annual Review of Environment and Resources, 44, 229-253. <https://doi.org/10.1146/annurev-environ-101718-033046>.
- The International Ecotourism Society (2017). “What is Ecotourism - the International Ecotourism Society.” <https://ecotourism.org/what-is-ecotourism/>.
- Thorpe, Stuart. *Discover Hidden Naxos: A Guide for the Individualist*. Stuart Thorpe, 2016.
- Times Agriculture. (2022). “What is Ecotourism? An Overview | Famous Tourism Places.” Times Agriculture. <https://timesagriculture.com/ecotourism/>.
- Troëng, S. & Drews, C. (2004). Money talks: Economic aspects of marine turtle use and conservation. WWF International.
https://wwf.panda.org/wwf_news/?153802/wwwpandaorglacmarineturtlespublications.
- UNEP: United Nations Environment Programme. (n.d.). Tourism. United Nations Environment Programme. <https://www.unep.org/explore-topics/resource-efficiency/what-we-do/responsible-industry/tourism>.
- UNWTO: United Nations World Tourism Organization. (n.d.). Global and regional tourism performance. World Tourism Organization. <https://www.unwto.org/tourism-data/global-and-regional-tourism-performance>.
- Valakos, E., Pafilis, P., Sotiropoulos, K., Lymberakis, P., Maragou, P. & Foufopoulos, J. (2008). *The Amphibians and Reptiles of Greece*, Edition Chimaira.

Appendix I: Mobile Application Template Comparison Chart

This Table aims to clarify how the original mobile application fields compare to the full Trail Description fields we have provided (Appendix III), which include suggested new features (see Chapter 2 for rationale). Understanding the parallels across both templates can facilitate the transfer of the new trail content produced in this report to the existing mobile device application platform, even if it is not amended to include the suggested new features. Suggested new features are highlighted in green.

Table 2: Template Comparison and Suggested Mobile Application Features for Elliniki Etairia

Original Application Template	Full Application Template
Home Links to 'The Area,' 'Trails', and 'Map' Sections	Home Links to 'The Area,' 'Trails', and 'Map' Sections
The Area Brief description and history of the trails, who is in charge of planning them, etc.	The Area Brief description and history of the trails, who is in charge of planning them, etc.
Trails List of the trails on the island, with corresponding start and end point, difficulty, distance in kilometers, and estimated hike time	Trails List of the trails on the island, with corresponding start and end point, difficulty, distance in kilometers, and estimated hike time
<i>Example Trail</i>	<i>Example Trail</i>
<u>Characteristics</u> <ul style="list-style-type: none"> ● Start point ● Summary of elevation change & terrain 	<u>Trail X</u> <ul style="list-style-type: none"> ● Difficulty of Terrain ● Estimated Hike Time ● Distance in Kilometers ● Elevation, Gain and Loss ● Start Point
	<u>Trail Summary:</u> Short description with information about the landscape, cultural sights, etc.
<u>Map</u> Opens to a map that shows a summary of the trail	<u>Maps and Elevation Graph</u> <ul style="list-style-type: none"> ● Elevation Profile ● Satellite Map* ● Hillshade Map* ● Topographics Contour Map* *each with numbered wayfinding points and points of interest
<u>Trail Sights</u> Summary of villages trekked through, cultural sights, and habitats	<u>Trail Highlights</u> <ul style="list-style-type: none"> ● Divided into <u>Culture</u> and <u>Nature</u> ● Numbered to correspond to the map

Original Application Template	Full Application Template
<p><u>Trail Photos</u> Around 5 photos of what visitors will hike through</p>	<p><u>Trail Photos</u></p> <ul style="list-style-type: none"> • Specific to each trail • Divided into <u>Culture</u> and <u>Nature</u>
<p><u>Trail Description</u> Brief trail navigation with points of interest highlighted along the path</p>	<p><u>Trail Description</u></p> <ul style="list-style-type: none"> • Navigation • Cultural & ecological highlights • Photos of highlights & wayfinding points • Restaurants/ Tavernas
<p><u>Accommodations</u> List of hotels and phone numbers in the villages along the trail</p>	<p><u>Accommodations</u></p> <ul style="list-style-type: none"> • Hotels • Contact information • <u>Description</u>
<p>Flora and Fauna (69) Species separated:</p> <ul style="list-style-type: none"> • Mammals • Birds • Reptiles • Amphibians • Butterflies • Trees • Flowers <p>Within each section species are listed out with a brief description</p>	<p>Flora and Fauna (130+) Species separated:</p> <ul style="list-style-type: none"> • Fauna <ul style="list-style-type: none"> ○ Mammals ○ Birds ○ Reptiles & Amphibians ○ Insects & Butterflies • Flora <ul style="list-style-type: none"> ○ Trees & Bushes ○ Flowers & Other Plants <p>Within each section species are listed out with a description (50-150 words)</p>
<p>Cities (Highlight those that are near or a part of the trail system)</p>	<p>Cities on Trail:</p> <ul style="list-style-type: none"> • City Name • Photo • Short Description • Accomodation • Restaurants & Tavernas
	<p>Geology & Landscape Description & characteristics</p>
	<p>Climate Description per season</p>
	<p>Habitat Types Each with descriptions & characteristics and photos</p> <ul style="list-style-type: none"> • Irrigated Fields <ul style="list-style-type: none"> ○ Grapes & Wine ○ Citrus Trees ○ Other Fruit Trees ○ Vegetables ○ Potatoes • Grain Fields • Olive Groves

Original Application Template	Full Application Template
	<ul style="list-style-type: none"> ● Old Fields & Roadside ● Terraces ● Phrygana & Heavily Grazed Phrygana ● Maquis ● Oak-Olive-Carob Woodland ● Streams and Riparian Vegetation ● Beaches & Dunes ● Older Walls
	<p>General Tips</p> <ul style="list-style-type: none"> ● Suggested gear ● Hiking tips
<p>Map Map that shows an overview of trails across Rhodope</p>	<p>Map Map with overview of trails on Naxos</p>
<p>Index List of important address and phone numbers to help visitors such as hospitals, pharmacies, fire stations, police, road assistance, accommodation, and transport</p> <p>Restaurants</p>	<p>Index List of important address and phone numbers to help visitors such as hospitals, pharmacies, fire stations, police, road assistance, accommodation, and transport</p>
<p>About Us</p>	<p>About Us</p>
<p>Settings</p> <ul style="list-style-type: none"> ● Emergency Numbers ● Language ● Font Size ● Download Map 	<p>Settings</p> <ul style="list-style-type: none"> ● Emergency Numbers ● Language ● Font Size ● Download Map

Appendix II: General Trail Information

I. Geology & Landscape of Naxos

Naxos is the largest island in the Cyclades, the most prominent island group in the Aegean Sea (Greece). The island's geological landscape is characterized mainly by various types of sedimentary rock, which visitors can easily observe along all hiking trails. Naxos is quite mountainous, with Mount Zeus, as the highest (1004 m asl.) peak in Naxos and the Cyclades dominating the island's landscapes. The island's coastal geomorphology also includes various characteristic forms, such as coastal dunes, rocky shores, and beaches. The island's geological background has played a significant role in shaping the landscape and determining the ecosystems encountered on Naxos. Erosion in limestone areas, for example, has created locally pronounced karst areas with prominent caves, sinkholes, and even underground water courses. Holocene erosion has transported vast amounts of soil from the mountains to the lowlands and extensively reshaped the coastline over the last 3,000 years. At the same time, this erosion has also created the extensive plains on the west side of Naxos, which serve today as the island's breadbasket.



Migmatite rock formation seen on Trail 5.



Dry stone walls seen on Trail 6.

The terracing system in Naxos, Greece, is an extensive network of dry stone walls built to cultivate the island's steep and rocky terrain by creating narrow flat areas resembling a series of steps. This unique agricultural system developed over centuries transformed the island's landscape into a patchwork of terraced fields to grow crops such as olives, grapes, and citrus. Traditionally, loose local stones were used, without the use of mortar, to construct the dry stone walls, which are either free-standing or, when built as steps into the side of a hill, used to support the terraces mentioned above (also called “πεζούλες” [pezoules] in Greek). Such terraces, when maintained well, can serve as essential protection against soil erosion and rockfall. A system of channels and cisterns that collect and store rainwater sometimes irrigate the terraces, allowing productive farming in otherwise dry areas.

Following the land's natural contours, these terraces maximize available land and water resources, making farming viable even in steep areas with poor soil or limited access to water. This ancient terracing system in Naxos is considered an important cultural and ecological heritage. It reflects the traditional ways of living and working the land and has been an essential factor in environmental preservation and conservation. This system is still in use in Naxos and is integral to the island's economy and culture. Many local farmers continue to maintain and use the terraces, and the island is a popular destination for tourists interested in traditional farming practices and the island's unique landscape.



Active agricultural terraces observed outside of the village of Moni on Trail 4.



Marble quarry observed from a distance on Trail 6.

Naxos is agriculturally the most fertile island of the Cyclades and produces significant quantities of cereals, olive oil, fruits, and wine. Livestock farming, tourism, and the processing of agricultural products are also highly developed. Emery and marble are found in the mountain regions. Multiple biotopes make up the landscape on Naxos, including maquis-type vegetation, dwarf scrubland, abandoned agricultural terraces, olive groves, active cropland, sandy and rocky coastlines, caves, rocky islets, and small abandoned settlements. These are home to many unique species of flora and fauna.

II. Climate Conditions

Naxos has a typical Mediterranean climate that is significantly drier and warmer than mainland Greece. Its main characteristics are mild, rainy winters and long, dry summers, as well as persistent sea breezes. During summer, 4-5 months without any rain are expected. During this period, conditions are kept pleasant by the daily *meltemia* and persistent cool northerly winds that pick up in the morning and only die down by sunset (naxos.net, 2019). These winds make summer hiking tolerable and have powered the numerous windmills dotting the island's interior.

From December to mid-March, Naxos experiences a rainy and windy winter. The pervasive dampness and strong winds create surprising cold conditions, even if absolute temperatures typically remain above 10C. While frost in the lowlands is rare, snow regularly falls in the higher elevations of the mountains. From Mid-March to May, Naxos' climate moves into Spring, which is sunny and windy. By late May, the *meltemia* starts to blow during the daytime and sometimes at night. Naxos enters a warm, sunny, and breezy Summer in June through mid-September. The Meltemia blows for long periods, especially during July and August. Due to this, the maximum temperature is around 30 °C (86 °F). Yet, it is not uncommon for there to be periods with high temperatures around 36 °C (97 °F) and, very rarely, peaks of 40 °C (104 °F) (climatestotravel.com). Lastly, from mid-September to November, Naxos' climate experiences Fall, which is initially warm but gradually becomes cooler. While bouts of rain and active Meltemia are expected in Fall, the weather is pleasant. Later in the season, the southern wind blows from Atlantic or Mediterranean sea depressions.

III. Habitat Types

Habitats, or the specific environments where organisms live and interact, are often classified into distinct categories, such as forests, grasslands, agriculture, and phrygana. However, in reality, habitats are not always so clearly defined, and there can be significant overlap and variation within and between them. Furthermore, the distribution of different habitats is not random but rather influenced by various factors, including elevation, aspect, substrate, and the history of human use. For example, certain vegetation types may be more prevalent on south-facing slopes than on north-facing slopes due to differences in sunlight exposure and moisture availability. Similarly, areas with different types of soils or rock substrates may support different plant communities. Human activities such as agriculture and urbanization can also significantly alter the distribution and composition of habitats. Overall, understanding the complex interplay of these factors is critical for effectively managing and conserving different habitats and the biodiversity they support.

On Naxos, hikers will encounter the following habitat types:

1. Irrigated Fields

Given the relatively arid climate of the Cyclades, irrigation with scarce water constitutes a necessity for most crops. Irrigated fields on Naxos are typically small areas of carefully tended land used to grow high-value crops like citrus fruit. While they are sometimes built on traditional dry stone wall terraces, they are always located near water, a precious resource. Various crops are grown on Naxos, including

- a. **Grapes and Wine:** The island has a long history of winemaking and is associated with the Greek god of wine, Dionysus. Even today, Naxos produces high-quality wines deeply rooted in local tradition and culture. Hence, winemaking traditions are passed down from generation to generation to ensure the continuity of the local winemaking methods. Naxos is particularly famous for its white wine production, with

Monemvasia, Serfiotiko, Athiri, Aidani, and Mandilaria being some of the most well-known grape varieties. Naxos vineyards are scattered across the island but are usually concentrated on deep, moist, fertile soils, mostly in lower elevations and areas sheltered by the wind. Wine tasting and tours of local vineyards, such as [Winery](#) and [ZasTours](#), are popular activities for tourists visiting Naxos. These tours allow visitors to learn about wine culture, meet winemakers, and sample the island's renowned wines. Irrigated fields of Naxos have been used for centuries to



Grape vine and other produce planted in a garden.

grow various crops, including fruit trees. The history of fruit tree agriculture in Naxos dates back to ancient times, and the village of Eggares is known for producing high-quality fruit.

- b. **Citrus Trees:** Citrus fruits, including citron, have had a notable cultural, economic, and historical significance on the island of Naxos. The production of citrus fruits has been a source of income for Naxian farmers for centuries and continues to play an essential role in the local economy. The sweet fragrance of citron and other citrus fruits symbolizes the warmth and hospitality of Naxos and is an integral part of the local identity. Citron, a type of lemon that grows on the island of Naxos, is known for its thick rind and is used in producing well-appreciated confectionery products, including the famous local *Glyko tou koutaliou* (translated: 'Sweet of the spoon'). The Naxian citron is prized for its sweet, fragrant aroma and large size. It is typically harvested in late fall and used in various culinary applications, from sweet and savory dishes to drinks and desserts. The plant leaves are used to flavor the *Kitron*, the 'national' drink of Naxos. It is worth visiting the local manufacturer in Chalki (see hikes 6, 10).
- c. **Other Fruit Trees:** In addition to citrus, Naxos grows a staggering variety of other fruit trees. It produces numerous types of fruit, including pomegranate, figs, peaches, apricots, apples, cherry plums, quince, loquat, and cherries and apples grown at higher-elevation sites. These fruit trees are grown in irrigated fields and benefit from the island's warm, sunny climate and fertile soil. Winter winds are most damaging to them, which is why they are often planted in sheltered valley locations and fields ringed by giant reed or cypress trees.
- d. **Vegetables:** Many areas near villages are used as small-scale irrigated gardens to grow a range of vegetables for family or local consumption. Often planted in association with food trees, they can – if cultivated with few pesticides - be valuable agroecological systems. Given the mild climate, vegetable production can commence over the whole year, including the winter, a perhaps surprising observation for visitors from more northern regions.
- e. **Potatoes:** Potatoes are a valuable cash crop for export to Naxos, with much of the cultivation taking place on the island's western plains. This area was formed by massive mountain erosion, resulting in an extensive coastal plain well-suited for agriculture. Potatoes have a relatively long history of cultivation on Naxos, considering that they were only introduced to Europe in the 1800s. However, their popularity as a crop has also brought challenges. The potato is susceptible to several pathogens, which has led to the extensive use of fungicides and pesticides to protect the crops. In addition, the high water needs of the potato crop require extensive irrigation, especially during the dry season. This has dropped water tables and substantial sea-water incursion along the coast continuously. As a result, much of the local wetlands are now mostly dry, and the ecosystem has been significantly impacted. While the potato crop has brought economic benefits to the island, its

intensive cultivation practices have also had significant environmental consequences. As such, efforts to develop sustainable farming practices and reduce the use of chemicals and water may be necessary to mitigate these impacts and ensure the long-term health of the island's ecosystem.

2. Grain Fields

Naxos is known for its fertile land and diverse agricultural production. Among the well-known grains grown in Naxos are barley, wheat, and corn, cultivated to varying extents on the island. Traditionally, grains have been the primary source of calories for human populations in the Cyclades, with wheat being the most commonly grown crop. To a lesser extent, one can also find growing pulses, such as lentils and fava which were important protein sources during lean times. The extensive cultivation of grainfields in areas that are marginally appropriate for agriculture is a testament to the resilience and adaptability of these crops. Growing grains on Naxos requires minimal technology, such as a simple animal-drawn plow, and does not necessitate irrigation, making these crops the poor farmer's choice. However, dependence on variable and increasingly insufficient amounts of rainfall means that, sometimes, precipitation levels need to be improved to keep the plants alive through the full development of grain. In these situations, prematurely dead plants are fed to sheep and goats.



Grain field being harvested.

3. Olive Groves

Olive groves are an integral part of the Naxian landscape, culture, and economy, providing not only oil but also employment opportunities and a valuable cash source for the local communities. A visit to the island is incomplete without learning about the rich history, cultivation, and production of olive oil. Olive trees typically require deep soil and adequate moisture to grow but can also thrive on relatively arid slopes once their roots have developed. Olive groves require long-term management and careful cultivation, making them a valuable, long-term agricultural investment. Naxos is a large and, by extension fertile enough island,



Olive Grove

to have these resources, with the Tragea Plateau, the agricultural and cultural heart of the island home to extensive ancient olive groves.

The high biodiversity of older olive groves is notable, especially if they are not intensive. For example, uncollected olives attract, and support numerous wintering and migrating birds, like thrushes and starlings. Lack of plowing and treatment with herbicides will allow diverse communities of herbaceous plants communities and invertebrates to develop. Trunks of old olive trees also form numerous cavities that provide refuge for various wildlife species, ranging from lizards to little owls. The value for biodiversity decreases in younger, more intensively managed groves. Despite this decline in conservation value among younger fields,, , olive groves constitute an immensely valuable resource for both human residents and wildlife communities of Naxos alike,.

4. Old Fields & Roadside

Characteristics of old fields and roadside habitats include the roadside vegetation and grasslands. These grasslands, known as abandoned agricultural fields, have not been used for a considerable time but are insufficient for the vegetation to transition into phrygana. This habitat type is rich in biodiversity, home to over 20 species of grass. Hikers can identify these areas by looking for vegetation typical of grasslands, such as tall grasses and wildflowers growing along roadsides. These areas also are often



Abandoned grain fields invaded by native grasses and shrubs

surrounded by stone walls, a characteristic feature of the rural landscape of Naxos. The old fields and roadsides provide essential habitats for various wildlife species and support the island's biodiversity. These habitats are also of great cultural and historical importance as they reflect the island's rich agricultural heritage and the traditional land use and management methods practiced for centuries. These habitats are often also interspersed with several woody plants, which despite their appearance are not native but were naturalized sometimes in the distant past. Such species include the tame olive tree (southern Turkey), the carob tree (Middle East), the giant reed (SE Asia), the broad-leaved oak tree, the chestnut and Aleppo pine trees (mainland Greece), the mulberry tree (Far East), the eucalyptus (Australia), as well as opuntia – or prickly pear- and agave plants (Central America), etc.

5. Terraces

The extensive terraces and dry stone walls were built to cultivate the island's steep and rocky terrain. This unique system developed over centuries transformed the island's landscape into a patchwork of terraced fields for crops such as olives and citrus fruits. These terraces are an important biological and cultural element of the Cycladic landscape, offering several benefits for agriculture. The walls create a flat and stone-free agricultural surface on otherwise steep mountainous terrain. Their terraces also reduce erosion and create a more manageable crop-growing environment. However, constructing these walls is labor intensive, and plowing with large machinery is difficult in this environment. The walls are also used in conjunction with hobbling, a method of restraining livestock from leaving walled fields. This practice is widespread on the islands due to the absence of predators who may prey on the hobbled livestock.



Terraces

6. Phrygana & Heavily Grazed Phrygana

Phrygana is a type of Mediterranean shrubland that occurs on rocky, infertile soils characterized by low-growing, drought-resistant plants such as thyme, lavender, and sage. It is a plant community that grows on shallow, well-drained soils. The community's composition depends on the substrate, and it is dominated by perennial shrubs, typically thorny and summer deciduous. The community is rich in aromatic taxa and, despite its appearance, is a high-diversity habitat with some of the highest diversity of pollinators on the planet. Over time, Phrygana tends to go through succession and become dominated by a few long-lived bushes. In Naxos, there seem to be at least two types of Phrygana, one growing on limestone and the other growing on flysch.



Phrygana

Heavily grazed Phrygana refers to Phrygana overused by grazing animals, such as sheep and goats, resulting in biodiversity loss and increased soil erosion. In Naxos, overgrazing of Phrygana by livestock can negatively affect the environment and the local farming industry.

7. Maquis

Maquis is an evergreen Mediterranean shrub that constitutes a transitional habitat between phrygana and Mediterranean oak forest ecosystems. This vegetation type is characterized by dense, thorny shrubs that provide crucial habitat and resources for many plant and animal species. Hikers may encounter these areas acting as nesting sites for bird species, such as the Sardinian warbler, the European shag, and the Balearic shearwater.



Maquis

The Maquis is a vital part of the Mediterranean ecosystem, well adapted to the region's hot and dry climate. The Maquis supports various plant species, including herbs, shrubs, and small trees. These plants provide essential food and shelter for wildlife, including birds, mammals, and insects. Additionally, the dense vegetation of the Maquis provides a critical microhabitat for many species, offering protection from predators and environmental stressors. The Maquis also play a critical role in maintaining soil stability and preventing erosion, as the deep roots of the shrubs anchor the soil and help to prevent soil loss during heavy rains. This feature helps to maintain the ecological health and productivity of the surrounding landscape, making the Maquis a vital component of the local ecosystem. In conclusion, the Maquis is an ecologically important and culturally significant habitat type in Naxos. Its dense vegetation provides critical resources for various plant and animal species. Its role in maintaining soil stability and preventing erosion makes it an integral part of the local ecosystem.

8. Mediterranean Woodland

Mediterranean woodland is a forested type of ecosystem found in Naxos and other warm and dry parts of the Mediterranean region. It is characterized by small 3-8m tall, mostly evergreen trees dispersed across an otherwise low, open vegetation matrix. Depending on local soil and water availability, it can become more luxurious, grading into a closed-canopied forest in cooler, more moist locations. In Naxos, this habitat is dominated by the kermes oak (*Quercus coccifera*), a small evergreen tree that can grow up to 8 meters



Oak woodland

tall. This species has small, spiny leaves and small, bitter acorns; intense goat grazing will often keep this plant in a stunted bonsai-like bush form. The kermes oak is a slow-growing species with small, glossy, leathery leaves designed to reduce water loss. The forest's understory is surprisingly dark, with very little ground vegetation and an unexpectedly low species diversity due to the poor regional species pool. Some areas in Naxos harbor open deciduous oaks from another type of open woodland found in Naxos, likely the Downy oak (*Quercus macrolepis ithaburensis*), an introduced species that has become well-naturalized. This species was widely planted near agricultural fields for its wood and acorns, which were used to feed pigs.

In ancient times, kermes oak woodland was one of the most widespread forest ecosystems in the region. Today it is limited to only a few relatively inaccessible locations on Naxos due to overgrazing and excessive cutting of trees. Other species found in this woodland include Cretan maple (*Acer sempervirens*), Holm oak (*Quercus ilex*), wild olives (*Olea*), and Carob tree (*Ceratonia siliqua*) in drier locations.

9. Streams and Riparian Vegetation

Riparian vegetation refers to the plants and trees that grow along the stream banks and in Naxos, including various types of shrubs, grasses, and trees that are tolerant of the moist soil and regular flooding that is common in riparian areas. This vegetation plays a vital role in stabilizing the stream banks and providing a habitat for wildlife. They help to filter pollutants and sediment from the water and provide shade that can lower water temperature and help to keep the stream healthy.

Streams and riparian vegetation in Naxos are essential habitats for drought-intolerant relict mainland taxa that only survive in the arid Cyclades in this habitat. Typically, they are limited to characteristic vegetation ribbons along streams, and Naxos has the most in the Cyclades. The dominant species in riparian vegetation are *Platanus orientalis* and *Nerium oleander*, with rare admixtures of *Salix*, *Alnus glutinosa*, *Vitex agnus-castus*, and the naturalized *Arundo donax*. These areas are great places to see plants like mints and numerous invertebrates, including *hymenopterans* and *butterflies*.



Streams & Riparian Vegetation

10. Beaches and Dunes

The Beaches and Dunes habitat in Naxos comprises sandy shorelines and dunes along the island's coastlines. These areas are important habitats for several specialized plant and animal species, including *Juniperus oxycedrus*, *Euphorbia paralias*, and *Helichrysum*. However, due to the harsh conditions of salt, wind, and lack of soil moisture, these habitats can be hostile for most species, supporting only a limited range of taxa. This habitat type is threatened by the expansion of tourist development, which can significantly impact the natural coastal ecosystem. Despite these challenges, areas such as the non-developed region around Alyko in the southwestern part of the island provide crucial habitats and resources for the specialized species that inhabit these ecosystems.



Dune vegetation

11. Older Walls

Older wall habitats refer to dry stone walls that have been standing for a significant amount of time and have undergone natural weathering and erosion. These older walls are often distinguished by their more weathered and lichen-covered surfaces. Due to their long existence, these walls harbor a significant diversity of plants, animals, and invertebrates, mainly if they have been well maintained. Various species on these older walls result from the unique microhabitat created by the wall's structure and the exposure to different environmental conditions such as light, moisture, and temperature. The biodiversity on these older walls highlights the importance of preserving and maintaining traditional stone structures in rural landscapes. They serve a practical purpose and provide essential habitats for wildlife.



Old stone walls

IV. Flora & Fauna Species Across Naxos

In the prehistoric era, Naxos was covered with dense forests with diverse animal and bird fauna. These forests were preserved in more remote island areas until the Middle Ages. Fauna such as jackals, deer, and migratory birds resided permanently on the island or passed through. Due to the numerous natural habitats and significant water resources, Naxos has a wide variety of species with more than 963 recorded flowering plants, of which 51 are found only in the Aegean region, 12 in the Cyclades, and three endemic species to Naxos.

Although the impacts of humans have varied over the centuries, they have also resulted in extensive degradation of the island's habitats with massive amounts of soil loss through deforestation and then erosion. This soil loss was so massive that most of the coastal plains along the west coast of Naxos formed through the accretion of mountain sediments during the last couple of thousand years. We know this because at key locations along the western edge of the hills, and several km from the sea, built structures associated with harbors, such as promenades between Galanado and Agios Thalelaios as a massive harbor light in Agios Arsenios can be found.

While Naxos used to be densely forested, today, the mountains of Naxos are largely denuded of forest cover outside localized groves and sparse clusters of Kermes oak. One isolated but widely visible grove is located on the western slopes of Mt. Zas just below the main peak and consists of several hundred year old holm oaks (*Quercus ilex*). Remnants of old forests and Mediterranean shrubs (*maquis*) can be found in remote areas of the island. In most areas of the island, perennial vegetation has been degraded to some type of phrygana consisting of spinose bushes of modest heights. In the valleys and meadows, many olives, citrus fruits, and grasses grow while the slopes of the hills are cultivated with crops. Much of Naxos' agricultural land is produced with raised stone terraces or low wall platforms. Overgrazing of livestock has impacted the natural vegetation of the island. However, many common plants survive, including rare species endemic to Naxos that grow on Mt. Zas and other areas. Some of the most important plants to Naxos are found on the dwarf bush steppe, an ecosystem that covers a large part of the island, especially when it is not overgrazed.

On slate or flysch substrates, the dwarf bush steppe is dominated by Scotch broom (*Genista acanthoclada*), while the limestone substrates are dominated by thyme (*Coridothymus capitatus*). Many of the perennial plants in the dwarf bush ecosystem include common features such as usually being thorny, having fragrant foliage, or frequently shed their leaves in the summer. Many of the aromatic plants used in Greek and European cuisine are found growing wild in Naxos. These plants include thyme, sage, and oregano, among others. Below, you will find a brief listing of Naxos's most common flora and fauna. These interesting species can be observed along Naxos' ancient hiking trails. Northern Naxos and the Tragea region offer less-grazed areas and the best opportunities for enjoying the local plant life. Some of the most interesting flowers and plants, such as chasmophytes, are found in more specialized habitats in Naxos, like wet meadows and cliff faces. Over 20 species of orchids have been found on Naxos, especially in these habitats. Hikers will find that the best time to observe the Naxian flora is between late March and mid-June, when most plants flower and grow.

Flora

Flowering Plants Endemic to Naxos

Cerastium runemarkii

These plants have hairy stems and grow in sparse clumps. The flowers have white petals that turn to light green towards the middle. Each petal is deeply lobed, giving them a heart shape. This plant grows in rocky crevices, usually in shady places at altitudes of 500 to 1500 meters, and is endemic to Greece.



Erysimum naxense

Erysimum naxense (treacle mustard)

This plant has a central stem, radial oblong leaves, and shallow jagged edges. The yellow flowers have four petals and grow in clusters from tall, slender stems. This attractive plant is endemic to Naxos and can grow in fissures of limestone rocks and on cliffs.

Symphytum davisii naxicola (comfrey)

This endemic species is a small plant with deeply veined leaves and thick hairy stems with a purple hue. The flowers grow along the end of the stem with several white bell-shaped flowers with scalloped edges. The end of the stem is often curling under itself, giving it a whorled profile. It grows on cliff crevices at elevations up to 900 meters.

Indicative of Overgrazing

Spanish broom (Spartium junceum)

This distinctive shrub has tall, slender stems tipped with whorls of bright yellow flowers that have an orchid-like appearance in shape. It is common along roadsides and has little to no leaves. The flexible and strong stems are used to make ropes and brooms to this day which is why it's commonly referred to as Spanish broom. Although native to the Mediterranean, the plant is considered invasive in other parts of the world.



Spartium junceum

Prickly burnet (*Sarcopoterium spinosum*)

As the common name suggests, the prickly burnet is a bush with small red fruits that form clumps and an abundance of spines that sometimes create a hexagonal pattern. The small, ovate leaves are arranged in pairs similar to a fern frond. The plant's roots are used for various medicinal purposes, including treating diabetes and digestive issues. The prickly burnet is most common in phrygana habitats and indicates overgrazing.



Sarcopoterium spinosum

Onion Weed (*Asphodelus fistulosus*)

As its name implies, the onion weed is a common and invasive weed in many parts of the world, including the Mediterranean. It has round tubular leaves around the base of a hollow stem. The flowers are white with a brown or maroon stripe down the middle of each of its six petals. The toxic fruit keeps them from being eaten by goats and sheep, so they can become overgrown.

Crofton weed (*Agertina adenophorum*)

Native to Latin America, this shrub is considered an invasive weed worldwide. Its leaves have serrated edges with small white flowers that appear hairy and grow in dense clusters. This plant is especially successful at spreading because its seeds are dispersed by the wind, and it is toxic to livestock. Because of this, Crofton weed will often be abundant in areas that have suffered from overgrazing.



Argentina adenophorum

Black hawthorn (*Rhamnus lycioides oleoides*)

Black hawthorn is an evergreen shrub that grows with gray-colored branches that end in a sharp point. The leaves are small and narrow with a leathery texture. It has small yellow flowers during the winter, and the maroon to black fruits are small and round when ripe. This hardy plant is resistant to grazing by livestock, and its presence can indicate overgrazing.

Common Plant Life & Trees

Common mallow (*Malva sylvestris*)

Often grown as an ornamental plant, the common mallow is known for its bright purple flowers with dark purple veins. The leaves of the plant, while young, can be boiled and eaten as a vegetable, and the seeds have traditionally been used as a yellow dye. Although less popular nowadays, traditionally, the plant was also used medicinally for its anti-inflammatory and moisturizing properties.



Malva sylvestris

Olive tree (*Olea europaea*)

The olive tree is perhaps the most recognizable species on Naxos and can take the form of a tree or shrub. As they age, the trunks become twisted and gnarled and have silvery-green oblong leaves. The flowers are small, leathery, and white, and the olives are harvested when they are green to purple. Some of the olive trees on Naxos are relics from past cultivation, but many are still actively harvested. They can be found in vast groves, stone terraces, and scattered across the landscape. Olives are thought to have been first domesticated in the third millennium BC, and olive oil had a variety of uses in Ancient Greece, such as for grooming and anointing kings and athletes. The original "eternal flame" of the Olympic games used olive oil. Today olives are mainly used for oil and eaten raw or fermented. Still, olive wood is also popular for handicrafts and kitchen essentials due to its durability and interesting grain patterns.



Olive tree

Jerusalem sage (*Phlomis fruticosa*)

Native to the Mediterranean, these yellow, hooded flowers are arranged in whorls on tall, erect stems with gray-green fuzzy leaves with a "quilted" appearance. Although the flowers are odorless, they attract various pollinators and are drought resistant. The plant looks superficially similar to Sideritis or mountain tea, which are used as an herbal, medicinal tea.



Phlomis fruticosa

Kermes Oak (*Quercus coccifera*)

The kermes oak is native to the Mediterranean and characterizes the Kermes oak woodland habitat. Unlike American oak varieties, this species is an evergreen with small, spiny-serrated leaves with a waxy layer that reduces water loss in the arid climate. In addition, the acorns, while edible, are bitter. These defense mechanisms, which make them unpalatable and hard to digest, have been developed to discourage herbivory.



Leaves, Quercus coccifera

Savory of Crete (*Satureja thymbra*)

Savory of Crete or pink savory is a small shrub with closely clustered branches with small dark green leaves. In the spring and summer, you will find small pink or purple flowers growing in whorls on erect stalks. The species grow in woodland, scrubland, and along roads in rocky limestone. It has a strong aroma that makes it a popular ingredient in perfume, as a spice for cooking, and as a medicinal tea to treat digestive issues.



Tragopogon dubius

Goat's beard (*Tragopogon dubius*)

Goat's beard is an annual forb that typically grows up to 60 cm but can sometimes reach heights of a 1 meter. The yellow flowerhead typically grows about 6 cm and resembles a dandelion. Its seed head is particularly identifiable and looks like that of a dandelion but is significantly larger. The roots and leaves of this plant can be eaten either raw or cooked.

Fauna

Fauna Responsible for Overgrazing

European hare (*Lepus europaeus*)

The largest among the hare species, the European hare, is native to Europe and Asia. It is light brown with white on its underside and black on the tips of its ears and tail. Unlike some other species, the European hare's fur does not turn completely white in the winter, though it does become grayer. They are more visible during the spring when females can be seen "boxing" males to test their determination or as a way of communicating that they are not ready to mate. These hares have a prolonged mating season and can produce three litters yearly. Because of these high reproductive rates, they can quickly become invasive, especially on islets without

predators. They do not dig warrens like rabbits and eat many plants, including native and endemic species. Eliminating these important species reduces the ecosystem's biodiversity and affects other species' populations, such as insects.

European rabbit (*Oryctolagus cuniculus*)

The European rabbit has a white underbelly and is typically gray-brown on the back and can come in many color variations. They have long ears, and their body is no longer than 40 cm. The tail is black on top and white underneath. Their long claws are used to dig warrens and underground tunnels in which they live. These rabbits are not native to the Cyclades and have been introduced by humans, often for hunting purposes. Due to their rapid reproduction and lack of predators, islets, where they are introduced, become overtaken by them. Not only do they eat all of the native flora, which greatly reduces biodiversity, but the combination of digging and the loss of flora also leads to soil erosion.

Domestic goats

Livestock ownership has emerged as a major revenue stream for locals on Naxos. Many elect to allow their goats to graze freely across the landscape. Unfortunately, goats have a voracious appetite and are fairly indiscriminate with their food choices. Many of the native and endemic species are flowering plants that are especially attractive to goats.

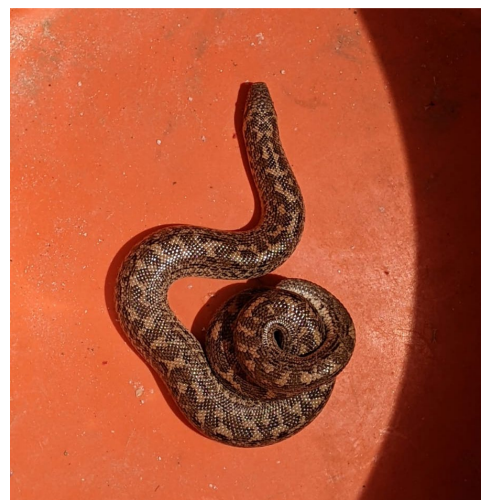


Domestic goats

Common Fauna

Javelin sand boa (*Eryx jaculus*)

The Javelin sand boa is the only species of European boa and can grow up to 80cm with a heavy body and short tail. Although color and pattern vary greatly, they are generally gray, tan, and brown with dark brown to black blotches. The belly can be yellowish to whitish. Although common, they can be elusive, spending hot days in shady crevices and under rocks. This snake is harmless to humans.



Eryx jaculus

Meadow brown (*Maniola jurtina*)

This widespread butterfly can have a variety of spot patterns; the main color is grayish to dark brown, with orange patches in the middle of the wings and a grayish-white border around the wing. Inside these

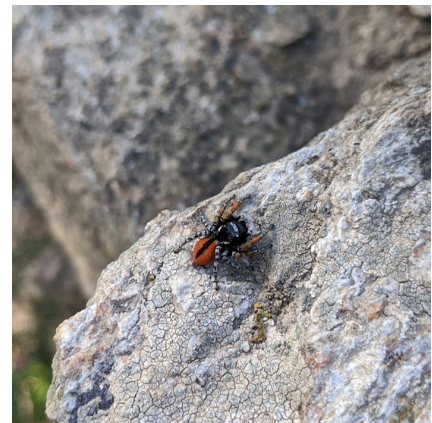
patches is a black eye spot with a white dot in the center. These important pollinators can be found in most habitats on Naxos.



Maniola jurtina

Jumping spider (*Philaeus chrysops*)

This species of jumping spider is common and can be found throughout the island. Typically only about 7-12mm, males are distinguishable by their bright red abdomen with a black 'eye' while females have a brown abdomen with two white stripes. As their name suggests, these spiders use their jumping skills to hunt, which you may be able to observe during the day, which is their preferred hunting time. These spiders pose no harm to humans.



Philaeus chrysops

Erhard's wall lizard (*Podarcis erhardii*)

Erhard's wall lizard is endemic to the Balkans and can be found on many of the Aegean Islands, including the Cyclades. This small lizard is about 7 cm long with a tail twice the length. Although color varies, they usually have a green upper body and a brown lower body and tail. In addition, females are often striped, and males often have a net-like pattern. You will often find them on and in old stone walls and other dry, rocky habitats with low, dense vegetation.



Podarcis erhardii

Common stonechat (*Saxicola torquata*)

The common stonechat is a medium-sized bird of the Old World flycatcher family. Males have a black head and back with a white half-collar. The chest is orange to red, which fades from light orange to white towards the belly. Females have a brown head and back with an all-orange chest and belly. As their name suggests, their calls sound like two rocks being tapped together. They can be found in fields and meadows with low, dense shrubs.

V. Culture & History of Naxos

The island's rich history is reflected in the cultural landscape, with many ancient sites and ruins, such as the temple of Demeter and Apollo's temples. The beaches, many of which are composed of golden sand, are major tourist attractions. Overall, Naxos is a geologically and culturally diverse island with a rich history, featuring a diverse landscape that has shaped both natural processes and human activity.

Main Historical Periods

The island of Naxos in Greece has a rich cultural heritage shaped by several historical periods, notably:

- **The Archaic Period (800-480 BCE):** Naxos was a significant center of the Cycladic culture during this period, known for its pottery and metalworking. The island was also home to several important religious sites, including the Sanctuary of Demeter and the Temple of Apollo.
- **The Classical Period (480-323 BCE):** Under the control of Athenians, Naxos saw the construction of several public buildings, including the theater and the Naxian lions. This period also saw the island's artistic and literary culture flowering, with several famous poets and philosophers, such as Pindar, hailing from Naxos.
- **The Hellenistic Period (323-146 BCE):** The island came under the control of the Macedonians during this period and saw economic growth, with Naxos becoming an important center for trade and commerce.
- **The Roman Period (146 BCE - 330 CE):** Aqueducts and several public works were noted under the Roman Empire. Economic growth continued to advance agriculture and trade.
- **The Byzantine Period (330-1204 CE):** The Byzantine Empire developed several churches and monasteries, highlighting the current architectural significance on the island.
- **The Venetian Period (1204-1537 CE):** The Venetians left significant architectural heritage, many of which are still visible in traditional villages and the castle of the capital city.
- **The Ottoman period (1537-1821 CE):** Culturally, the island's population, mainly Greek Orthodox, was exposed to different customs, languages, religions, and cultural practices. The Ottoman culture, architecture, and food influenced the Naxian culture.
- **The Greek War of Independence (1821)** ended the Ottoman period in Naxos in 1821, and since then, the island has become a part of the new Greek state.

These historical periods have had a profound impact on the island's culture and have shaped the island's architectural, artistic, and literary heritage. Understanding the cultural and historical context is essential to understanding the rich and diverse cultural heritage of Naxos island. Studying this cultural heritage is essential to understanding the island's cultural identity and relationship to the Mediterranean context.

VI. Trail Description Content & Features

Each trail description features the following content:

- Difficulty of Terrain
- Elevation Gain and Loss
- Estimated Hike Time
- Trail Summary
- Maps (Satellite, Topographic Contour Fill, and Hillshade) and Elevation Profile
 - Highlights of each hike - including cultural sites and directions
- Culture and Nature Section
- Trail Description
 - Terrain
 - Habitats
 - Flora and Fauna of Note
 - Cultural landmarks
 - Highlights of each hike - including cultural sites and directions

VII. Suggested Gear

- Clothing
 - Sturdy walking shoes, hiking shoes or sandals
 - Trekking long pants
 - Trekking shirts
 - Fleece Jacket
 - Sun protection hat
 - Inner and outer gloves
- Essentials
 - Hiking backpack
 - Trekking towel
 - Sunblock
 - Sunglasses
 - First-aid kit
 - Travel bag organizer
 - Refillable water bottle
 - Hydration bladder
 - Protein bars and other lightweight snacks
- Additional Items
 - Headlamp
 - Ankle support
 - Camera/Videocamera
 - Notebook/Journal and Pen

VIII. Tips

- Avoid stepping on or damaging any flora and fauna on the trail. Follow the paved or well-trodden path on each trail.
- There are no trash cans along the trails. Be prepared to carry your trash with you.
- Make a note of where water is in the villages along the trails. Suggest carrying more water than you need, especially in the summer months.
- Most trails have little to no shade. Plan to wear light layers, sunblock and a hat.
- On most trails, you will find gates blocking the path. These are to control the movement of livestock like goats and sheep. You should go through the gates but permanently close them behind you.
- Instead of official trail markers, you may see red spray paint with arrows or circles.
- Please remember that some trails go through or along private property. Please be respectful of noise and cleanliness.
- The trails are characterized by various levels of difficulty in easy, moderate, and complex categories. Definitions for these categories:
 - **Easy:** Walking with a low chance of injury; suitable for people of all ages who are in fair physical condition. Generally flat with an elevation gain of fewer than 200 meters and less than 10 km of the total distance.
 - **Moderate:** More challenging, yet with little potential danger encountered. Stairs and elevation changes are present. Suitable for people of most ages who have a basic fitness level. Elevation gain of less than 400 meters and less than 12 km of the total distance.
 - **Difficult:** Most challenging with mountainous exposure. Suitable for people who have hiked before and are reasonably fit. Elevation gain or loss of 600 meters or less and less than 14 km of the total distance.

IX. Helpful Phone Numbers

General Emergency Services: 112

Police: 100

Chalki Regional Clinic: +30 22850 31206

Taxi: +30 22850 22444

Municipality of Naxos and Small Cyclades: +30 22853 60100

Appendix III: Trail Descriptions

Trail 1

APEIRANTHOS - EMERY MINES - MOUTSOUNA

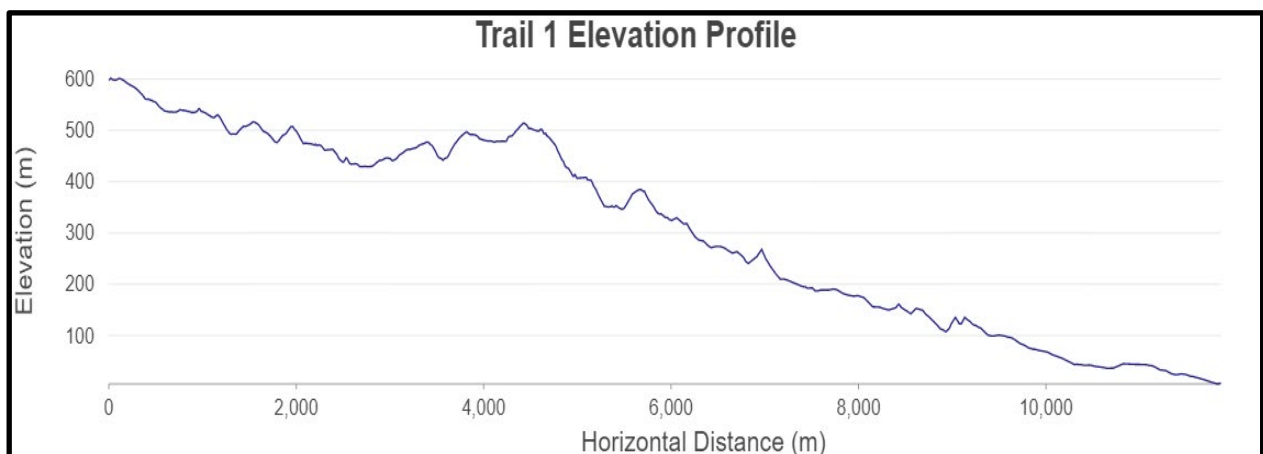
11.8 km || 4h || Difficult || Elevation Gain: 597 m || Elevation Loss: 955 m

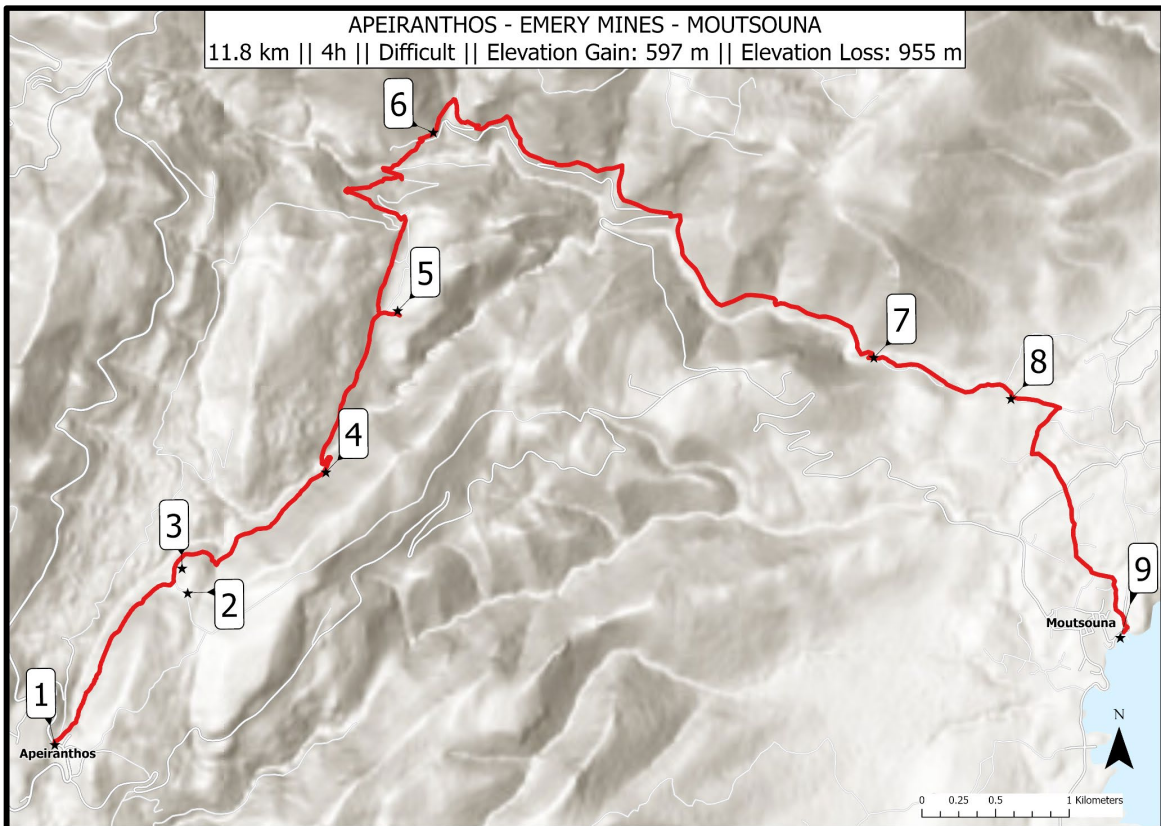
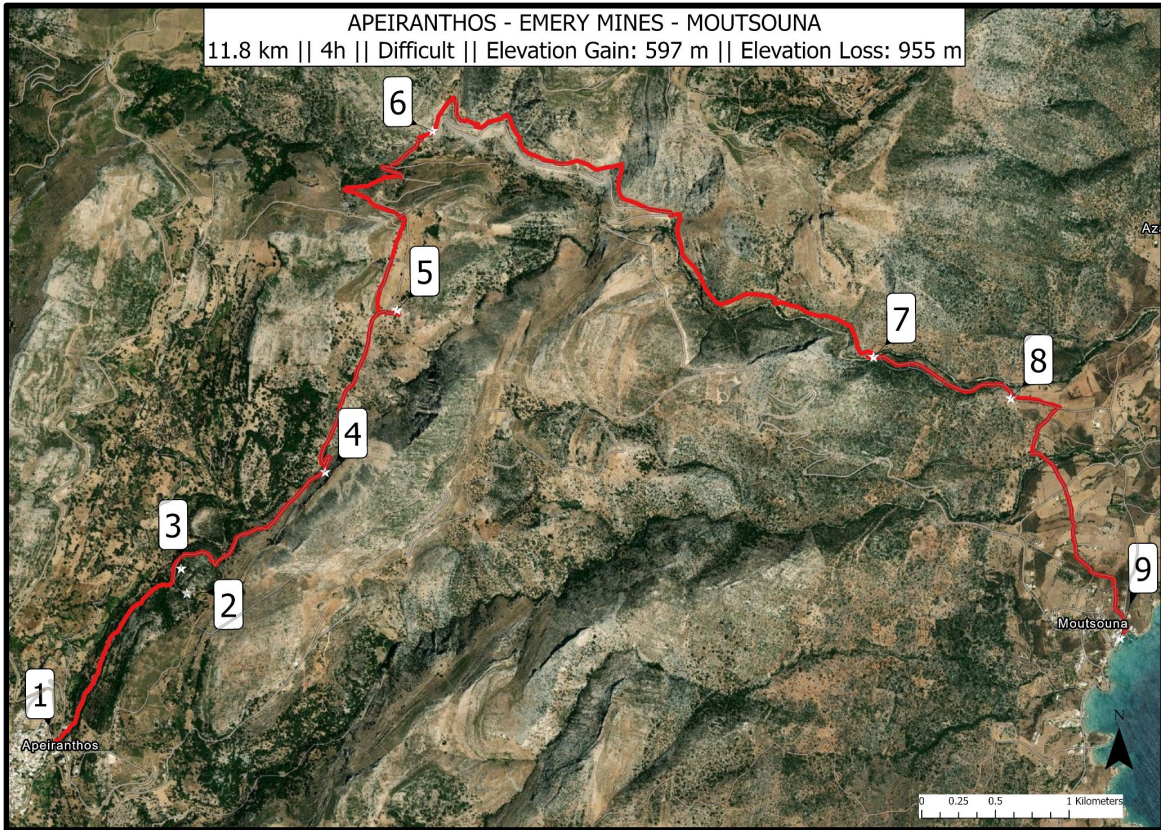
Trail Summary

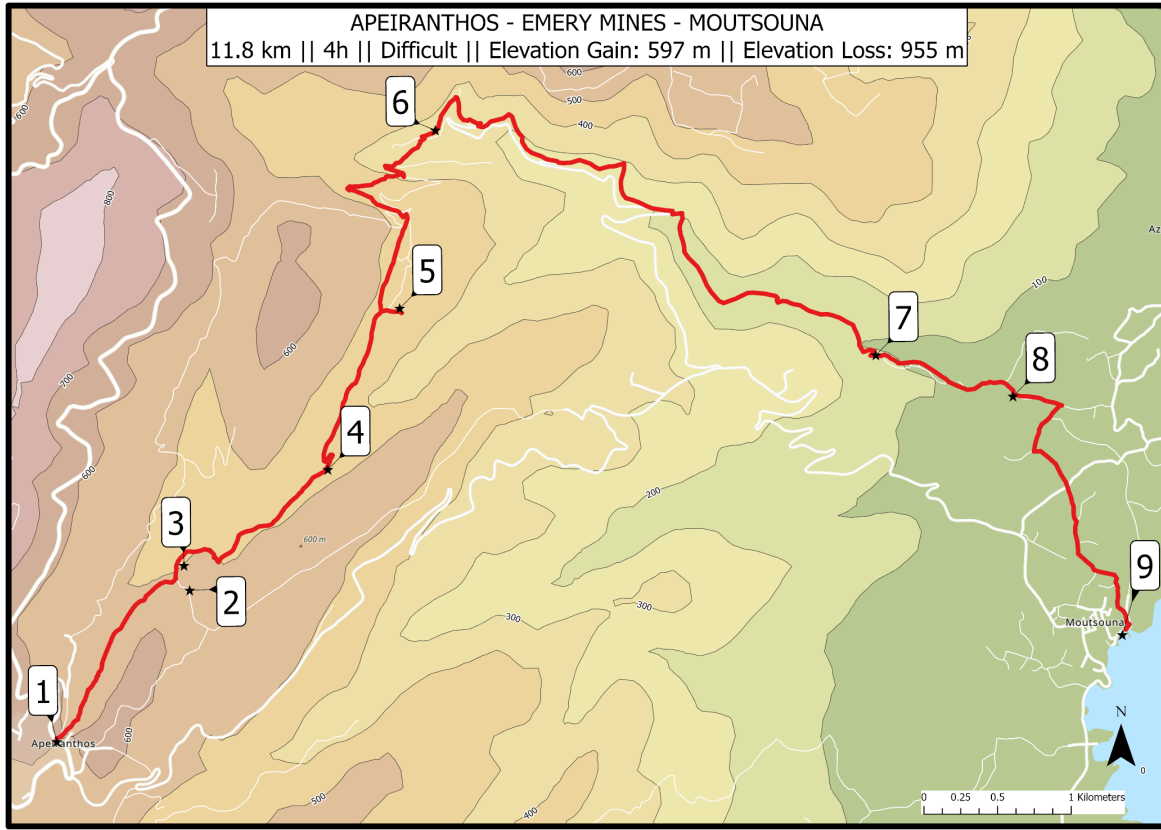
This moderately difficult trail connects the quiet mountainside village of Apeiranthos to the beaches of Moutsouna along an ancient path traveled by miners up to the abandoned Naxos emery mines. Hikers can enjoy a blend of nature and culture as they travel through shaded Kermes oak woodland towards Byzantine churches. Following steep, wooded paths past farmed terraces rich in Naxian agriculture, climb to a small church on an isolated knoll. From there, hikers cross a rocky path to a magnificent limestone landscape showcasing the remains of emery mining. Once past the mines, enjoy descending views of Naxos' richly colored coastline. End the hike in the tiny port of Moutsouna, with a quiet beach to enjoy with an appetizer of fava and a glass of raki.

Maps and Elevation Graph

1. Start of Trail in Apeiranthos
2. Church of Agios Ioannis Theologos
3. Threshing Circle
4. Kamilaris Bridge
5. Byzantine Church of Agia Kyriaki
6. Kakoryakas Emery Mines
7. Streambed
8. Shipping Container
9. Azalas Beach in the port town of Moutsouna







Culture

Apeiranthos (1) is a small village nestled in the foothills of the mountain Finari, around 28 km away from the capital of Chora. Boasting architecture unique to the island, Apeiranthos hosts stone-built towers and marble-paved alleys. Rich in art and folk culture, the village is at 600 m above sea level and has picturesque views of the Naxian mountain ranges. Visitors can enjoy the embroideries created and sold by the women of Apeiranthos via the **Woven Products Cooperative**.



Church of Agios Ioannis Theologos

Approximately 1 km from Apeiranthos, hikers can take a short detour east to the **Church of Agios Ioannis Theologos (2)**. The 13th-century church was built on the site of an older church and is a rare example of an early Christian basilica.



Ancient threshing circle found midway through the trail

The beginning of the trail follows the ancient stone path treaded by miners and mules to reach the emery mines. Hikers will pass a series of **threshing circles (3)**. The traditional practice of threshing, which refers to separating grains from the plant, has been a crucial aspect of crop production in Naxos. The process involved threshing circles, where the sheaves of grain were first opened and spread out on the ground. Subsequently, pairs of donkeys were led around the circle, walking over the stalks and dragging a threshing board behind them to tear the ears of the grain from the stalks. The broken stalks and grains were

then collected and subjected to winnowing. During winnowing, the mixture is thrown into the air with a fan, allowing the wind to separate the lighter straw from the heavier grain. The heavier grain that falls at the feet of the winnow is collected for storage and subsequent use. This traditional practice of threshing demonstrates the ingenuity and resourcefulness of Naxian farmers to sustain their crops and communities.

Continuing uphill, hikers will come across the **Church of Agia Kyriaki (5)**, approximately 3 km from Apeiranthos. This ancient church represents a classic Iconoclastic Byzantine church built in the 9th century. The term iconoclastic refers to a style of church that does not feature figurative imagery related to religious icons due to the banning of human figures in the early Middle Ages. Instead, frescoes adorn the interior with depictions of birds, crosses, and floral designs.



Church of Agia Kyriaki (9th c.)

Nature

Usually barely growing more than 2 meters tall, this trail features extensive areas of **[Kermes oak woodland](#)** with trees reaching close to 5 meters. Native to the Mediterranean, **[Kermes oak \(*Quercus coccifera*\)](#)** is commonly found as a bush and rarely as a tree. It is the primary food source of the Kermes scale insect, whose body is used to produce crimson dye.

One of the most recognizable species found on the trail is the **[dragon lily \(*Dracunculus vulgaris*\)](#)**. Named because of its shape, which resembles a small dragon hiding within the spathe, the

dragon lily is best known for its potent smell that has been likened to that of rotting flesh. Growing up to a meter tall, the dark purple flower can heat itself to 18 degrees Celsius to attract insects for pollination.



Distance view of abandoned emery mines and cables

The trail's main attractions are the **Kakoryakas Emery Mines (6)**. Emery is a natural mineral composed of corundum and magnetite and is used as an abrasive for polishing and grinding marble, weapons, and tools. It was first discovered on the island of Naxos during the Bronze Age. The mines were in operation for centuries, with Naxos being the only emery-producing region in Europe. They were then abandoned in the 20th century, but the tunnels and quarries can still be seen and explored by hikers.

Trail Description

The trail starts **(1)** in the picturesque, mountainous village of Apeiranthos. The town has a single main road along its edge with parking alongside it. Look for the Memorial to the Victims of War, a large limestone obelisk near the village entrance. A set of stone stairs leads under a bridge on the opposite side of the road. Here, hikers will see the first trail marker. Continue along the path, staying cautious of the uneven rocks.



Look for this start to Trail 1

Observe as the scenery slowly shifts from the low-lying shrubbery that characterizes the phrygana to rich woodlands with tall Kermes oak on either side. The overhanging trees bring a welcome reprieve from the sun. The trail is straightforward at this point, with frequent trail markers and no possibility of wandering off. Hikers can take a moment to appreciate the variety of bird calls they can hear as they continue forward.

Eventually, visitors come across a gated-off portion of the trail that local farmers sometimes use to hold their sheep in. If no sheep are present, hikers should continue onwards, making sure to close the gate behind them. If visitors come across a flock of sheep, don't panic! Greet the farmer



Enjoy the wooded walk through the beginning of this trail

amongst them, and if it is safe, they will allow safe passage through to the other side, where there will be another trail marker.

As the trail continues, hikers will come across a gentle downhill slope with large loose rocks and need to be careful as they make their way down and come across two potential paths. The path on the leftmost side is marked by a trail marker and leads towards the Emery mines. However, a short detour to the right will take hikers to the **Byzantine Church of Agios Ioannis**

Theologos (2). This 13th-century church is an early Christian basilica with a medieval church built on top of it. If the door is unlocked, hikers can find an older church built in the 7th or 8th century inside. Elaborate frescoes decorate the interior walls with portraits of the saint for which the church is named.

Back on the main path, the scenery will shift from shaded forest to [maquis shrubland](#) as the trail becomes more mountainous. Passing through a metal gate, hikers will now begin the slight uphill ascent along the ancient mule paths miners used as they head up to the mines. A ravine will reveal itself on the left-hand side as they continue upwards. Although wooden railing protects parts of the path, the majority is exposed, so take caution navigating the stone stairs interspersed with loose rock. As hikers reach the peak, they'll notice stones arranged in circular formations. These are **wheat threshing circles (3)** that farmers use to separate grains of wheat.



Cross through the gated sheep to continue along the path. Be sure to say hello to the shepherd!

The path will begin to slope downwards as hikers head down the mountain towards the **Kamilaris Bridge (4)**. The route then heads back steeply uphill. At the summit, they'll come across the **Byzantine Church of Agia Kyriaki (5)**. The church is on private property, so hikers should be respectful and close any gates they go through. Although the path doesn't go through Agia Kyriaki, hikers can make a small detour to enjoy the Iconoclastic church and the mountaintop views.

The trail continues towards the left, where hikers come across another trail marker and a stone structure. The dirt path will split off into stairs. Head down and carry on the dirt path through phrygana until coming to a boulder with a trail marker. Turn left and follow the path down past cement tanks and feeding troughs. Soon a path surrounded by [Scotch broom](#) will open up, continue towards a set of stone steps with a wooden sign at the bottom denoting a trail marker. The hike will now start to slope downwards as hikers approach an intersection. Following the trail marker, take a left.



View of Kamilaris Bridge

As the trek continues, a stream will bisect the path. Hikers should take the concrete bridge to the other side and pass by abandoned houses as they continue down the now gravel road. A trail marker will mark the path to take off the road and up toward the abandoned mining structures as visitors pass through the gate and follow the trail marker to the left. Wind turbines will greet hikers as they head further toward the **Kakoryakas Emery Mines (6)**. As the trail continues, see a pair of caves with excavators inside. At the top, municipality signage directs hikers toward Moutsouna. Follow the sign to the left and start hiking downward. After 20 m, come across a ruined stone wall.



Major junction on the emery cable way

The path from this point on is not well-marked. Look out for red spray-painted markers along the way. The loose rock path leads down to several other caves showcasing a variety of mining mechanisms, including a metal slide most likely used to transport materials. Carry on towards the cables. They begin to get lower, so hikers should be careful to pass safely underneath them and follow the stone stairs down until reaching the concrete road at the bottom. Continue onwards and merge onto a dirt path marked by a trail marker.

After heading up the path, reach another set of emery mines. The mine requires a little effort to climb up safely. Keep to the right and follow the path until the trail becomes a rough, rock-filled

path. Stay right as the track climbs down the steps before noticing a boulder with a painted trail marker to the left. The stairs lead down to the road where hikers should take a left, heading downhill until reaching a faded trail marker alongside a rocky path. Follow it down towards a valley and continue straight along the route. Eventually, come to an abandoned house with a spray-painted trail marker across it and continue through the [phrygana](#). A stone wall will be to the right along a loose stone path leading to a white pebble streambed **(7)**.



Look out for red trail markers that indicate you are on the right path



While out of the ordinary, this shipping container indicates that you are nearing the port of Moutsouna

Hikers will then have to pass through a gate on the right, marked by a trail marker, until coming across an abandoned farming structure on the right. Straight ahead, an unofficial trail marker can be seen leading to a transition point between Kermes oak woodland and maquis shrubland. Further along, a trail marker is on the left, pointing towards a shipping container **(8)**. The path will lead down to an [olive grove](#), and the trail will soon split. Take the path on the left and pass by a solar farm followed by a vineyard. At this point, hikers will see a stunning view of the Aegean Sea.

Continue downhill until reaching a four-way junction and take a right. A trail marker on a blue gate can be found to the left, and then the path moves through overgrown vegetation toward a gate. Follow the narrow dirt path until reaching the small white church of Agios Ioannis. Just past the church, visitors will see a statue and trail map as they reach Moutsouna. Here, spend time at **Azalas Beach in the port town of Moutsouna (9)**. Moutsouna is a small fishing village on the eastern coastline of Naxos with two beaches. The quay was used for transferring marble from the emery quarries of Koronos-Apeiranthos. The emery airlift tower, cranes, and rail mechanisms are still intact today, albeit a bit rusty. Relax on the sandy beach or grab a bite at the Net restaurant, one of the three seaside taverns that serve delicious Greek cuisine, featuring the fresh catch of the day.

- End Trail 1 -

Logistics

Accommodation

Moutsouna

- NONE



Arriving at the emery port of Moutsouna



View of Azalas beach, a quiet reprieve from a strenuous hike

Getting Around

While a rental car or taxi may be the most convenient way to get from Naxos Town (Chora) to Apeiranthos, there is also regular bus transportation to Apeiranthos. At the time of writing, several bus lines (2, 6) run between Chora and Apeiranthos. Additionally, line 2 runs from Moutsouna to Naxos Town (Chora). Buses frequently increase in the summer months: from July to August the bus runs every day from Chora to Chalki at 07:30, 09:30, 11:00, 12:00, 13:30, 15:00, 17:00, and 20:15. For more information, visit <https://naxosbuses.com/> or contact by tel. +30 22850 22291, email: info@naxosbuses.com

Trail 2

MOUNT ZAS - FILOTI LOOP

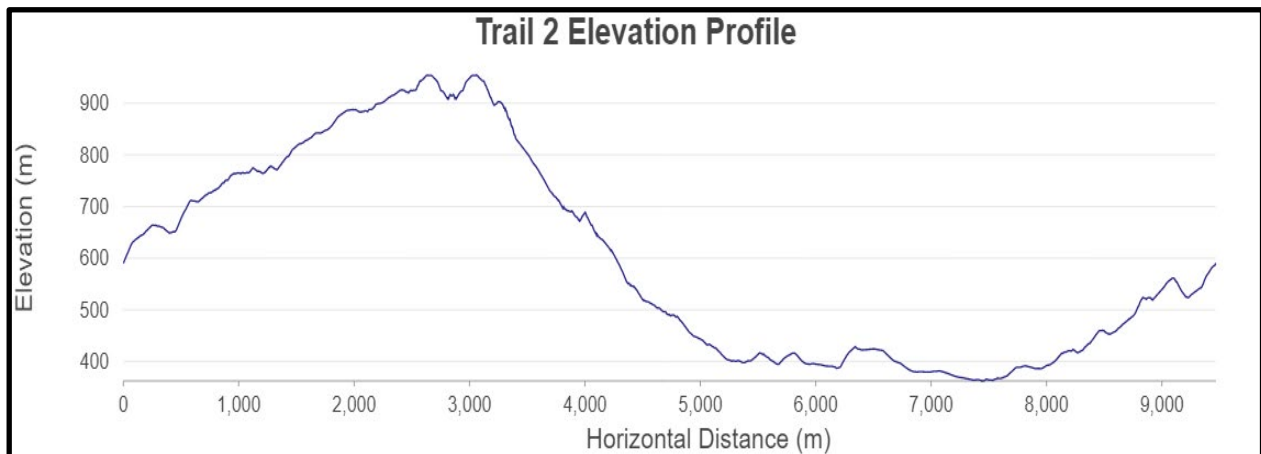
9.3 km || 5 hrs || Difficult || Elevation Gain: 730 m || Elevation Loss: 730 m

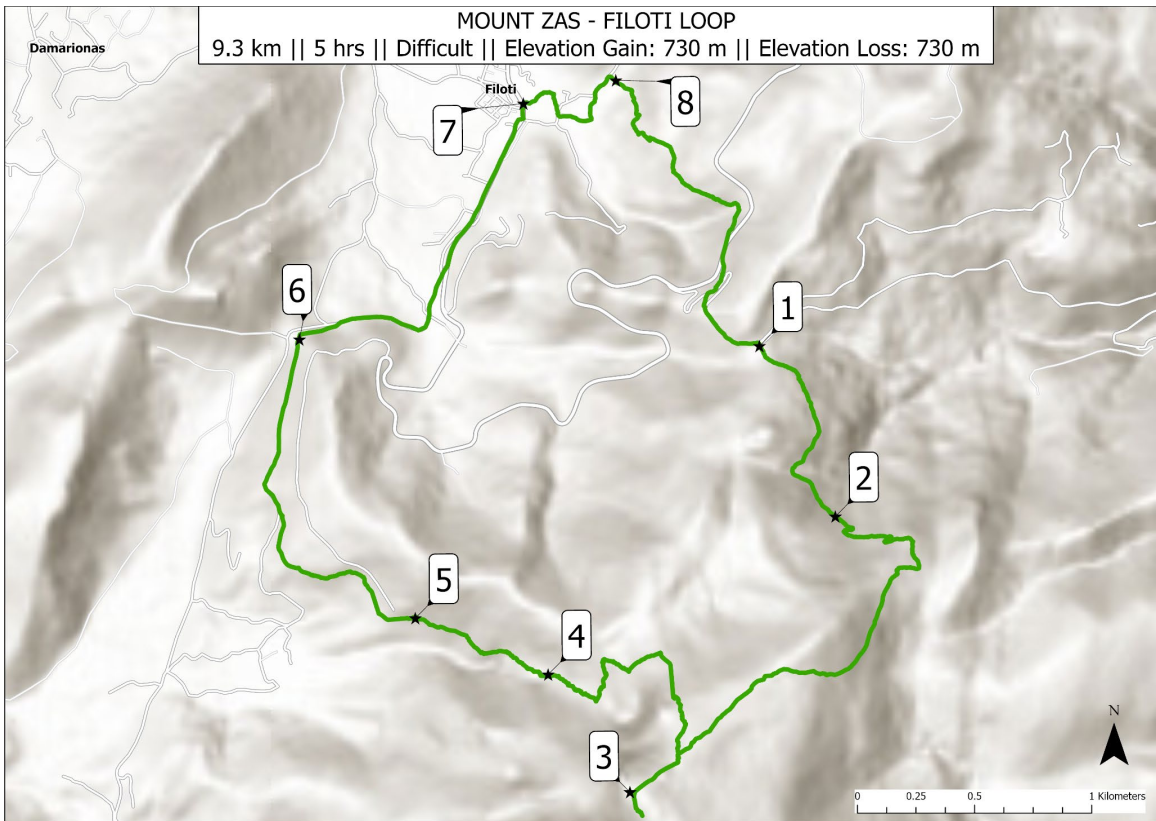
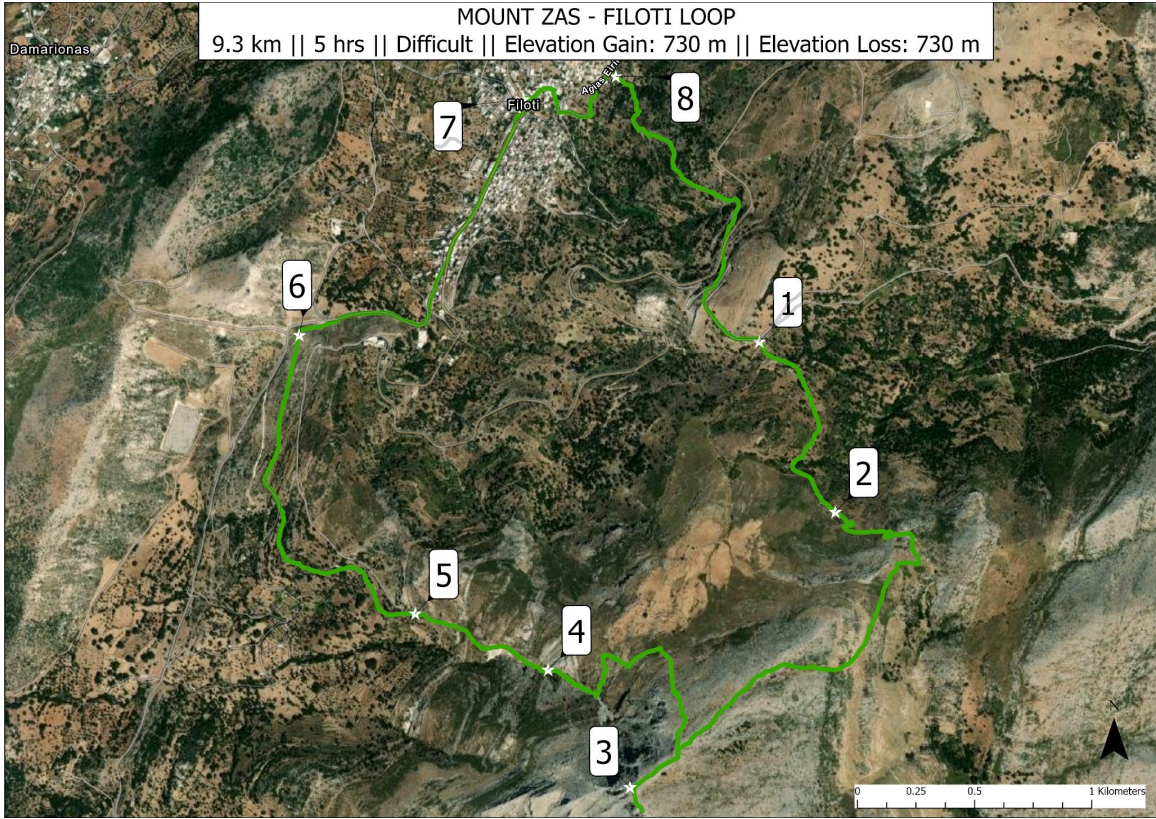
Trail Summary

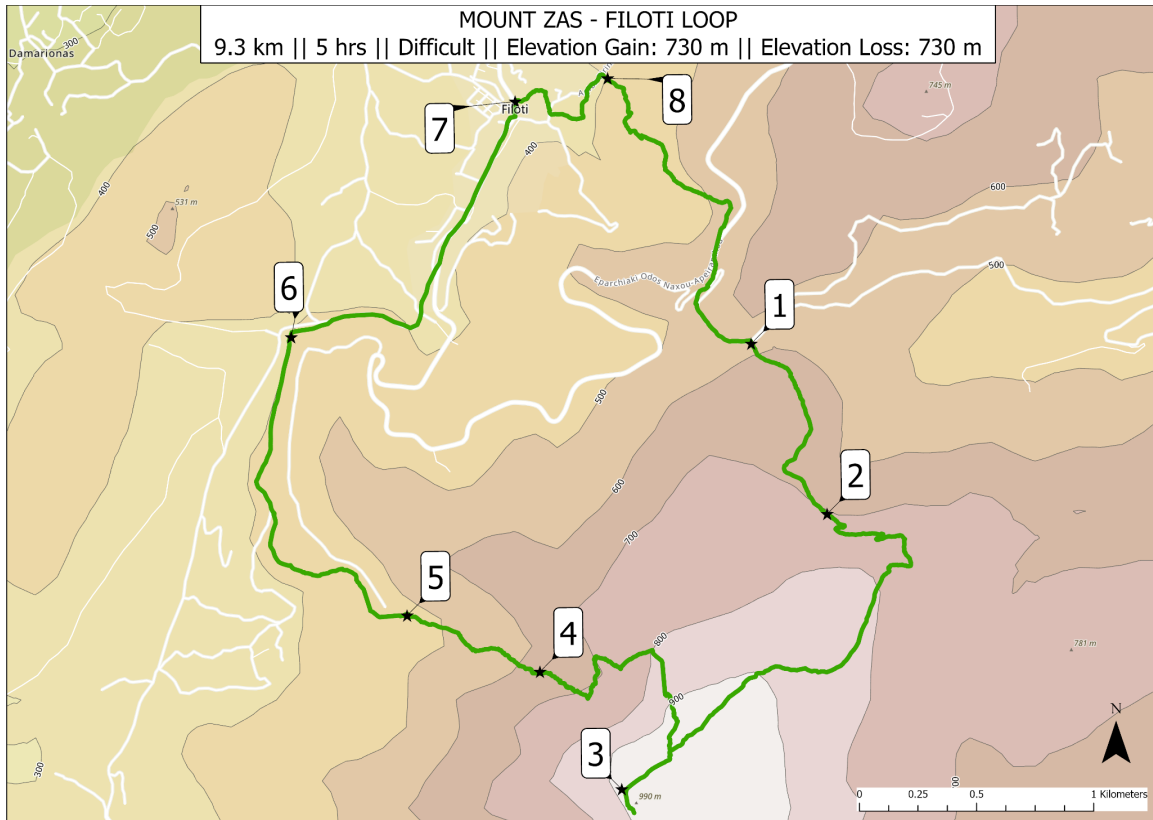
This challenging hike gives visitors stunning views of the island and brings them face-to-face with incredible mythological sites before ending in the vibrant village of Filoti. From the mountain peak - the highest point in the Cycladic Islands - hikers can enjoy 360-degree views of surrounding islands and the Aegean Sea before the challenging descent to Zas Cave and Aria Spring.

Maps and Elevation Graph

1. Saint Marina Holy Chapel
2. "Mount of Zeus, Protector of Sheep"
3. Mount Zas
4. Zas Cave
5. Aria Spring
6. Windmill
7. Bazaar super market
8. Church of Agia Irini







Culture

One of the biggest draws for hikers visiting Naxos is summiting **Mount Zas (3)**, the highest point in the Cycladic Islands at 1,004 m high. Locals believe Zeus, born on Crete, was raised in Naxos and therefore named the island's tallest mountain to honor him. On the peak of Mount Zas is where an eagle gave Zeus the thunder that allowed him to rule Olympus. Myths say that Zeus was raised in **Zas Cave (4)** to hide from his Titan father, Cronos, who feared a prophecy that his son would overthrow him. Take a peek into the cave as it boasts impressive stalactites and stalagmites, but be very cautious as it is very dark and full of dangerous caverns.

Aria Spring (5), a natural spring at the foot of the mountain and near Zas Cave, is just 2.5 km from the peak of **Mount Zas**. It offers a shaded area for hikers to rest and refill their water bottles directly from the spring after the strenuous summit and descent. There is a parking area at the Aria Spring for visitors who only want to walk part of the trail.



Zas Cave

After the spring, the trail brings visitors to **Filoti**, a village known for its picturesque architecture. The village has several traditional shops selling local crafts and products such as pottery, textiles, and jewelry. An important cultural center, and a popular destination for tourists interested in experiencing Greek culture, Filoti produces conventional Naxian products such as cheese, wine, and olive oil.



Filoti Village

This picture features a traditional Greek goods shop where hikers can shop for household items such as mugs, pots and kitchen utensils.

Nature

The Filoti-Mount Zas loop offers a unique opportunity for hikers and tourists to explore Naxos' diverse ecosystems. The trail commences in a **Kermes oak woodland**, a deciduous forest characterized by kermes oak and other broadleaf trees. Typically found in the Mediterranean climate, it provides essential habitat for numerous species of birds and mammals. As the trail progresses, it transitions to **maquis shrubland**, a type of scrubland found in the Mediterranean region that provides essential shelter and food resources for various wildlife species, including migratory birds and mammals.

Finally, the trail reaches the **phrygana**, a dense evergreen shrubland that grows on limestone soils. Low-lying, drought-resistant, and thorny shrubs characterize this unique hot-dry climate habitat. The phrygana is dominated by **Genista acanthoclada**, a yellow flowering shrub, but it also includes sage, thyme, oregano, and lavender. These plant species, with their deep roots and drought-resistant nature, play a crucial role in maintaining soil stability and preventing soil erosion in this hot and arid landscape.

Mount Zas is composed of **limestone** and **dolomite** rocks, which were formed by the accumulation of shells and other debris that formed the limestone on the seafloor over millions of years. Dolomite, in particular, is the modification of limestone by magnesium-rich groundwater, which created its distinct mineral composition. The tectonic uplift of the region caused the formation of Mount Zas, making it an excellent example of **karst topography**. Karst topography is a type of landscape that results from the chemical weathering of limestone and dolomite rocks by rainwater. This weathering creates features such as



Mount Zas - rock formations

caves, sinkholes, and cliffs, which are evident in the form of Zas Cave.

The karst topography of Mount Zas provides important habitat for various wildlife species. The caves, sinkholes, and cliffs are home to several species of bats, reptiles, and insects, while the surrounding landscape supports a diverse range of plant life, including shrubs, herbs, and wildflowers.

Trail Description

Hikers should park at the **Saint Marina Holy Chapel (1)** on the Epar.Od. Damariona-Danakou, Drimalia road, which is on the eastern side of the trail. The Chapel is an excellent example of the Byzantine architecture style, featuring typical elements such as a dome roof, intricate frescoes, and ornate carvings. It has a rich history dating back to the 17th century, with several myths and legends associated with Saint Marina and her life. It is said that the chapel was built on the site of Saint Marina's birthplace and that she lived and died there, making it a significant site for religious pilgrimage.



Mount Zas Summit.

Follow a trail marker leading to the back of the church before passing through a fence on a dirt path in a dense Kermes oak woodland. The way forward is clear and opens up to a **terraced** landscape and contoured path overlooking the mountains with a map of the loop to the right. About 400 m into the uphill hike, continue onto an irregular rocky path and see an ancient inscription on a carved rock that translates to "**Mount of Zeus, Protector of Sheep**" (2).

Hikers will then continue the uphill hike out of woodland as the trail transitions to phrygana before coming upon a well-like structure known as Levgasia Spring and a map with a trail marker. The path is not difficult to follow, but trail markers eventually fall away as the path becomes marked by cairns, small stacks of stones that mark the route. Continue up the



View from trail overlooking western Naxos with the Prophet Elias Church in the distance.



Semi-ruined windmill

mountain through a clear path dotted with cairns until reaching the **summit (3)**. Here, visitors will enjoy the 360-degree view of the Cycladic Islands.

Hikers can turn back and descend the mountain the way they came or make the trail loop. Continue the circular route by taking the steep descent along an unclearly marked trail where hikers must find cairns that indicate the path.

On this descent, 1.3 km from the peak, pass by **Zas Cave (4)**. Small and unassuming, it is easy to miss. According to mythology, Zeus grew up in this cave. Hikers can peek in but not see much, as the cave is very dark. Exploration of the cave is ill-advised as the cave floor is very uneven and contains several crevices. Soon after Zas Cave, the path becomes an easily discernible smooth marble path. Continuing 800 meters down the trail, reach **Aria Spring (5)**. This spot offers a picturesque view of the

village of Filoti and a shaded area to rest and refill water bottles.

The trail continues south as hikers pass a run-down **windmill (6)** before reaching a paved road leading to Filoti. Here there are many restaurants hikers can visit. Two popular ones are [Ambrosia](#) and [Platanos - The Purescence Cafe](#). Ambrosia is located right in the center of town on a shady terrace. Here, hikers can stop in for fresh, traditional Greek food. Their menu changes depending on the season, and the service is excellent. Platanos - The Purescence Cafe offers delicious pizza, great views, and cold drinks to stop and people-watch after the arduous hike. Get the pizza topped with traditional Naxian cheeses to put a Greek flare on an Italian dish.

To finish the loop, turn right at **Bazaar Super Market (7)** and follow the trail markers up and out of the village center. Hikers will climb out of Filoti as the trail follows a steep mountain slope along a well-marked path. About 10 m from the **Church of Agia Irini (8)**, hikers will see various farms and vineyards below them in the Tragea valley. As the hike ends, the trail will merge with the paved asphalt road for 50 meters until reaching the Saint Marina Holy Chapel.



Upward path (7) leaving from Filoti's center. Bazaar Super Market on the left. Platanos - The Purescence Cafe on the right.

Logistics

Accommodation

Filoti

- [Giannakis Rooms](#)
 - **Contact number:** +302285031563
 - **Address:** Eparchiaki Odos Damariona-Danakou, Filoti 84302 Greece
 - A guest room located in the middle of Filoti and in close walking distance to restaurants, cafes, and bars.

Chalki

- [Dreamcatcher of Zeus](#)
 - **Contact Number:** +306972122281
 - **Address:** Naxos-Epiranthou Filoti, Chalkio 843 02, Greece
 - Set of apartments in Filoti with free parking and a car rental service.

Getting There

While a rental car or taxi may be the most convenient way to get from Chora to Filoti, there is also regular bus transportation to Filoti. Bus line 2 runs from Chora to Chalki, Filoti, Koronos, Moutsouna, and Lionas on certain days. Bus line 7 transits from Chora to Galando, Chalki, Filoti, and Apeiranthos. From July to August, the bus runs every day from Chora to Filoti at 07:30, 09:30, 11:00, 13:30, 15:00, 17:00, and 20:15. For more information, visit <https://naxosbuses.com/> or contact by tel. +30 22850 22291, email: info@naxosbuses.com

Trail 3 **DANAKOS - CHALKI**

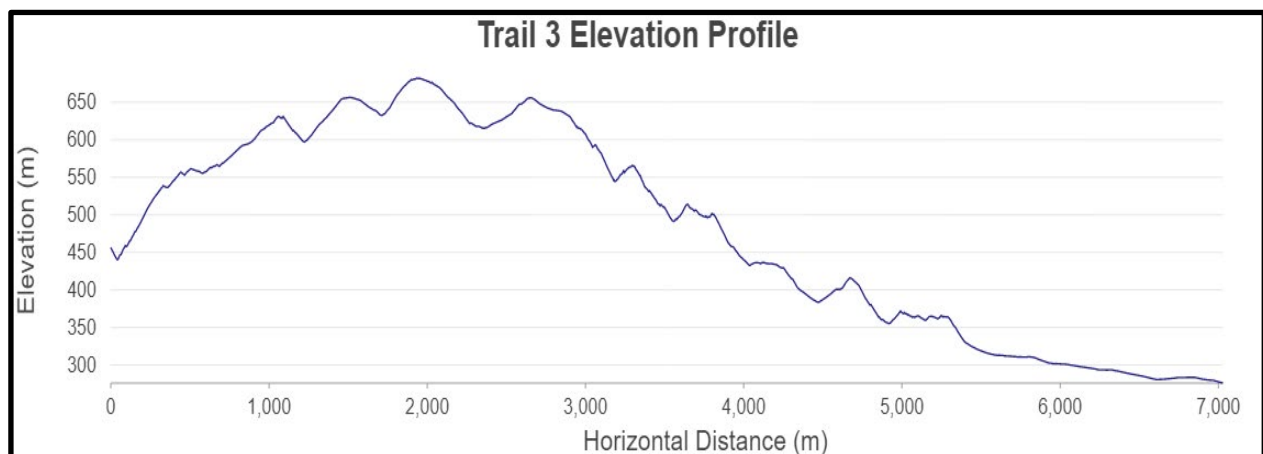
7 km || 3h 30 || Moderate || Elevation Gain: 350 m || Elevation Loss: 510 m

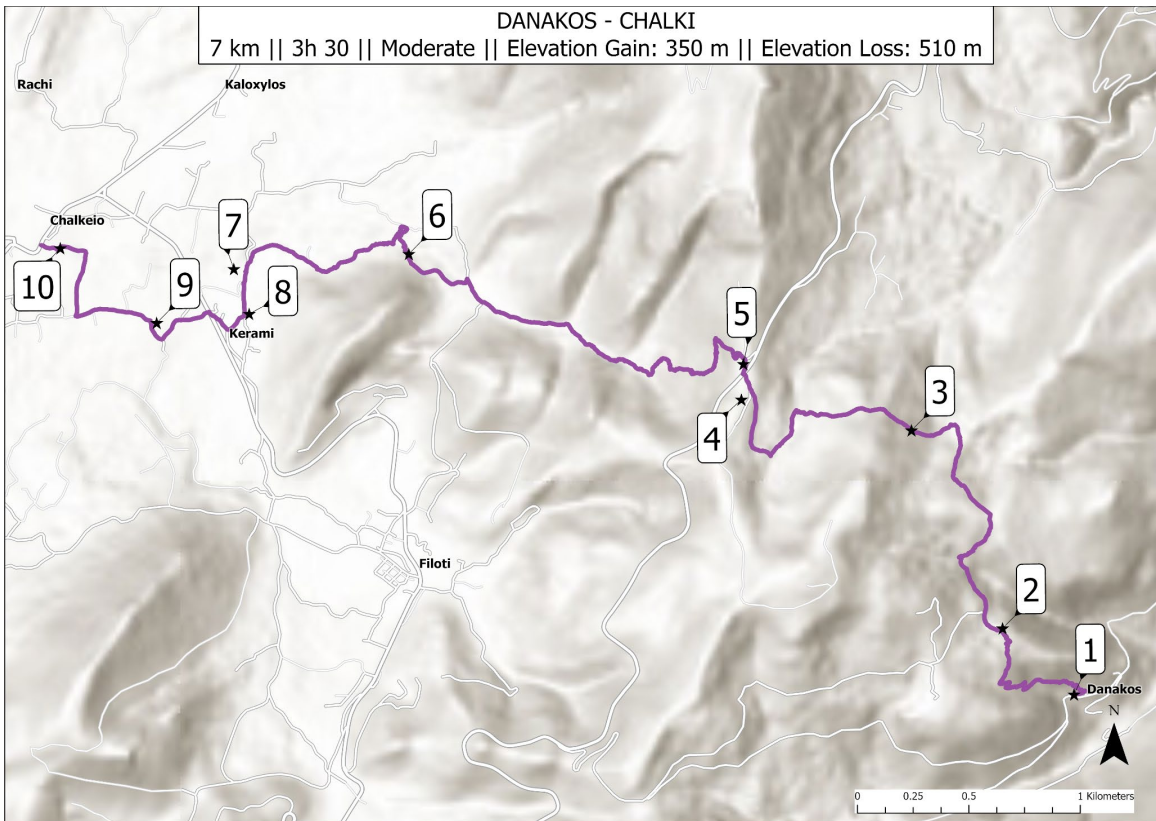
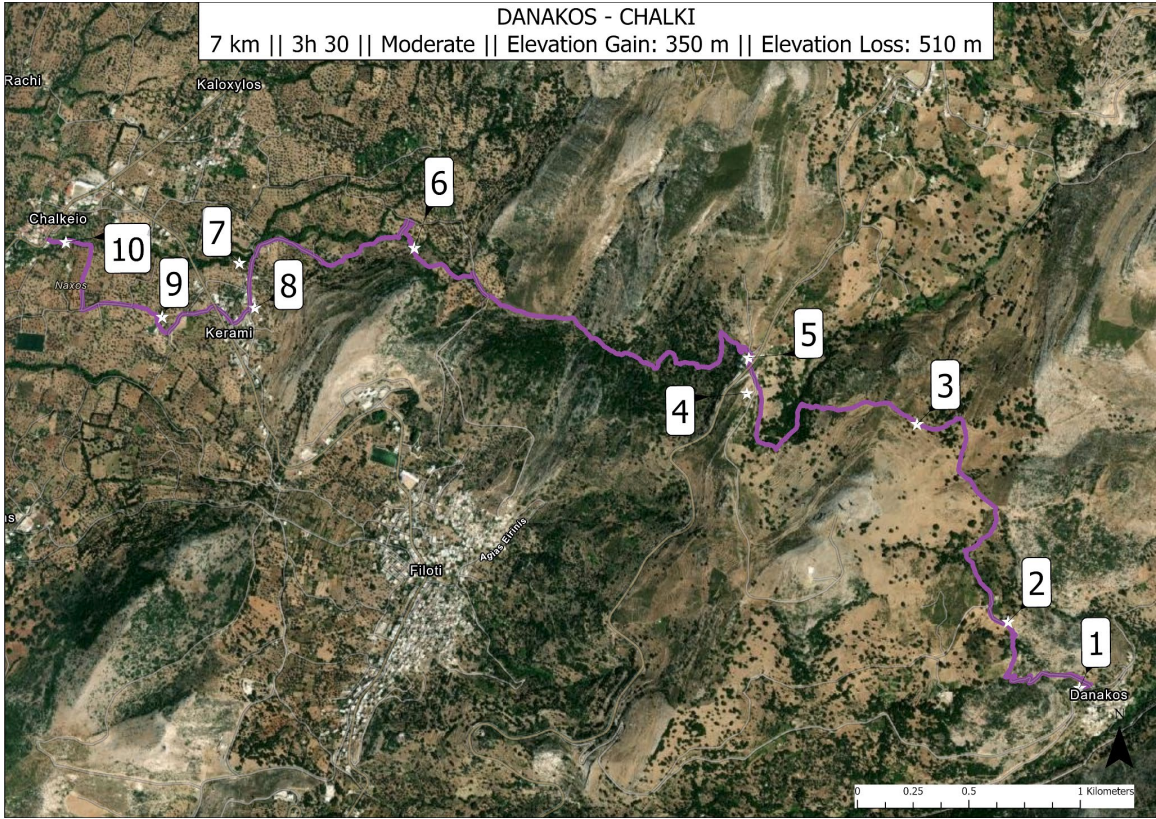
Trail Summary

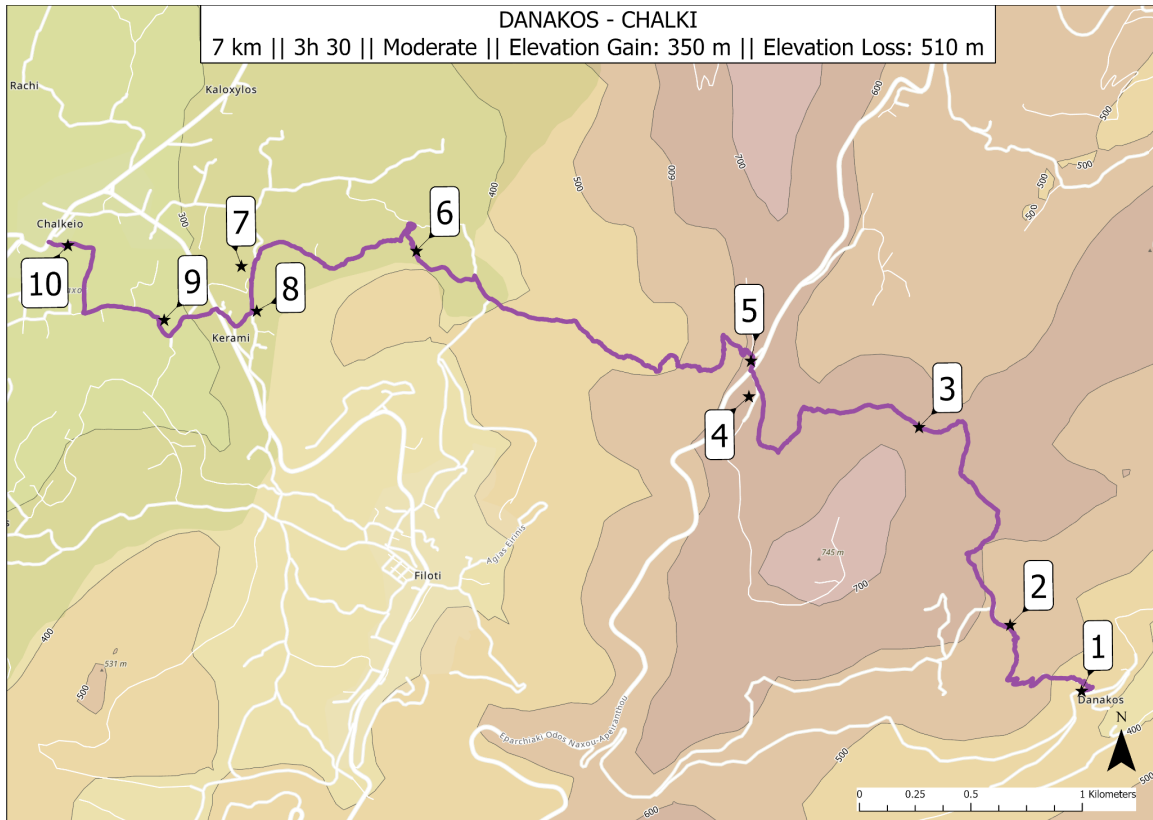
A moderately challenging hike across the mountainous spine of Naxos, this trail rewards hikers with spectacular mountain views of the island's high country. While this is a popular trail, visitors can still enjoy moments of solitude during quieter hours of the day. This path climbs out of the village of Danakos before traversing the Apeiranthos-Filoti pass and dropping into the central Tragea Plateau. It combines fine examples of Byzantine religious architecture, rich mountain flora, and a final stroll through the ancient olive groves surrounding the village of Chalki.

Maps and Elevation Graph

1. Stairs
2. Monastery of Christos Photodotis (Christ the Lightgiver)
3. Top of uphill dirt path
4. Windmill
5. Church of Agios Ioannis
6. Gully
7. Church of Agios Ioannis Prodromos
8. Markopolitis (or Kalavros) tower house
9. Church of Agii Apostoli
10. Small wooden bridge







Culture

Danakos is a small village on the eastern side of Naxos, surrounded on a hillside by oak, orange, and plane trees. According to legend, there are two possible origins of the name Danakos. The first legend is that it gets its name from the word “danax,” which translates to “reeds,” as the people of Danakos have a long history of reed construction and [agriculture](#). The second is that the village was named after the Danaoi, an ancient Greek tribe referenced in Homer, who are from this location. The village is at the foot of Mount Zas and is the primary entrance for visitors climbing the Mountain.



Markopolitis/Kalavros tower house (18th c., Kerami)

Chalki is located at the island's center, and was Naxos' historic capital and main administrative and trade center. Although it is no longer the capital, it is a bustling village with lots to offer visitors, such as galleries, jewelers, distilleries, and tavernas. In Chalki, tourists can visit the **Vallindras distillery**, which produces Naxos' traditional Kitron liqueur. Kitron is made from the leaves of the citron tree, native to the island, which is

collected in summer and then distilled with alcohol and sugar to create the liqueur. It can be either clear or pale yellow with a flavor similar to lemon and is typically served as a digestif.

About 1 kilometer from the trailhead, hikers will find the fortified **Monastery of Christos Photodotis (Christ the Lightgiver) (2)**, originally constructed in the 6th century. The monastery, which is free to visit, offers majestic views of the Aegean Sea and Donoussa Island. On the ground floor, visitors will find a three-aisle church with elaborate architectural sculptures, and the top floor features the monk's former living quarters. According to local legend, the monastery was built at this location because a princess sailing in dangerous waters off of Naxos saw a light coming from that spot, dubbing it the "light giver."

In the village of Kerami, hikers will find the **Markopolitis (or Kalavros) tower house (8)**, built in the latter half of the 18th century. The tower house is three levels high and built by a local resident, Marcos Politis. The tower stands out because of its imposing size and defensive architecture.

Nestled in an ancient [olive grove](#) between the abandoned settlements of Metochi and Kerami near Chalki, hikers will find the **Church of Agii Apostoli (9)**, a cruciform domed Byzantine church. The church was built between the 10th and 11th centuries, and its two-story design is very rare, with the upper level being accessed through an exterior staircase. On the interior of the first level, 12th-century wall paintings were discovered recently when the church's whitewash was removed.



Byzantine Church of Agii Apostoli (10th -11th c., Metochi)

Nature

Naxos is unique in the Cycladic islands for its open woodlands. On this trail, hikers will pass through a [kermes oak woodland](#) that offers shade to escape the summer heat. Kermes Oaks prefer moist soil, which is why so much of the woodland trail is through gullies and riverbeds.

Near Filoti, there are also numerous big [Valonia Oak trees](#). A gall, or growth, forms on the oak tree's acorns due to the presence of a small wasp called *Andricus quercuscalicis*. The gall is caused by the tree's reaction to the wasp's eggs or larvae, which stimulates the tree to produce abnormal growths around it. The galls are not harmful to the tree and used to be harvested for various uses. The Valonia acorns, the cup of which resembles a miniature sun, are used for tanning and dyeing. They can also be eaten raw or boiled and are often used as feed for pigs.

This trail passes through extensive [olive groves](#) and **agricultural areas**. The groves can be found throughout the island, with many of them located in the **Tragea Valley**, where the fertile soil and mild climate are well-suited for olive trees. The olives are usually harvested from late October to December and are used to produce high-quality extra virgin olive oil. Hikers will notice the [terraced landscape](#) that allows cultivating the steep mountainsides of Naxos to be possible.

Steeply below the church of Agia Irini, looking out west over the Tragea plateau, one can observe how dense maquis and forest are invading abandoned agricultural terraces. The fields on the steepest slopes away from the village were abandoned first, typically exhibiting the most advanced vegetation encroachment. North-facing slopes are covered with the densest forest as conditions are cooler and more moist.

Trail Description

There is a [parking area](#) just off the road at the entrance of Danakos. If needed, venture into the village to the Church of Zoodochos Pigi, visible to the south, where a water spigot can be found. Hikers will start the trek by walking uphill along the paved road they drove up before reaching a trail marker to the right on stone stairs **(1)**. Follow the stairs up through an agricultural area and [phrygana](#) before walking past many kermes oaks and olive trees. Continue winding uphill through switchbacks until reaching a trail marker on the right and the fortified **Monastery of Christos Photodotis (Christ the Lightgiver) (2)**. From here, hikers are rewarded with stunning views of the eastern coast of Naxos.



View along trail near Danakos looking east towards the island of Donousa



The fortified Monastery of Christos Photodotis

The path diverges directly after the monastery, and hikers should take the fork on the right that leads to an uphill dirt path, as indicated by the trail marker. The trail opens up as hikers pass through a sheep gate, bringing visitors through maquis and terraces with evidence of overgrazing. The trail becomes difficult to discern here, and hikers should keep an eye out for spray painted red dots that serve as unofficial trail markers. Look for the trail marker **(3)** at the top of the hill and continue in between a terrace and fence. The vegetation becomes denser, and the path becomes narrower, as hikers enter a shaded woodland along a riverbed before the path opens to a meadow overlooking the village of Apeiranthos. From here, walk up through a shaded gully along a stone wall on a rocky path and pass through multiple sheep gates before merging with the paved road in 850 meters. See a trail marker before approaching a restored **windmill (4)**.



Faded unofficial trail marker along steep hill (left) and official trail marker signaling exit from hill (right)



View to the west from the Church of Agios Ioannis at the saddle of the island mountains. The Tragea plain in the foreground, Paros in the background.

The path then leads hikers downhill on the road until reaching a taverna with a trail marker directing the path toward Filoti and Chalki. In 100 meters, approach the **Church of Agios Ioannis (5)**, located above the village of Filoti. The church is not particularly old, but here visitors can rest under the shade of a large oak tree and refill their water bottles while enjoying the stunning views of western Naxos.

From the church, hikers will follow the trail down the valley through the gully **(6)** surrounded by kermes oak woodland for 1 km. The path continues downhill through rocky dirt paths, paved roads, agricultural areas, and olive groves.

Walk through a residential area and see a wooden sign with a trail marker indicating the path to Chalki. Turn right at the trail marker and follow the trail through olive groves until they reach the

Church of Agios Ioannis Prodromos (7). This church, tucked away in an olive grove, was built between the 11th and 13th centuries. If it is open, visitors can go inside and admire the unique frescos dating back to the 13th century.

Continue along the road for 120 meters until arriving at the **Markopolitis (or Kalavros) tower house (8)** and make a slight right, continuing down the asphalt road through the village of Kerami. The path will connect with a paved asphalt road. Cross the road and continue along the gravel road that leads to the **Church of Agii Apostoli (9)**, an 11th-century church with a rare 2-story design. Continue for approximately 325 meters, passing olive groves before reaching a fork and taking the trail to the right.



Byzantine Church of Agios Ioannis Prodromos, 11th -13th c., Kerami

From here, a trail marker directs hikers towards a dirt path along a riverbed. Come upon one last trail marker passing over a small wooden bridge **(10)**, indicating hikers' arrival in Chalki. At the next intersection, take a right and continue until reaching a main road.

- End Trail 3 -

Logistics

Accommodation

Chalki

- Villa Onar
 - **Contact number:** +30 694 451 02
 - Booking via 3rd party website: <https://hotelscheck-in.com/villa-onar/en/>
 - Rooms available for rent in the center of Chalki with free parking

Danakos

- NONE

Getting There

While a rental car or taxi may be the most convenient way to get from Chora to Danakos, there is also regular bus transportation to Chalki. At the time of writing, several bus lines (2, 6) run between Chora to Chalki and Danakos. Buses frequency increases in the summer months: from July to August, the bus runs every day from Chora to Chalki at 07:30, 09:30, 11:00, 12:00, 13:30, 15:00, 17:00, 20:15 and from Chora to Danajos on Tuesdays at 13:30. For more information, visit <https://naxosbuses.com/> or contact by tel. +30 22850 22291, email: info@naxosbuses.com

Trail 4

CHALKI – MONI LOOP

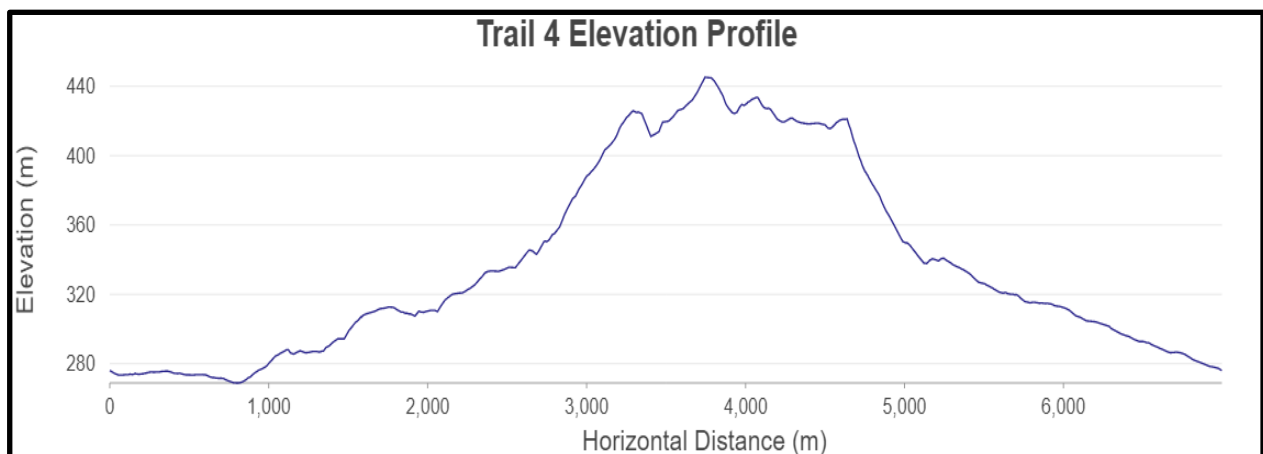
7.2 km || 2h 10 || Moderate || Elevation Gain: 300 m || Elevation Loss: 300 m

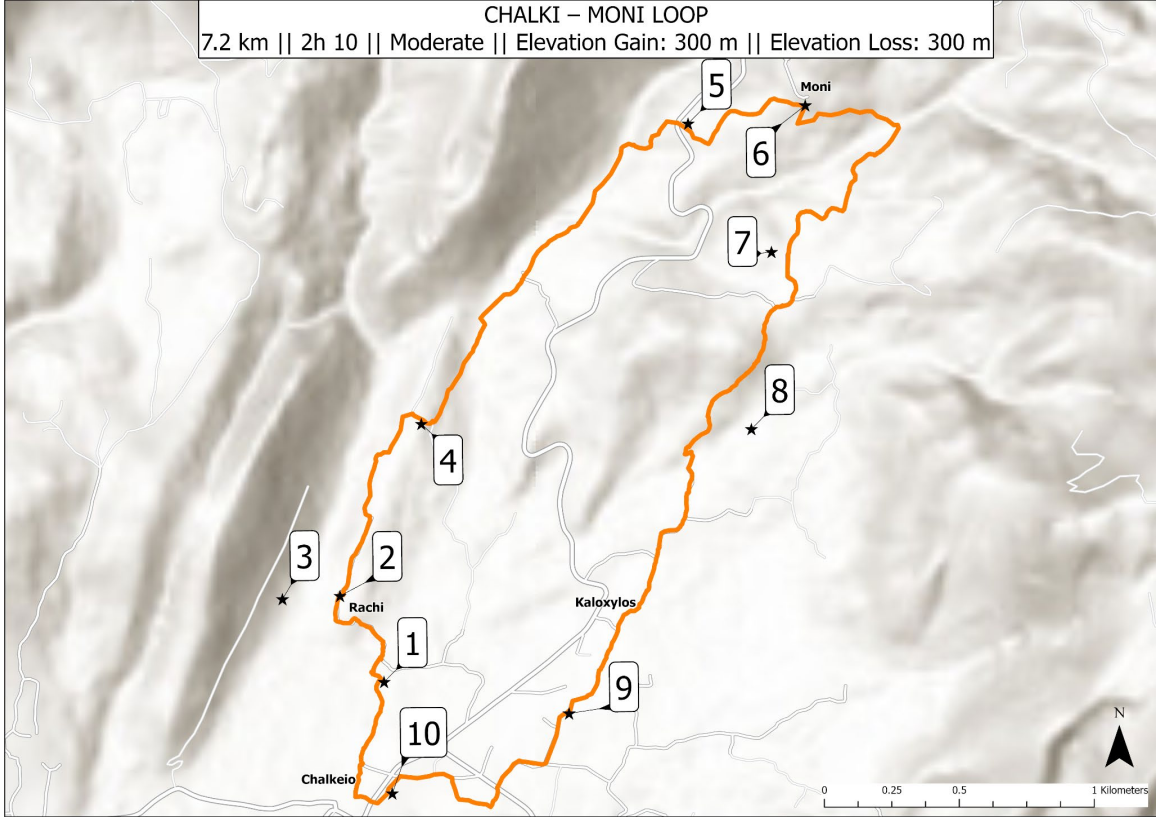
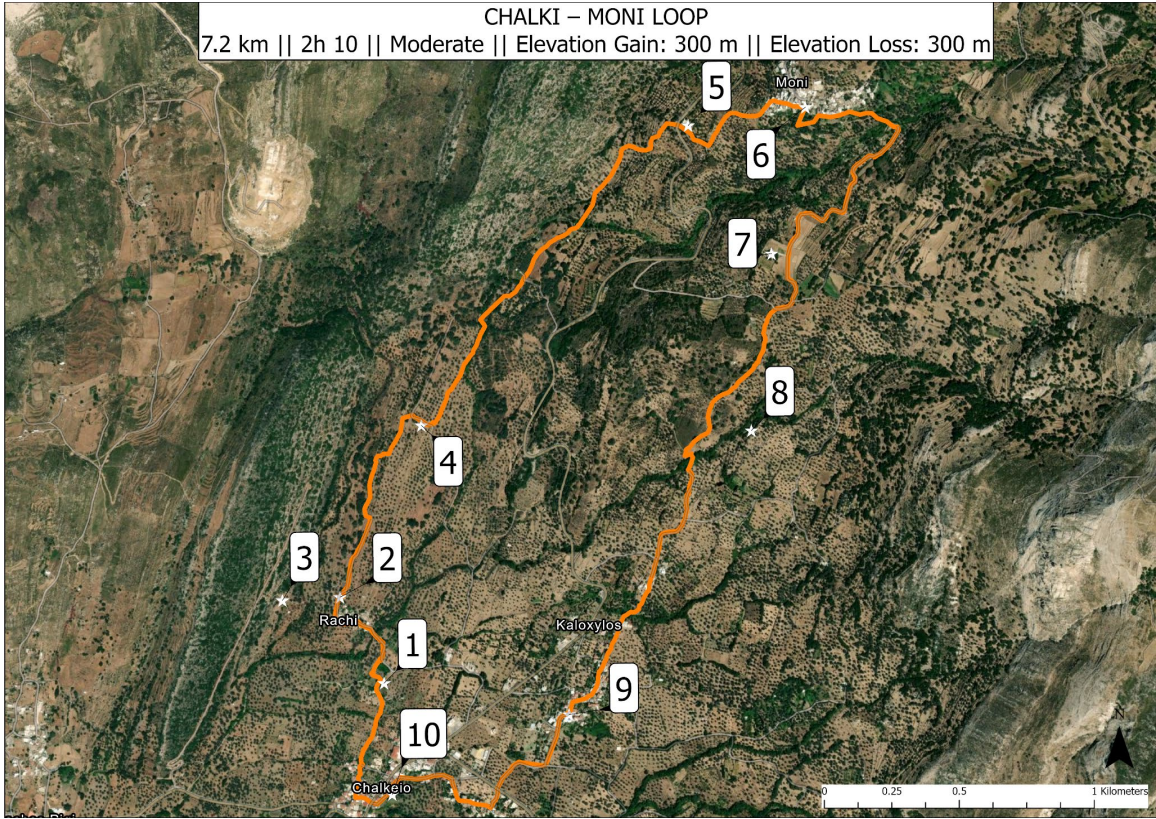
Trail Summary

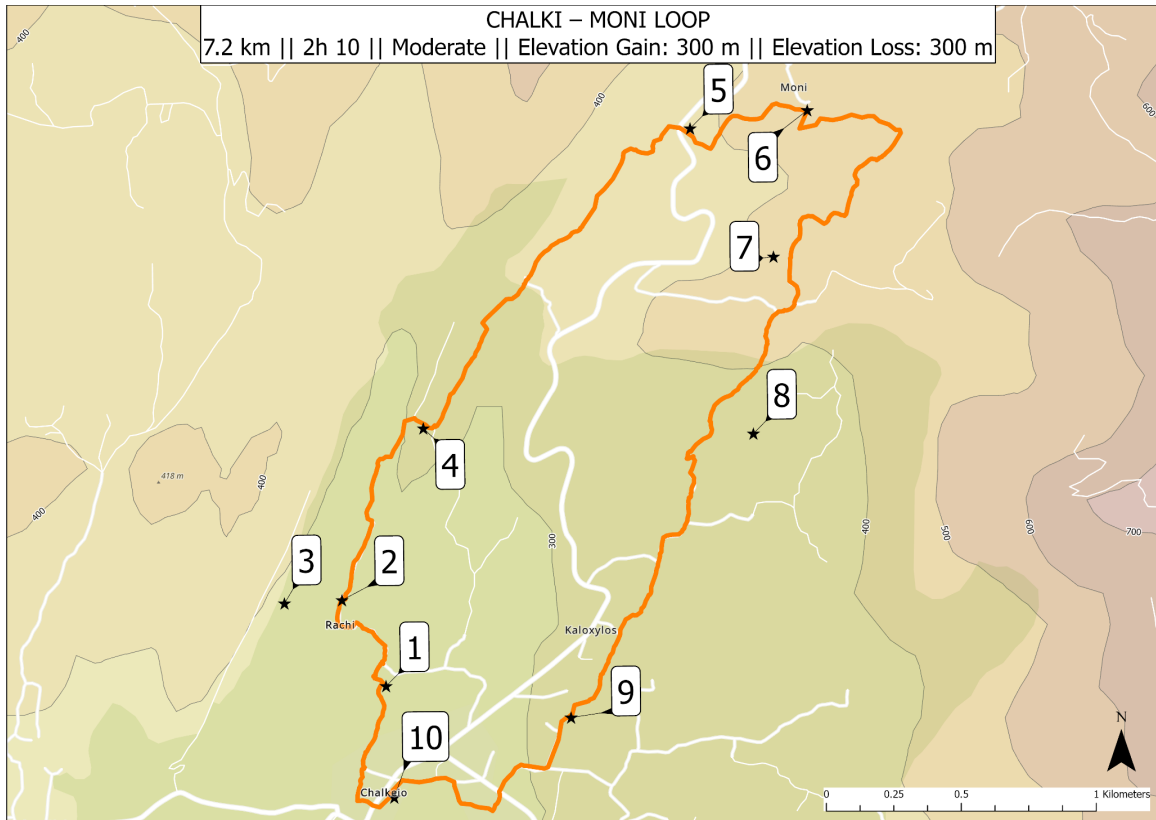
This scenic circular trail travels through centuries-old olive groves and the village of Moni, giving hikers the opportunity to experience two different sides of Naxos: history and art. Start from Chalki clockwise in a full circular route to discover the intersection of nature and culture of ancient Byzantine churches, olive groves, and views of marble hills. The route from Moni will reward hikers with rocky dry beds surrounded by fragrant oregano and rest at the peaceful settlement of Kaloxylos. This trail is best attempted in late spring and earlier summer in order to fully appreciate the diversity of flowering species found alongside the trail. Although this trail is a loop that can be started in either Chalki or Moni, on hot days, it may be worth walking this circular route clockwise as much of the western leg is shaded.

Maps and Elevation Graph

1. Byzantine church (11th-13th century) and Spring of Agia Marina
2. Church of Agios Nikolaos - Agios Demetriou
3. Byzantine Church of Taxiarchis Rachi
4. Church of Panagia Rachidiotissa
5. Church of Panagia Drossiani
6. Trail Marker Leaving Moni
7. Taverna
8. Profitis Illias Church
9. Folklore Museum
10. Tower of Barozzi-Gratsia







Culture

Chalki is located at the island's center, and was once Naxos' historic capital and main administrative and trade center. Chalki is central to the Tragea region and is informally known as "Byzantine Park" which is home to numerous examples of Byzantine architecture in the Cyclades. Now it is a bustling village with lots to offer visitors, such as galleries, jewelers, distilleries, and tavernas. In Chalki is the **Church of Panagia Protothronos**, one of Naxos' oldest churches. Built in the 7th century, the church, also known as "Madonna of the First Throne," is dedicated to the Virgin Mary and now hosts a collection of holy relics and ancient texts. The interior walls are known to have at least five layers of frescos, with a particular fresco depicting the Virgin Mary over the altar, which is considered unique in the Balkans.



Church of Panagia Protothronos, the oldest church in Naxos.

Right outside of Chalki, is the **Byzantine church (11th-13th century) and Spring of Agia Marina (1)**. The church is dedicated to Saint Marina, a popular saint in the Greek Orthodox Church. The church is a simple, white-washed building with a blue dome. The interior of the church is decorated with several icons and frescoes, many of which depict scenes from the life of Saint Marina. The frescoes are an important example of the religious artwork of the region and offer a glimpse into the rich cultural heritage of Naxos. The Church of Agia Marina is an example of the traditional style of religious architecture in Greece. The church is a small, one-room building with a dome supported by four pillars. The exterior of the church is relatively plain, with a simple, rectangular design and a single entrance. Although the doors may be locked, the church has a charming inner courtyard where the Spring of Agia Marina can be seen. The Spring has a long history of use by the local population, who have relied on its fresh water for centuries. It is considered to be a sacred site by many, and there are several legends and myths associated with the spring, many of which involve the healing powers of its water.

Pass through **Monistia** which is a small village that has been revitalized in recent years by an increasing number of foreigners, mostly North Europeans, who have bought and renovated old houses. Here, hikers will find the **Church of Agios Nikolaos - Agios Demetriou (2)**, a medieval church in the village of Monitsia. Believed to have been built in the 13th century, the church is notable for its unique architectural style that combines elements of Byzantine and Western Medieval designs. It features a distinctive cylindrical bell tower, and a curved, horseshoe-shaped apse, unusual for churches from this period. The interior of the church is decorated with beautiful frescoes, many of which depict scenes from the lives of the church's patron saints, Saint Nicholas and Saint Demetrius. The Church of Agios Nikolaos and Agios Demetriou is an important landmark for the people of Naxos and a testament to the island's rich cultural heritage. It is a popular tourist destination and a pilgrimage site for many Greek Orthodox Christians. Additionally, the church is considered one of the finest examples of medieval religious architecture in Greece and is listed as a protected national monument.

From Monistia, a short detour can be taken north to visit the Byzantine **Church of Taxiarchis (3)**, which is currently being restored. Originally a three-aisle church, it underwent a series of renovations and wall collapses throughout the centuries that hid its true construction until excavation work revealed it. During this restoration work in 2015, the church was reinforced with concrete, but the original stonework remains. One of the most notable frescos that were revealed during excavation is of the Epiphany, in which the Christ child was presented to the Magi, which is thought to be part of the initial building of the church.



*Byzantine Church of Panagia Rachidiotissa
(12th-14th c.)*

The **Church of Panagia Rachidiotissa (4)** is a medieval church located in the village of Rachi. One of the oldest surviving churches on the island, it dates back to the 12th and 14th centuries. A simple, unadorned facade and whitewashed walls characterize the Byzantine architecture of the Virgin Mary Church. Despite its simplicity, the church's dome and walls are adorned with intricate frescoes. The frescoes are thought to have been painted in the 13th or 14th century and are considered some of the finest examples of Byzantine art in Greece. The church also features several important religious artifacts, including a reliquary containing a piece of the True Cross and several Byzantine icons. In addition to its religious significance, the Church of Panagia Rachidiotissa is also an important cultural and historical landmark, providing insight into the artistic, religious, and social life of medieval Naxos.

The 6th-century Byzantine **Church of Panagia Drossiani (5)**, also called “Our Lady of Morning Dew”, can be found just outside Moni. It is one of the most important Byzantine churches and consists of three apses originally constructed in the 4th century. It also features an enclosed



Visit and support a local handloom weaver near town plaza in Moni.

courtyard and regional cemetery lined with fragrant roses. Although still in active use by locals, visitors are welcome to step inside for a small donation and view the 1,400 year old frescoes – the oldest in the Balkans.

Moni, in the heart of Naxos Island, is a farming, olive-producing village that also has a notable tradition in handloom weaving, making it one of the last places in Greece where this significant tradition is still alive. This art form has been passed on through generations and is considered an important symbol of life in Naxian culture. Survival of this tradition relies on visitors purchasing the impressive textiles which support the local trade and economy. Visit a handloom weaving demonstration in this village where the work of the Moni Weavers Association of Women displays and sells their handmade textiles.



Tower of Barozzi-Gratsia (c. 17th century).

Enter the village of **Kaloxylos** and find the **Folklore Museum (8)** which features a privately owned collection of items celebrating the everyday lives of residents. From scooters to military relics to old agricultural tools, take a step into the lives of the inhabitants of this idyllic town. The Folklore Museum operates from May to October, 9 am to 5 pm.

First mentioned in a 1678 report detailing a pirate raid, the **Tower of Barozzi-Gratsia (9)** is one of many fortified tower houses that can be found around the island of Naxos. These buildings were erected from the 14th century onwards as either a means of defense, a monastery, or as the country homes of local wealthy Venetian landowners. The Tower of Barozzi-Gratsia, decorated with iron-barred windows, a wooden drawbridge, and tactfully small windows to throw scalding water from, was built to withstand attack.

Nature

On the eastern leg, the trail leads across a mosaic of agricultural areas and dry open habitat, including [phrygana](#) and [roadside vegetation](#). The trail intersects a couple of watercourses draining the west-facing slopes of the mountain and which give rise to lush [kermes oak woodlands](#). They are characterized by plane trees and oleander and often harbor different species than the surrounding areas. Look out for ancient Valonia oak trees that have escaped clear-cutting for olive tree cultivation.

Much of Naxos consists of marine sediments in the form of limestone and its metamorphosed cousin, marble. The beauty and utility of Naxian marble as a strong construction material make it sought after in several surface mines. Because of marble's durability, it has withstood erosion over the millennia relative to other, softer rocks on the island and tends to persist in mountaintops and peninsulas. As a result, most marble quarries on Naxos are located in exposed, highly visible locations, such as the hills just west of Moni.

On the western leg, the path leads mostly through ancient olive groves. This area, despite being mostly south-facing, has fertile, moist soil because the substrate comprises soft, erodible, and water-absorbent flysch rock. It has been recognized since ancient times as a high-value agricultural habitat and further developed through a well-maintained network of [terraces](#) and stone [walls](#). Where irrigation water is available (e.g. in the little valley directly southeast of Moni), it is used for



Ancient valonia oak tree (Quercus macrolepis) located just off the trail near Moni.



Exposed marble quarry seen from a distance in the hills west of Moni. The substrate consists of alternating layers of limestone (light gray) and flysch, which because of their separate chemical properties support different plant communities. In the foreground olive trees in an agricultural matrix which grade into the original Naxian oak woodland at higher elevations.

vegetable cropping, while even non-irrigated areas are important as valuable olive groves. The **olive groves** below Moni are among the most biodiverse sites on Naxos and harbor a wide variety of wildlife, including many species of lizards and snakes.

Trail Description

Park in the [Public Parking Lot](#) in Chalki right by the Chalkio School opposite the War Memorial. The **Epiouision (MA) Bakery** next to the high school is perhaps the best bet for trail food. Walk downhill on the main street, passing the **Church of Panagia Protothronos (6)** on the left. Turn right at the Pharmacy down the side street towards local cafes and shops where visitors can enjoy black Naxian pizza and ice cream. After passing Four Tastes Ice Cream and Cafe, notice a fork in the road with a map of the cultural footpaths network in the center. Turn right at this fork and follow a paved street to continue on Trail 4.



Olive groves characteristic of the western leg of the trail with Moni in the distance.



Rear facade of Byzantine Church of Agios Nikolaos-Agios Demetriou (13th c., Monitsia)

After 350 m, reach the **Byzantine church (11th-13th century) and spring of Agia Marina (1)** with the option to turn left at this junction and take a short detour (250 m) to the Byzantine Church of Agios Georgios Diassoritis (10th-11th century) that features mosaics, frescos, and stone carvings. After visiting the church, go back to the main trail and continue for 50 m before turning left down a gravel path lined by old stone walls following the trail markers.

Arriving in Monitsia, walk past the Byzantine **Church of Agios Antonios (13th century)** and enter a small square featuring a large planted Valonia Oak where one can rest and observe village life. Nestled under the shade of the tree is the Byzantine **Church of Agios Nikolaos-Agios Demetriou (13th century, Monitsia) (2)**, modernized with plaster walls and electricity features. Many framed iconography was placed there by locals. Continue up the short stairs to the right, where the trail splits. To the left, follow Trail 4A to visit the **Byzantine Church of Taxiarchis Rachi (7th—8th century) (4)**, an early Byzantine three-aisled basilica currently being renovated for preservation. The adventurous traveler may choose to continue on Trail 4A for approximately 1000 m until it rejoins Trail 4. This trail is largely unmarked and traverses through phrygana.



*South facing facade of Byzantine Church of Taxiarches
Rachi (7th-8th c.)*

characterize the Byzantine architecture of the medieval Virgin Mary Church.

Immediately past the church, turn left and continue through a phrygana landscape that transitions into maquis as the trail follows parallel to a gully. After a short distance, find a large rock buried on the opposite side of the gully with a red spray-painted arrow pointing towards the trail opening that continues uphill through Kermes oak woodland. Although the gully is dry during the summer, hikers should observe caution when crossing the gully in the wetter winter months as there may be running water. After crossing, use this opportunity to rest under the shade near the watermill.



*Byzantine Church of Agios Isidoros (6th-7th c., Rachi,
Monitsia)*

dome, and three adjoining chapels and is adorned with frescoes in many layers dating between the 7th and the 14th centuries. Along with Chalki's Panagia Protothronos, Panagia Drossiani is considered the most important church in the entire Cycladic region. Visitors can enter for a small donation that contributes to the church's restoration. Enjoy walking around the inner courtyard and observe the regional cemetery at the back of the church.

Return to Trail 4 and exit Monitsia village. Continue slightly uphill along ancient stone walls, past olive groves. Continue 800 m until arriving at a fork in the trail. Take a short detour to the left to visit **Agios Isidoros (6th - 7th century)**, an early Byzantine three-aisled basilica. Hikers that opted to take Trail 4A will end at this church. Return to the fork and take the right leg uphill to the **Byzantine Church of Panagia Rachidiotissa (12th-14th century, Rachi) (4)**. Simple, unadorned facades and whitewashed walls

Exiting the Kermes oak forest, the trail continues uphill between stone walls before climbing the stairs. These stairs run perpendicular through ancient terraces that were built to make full use of the rocky and steep terrain. Although these terraces are no longer actively cultivated, there are still many ancient olive trees and other vegetation that are remnants of the crops that were once intentionally planted here.

At the top of the stairs, cross the road and see the **Byzantine Church of Panagia Drossiani (7th century, Monastery) (5)**.

The church has three alcoves, a conical

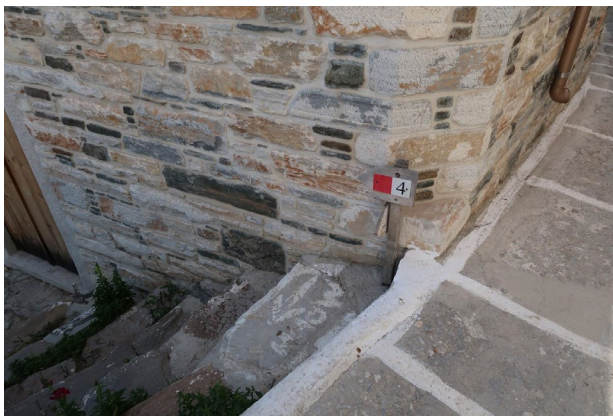
After visiting, descend the stairs from the church and continue left around its perimeter. On the right, observe an overgrown olive grove dominated with several species of thistle. At the first fork, turn left and continue uphill perpendicular to terraces for approximately 115 m before arriving at a final fork before the ascent into Moni and go right. Follow the trail uphill until entering into the village. As hikers continue through the village, stop at Agia Fotini church, where there is a water spigot with potable water.



Byzantine Church of Panagia Drossiani (7th c., Monastery)

Hikers may choose to end the trail in Moni or continue on the circuitous route back to Chalki on the Eastern leg of the trail. Whichever option is chosen, it is suggested to take a detour further into Moni, where there are several restaurants, such as **Taverna Panorama**, which has unobstructed panoramic views of the landscape towards Chalki. Also, visit **Moni Handicrafts** at the North entrance of the village which features homemade Naxian handicrafts and weavings.

To continue the trail, return to Agia Fotini and walk East away from the direction the Western leg of the trail ended. In a couple of meters, there is a trail marker on the wall to the right **(6)**, which leads downhill on an overgrown path which continues for about 350 meters. Take a left at the sign littered with holes from shotgun bullets. In 125 meters arrive at Taverna Calliope **(7)** where hikers can step inside and find an assortment of hand-made wood carvings and knitwear created by local artists.



*Starting from Agia Fotini, continue east for several meters until arriving at trail marker on the right **(6)***

Continue for another 140 meters before reaching a fork in the road. Take a right and in 50 meters take a left down a dirt farm road. There will be a dwelling on the left side which indicates where the trail continues. After passing underneath a tunnel created by tree branches, the path will become less defined. On the left, two churches will emerge from the trees. The church closest to the trail is Profitis Illias Church **(8)**, a single aisle church with a white-washed exterior and bright blue door nestled into a small hill. In several more meters, take a right at the fork in the road.

After 50 m, see a trail marker and walk downhill a steep rocky path and continue forward past a waterfall. As hikers continue forward, they see an olive grove situated on their right side. A small hill awaits, which hikers will have to climb down to glimpse the village of Kaloxylos in the distance. Along the way, be sure to keep an eye out for the imprints of donkey hooves in the cement passing through the outskirts of the village. The donkey prints serve as a symbol of the village's connection to its rural roots and its reliance on traditional methods of production.

Pass Kaloxylos Cemetery on the left as stone walls begin to flank the path on both sides. The walls differ in age, which determines the ecology of this microhabitat. Older walls can be recognized by their more weathered, lichen-encrusted surfaces and harbor significant diversity of animals, plants, and invertebrates especially when they are well-maintained. The landscape changes from stone walls to houses, marking the arrival into Kaloxylos. Continue straight, passing a small church with a bright blue doorbell. Walk under the stone arch and reach the town square.

Take a right at the next two forks in the road, marked by red trail markers. Pass the **Folklore Museum (9)**, recognizable by its painted ornamental doors, and see The Church of Holy Trinity across the street. Housed in a beautiful neoclassical building, the museum contains collections of traditional farming and household implements, as well as a rope-making workshop and an old-fashioned grocery store. Visitors can plan to spend upwards of an hour in this private museum collection, which includes a variety of items depicting the lives of the generations that have lived in this town. The residents of Kaloxylos village are famous for the exotic flowers growing in their gardens, which visitors will notice peeking over garden walls on both sides of the path.



Charming facade of the Folklore Museum in Kaloxylos

Turn right at the museum, and continue down a path that meanders through the sleepy village of Kaloxylos. After 300 m, reach the end of a road and veer right. Continue for 60 m to reach the **Pyrgos Markopolitis - Papadaki**. Along this path, notice a traditional Greek family garden on the

right, filled with a broad range of the fruit and vegetable species forming the core of the Mediterranean diet Cycladic families have been relying on: artichokes, eggplant, romaine lettuce, and olive trees, but also more unusual fruits including pomegranate, quince, loquat, and citron.

Turn right at the Pyrgos Markopolitis – Papadaki. At the end of the road, turn right towards Chalki. Continue for 250 m, then turn left at the fork in the road. On the left, see the fortified **Tower of Barozzi-Gratsia (10)**. From here, a short walk takes visitors to the **Church of Panagia Protothronos**.

- End Trail 4 -

Logistics

Accommodation

Moni

- ELaiolithos Luxury Retreat - Located just outside Moni village
 - info@elaiolithos.com
 - **Contact Number:** +30 698 608 3477 - WhatsApp +30 698 932 7674
 - ELaiolithos offers visitors a green, Eco-friendly hotel retreat defined by nature, tradition, and hospitality.

Chalki

- Villa Onar - In village
 - **Contact Number:** +30 694 451 02
 - Booking via 3rd party website: <https://hotelscheck-in.com/villa-onar/en/>
 - This hotel has a shared lounge and garden for visitors as well as WiFi and free parking.

Getting Around

While a rental car or taxi may be the most convenient way to get from Chora to Chalki, there is also regular bus transportation to Chalki. At the time of writing, several bus lines (2, 6) run between Naxos town (Chora) and Chalki, as well as line 7, which runs from Moni via Chalki to Naxos town (Chora). Bus frequency increases in the summer months: from July to August, the bus runs every day from Chora to Chalki at 07:30, 09:30, 11:00, 12:00, 13:30, 15:00, 17:00, 20:15. For more information, visit <https://naxosbuses.com/> or contact by tel. +30 22850 22291, email info@naxosbuses.com

Trail 5

TRAGEA (CHALKI) – ANO POTAMIA

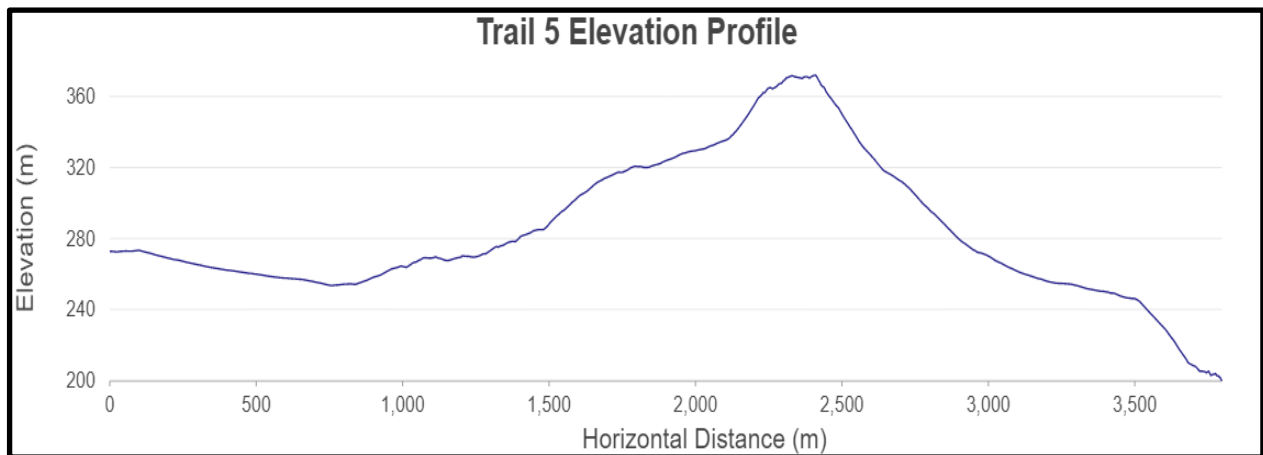
3.7 km || 1h 30 || Easy || Elevation Gain: 111 m || Elevation Loss: 196 m

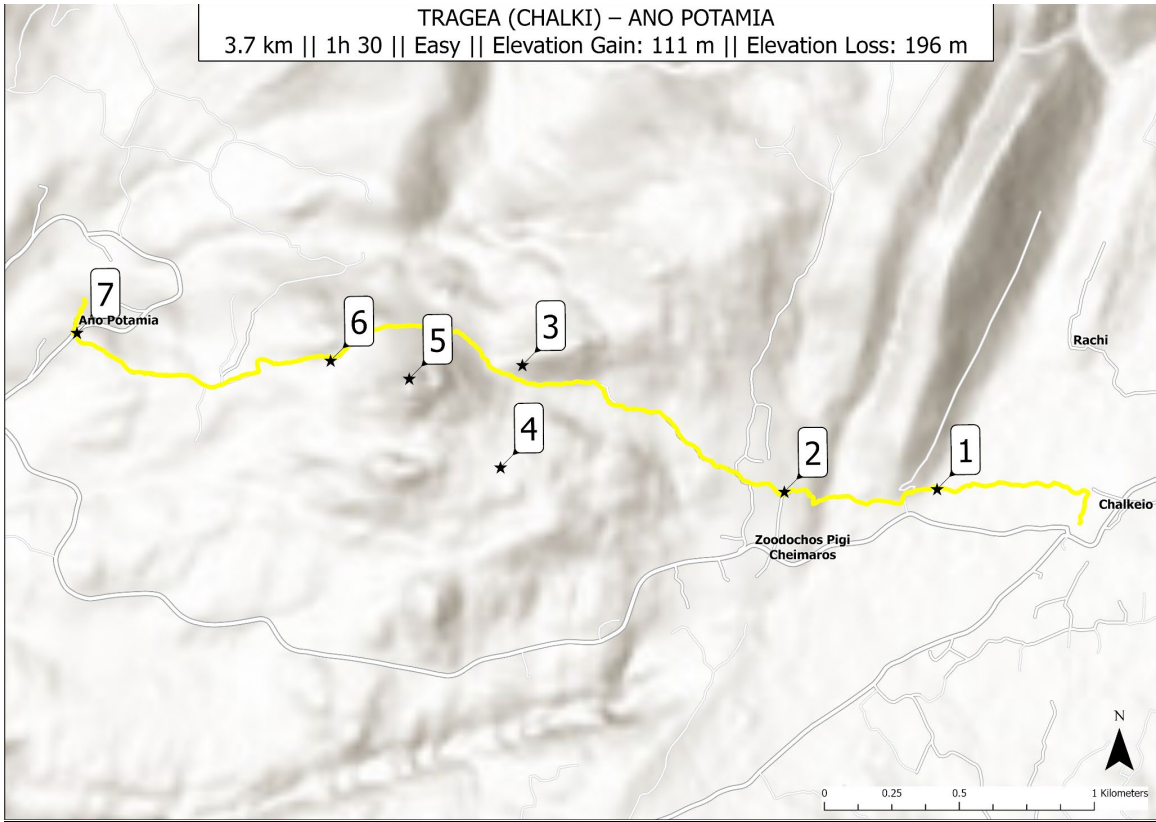
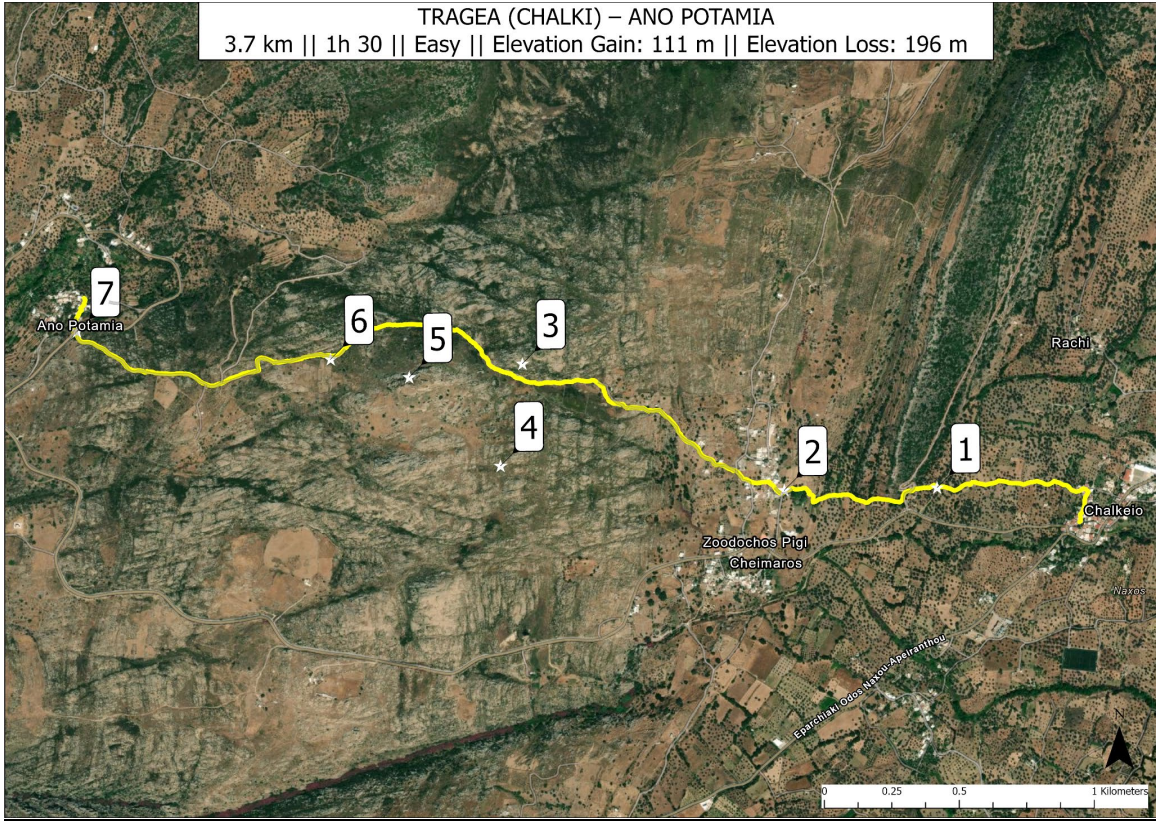
Trail Summary

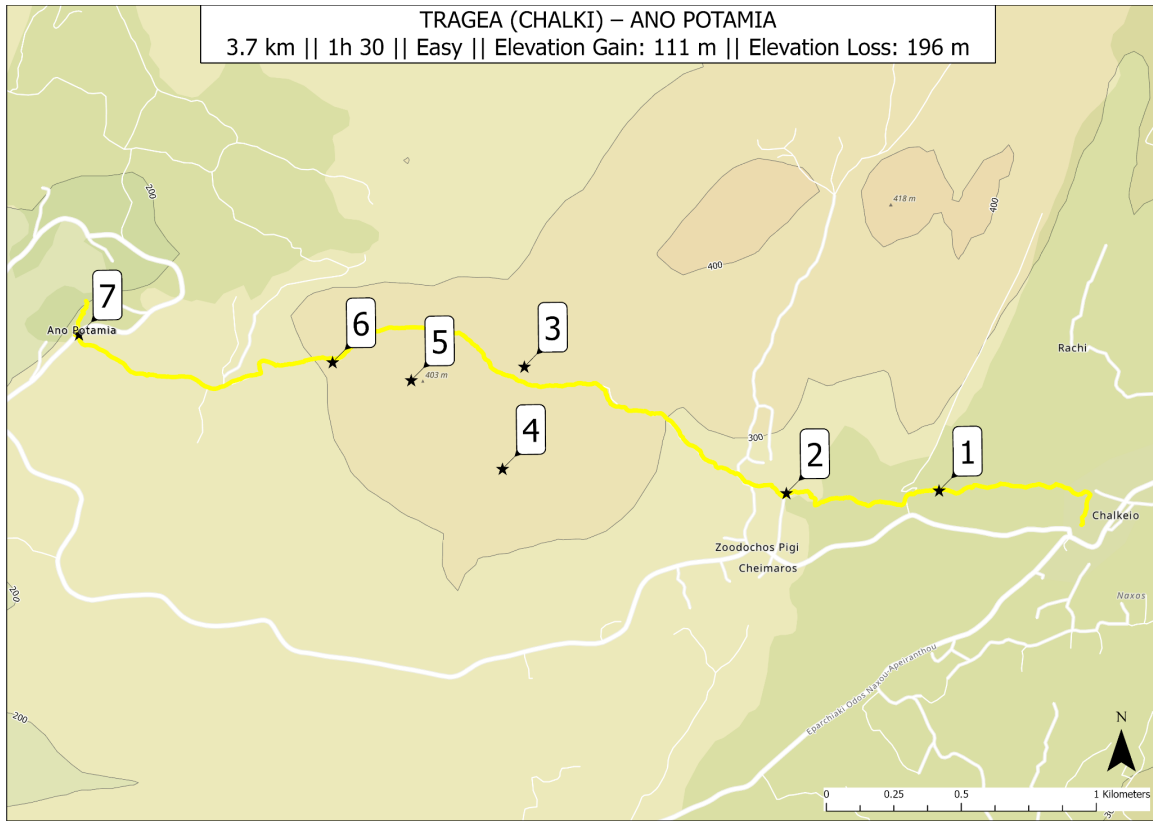
This short hike brings hikers through a diverse range of ecology and culture. Hikers will begin in the Tragae Plateau, where they will see the terraced olive groves and end in a starkly different lunar landscape on the raised dome of Naxos. Visitors will pass through the traditional settlement of Tsikalario, skirting the fortified settlement of Ano Chora, and will come across the Mycenaean cemetery of Tsikalarioan. This trail is of great significance for both tourists and ecologists, as it showcases the intersection of human development and the natural environment, exemplifying the interdependence between human societies and the ecosystems that support them.

Maps and Elevation Graph

1. Cross Dry river bed/sheep gate
2. Church of Agios Stefanos
3. Mycenaean cemetery of Tsikalario
4. Apano Kastro
5. Migmatite rocks
6. Church of Agios Andreas
7. Main road to Ano Potamia







Culture

Along the trail, hikers will find two stunning Byzantine-era churches dating back to the 12th century. From the east, enter the settlement of Tsikalario, a historic pottery hub. Note the domed **Church of Agios Stefanos (2)**, built between the 12th and 13th centuries that is maintained by village volunteers and often locked. Visitors can view the 13th-century frescoes by asking cafe employees opposite the church for access.

Near the village of Potamia, hikers will see **Apano Kastro (4)**, a medieval fortified community built on an isolated steep hill. The ruins of the fortified castle can be dated back to the 13th century when the island's Venetian rulers reconstructed the old castle. Marco Sanudo, who also built the castle in Chora, did the reconstruction. Apano translates to "upper" in English, and the



Byzantine church of Agios Stefanos (12th - 13th century, Tsikalario)

name differentiates Apano Kastro from the “lower” Kastro in Chora. Hikers can explore the ruins of Apano Kastro by taking a footpath from Tsikalario and will enjoy 360-degree views from the top.

At the foot of Apano Kastro is the **Mycenaean cemetery of Tsikalario (3)**. The archaeological site, estimated to be built in the Late Bronze Age (1600-1100 BC), contains the Mycenaean-era burial ground's remains. The cemetery is made up of circular stone graves and was found in the early 20th century. Subsequent excavations revealed many tombs and offerings, including pottery, weapons, and jewelry. The site provides unique insight into the funerary practices and beliefs of the Mycenaean people. The artifacts recovered from the cemetery are now on display at the Archaeological Museum in Chora.



Byzantine church of Agios Andreas (13th - 14th century)

Near the trail's end, just before reaching Ano Potamia, lies the **Church of Agios Andreas (6)**. It is a small church just off the trail and typical of the Byzantine architectural style, with a dome and floor mosaics. Inside the church, visitors can find frescos dating to the 12th century. The ornate frescos are well preserved and are considered some of the finest examples of Byzantine art in Greece. The church is an important religious site to the local community and a popular tourist destination for those interested in Byzantine history and architecture.

Nature

The landscape alters drastically after moving through the settlement of Tsikalario, as the landscape changes from lush greenery and rolling hills to a barren lunar landscape. The landscape here is characterized by the large **migmatite rocks (5)** and the island's rocky terrain. Migmatite is a type of rock formation that occurs when sedimentary and metamorphic rocks partially melt and then recrystallize. This results in a unique rock with both solid and partially melted parts. The Naxos migmatite is particularly interesting because it formed during the Pan-African Orogeny, a major mountain-building event about 550 million years

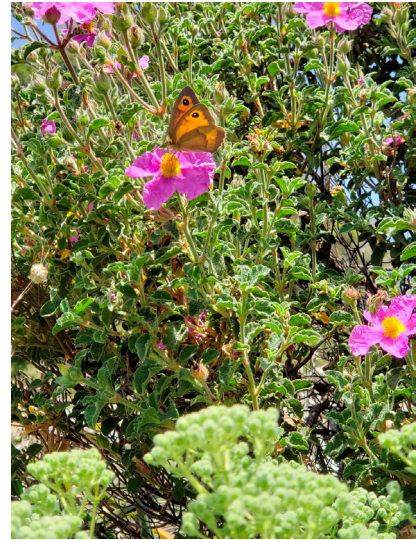


View of the migmatite-dominated landscape leaving the village of Tsikalario

ago. During this event, it subjected the rock layers on Naxos to high pressures and temperatures, causing partial melting and recrystallization.

Here visitors will notice the elevated **geologic dome of Naxos**. A geologic dome is a landform characterized by a circular or oval-shaped uplift in the Earth's crust with a central peak and a surrounding area of gently sloping rock formations. The gradual uplift and deformation of the Earth's crust form domes, often due to the accumulation of stress within the rock layers. Naxos' dome was formed by the upper crustal extension and simultaneous deep crustal flow due to the pressure buildup within the Earth's crust. The stress caused the upper crust to stretch and thin, resulting in a dome-like uplift.

Around this area, visitors can observe endemic species such as the [Naxos wall lizard](#), [the sand boa](#), and the [chukar partridge](#). In the meadows and grasslands surrounding it, hikers can find [Meadow brown butterflies](#) and various wildflowers, such as the rare and protected Naxos cowslip.



A meadow brown butterfly (*Maniola jurtina*) on top of a rock rose flower (*Cistus creticus*)

Trail Description

Park at the [Public Parking Lot](#) in Chalki behind the high school and opposite the War Memorial. Walk downhill on the main street and do not miss the chance to pick up a spanakopita for a snack on the trail at [Epiouision \(AM\) Bakery](#) on the right, opposite the large Panagia Protothronos church. Hikers will take the narrow street on the right to enter the main village square that offers multiple meal and beverage opportunities among the local cafes and restaurants. Tourist favorites here include black Naxian pizza and diverse ice cream flavors. The trek continues past the [Vallindras Kitron Distillery](#), a historic distillery of a local Naxian liquor called Kitron, made from the citron fruit that grows on the island. Walk northwest through the village, following the clear trail markers guiding the path.

Once outside the village, follow a trail marker for Trail 5, walking along a path with high stone walls flanking them. Hikers will proceed westward through the flat [olive groves](#) of Tragea and a [Kermes oak woodland](#). The flat olive groves of Tragea are a distinctive feature of the region's agriculture, characterized by their flat terrain and olive trees providing important habitat for a variety of bird species, including migratory birds that rely on the region as a stopover during their long-distance journeys. Additionally, these groves play an important role in the local economy, providing income for farmers and supporting the production of the famous Naxos olive oil.

The woodland area is overgrown with grass, and hikers would benefit from long pants and sturdy shoes. Continue ahead to cross a dry river bed **(1)**, and after 1 km, the trail transitions to a meadow as hikers continue along a dirt path with loose rocks and long grass up to the knees.

After 350 meters, walk through a sheep gate and take care to close it. The path continues uphill and will take the route on the left, heading west and following the trail marker to a rocky dirt road. The course proceeds slightly downhill with leafy debris and limestone rocks along the path. The trail then turns uphill through a stone-laid stairway with grass and vegetation on both sides, leading to a parking area where hikers enter the village of Tsikalario. Famous for pottery and ceramic art, visitors can explore the village and discover some of the oldest arts of Crete.



Dry River Bed

See the church of **Agios Stefanos (2)** on the right and continue the trek on the paved road until the path diverges. Take the left path leading downhill, overlooking the mountains. From a cultural perspective, the church of Agios Stefanos serves as a symbol of the continuity of the local community's religious beliefs and practices. The church had been a central gathering place for religious celebrations, such as weddings and festivals, and everyday acts of worship and reflection.

After exiting the village of Tsikalario, spot a wooden sign on the left, indicating the offshoot path for the **Mycenaean cemetery of Tsikalario (3)**, an important archaeological site for historians and archaeologists studying the Mycenaean civilization. After visiting, return to the main trail and find the trail marker on the right indicating the continued route for trail 5. The trail diverges after 50 m, with the option to take a short detour uphill to see **Apano Kastro (4)**. Return to the main trail and continue on the downhill path on the left to stay on Trail 5. For tourists, visiting the Mycenaean cemetery of Tsikalario and Apano Kastro offers a unique opportunity to explore the rich cultural heritage of Naxos and gain a deeper understanding of the ancient civilizations that inhabited the area. For ecologists, the surrounding landscape provides a glimpse into the island's unique natural environment, showcasing the delicate balance between human development and conservation.



View of the raised geologic dome of Naxos

After exiting the village, the landscape drastically changes as hikers traverse across Naxos' raised dome surrounded by huge **migmatite rocks (5)**. Walk through the large boulders on areas of loose, sandy soil with low vegetation and rock cover. This is the European Sand Boa habitat, a nonvenomous snake common on Naxos and a critical lizard predator.

Continue the trek with a stone wall on the left, facing the mountains, until reaching a stone structure beyond the wall on the left-hand side. After 85 m, arrive at the Byzantine **Church of Agios Andreas (6)**. As hikers continue, follow a defined stone path that merges with a gravel road. Take the path heading downhill and connect with the main road **(7)**, where there is a trail marker on a wooden sign.

Follow the **paved road** downhill to a trail marker on the wooden pole, indicating that the path descends a set of paved steps. From there, the path is well-defined and brings visitors to Ano Potamia. At the end of the path, find a water spigot to refill water bottles and have a bite to eat at [Pigi Taverna](#) before heading back.

- End of Trail 5 -

Logistics

Accommodation

Ano Potamia

- NONE

Chalki

- **Villa Onar - In village**
 - **Contact Number:** [+30-69445102](tel:+30-69445102)
 - Booking via 3rd party website: <https://hotelscheck-in.com/villa-onar/en/>
 - Rooms available to rent with free parking provided.

Getting There

While a rental car or taxi may be the most convenient way to get from Chora to Chalki, there is also regular bus transportation to Chalki. At the time of writing, several bus lines (2, 6) run between Naxos town (Chora) and Chalki, as well as line 7, which runs from Moni via Chalki to Naxos town (Chora). Buses frequently increase in the summer months: from July to August the bus runs every day from Chora to Chalki at 07:30, 09:30, 11:00, 12:00, 13:30, 15:00, 17:00, 20:15. For more information, visit <https://naxosbuses.com/> or contact by tel. +30 22850 22291, email info@naxosbuses.com

Trail 6

KOUROUNOCHORI - KATO POTAMIA

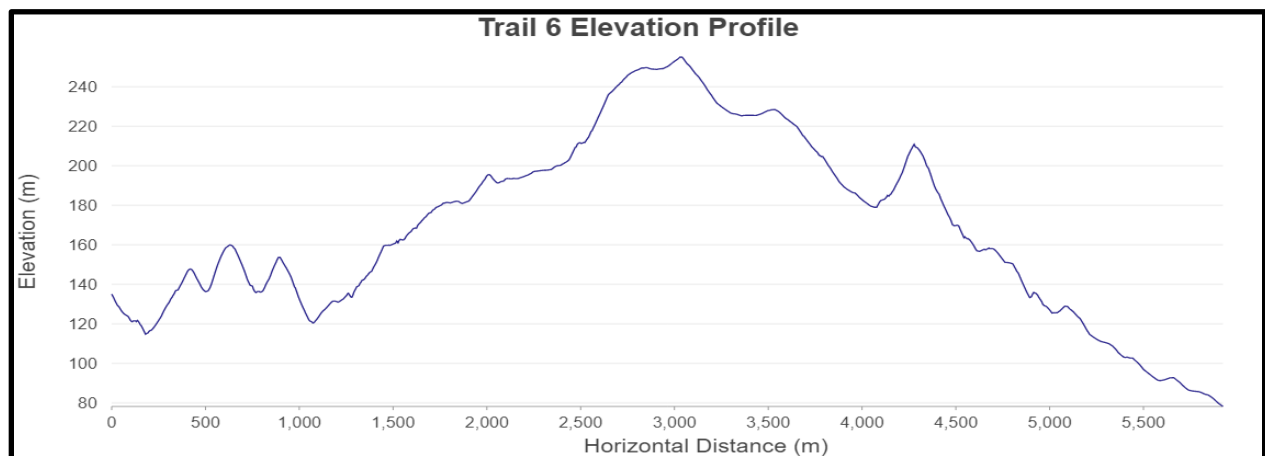
8.1 km || 2h 30 || Moderate || Elevation Gain: 220 m || Elevation Loss: 299 m

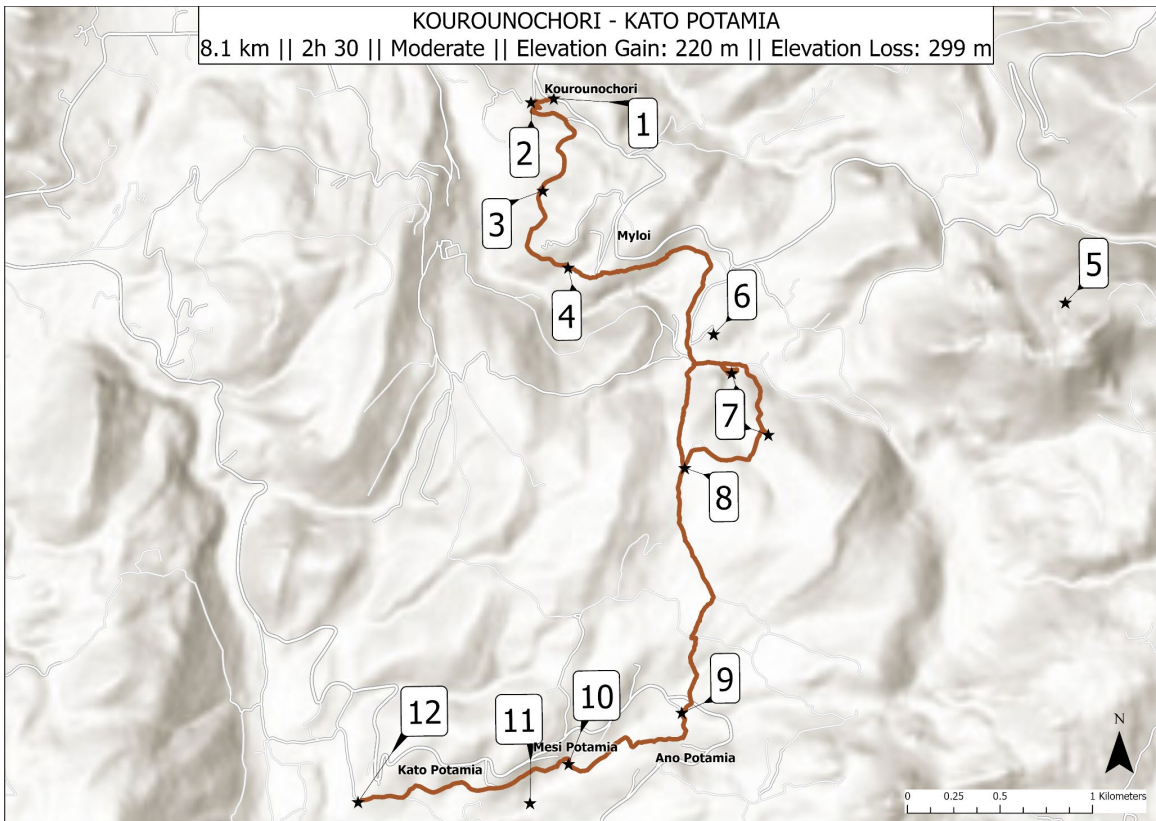
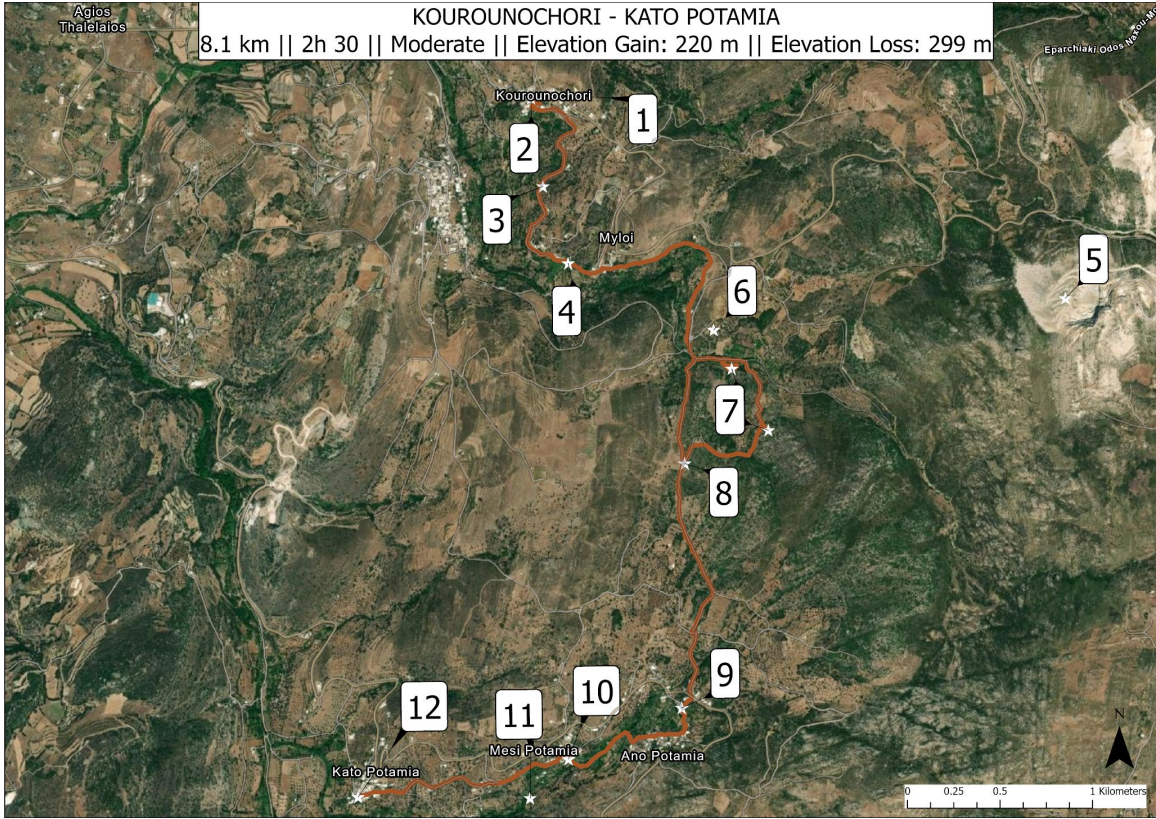
Trail Summary

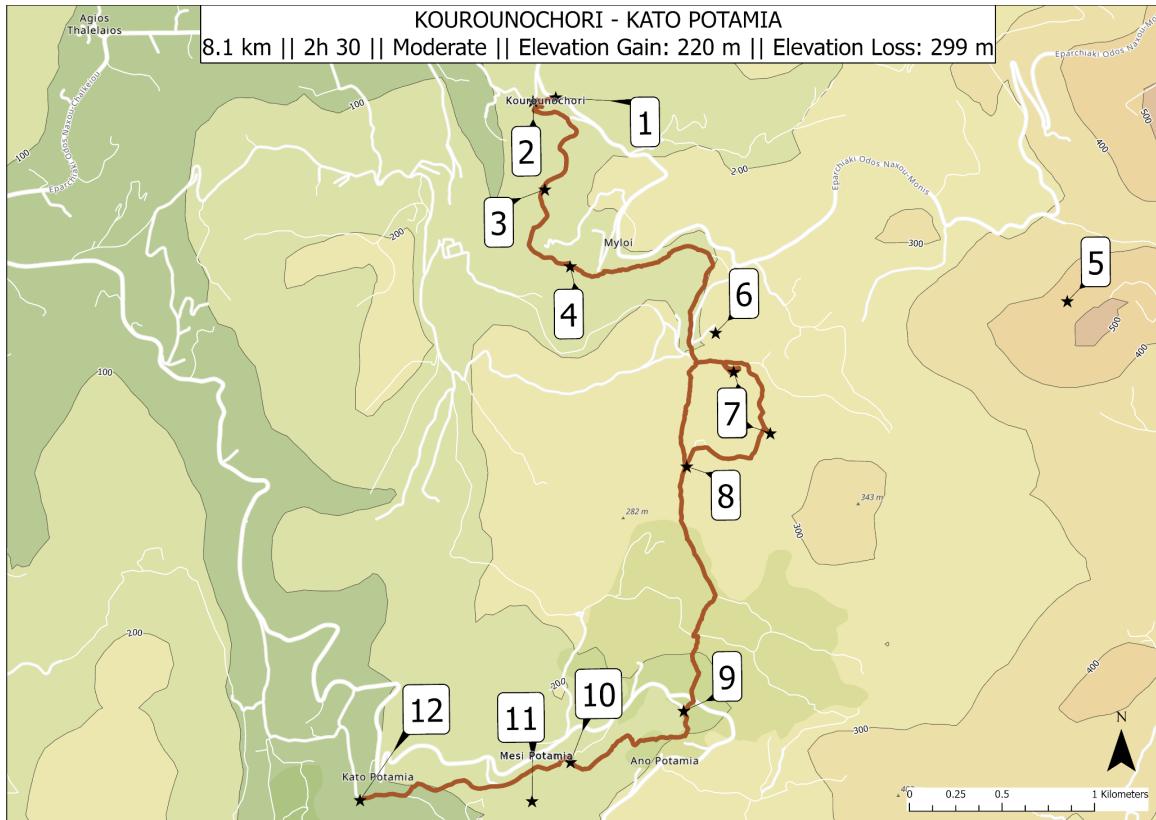
This unique hike is moderately challenging and takes visitors through historical sights and a lush river landscape. Starting in Kourounochori, the trek brings hikers across churches and monuments dating back to the medieval and archaic periods, giving insight into the island's vast history and providing stunning views. At the end of the hike, the river that the settlement of Potamia lies along offers visitors unique access to the freshwater flora and fauna that sets Naxos apart from other Cycladic islands.

Maps and Elevation Graph

1. Trail start
2. Fragopoulos tower house (likely 14th c., Kourounochori)
3. Church of Agios Nektarios and Agios Nikodimos
4. Myli Stone Steps/ Group of traditional watermills
5. Marble quarries
6. Sanctuary of the springs
7. Ancient Quarries – half-finished archaic Kouroi
8. Intersection
9. Pigi taverna
10. Washing facility/Sycamore tree
11. Kokkos Tower (17th c.)
12. Theoskepasti Christian Church







Culture

Near the start of the hike in Kourounochori, hikers will come across the **Fragopoulos tower house (1)**. Fragopoulos Tower is a medieval tower built in the 14th century and served as a defensive structure during Venetian rule on the island. It is one of the few surviving examples of medieval military architecture on Naxos. Today, the Fragopoulos Della Rocca Tower is a popular tourist attraction known for its historical significance and views of the surrounding countryside. The three-story building features bastions and murder-holes for thwarting attackers. Murder-holes are holes in the ceiling of a gateway or passageway so that defenders can shoot, throw or pour harmful substances or objects down on attackers. The tower's



View of the Melanes Kouros

Venetian owners, the Sommaripa family, sold the tower to the Fragopoulos family, who denounced Orthodoxy and converted to Catholicism.

The **Melanes Kouros (7)** is a group of large-scale, unfinished marble statues discovered on the island near the village of Melanes. These kouroi are thought to date from the late Archaic period, around 550-530 BC. Despite their unfinished state, they remain an influential example of ancient Greek art and culture. The statues are notable for their depiction of the human form and their role in the development of Greek sculpture during the Archaic period. The incomplete nature of the figures has also led to much speculation and debate among scholars, as it is unclear why they were never completed or their intended purpose.



Melanes Kouros date to 550 to 530 B.C. (at Feragi)



Foot of a damaged kouros

In Kato Patamia is **Kokkos Tower (11)**, a Venetian structure built in the 17th century above the small river of Lierado. Although the tower is crumbling today, it was once an estate with a watermill, olive mill, and bakery that allowed the family to act autonomously. The tower was home to a forbidden love affair, a real-life Romeo and Juliet story. When Venetians were conquering Naxos, conflict broke out between the Venetian Barozzi and the orthodox Kokkos families, where eventually, Franciscan Barozzi murdered the head of the Kokkos family. The murder led to a deep bloodstained vendetta between the families, and the following years were filled with revenge and murder. That was until the Barozzi heir and the Kokkos heiress were secretly married, thus binding the two heritages and feuds together.

Nature

This hike brings visitors a unique tour of Naxos' flora and Fauna. The trail starts in [kermes oak woodland](#) before going through [agricultural areas](#), [olive groves](#), and orchards before transitioning to [phrygana](#). Near the end of the trek, the trail leads to Potamia. Potamia has three settlements: Ano, Mesi,



Banded Demoiselle

and Kato, which translates to upper, middle, and lower. The river makes these villages lush and cool, filled with sycamore, fig, and mulberry trees. Hikers will see [riparian vegetation](#), [Banded demoiselle](#), and [freshwater crabs](#) along the river. However, these are becoming threatened by the desiccation of streams due to climate change and increased water withdrawal from streams and underground aquifers for agricultural irrigation and potable water.



View along trail of riverside in Potamia

Near the Kouros, visitors will see Naxos' **marble quarries (5)**. Marble is formed through the metamorphism of sedimentary rocks. It is composed of a mixture of calcium carbonate and silica minerals. Naxian marble is prized for its beauty and is used in various ways, including for building construction, sculpture, and interior design. It has played an essential role in the island's history and culture. Some of the most notable examples of Naxian marble include the Temple of Demeter and various temples on the island of Delos. The Naxian marble is also an essential resource for the local economy, and is exported worldwide.

Trail Description

A parking area is just off the main road as visitors enter Kourounochori. Immediately, hikers will head west, following a trail marker **(1)** indicating the way to Myli. The path is a paved road through the village, and hikers will walk along cacti and vines, passing through a residential area. In 100 m, arrive at **Fragopoulos tower (2)**. From here, immediately make a u-turn, indicated by a trail marker, towards the [Transformation of God Church](#) with blue domes. At the T-junction, take a left through the residential and agricultural areas defined by the olive groves and citrus orchards. Continue straight on the paved road, with a water channel used for irrigation on the right-hand side. Notice an abundance of olive trees and Spanish brooms along this path.



Signage in Korounochori signaling the start of Trail 6

About 600 m further, the trek leads to the **Church of Agios Nektarios and Agios Nikodimos (3)**, where hikers will see a trail marker indicating the way forward on a dirt path. The uphill journey leads to a concrete gravel road with roadside vegetation with a stunning view of the village of Melanes. This path is abundant in cacti and wildflowers, best seen in spring and early June.

After 400 m, hikers will enter the small traditional village of Myli. A complex of traditional watermills runs through the village's center, giving this part of the trails its lush, green quality. A



Waterfall along the trail in Myli

large plane tree covers the town square, offering a brief respite from the heat. Here, hikers can find a small taverna called “I Koukouvagia kai o Mastoras” to relax and enjoy a coffee. Walking along the stream, see stone steps **(4)** on the left leading to a small waterfall that splashes hikers as they approach. After ascending the steps, the path opens to an olive grove with a donkey shelter on the left. The path turns left, as indicated by a trail marker, which will lead the hikers out of the village.

From here, look at the mountains straight ahead to see the **marble quarries (5)**. The path continues, turning into a dirt road with a long grass meadow on either side. After 400 m, hikers will see a diverging path and should follow the trail marker left as the path turns into a loose rock path before transitioning to smooth

marble. After a few hundred meters, the hike becomes a dirt path with long grasses on either side. Turn right, as indicated on the trail marker, to reach the church of Pavala. After passing the church, the trail meets with the main road, and hikers will see the “[Parking Kouros](#)” sign. Take a left to see the **Sanctuary of the Springs (6)**, a place of worship and sacrifice dedicated to the Greek Euphrosyne, goddess of euphoria and joy, and god Otus and Ephialtes, who used their power to move marble. The sanctuary was created in the 8th century and is now an open-air archeological site. After visiting, return to the path and take a right to reach the Kouros on a path surrounded by [maquis](#).



View of the marble quarry along the trail



Ancient Sanctuary of the Springs (at Flerio)

After 60 m, there will be a fork in the road. Here, there is the option to make a left and follow the offshoot path to see the kouroi or make a right to continue towards Ano Potamia. If choosing the left offshoot trail, encounter the [Kouros of Flerio \(7\)](#), a large stone structure of a man lying down. The path is made up of large uneven stones. Opposite the Kouros, the trail proceeds to the [Garden of Paradise](#), where hikers can

rest and enjoy refreshments and a coffee from a goldfish pond. Turn right down a shaded asphalt road and turn right up stone stairs towards the [Faragi or Gorge Kouros \(7\)](#). After visiting, there is an option to take the stairs back down to the parking area where the trail began or return to the previous fork to continue towards Ano Potamia.

Hikers will return to the main path through a gate, past marble columns and a collapsed wall. A tree on the left with a trail marker, indicates that the trail continues straight ahead. The path winds through phrygana, and hikers will continue along a loose limestone path. After 200 m, continue straight through a junction and right at a second junction past a small building with a bench and trail marker. Continue straight until reaching a three-way intersection **(8)** that connects back to the main path. The right trail returns to the kouros, or take the left route to continue the trek. The path will merge with a gravel road, and hikers should turn left immediately before a drinking water spigot. Continue on the path past a cemetery dating back to 1909 and walk on the paved road downhill to arrive at the [Taverna Pigi \(9\)](#), a great place to rest and enjoy the local cuisine of Naxos. Recommended dishes include fava, lamb chops, and stuffed tomatoes.



Continue on the path through this gate after viewing the Kouros at Faragi



Walk past the cemetery near St. Ionnis church



View of Ano Potamia from Taverna Pigi

A stone path leads hikers from the taverna into Ano Potamia, indicated by a trail marker. The Potamia settlements are built on a river, making this area some of the island's most fertile land. Hikers will find an abundance of mulberry and banana trees on this path. Arriving at a T-junction, turn right and admire the traditional architecture and history of old houses. The dwellings have been restored with stone and retain the original defensive designs meant to protect residents from pirates. Notable features include shutters on the interior of houses inside the window, allowing residents to peek outside without losing protection.

The path leads to a running water channel used in the late 1900s to run the Dryllis watermill ahead. Visitors can spot Muscovy ducks swimming along the water channel. Continuing on the path that winds along the **stream**, turn left over a stone bridge. On the right, hikers will see a historic house with a trail marker, indicating that the trail proceeds through the **woodland** under kermes oak and plane trees. See reeds and fig trees along the way as the path becomes dirt leading past another stone bridge and connecting with a water channel. The community's women previously used this water channel to wash clothes. Here, hikers can rest under the **Sycamore tree (10)**, as the spot offers a bench under the shade. Turn left to walk through old stone structures and houses. The style of these houses was built specifically to provide insulation from the hot weather in Naxos. The dense settlement of Mesi Potamia creates a strong sense of community and lack of privacy, resulting from survival mechanisms to protect the residents from pirates and looters. As hikers walk downhill on a paved stone path overlooking multiple chapels on the left valley, see some telltale signs of historical life in Naxos. For example, a house on the right has a wooden shoe hung on the door, indicating the local shoemaker's house. Continue down the steps straight ahead, overlooking the woodland, before starting the trek along the waters.

At Lierado, hikers can continue straight towards Kato Potamia through scenic olive groves or take a detour downhill left to see **Kokkos Tower (11)**, 150 m away. This detour continues the trek along the river, and visitors will notice the **riparian fauna**, such as the different types of damselflies. Further ahead, as the path curves, an abandoned small building with an olive oil press machine inside gives insight into Naxos's olive oil-making history



Traditional Naxian house in rural Potamia



Take a break near the stream



Kokkos Tower

and culture. The trail overlooks meadows with **olive groves** and **agriculture**, including local crops such as lemon trees, cucumber, pomegranate, and zucchini, making this area a hot spot for fresh classic Greek dishes. Hikers will also see reeds, which the locals use for weaving wicker baskets. After 300 m, arrive at the [Theoskepasti Christian Church \(12\)](#) in Kato Potamia.

- End Trail 6 -

Logistics

Accommodation

Kourounochori

- Villa Elia
- Contact: +306974633196
- Address: Epar.Od. Naxou-Chalkiou, Naxos ke Mikres Kiklades 843 00, Greece
- Booking can be done through their direct website - <https://villaelianaxos.gr/>

Kato Potamia

- Vallerie Guest House
- Contact: +306985839953
- Address: Κάτω Ποταμιά 843 00, Greece
- Booking can be done through their direct website - <http://www.vallerienaxos.gr/>

Getting Around

While a rental car or taxi may be the most convenient way to get from Chora to Kourounochori, there is also regular bus transportation to Kourounochori. At the time of writing, bus line 4 runs between the Naxos town (Chora) and Kouros Melanes. Buses frequently increase in the summer months: from July to August, the bus runs every day from Chora to Kouros Melanes at 08:00, 12:00, 15:00. For more information, visit <https://naxosbuses.com/> or contact by tel. +30 22850 22291, email: info@naxosbuses.com

Trail 7

TSIKALARIO - TEMPLE OF DEMETER

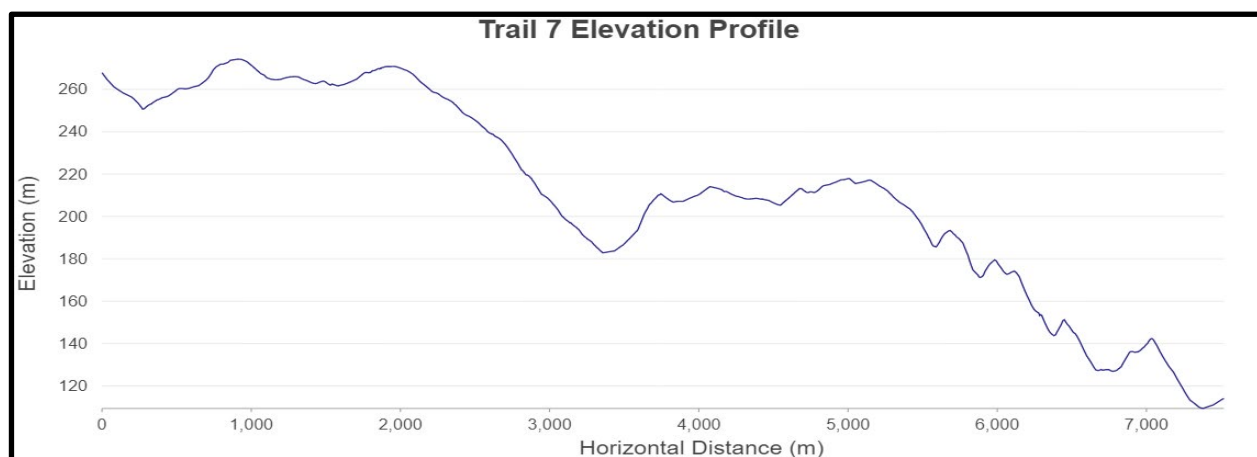
7.4 km || 2h 15 || Moderate || Elevation Gain: 143 m || Elevation Loss: 305 m

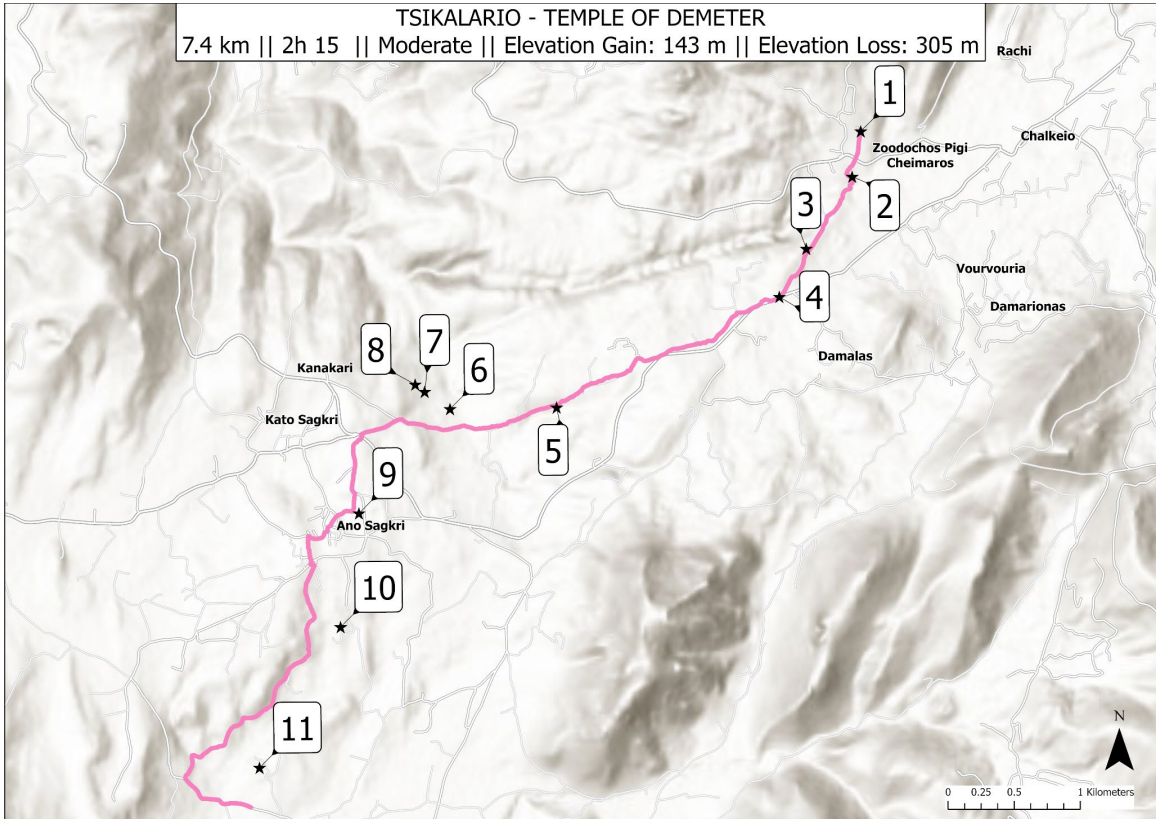
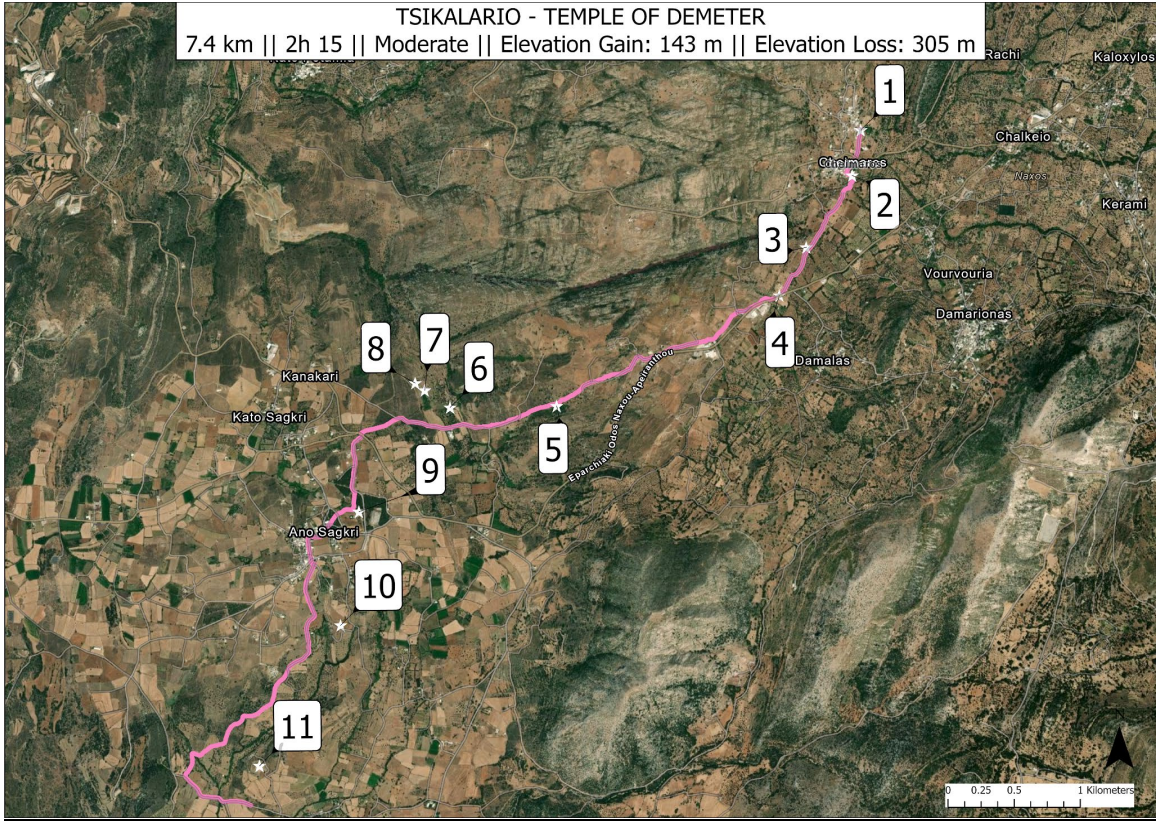
Trail Summary

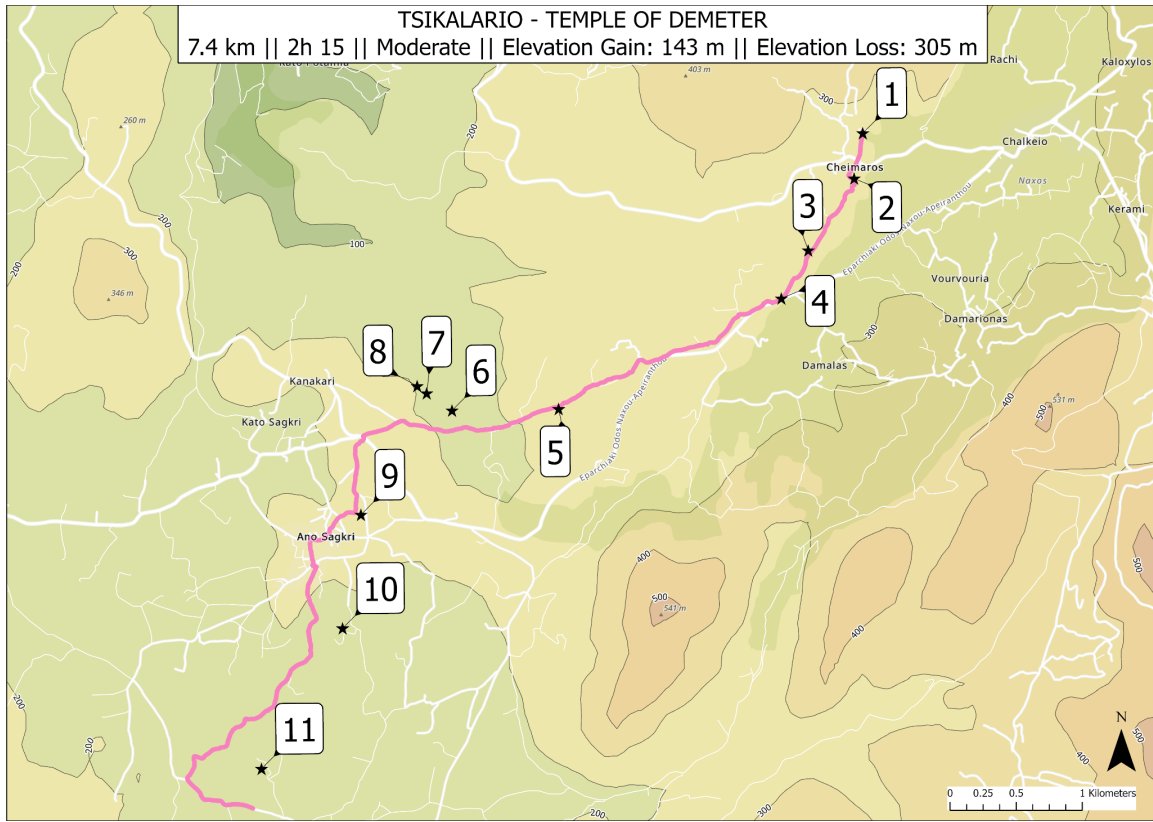
From a church-dotted trail to the small farming village of Tsikalario to the illustrious Temple of Demeter, hikers can enjoy discovering various cultural sights during this challenging trail. Starting in Tsikalario, the trail follows alongside the main road, through abandoned settlements hinting at Naxos' past until it concludes at the sacred Temple of Demeter, built around 530 BC, which features an extensive museum.

Maps and Elevation Graph

1. Tsikalario starting point, Agios Stefanos
2. Chinaberry tree in Chimarros
3. Agios Merkourios Tunnel/Connection to Main Road
4. Abandoned settlement
5. Agii Anargyri, Agia Marina and Agios Andreas
6. Palaiologos-Barotsi Tower (17th century, Kato Sangri)
7. Byzantine church of Panagia Orfani (11th-13th century, Kato Sagri)
8. Church Agios Taxiarchis
9. Byzantine church of Agios Nikolaos (11th-13th century, Sangri)
10. Ancient temple of Demeter and Koris (6th century BC, Gyroulas-Sangri)







Culture

The trail begins in Tsikalario and Chimarros, two villages that make up the settlement of Zoodochos Pigi. Although now primarily focused on farming, Tsikalario used to be a pottery hub specializing in making ceramics for the inhabitants of Apano Kastro – a Venetian citadel.



Barozzi Tower House (17th c.)

Agios Merkourios (3) is a single-aisle church dedicated to Saint Mercurius and other Roman military soldiers who died for their faith. He was a Christian soldier that helped defend Rome against the Barbarians around 250 A.D. and, in Arabic, is referred to as “the father of two swords.” The church has a plain interior but is heavily decorated with religious paraphernalia placed there by locals.

Taking a short detour off the main trail, hikers will find **Paleologos - Barozzi Tower House (7)**, built in the 17th century

by the Barozzi family. The first mention of the tower appeared in a report about a pirate raid in 1678. The fortified tower is surrounded by impressive walls that feature hot oil shooters and a suspension bridge. Visitors are welcome to view the tower, but should be respectful as it is currently a private residence.

Just north of the tower house is the **Church of Panagia Orfani (8)** (Virgin the Orphan) in the cross-in-square design common to Naxos. Although it was renovated in the 14th century to repair damage to the western arm and roof, the original construction dates back to the middle Byzantine period, around the 11th century. After excavation, sixteen cist graves were found directly south of the church.



Byzantine Church of Panagia Orfani at Sagri (11th-13th c.)

Just a ten-minute detour off the main trail is the **Byzantine Church of Agios Nikolaos (10)**, constructed in the 11th century. This single-aisled dome church has several layers of frescoes featuring the birth and baptism of Jesus Christ. Although the most recent layer dates back to approximately 1270, some details of frescoes from the 11th century can be discerned.



Temple of Demeter (6th c. BC, Gyroulas, Sagri)

This trail ends at the **Temple of Demeter at Sangri (11)**, built completely from Naxian marble around 530 BC. Dedicated to Demeter, the Greek goddess of agriculture, harvest, and fertility, it is no surprise that its location has views of lush, fertile farmland for kilometers. Interestingly, this temple contains several features that are unique when compared to other

architecture from this period, including a South facing facade instead of the usual East facing ones, and the columns taper towards the top, whereas classical Greek columns taper towards the bottom. For these reasons, the temple is considered of great archeological importance and underwent extensive restoration in the mid-1990s. Parts of the temple not used in the restoration are

displayed in the small archeological museum, where visitors can also find digital renderings and other in-depth details about the original temple architecture.

Nature

This trail highlights the farming practices done in Naxos for centuries. Behind kilometers of handcrafted [stonewalls](#) lay ancient [olive groves](#) and [barley fields](#). Olive trees are recognized by their twisted trunks and long, thin leaves. A staple of the Mediterranean, the Tragea plain in the center of Naxos is a particularly fertile region of the island. Most of the olive groves that hikers see have been around for millennia.

Demeter is known as the goddess of harvest, fertility, and [agriculture](#). Heading this, agricultural fields surround the monument.

Trail Description

The trail starts in the small village of Tsikalario **(1)** in front of Agios Stefanos, where hikers will find parking across the street. Facing south from the church, visitors will come across the first trail marker. Following it straight, the trail leads past a church with a blue dome and cemetery before crossing the main road leading into the village of Chimarros. Hikers will arrive in a town square centered around a planted tree. Here, the trail diverges, and visitors should take the path to the left of the tree before passing under a stone arch and coming out into the next square, where there is a large fragrant *Melia azedarach* tree, commonly known as the Chinaberry tree **(2)**. Walking through, there is a trail marker on the left leading out of the village and towards a creek, where another trail marker sits atop a large rock on the left.

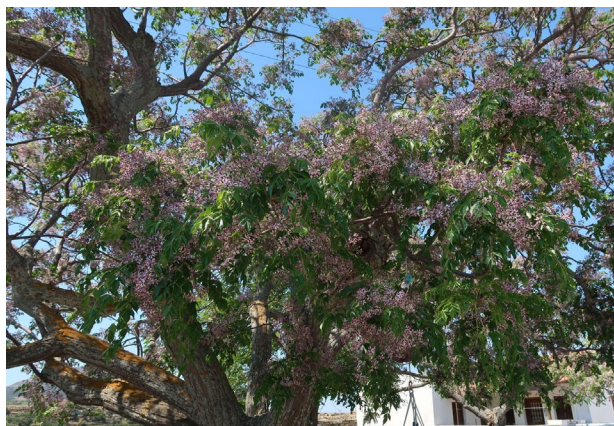
Continue along the path, lined by an assortment of large boulders, before passing the ruins of a church on the left. Hikers will then come to a junction in the path and should take



Trail 7 goes through a valley with many agricultural fields.



Ancient olive trees in overgrown agricultural field.



Chinaberry tree (Melia azedarach), also known as Tree of Heaven.



Agios Merkourios



Abandoned settlement



*Directly opposite of the Church of Agios Taxiarchis,
follow paved cobblestone path lined with lamp
posts*

the left. Immediately after this turn, the trek leads past the Chapel of Taxiarches, followed closely by **Agios Merkourios (3)**. After 500 m, the trail leads to the main road, and hikers will turn right. This portion of the trail follows the paved road, so proceed with caution. Further up, a trail maker directs hikers toward a tunnel **(4)**. This is a good opportunity to take a break and get out of the sun. Continues along the road, staying on the right side, for about 125 m before the trail turns to the right, as indicated by a trail marker. In 75 m, a trail marker indicates a left turn. The path continues parallel to the road along the stone wall passing behind St. Efraim Church.

After several meters, the trail becomes a dirt path continuing for 250 meters, partially along the road before it veers to the right along a wide farm road that takes hikers to the left. Although the road seems to end, continue straight, following the stone wall on the left, looking out for spray-painted red dots that serve as unofficial trail markers. The path leads past an abandoned settlement **(5)** on the left, where hikers can take a break to look into the inner workings of a small community from the early 20th century. In 250 m, the trail merges with a wider farm road. Continue straight.

In 375 m, the trail will pass by Villa Themis hotel on the left before seeing trail signage for trail 7 with the option to take a detour to the right to visit a complex made up of three churches **(6): Agii Anargyri, Agia Marina and Agios Andreas** and the nearby **Barozzi Tower (7)** and **Byzantine Church of Panagia Orfani (8)**.

The main trail continues for 150 m before veering left on a path that follows a stone wall, eventually merging with the main road. Follow the **asphalt road** on the left, with signage for

the Temple of Demeter. The hike continues along the road until hikers reach a sidewalk lined with trees leading to **Church Agios Taxiarchis (9)**. The trail continues on a lamppost-lined brick path directly opposite and will converge with the road once more. Carefully cross the road and walk through the square, exiting beside a school. Once again, the path crosses another street, and hikers should take the small road that branches off on the right. At the fork in the path, turn left and walk through Ano Sagkri, passing **St. Eleftherios Monastery** on the right. Crossing another street, the trek continues straight with Konstantinos Xenakis Memorial on the left. Turn right and follow the loose gravel path for 325 m. Here, the path branches off to the left, heading towards **Agios Nikolaos (10)**, known for its impressive collection of frescoes. The main trail, however, continues for an additional 425 m before coming across a small path on the right, marked with a trail marker. The path passes Ayiopetra Hotel and traverses agricultural fields as the Temple of Demeter becomes visible to the left. Continue for approximately 1 km until meeting up with the main road. Turn left and walk for an additional 500 m until arriving at the main entrance for the **Temple of Demeter (11)**. The temple is open from 8:30 AM to 3:30 PM every day except for Tuesday and features a museum with a stunning collection of authentic temple pieces.



Byzantine church of Agios Nikolaos



View of Temple of Demeter and its museum in the distance



Temple of Demeter

Logistics

Accommodation

Tsikalarío

- NONE

Sangri

- [Ayiopeetra Exclusive Getaways](#)
 - **Contact number:** +302285044342
 - **Email:** welcome@ayiopeetra.com
 - **Address:** Demeter's Temple area, Sangri, Naxos, 84300, Greece
 - Visitors can rent a suite a short distance from the Temple of Demeter.
- [Kankari 1956](#)
 - **Contact Number:** +306976388589
 - **Email:** info@kanakari1656.gr
 - **Address:** Kankari, Kato Sangri, Sangri, Naxos 84300, Greece
 - Set of ancillary buildings for rent at the Venetian Sommaripa's tower.
- [Xerolithos Natural Living](#)
 - **Contact Number:** +302286021737
 - **Email:** info@xerolithosnaxos.gr
 - **Address:** Kankari, Kato Sangri, Sangri, Naxos 84300, Greece
 - Suites available for rent in Sangri for groups of four or smaller.

Getting Around

While a rental car or taxi may be the most convenient way to get from Chora to Tsikalario, there is also bus transportation to Tsikalario. At the time of writing, bus line 9 runs between Naxos town (Chora) and Tsikalario. However, buses to Tsikalario run infrequently in the summer months: from July to August the bus runs every Tuesday and Thursday from Chora to Tsikalario at 13:30. For more information, visit <https://naxosbuses.com/> or contact by tel. +30 22850 22291, email: info@naxosbuses.com

Trail 10 **KORONOS - LIONAS**

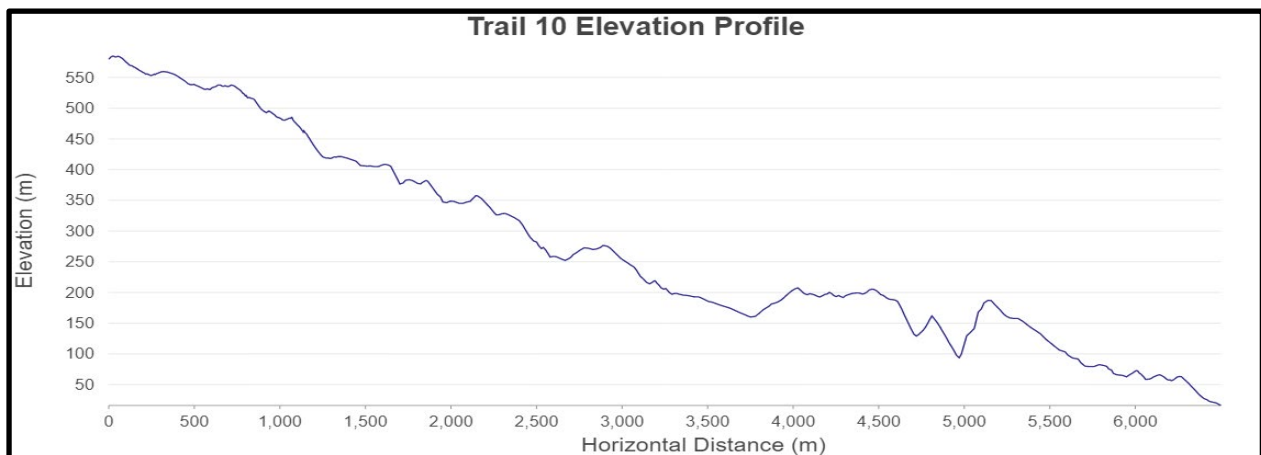
6.4 km || 3 hrs || Easy || Elevation Gain: 183 m || Elevation Loss: 735 m

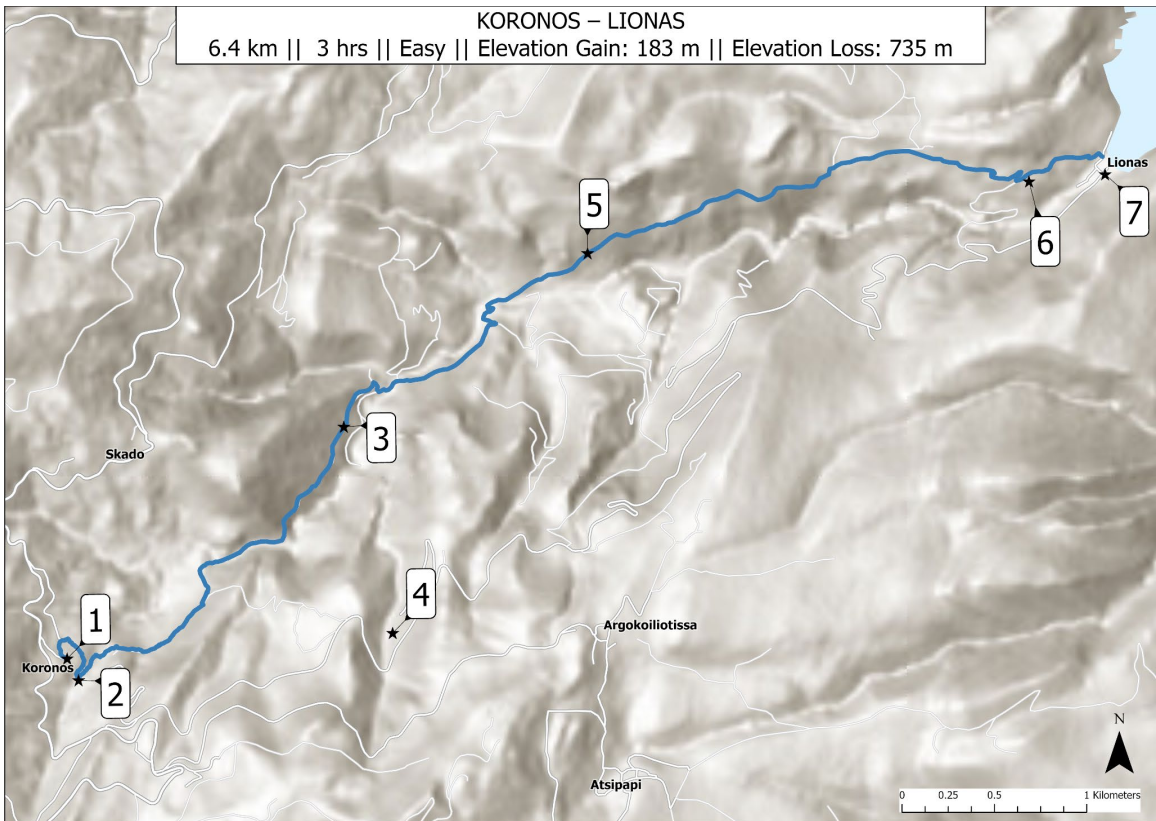
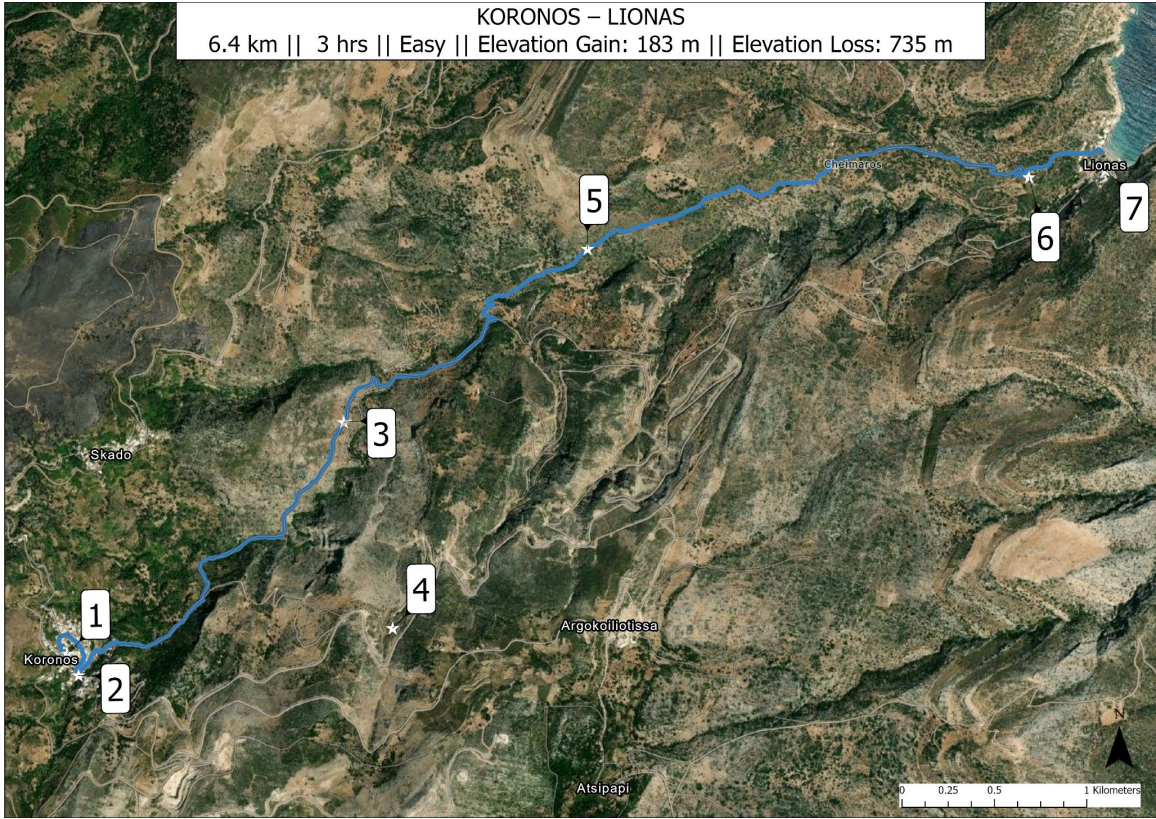
Trail Summary

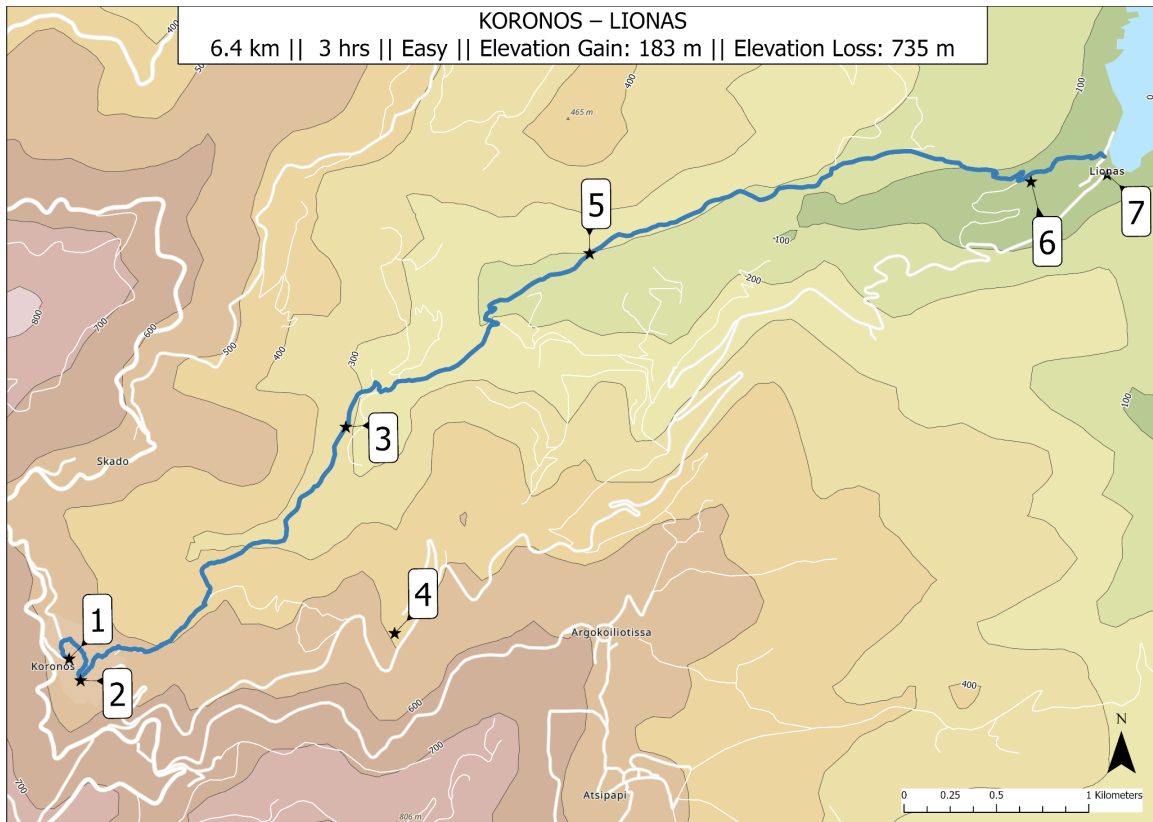
A moderately challenging trail takes hikers down a well-defined path through the north coast valley, passing through rocky cliffs, olive groves, and small traditional villages. Along the way, enjoy views of the crystal clear waters of the Aegean sea. The hike starts in Koronos, a mountain village known for its picturesque setting and Cycladic architecture, and it ends at Lionas beach, a secluded rocky beach with clear waters.

Maps and Elevation Graph

1. Folklore Museum of Koronos
2. Well of Platsa
3. "Mazomo" (livestock facility)
4. Emery mines
5. Steep uphill
6. Threshing circle
7. Ntoyzenia, and Delfinaki







Culture

Koronos is a small village on Naxos in a very mountainous part of the island, around 20 km from the capital. The village is known for its traditional architecture, as many houses are built from local stone and features the characteristic blue-painted wooden shutters of the Cyclades. It is also known for its picturesque setting, with views of the surrounding mountains and the Aegean Sea. Koronos is a quiet and peaceful village that is not very touristy, making it a good destination for those looking for a more authentic experience. Visitors can explore the narrow streets and traditional houses and enjoy the local cuisine at the tavernas and cafes.



View of the threshing circle with the village of Lionas in the background

At the start of the trek, hikers will pass the **Folklore Museum of Koronos (1)**. The Museum opened in 2021, and although small, it offers visitors an exciting view of how Naxians lived long ago. Local families donated most objects at the museum. Soon after, hikers will come across the **Well of Platsa (2)**. Until the 1960s, Koronos had no central water supply; therefore, residents got their water from five different wells, one for each neighborhood in the village. The hike starts in one of the neighborhoods – Platsa—and therefore, this well is called the Well of Platsa. The wells were built in 1910 by digging several meters down to find a water source. The other four wells are in the neighborhoods of Kastro, Kato Geitoniam, Livadaki, and Anegyrida.

Close to Lionas, hikers will see a **threshing circle (6)**. Threshing originally meant “to tramp heavily with feet” but has come to mean separating the grain. In Naxos, threshing circles are used for barley. Sheaves of grain are opened up, and the stalks are spread across the ground of the circle. Pairs of donkeys are then walked round and round over the stalks, dragging a threshing board behind them to tear the ears of the grain from the stalks. After this process, the broken stalks and grain are collected and thrown into the air with a winnowing fan, the straw is blown away, and the heavier grain falls at the winnower's feet.

Nature

This trail brings hikers through Naxos' **emery mines (4)**. Emery is a natural mineral composed of corundum and magnetite and is used as an abrasive for polishing and grinding. Emery was first discovered on the island of Naxos in ancient times. The mines operated for centuries, and the emery was extracted from the rock using hammers and chisels. The emery was then transported to other parts of Greece, and the Mediterranean, where it was used for various purposes, including polishing marble and sharpening weapons and tools. The mines were abandoned in the 20th century, but hikers can still see the tunnels and quarries. The small bay of **Lionas** was the first port on the island to export emery, but now Lionas is a sleepy village with a pebbly beach where visitors can enjoy a view of Greek life unspoiled by mass tourism.



View looking northeast over the trail with views of poppy flowers and terraces in the distance



Remnants of the fire that went through the valley

As hikers move down through the valley, they will notice active [terraces](#). Terraces were built by the island's inhabitants over the centuries to make the most of the limited land available for cultivation, particularly in the mountainous areas, and are used to grow a mixture of crops such as olives, citrus fruits, and vegetables. On these terraces, hikers will see olive trees and spot remnants of a fire that scarred the valley. Unfortunately, fires are common on the island, especially during the summer when the weather is dry and hot.

Trail Description

Starting in the small village of Kronos, take the stairs just past the **Folklore Museum of Koronos**. Continue walking, and after 130 meters, a trail marker can be found on a light pole across from Nikos Bakery. Continue down the stairs and pass the **Well of Platsa (2)**. Two arches indicate the way to the *platsa* (village square). Hikers can grab a frappe before the trek at [Καφενείο του Ιππότη](#), which translates to Cafe of Knight. The owner is friendly and doesn't speak much English, but the coffee is good, and the cafe is open early, letting hikers start the trek early to beat the afternoon heat.

After the cafe, head north across the *platsa* and see another arch framing a house on the left with a trail marker pointing towards trail 10. Follow the marked path and begin the way to Lionas.

The stone path leads to the woods exiting the village through sycamore trees and kermes oaks. Travelers will come across a stone bridge that crosses the stream on a shaded dirt path. The path leads to the opposite slope and offers terraces and wind turbine views.



View of the "mazomo" livestock facility

After another trail marker, pass through the sheep gate onto private property. Hikers might see a farmer as they walk past a permanently inhabited **"mazomo" (livestock facility) (3)**. Continue straight through the sheep gate, being mindful of closing it. The path continues downhill.

After 1 km, the hike becomes more difficult as the trek leads hikers uphill **(5)** along steep marble stairs. Around these stairs, notice the terraces filled with olive trees, some of which have been impacted by fires. Hikers will then pass through a sheep gate with a trail marker and see a **threshing circle (6)** to the east as the trail continues downhill on a steep limestone path. The trail

eventually merges with a paved road, and hikers are rewarded with views of the beautiful pebble beach and the small village of Lionas.

There are two tavernas in Koronos, [Ntoyzenia](#) and [Delfinaki \(7\)](#). Both are excellent choices for visitors, offering traditional Greek dishes and fresh seafood. Ntoyzenia is almost directly on the beach and offers stunning views, and Delfinaki's owner offers to show visitors the mines. Hikers can pick one, and the owners will drive them back to Koronos for a small fee.



View of Lionas Bay with tavernas Ntoyzenia and Delfinaki (6) on the far right

-End of Trail 10-

Logistics

Accommodation

Koronos

- [Marina's House](#)
 - **Contact Number:** +306972364193
 - **Alternative Website:** <https://marinashouse.business.site/>
 - **Address:** Koronos, Kóronos, 84302, Greece
 - Traditional stone home available for rent in the center of Koronos.

Lionas

- [Delfinaki Lionas Boutique Apartments](#)

- **Contact Number:** +30 697 220 4864
- **Address:** Lionas Naxos, Lionas, 84301, Greece
- Visitors can rent an apartment in the Lionas, a short walk from the beach.

Getting Around

While a rental car or taxi may be the most convenient way to get from Chora to Koronos, there is also regular bus transportation to Koronos. At the time of writing, Koronos is the 8th stop on bus line 2. From July to August, the bus runs every day from Chora to Koronos at 13:30. The bus returns from Koronos at 07:25 and 16:05. For more information, visit <https://naxosbuses.com/> or contact by tel. +30 22850 22291, email: info@naxosbuses.com

Appendix IV: Hiker Trail Selection Tool

When tourists visit Naxos, many are looking for a unique experience that includes exploration and discovery. Their visits to the island may be short or long in duration and hiking may not be the only activity on their itinerary. Visitors to Naxos also range in age and fitness levels. We've created the following hiker trail selection tool to help hikers choose their own adventure based on their specific needs. The trails of the ancient trail network are characterized by various levels of difficulty in easy, moderate, and complex categories. Definitions for these categories are included below.

- **Easy:** Walking with a low chance of injury; suitable for people of all ages who are in fair physical condition. Generally flat with an elevation gain of fewer than 200 meters and less than 10 km of the total distance.
- **Moderate:** More challenging, yet with little potential danger encountered. Stairs and elevation changes are present. Suitable for people of most ages who have a basic fitness level. Elevation gain of fewer than 400 meters and less than 12 km of the total distance.
- **Difficult:** Most challenging with mountainous exposure. Suitable for people who have hiked before and are reasonably fit. Elevation gain or loss of 600 meters or less and less than 14 km of the total distance.

We've ranked trails 1 - 7 and 10 by difficulty level ranging from easy to difficult below.

Trail Level of Difficulty Rankings:

- Trail 1: APEIRANTHOS - EMERY MINES - MOUTSOUNA - **Difficult**
- Trail 2: MOUNT ZAS - FILOTI LOOP - **Difficult**
- Trail 3: DANAKOS - CHALKI - **Moderate**
- Trail 4: CHALKI – MONI LOOP - **Moderate**
- Trail 5: TRAGEA (CHALKI) – ANO POTAMIA - **Easy**
- Trail 6: KOUROUNOCHORI - KATO POTAMIA - **Moderate**
- Trail 7: TSIKALARIO - TEMPLE OF DEMETER - **Easy**
- Trail 10: KORONOS – LIONAS - **Easy**

We have also categorized the trails into the descriptive categories below that may help with hiking planning and provide various experiences.

Best Trails for First-Time Hikers	Best Trails for Experienced Hikers
<p>Trail 5: Easy, short hike that brings hikers through a diverse range of ecology and culture.</p> <p>Trail 7: Although overgrown in areas, easy hike along a main road and grain fields that includes many cultural sights and ends at the Temple of Demeter.</p>	<p>Trail 1: Moderately difficult trail that incorporates steep elevation changes and rocky terrain types.</p> <p>Trail 2: Difficult trail with a steep climb to the peak of Mt. Zas and a challenging descent with various terrain types.</p> <p>Trail 3: Moderately challenging and mountainous with climbs, descents, and strolls.</p>

Best Trails for Experiencing Naxos' Culture	Best Trails for Experience Naxos' Nature
<p>Trail 1: Relive the climb of the miners as you hike to the entrance of an abandoned emery mine, visit a historic church, and relax at a picturesque beach village.</p> <p>Trail 2: Climb to the peak of Mt. Zas and visit Zas Cave, the birthplace of the Greek god, Zeus, according to myth and legend.</p> <p>Trail 3: Visit an ancient fortified monastery from the 6th century that is named for Christos Photodotis (Christ the Lightgiver).</p> <p>Trail 4: Explore multiple inland villages that are rich in history and cultural highlights such as traditional weaving in Moni and visit many Byzantine churches along the way.</p> <p>Trail 6: Explore the Melanes Kouros, a group of large-scale, unfinished marble statues discovered on Naxos around 550 - 530 BC that are a notable example of Greek art and culture.</p> <p>Trail 7: Visit the Temple of Demeter, an ancient ruin dedicated to the Greek goddess of</p>	<p>Trail 1: Climb along steep, wooded paths past farmed terraces and isolated knolls showcasing a magnificent limestone landscape.</p> <p>Trail 2: Come face-to-face with endemic species, various habitat types, and unique terrains while discovering incredible mythological sites.</p> <p>Trail 5: Walk through a lunar landscape on the raised dome of Naxos and experience the intersection of the natural environment and human development.</p> <p>Trail 6: Hike through a range of differing landscapes including a stream and water mill that offers a close-up look at the freshwater flora and fauna of Naxos.</p> <p>Trail 7: Explore the rolling hills and grass fields near the Temple of Demeter and be welcomed by a vast array of pollinators, migratory birds, and other unique species.</p>

agriculture, harvest and fertility that also offers lush fertile farmland for kilometers.	
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Trails with the Best Views	Short Trip to Naxos
<p>Trail 1: Climb to the top of the emery mine and visit the church on the other side to experience breath-taking 360 views of a magnificent limestone landscape.</p> <p>Trail 3: Experience gorgeous mountain views of the island’s high country by traversing the Aperianthos-Filoti pass and descending into the Tragea Plateau.</p> <p>Trail 10: Enjoy breath-taking views of the crystal clear waters of the Aegean Sea along this path as well as a picturesque mountain village and a secluded rocky beach.</p>	<p>Trail 2: As the most popular hike on Naxos, hikers can experience nature and culture all in one afternoon.</p> <p>Trail 5: Walk this path for a easy yet unique hike through ancient geology that can be found in no other place in the world.</p> <p>Trail 6: Take this path that offers the greatest diversity in landscapes and nature as well as many historical and cultural highlights.</p>

Best Hike - Recommended by Visiting Hikers (May - June 2022)

Trail 6: Hike this path that offers the greatest diversity in landscapes and nature as well as many historical and cultural highlights, such as a water mill that offers a close-up look at the freshwater flora and fauna of Naxos. This path also highlights the Melanes Kouros, a group of large-scale, unfinished marble statues discovered on Naxos around 550 - 530 BC that are a notable example of Greek art and culture. Lastly, this trail offers the best tavernas for a stop to rest and rejuvenate along the way.

Appendix V: Species Descriptions

The following resources were used to assist in identifying and describing the species of flora and fauna that occur along the trails of Naxos. Occurrence was verified either from observations and photos taken in the field, expert review, and/or from the resource itself.

- Antypas, M., Gavalas, J., Karameta, E., Konstantinidis, Th., Legaki, Eir., Bazos, I., Pafilis, P., Foufopoulos, J. (2017). *Biodiversity on Greek Paths of Culture in the Lesser Cyclades*. Carras, C., Lazoglou, M., Pafilis, P., Stebili, K., Foufopoulos, J. (eds.). Foundation A.G. Leventis.
- Böhling, N. B. (1994). *Studien zur landschaftsökologischen Raumgliederung auf der mediterranen Insel Naxos (Griechenland) unter besonderer Berücksichtigung von Zeigerpflanzen*. Balogh Scientific Books.
- Brock, P. D. (2017). *A Photographic Guide to Insects of Southern Europe & the Mediterranean*. Pisces Publications.
- *greekflora.gr*. (n.d.). <https://www.greekflora.gr/el/Default.aspx>.
- Sfikas, G. (1993). *Wild Flowers of Greece*. Efstathiadis Group/Bay Foreign Language.
- Valakos, E., Pafilis, P., Sotiropoulos, K., Lymberakis, P., Maragou, P. & Foufopoulos, J. (2008). *The Amphibians and Reptiles of Greece*, Edition Chimaira.

Flora

Spiny bear's breech (*Acanthus spinosa*)

Mature spiny bear's breech has tall, thick stems from a dense rosette of leaves that are deeply cut with spiny edges. The flowers grow up all along the length of the stem and are white with pink to maroon bracts. They are also topped with a crown of small spiny green leaves with purple tips.



Acanthus spinosa

Cretan maple (*Acer sempervirens*)

Unlike most maples, the Cretan maple is one of the only evergreen species in the *Acer* genus. Native to the Mediterranean, it is both drought and heat tolerant, making it well adapted to the climate. The leaves on this small tree have three lobes and a waxy texture that aids in water retention. It also has winged seeds characteristic of maples and yellow-green flowers.



Leaves of Acer sempervirens

Crofton weed (*Agertina adenophorum*)

Native to Latin America, this shrub is considered an invasive weed worldwide. Its leaves have serrated edges with small white flowers that appear hairy and grow in dense clusters. This plant is especially successful at spreading because its seeds are dispersed by the wind, and it is toxic to livestock. Because of this, Crofton weed will often be abundant in areas that have suffered from overgrazing.

Allium staticiforme

Native to Greece and Turkey, these small wild onions have underground bulbs and tall, thin stems. These are topped with a tight cluster of many small white or pink flowers and smell strongly of garlic or onion. They are found in sandy and rocky coastal habitats and dry, open shrubby vegetation.



Agertina adenophorum

Holy orchid (*Anacamptis sancta*)

Endemic to the eastern Mediterranean, the holy orchid has leaves that wrap around the stem with flowers in various shades of pink. The flower has a lower lip with three lobes, an overhanging upper lip, and a green helmet. The species is fairly rare and prefers dry and stony ground.



Anacamptis sancta

Coastal Rayless Chamomile (*Anthemis rigida*)

Common in coastal areas, rayless chamomile has long but sprawling stems that grow radially out instead of up. As they age, they harden and become rigid, as their scientific name suggests. The hairy leaves are divided into small lobes and have yellow flowers. They grow in rocky, stony, and sandy habitats.

Lavender-leaved anthyllis (*Anthyllis hermanniae*)

The lavender-leaved anthyllis is a shrub with many densely growing woody branches that can grow crookedly, mimicking thorns. The small, yellow flowers grow in clusters, and the species has small rectangular leaves with silky hairs on their underside. This species is widespread around the Mediterranean.

Smearwort (*Aristolochia rotunda*)

Commonly known as smearwort, this plant has tubular flowers with a dark purple to brown flap with a yellow-green body. The leaves are disproportionately large compared to the smaller flowers and are heart-shaped and heavily veined. The genus name, *Aristolochia*, comes from two Greek words meaning "the best" and "childbirth", hinting at its historical use to induce pregnancy and abortions depending on the progress of the pregnancy.



Aristolochia rotunda

Arum concinnatum

These attractive flowering plants have large heart-shaped leaves with wavy edges and only one or two flowers per plant. The conical flowers are mostly white when young but start turning purple or maroon

along the edges as it matures. They also have a long yellow-orange tuber nestled in the flower. The Crete arum prefers wet habitats such as the ionKermes Oak Forest.

Onion Weed, Pink Asphodel (*Asphodelus fistulosus*)

As its name implies, the onion weed is common and invasive in many parts of the world, including the Mediterranean. It has round tubular leaves around the base of a hollow stem. The white flowers have a brown or maroon stripe down the middle of their six petals. The toxic fruit keeps them from being eaten by goats and sheep, so they can become overgrown.



Arum concinatum

Cage Thistle (*Atractylis cancellata*)

The cage thistle is an herb that grows from a single shoot with long, hairy leaves lined with spines. The fruit is barrel-shaped with spines all over, topped with pink to purple flowers, with many slender petals growing straight up out of the fruit. It can be found on exposed, dry, rocky ground.

Sterile oat (*Avena sterilis*)

Although sterile oat has edible seeds, it is considered a grass weed for its tendency to invade wheat fields and outcompete crops. Its main dispersal method is attaching to animals and humans, so you will likely find these seeds sticking to your pants and socks. Their flowers have a distinctive 'V' shape with long bristles hanging off both sides of the flower.



Ballota acetabulosa

Greek horehound (*Ballota acetabulosa*)

This native plant is an evergreen shrub with tall hairy branches with heart-shaped leaves that are heavily veined and hairy. The flowers are clumped in layers growing up the length of the branches and can be white to pink. Interestingly, the flowers of this plant can be used, in part, for a makeshift candle. Before electricity, locals would take the empty shell of a big snail, fill it with olive oil, and place the bract of a flower lightly on top. When lit, the hairs on the petal draw up the oil, and the stem acts as a wick, creating a flame.

Arabian pea (*Bituminaria bituminosa*)

This leafy shrub has slender branches, each ending with three oblong leaves or flower clusters. Each pink to purple flower has two lips facing opposite directions forming the well-known shape of pea flowers.

The lower lip is typically a lighter color than the top lip. A distinct characteristic of this plant is that it has a strong tar-like aroma which hints at its use for the immobilization of heavy metals in contaminated soils. Its unique combination of chemicals makes it attractive for various medicinal uses.

Briza maxima

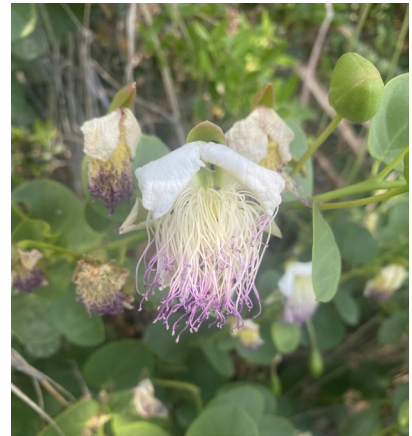
This grass has long leaves with tall, thin stems. Each stem branches off into even thinner, delicate branches, which end in seeds with a layered pattern. As their common name suggests, the seeds look like flattened rattlesnake rattles that start green and turn golden as they dry. They are very common in grasslands.



Bituminaria bituminosa

Capparis spinosa

During the blooming season, the caper bush is distinguished by its fragrant, large white to light pink flowers with long purple stamens. The leaves are thick, round, and glossy. Common in Mediterranean cooking, capers, the flower buds of these plants, are often prepared pickled or salted. The caper bush has several medicinal uses, including curing gastrointestinal distress in ancient Greece.



Capparis spinosa

Centaurea raphanina

These pink to purple flowers grow low to the ground with dark green lobed leaves in a rosette shape. It grows in a wide variety of habitats, including in rock crevices, stony ground, and stone walls. This species is common and endemic to Southern Greece, and the leaves can be collected and eaten in salads.



Centaurea raphanina

Red knapweed (*Centaurea oliveriana*)

As the name suggests, Red Knapweed has dark pink to dark red flowers with a layered, scaled bract. The leaves are lyre-shaped, and the stems sometimes appear white. It is endemic to the Cyclades and grows on limestone rocks at high elevations, usually on a south-facing cliff.



Centaurea oliveriana

Cerastium runemarkii

These plants have hairy stems and grow in sparse clumps. The flowers have white petals that turn light green towards the middle. Each petal is deeply lobed, giving them a heart shape. This plant grows in rocky crevices, usually in shady places at altitudes of 500 to 1500 meters, and is endemic to Greece.

Chrysanthemum coronarium

These large, attractive daisies can be up to 6 cm wide with an orange center surrounded by numerous petals. These petals start orange-yellow in the middle of the flower and gradually fade to yellow and eventually white at the tips. The leaves are feathery, with multiple small lobes coming off a main stem. The tender shoots can be eaten raw or steamed.



Chrysanthemum coronarium

Spiny chicory (*Cichorium spinosum*)

As the name suggests, the spiny chicory has stalks that are rigid and come to a point giving the whole plant a spiny appearance. The flowers have five petals and are light purple to blue with serrated edges. Its long leaves are sometimes serrated and used in cooking to add to salads or as a nutritious leafy green side.



Cretan Rockrose (*Cistus creticus*)

The flowers of the Cretan rock rose have five petals that are bright pink with a wrinkled texture and yellow to orange stamens. The leaves are small and fuzzy with wavy edges. You will find this shrub growing low to the ground in rocky areas and slopes.

Cistus creticus

Mallow bindweed (*Convolvulus althaeoides*)

This species of morning glory is native to the Mediterranean and has the characteristic funnel-shaped pink flower that opens in the sunlight. They grow singly on long flexible stems that appear “hairy”. This common climbing plant also has small silver-green, heart-shaped leaves with deeply divided lobes. In some places, it can become invasive due to its sprawling roots and stems.



Convolvulus althaeoides

Delphinium staphisagria

This attractive plant is native to the Mediterranean and has dark purple to blue flowers with five petals, each with a green dimple at the tip. It has large leaves that can be up to 15 cm across with hairy stems. The entire plant is toxic to humans and was called *phthiroctonon* or louse-killer in Ancient Greece due to its traditional use as a medicine to kill lice.



Delphinium staphisagria

Violet larkspur (*Delphinium peregrinum*)

The violet larkspur is a flowering plant that usually has one central stem that branches. The flowers are shades of purple with a distinctive spur that curves upwards, resembling the tail of a scorpion. The genus *Delphinium* comes from the Greek word *delphis*, meaning dolphin, which points to the flowers' shape. Most parts of the plants contain chemicals that are toxic to livestock.

Vampire lily (*Dracunculus vulgaris*)

The vampire lily has a large, central, maroon-purple flower in a conical shape with a large dark purple stigma in the center. It releases a foul smell similar to rotting meat to attract pollinators and can also self-heat to 18 degrees Celsius. The stem has an interesting black-and-white pattern and can be commonly found in kermes oak forests.

Autumn heather (*Erica manipuliflora*)

Commonly known as the Autumn heather, this is a phrygana bush that flowers from late summer to early autumn. It can grow up to a meter tall and can be found at elevations up to 2,000 m in the maquis, phrygana, and light woodland. The leaves are small and needle-like, and its flowers are bell-shaped, ranging from mauve to purple, and are set in whorls around the stem. It is native to the eastern Mediterranean, is lime-tolerant, and grows in magnesium-deficient soils.



Sea holly (*Eryngium maritimum*)

Sea holly has silver-blue or bluish-green leaves that are leathery, stiff, and spiny. The blue to purple flowers grow in round clusters from spiny bracts. These plants have deep root systems and grow on sandy beaches in coastal ecosystems. A possible etymology is from the Greek word "eruggareun" meaning belch, as the plant was used to treat ailments such as trapped gas.

Dracunculus vulgaris

Treacle mustard (*Erysimum naxense*)

This species of mustard has a central stem with radial oblong leaves with shallow jagged edges. The yellow flowers have four petals and grow in clusters from tall, slender stems. This attractive plant is endemic to Naxos and can grow in fissures of limestone rocks and on cliffs.



Mediterranean spurge (*Euphorbia characias*)

Mediterranean spurge is an evergreen shrub that can grow more than 1 meter tall. Long, slender leaves grow radially from several tall stems. An older plant may have thick, bare branches with a collar of leaves and topped by a cluster of yellow flowers with characteristic black or brown nectar glands. These plants are highly drought resistant and can also resist high salinity.

Euphorbia characias

Scotch broom (*Genista acanthoclada*)

The Scotch broom is a densely branched, spiny shrub that grows one to three meters high. Scotch broom is characterized by narrow and elliptical 3-foliolate leaves and yellow pea-like flowers, about three-quarters of an inch long. It is found in the maquis, phrygana, and open woodland and grows on limestone cliffs and stony slopes.

Italian gladiolus (*Gladiolus italicus*)

The Italian gladiolus is an attractive plant with bright pink orchid-shaped flowers growing irregularly on long bare stems. The stems can grow up to 1 meter with long sparse leaves along the base. Although native to Eurasia and North Africa, this plant is widespread and considered a common weed in many parts of the world.



Gladiolus italicus

Handsome Lida (*Hymenonema graecum*)

This herbaceous plant has lobed, pinnate leaves with soft, hairy stems. Its flowers are yellow with 1 to 3 per stem and overlapping petals. Each petal is oblong with small "teeth" on the tips. This plant is endemic to Greece, and its Greek name Adralida means "handsome Lida".

Phoenician Juniper (*Juniperus phoenicea*)

The Phoenician Juniper is a large shrub or small tree with distinctive dark, ashy brown bark that can be peeled off in strips. The blue-green leaves are scaly and arranged in pairs or groups of three. Its berries are orange-brown, grow densely, and are used as a seasoning and to flavor gin. Juniper thrives in the hot, dry climate and has a shallow root system.

Common Wild Cumin (*Lagoecia cuminoides*)

Wild cumin is a flowering plant and the only species in its genus. The leaves have deeply pointed lobes and tend to grow pointed up along the stem. The flower often faces down towards the ground as it bends the delicate stem. They are made up of many small flowers bunched together with many spikes along all the edges. It is native to the Mediterranean, and its essential oil contains high concentrations of thymol which can be used for food preservation.

Hare's Tail Grass (*Lagurus ovatus*)

Hare's tail grass is an Old World grass native to the Mediterranean. It grows about 30 cm tall with short, grass-like leaves. The flower heads are conical and tan when mature. This attractive plant has been cultivated worldwide as an ornamental and established as an invasive species in some places.



Lathyrus clymenus

Spanish vetchling (*Lathyrus clymenus*)

Spanish vetchling is an herbaceous legume plant that grows in fairly large patches. The leaves are long and grass-like, with attractive flowers with three main petals. The larger petal is red, and the

inner pink petals are smaller and slightly overlapping, forming a hood. The seeds are used to prepare fava santorinis, a delicious and traditional Greek dish.

Lavandula stoechas stoechas

This wild lavender is a small evergreen shrub with tubular bracts and small, purple, funnel-shaped flowers. This subspecies is native to the Mediterranean, but its aromatic scent is recognizable and makes it a popular herb for oils, insect repellent, flavoring, and medicinal purposes. In ancient Dioskouridis, Sroichadite wine was prepared with this lavender.

Wavyleaf sea lavender (*Limonium sinuatum*)

Although commonly known as wavyleaf sea lavender, this flowering plant is not a part of the lavender family. It is known for its delicate papery flowers in various colors, including white, pink, purple, and yellow, with white petals inside and pinnate, lobed leaves. It is native to the Mediterranean and often used in dried floral arrangements.



Lavandula stoechas stoechas



Limonium sinuatum

Lupinus gussoneanus

Lupinus gussoneanus is a species of lupine, a flowering plant belonging to the family Fabaceae. It is native to the Mediterranean region and can grow up to 60 cm tall. It has palmate leaves with 5-7 leaflets that are dark green. The plant produces showy spikes of blue, violet, or purple flowers, which bloom in late spring to early summer. Like other members of the lupine genus, *Lupinus gussoneanus* can fix nitrogen in its roots, which makes it a valuable plant for soil improvement and ecosystem restoration.

Blue lupine (*Lupinus pilosus*)

Blue lupine is a hairy flowering plant with several tall stems. The end of the stems have 7 to 11 leaves that grow radially from a central point. The pea-shaped flowers are blue to purple with white along the middle spine. They also have the characteristic lupines with bitter beans. In their endemic Israel, they are considered edible, although they go through several rounds of boiling to make them palatable. They can be found on rocky slopes and in olive groves.

Common mallow (*Malva sylvestris*)

Often grown as an ornamental plant, the common mallow is known for its bright purple flowers with dark purple veins. The leaves of the plant, while young, can be boiled and eaten as a vegetable, and the seeds have traditionally been used as a yellow dye. Although less popular nowadays, traditionally, the plant was also used medicinally for its anti-inflammatory and moisturizing properties.



Malva sylvestris

Coastal medick (*Medicago marina*)

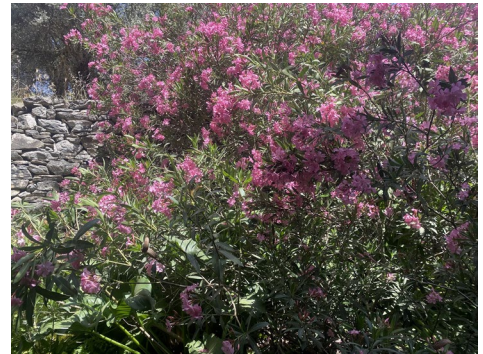
Found exclusively in coastal habitats, coastal medick is endemic to the Mediterranean but can be found worldwide. It has yellow petals and gray, felty leaves that are arranged in a symmetrical herringbone pattern. This plant forms a symbiotic relationship with a specific species of bacteria capable of nitrogen fixation - the process in which nitrogen in the air is converted into ammonia in the soil.

Muscari cycladicum

Endemic to the Cyclades, this species has one thick, erect stem with 4-5 long, overlapping leaves around the base. The leaves are smooth, with the edges curled inwards. Moving up the stem are alternating green to yellow flowers, turning indigo to purple and getting smaller towards the top of the stem. The flowers are bell-shaped with a yellow "pucker" or teeth at the end.

Oleander (*Nerium oleander*)

Oleander typically grows as a large shrub between 2-6 meters tall. The leaves are leathery, green, and narrow, growing in whorls of three. The flowers have five petals with wavy edges and can range in color from white to red. They also have a corolla in the middle of the flower with five fringed lobes. Because of their striking appearance and sweet scent, they are frequently used as decorative plants in landscaping. Although they contain several toxins that are poisonous to both humans and fauna, some insects use the toxins to make themselves unpalatable to predators. It has been suggested that oleander was used in Ancient Greece to induce hallucinations, such as by Pythia, the Oracle of Delphi.



Nerium oleander

Olive Tree (*Olea europaea*)

The olive tree is perhaps the most recognizable species on Naxos and can take the form of a tree or shrub. The trunks become twisted and gnarled as they age and have silvery-green oblong leaves. The flowers are small, leathery and white and the olives are harvested when they are green to purple. Some of the olive trees on Naxos are relics from past cultivation but many are still actively harvested. They can be found in

vast groves and on stone terraces as well as scattered across the landscape. Olives are thought to have been first domesticated in the third millennium BC and olive oil had a variety of uses in Ancient Greece such as for grooming and for anointing kings and athletes. The original "eternal flame" of the Olympic games used olive oil. Today olives are mainly used for oil and eaten raw or fermented but olive wood is also popular for handicrafts and kitchen essentials due to its durability and interesting grain patterns.

Onobrychis aequidentata

This flowering plant has slender, hairy stems and bright pink flowers with a typical pea-flower shape. The top lip is a darker pink and curves up, while the lower lip is a lighter pink that curves down. The flat seed pods resemble a rising sun and are a semicircle with multiple points with the ends curving to one side. This species is widespread in the Mediterranean in many habitats, including olive groves, woodland, and the sandy coast.



Ophrys scolopax

Woodcock orchid (*Ophrys scolopax*)

This orchid has three light to dark pink lobes, a brown background lip, and a purple H or X-shaped speculum outlined with white-yellow. Although common, they only flower from March to the beginning of May. You will most commonly find them in phrygana habitats.

Pot marjoram (*Origanum onites*)

Also called pot marjoram or Greek oregano, it has small white flowers when in bloom with large stamens. This common oregano is used both fresh and dried for cooking and various medicinal purposes due to its antimicrobial activities. The Greek word *gano* means to shine or rejoice.



Origanum onites

Origanum calcaratum

This species of oregano is endemic to the South Aegean islands. It has alternating leaves that have a rounded shape and are fuzzy and supple similar to that of a succulent. When viewed from above, the leaves cover the entire stem length in a pattern that gives it a fairly square shape. It grows at high elevations in the crevices of rocks and is desired for its aromatic and medicinal properties.



Ornithogalum arabicum

Arabian star flower (*Ornithogalum arabicum*)

The Arabian Star flower has six white to ivory petals with a black ovary and yellow anthers. Long, slender petals surround naked tall stems topped with a cluster of up to 15 flowers. They are readily found in the wild and planted as ornamental flowers, although all parts of the plant are toxic to humans.

African wood sorrel (*Oxalis pes-caprae*)

Native to South Africa, the wood sorrel grows along the ground, often in a dense carpet. The heart-shaped leaves grow in groups of three, and the yellow flowers have five fused petals. Its high concentration of oxalic acid gives this species a sour flavor that is fairly harmless to humans and is used in folk medicine for ailments such as tapeworms. These plants are both invasive and difficult to control because they propagate through their bulbs. Any part of the bulb left behind could still propagate, and the soil is likely contaminated with many small bulbs.

Red poppy (*Papaver rhoeas*)

As their name describes, red poppies grow singly on delicate, hairy stems and have bright red flowers with four overlapping, papery petals and a black spot at the base. The leaves have hairs and are coarsely toothed. They are considered agricultural weeds because they thrive in disturbed soil where herbicides are not used. The seeds can be eaten alone or be used in foods such as bread, and the red dye in petals is sometimes used in wine and medicine.



Oxalis pes-caprae



Papaver rhoeas

Algerian tea (*Paronychia argentea*)

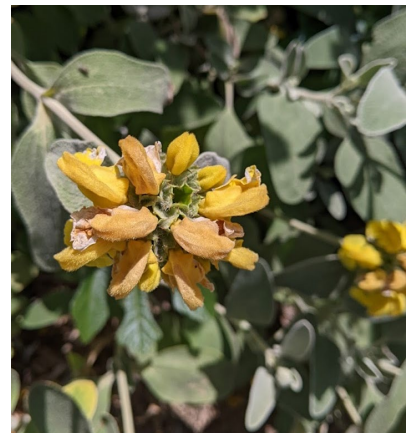
Algerian tea is a small flowering plant that grows in sandy soils, dunes, and other dry terrains. The branches can grow up to 30 cm and spread out from a central body growing along the ground. The leaves are oblong with sharp tips and grow alternatively along the length of the stem and can range from green to dark red. White, papery thin flowers with yellow sepals grow in dense clusters at the ends of the stems.



Paronychia argentea

Jerusalem sage (*Phlomis fruticosa*)

Native to the Mediterranean, these yellow, hooded flowers are arranged in whorls on tall, erect stems with gray-green fuzzy leaves with a "quilted" appearance. Although the flowers are odorless, they attract various pollinators and are drought resistant. The plant looks superficially similar to *Sideritis* or mountain tea, which are used as an herbal, medicinal tea.



Phlomis fruticosa

Mastic tree (*Pistacia lentiscus*)

This species is an evergreen plant ranging in size from a shrub to a small tree. Native to the Mediterranean, the species has alternate, leathery leaves growing in clusters of five to six. It has tiny green flowers and fruit that turn red to black as it ripens. Although this hardy species can grow in many types of soils and provides food and shelter for many fauna, its growth can be stunted by logging, grazing, and fires. Notably, it has a strong resin aroma collected for the flavoring of mastic chewing gum and several other culinary and medicinal uses.

Cretan plantain (*Plantago cretica*)

The Cretan plantain is a tumbleweed that grows densely and close to the ground. The hairy leaves are slightly curved and grow directly from the main body. The hairy flowers have delicate white petals with maroon to dark brown centers and grow clumps from the main body.

White hedge nettle (*Prasium majus*)

This shrub is the only species in the *Prasium* genus. It has white flowers growing in pairs whose shape resembles orchids. The leaves have a smooth texture and toothed edges. A popular shelter for hares, it has earned the nickname "hare grass." Rich in vitamins A and K, the leaves and stems are used in several Greek dishes.



Prasium majus

Dune carrot (*Pseudorlaya pumila*)

As the name suggests, the dune carrot is found in coastal areas in sandy and rocky soils. The hairy stems grow from the base of the plant from a central point, and the heavily lobed leaves grow opposite each other. The seed pods are heavily spiked with small pink flowers on the tips.

Eagle fern (*Pteridium aquilinum*)

The Eagle fern has large triangular-shaped fronds growing an underground rhizome. They tend to grow in dense aggregations of genetically identical fronds. This species prefers woodlands such as Kermes Oak forests found on Naxos. Although it is known for its toxicity and is linked to certain types of cancer in humans, it is consumed in many parts of the world. In the Mediterranean, the bracken leaves are used to filter sheep's milk and to store fresh ricotta cheese.



Pteridium aquilinum

Kermes oak (*Quercus coccifera*)

The kermes oak is native to the Mediterranean and characterizes the Kermes oak woodland habitat. Unlike American oak varieties, this species is an evergreen with small, spiny-serrated leaves with a waxy layer that reduces water loss in the arid climate. In addition, the acorns, while edible, are bitter. These defense mechanisms, which make them unpalatable and hard to digest, have been developed to discourage herbivory.



Leaves, *Quercus coccifera*

Valonia oak (*Quercus macrolepis*)

The Valonia oak is a tree that can grow up to 25 m tall and grows broadly, forming a domed canopy. The acorns grow in cups called valonia that are shaped like a sun and are used for tanning and dying. A gall, or growth, forms on the acorns in reaction to the presence of the eggs or larvae of a small wasp called *Andricus quercuscalicis*. The galls are not harmful to the

tree and can be harvested for various uses. The ripe acorns are eaten raw or boiled and, in Naxos, are often used as feed for pigs.

Black hawthorn (*Rhamnus lycioides oleoides*)

Black hawthorn is an evergreen shrub that grows with gray-colored branches that end in a sharp point. The leaves are small and narrow with a leathery texture. It has small yellow flowers during the winter, and the maroon to black fruits are small and round when ripe. This hardy plant is resistant to grazing by livestock, and its presence can indicate overgrazing.

Prickly burnet (*Sarcopoterium spinosum*)

As the common name suggests, the prickly burnet is a bush with small red fruits that form clumps and an abundance of spines that sometimes create a hexagonal pattern. The small, ovate leaves are arranged in pairs similar to a fern frond. The plant's roots are used for various medicinal purposes, including treating diabetes and digestive issues. The prickly burnet is most common in phrygana habitats and indicates overgrazing.



Sarcopoterium spinosum

Savory of Crete (*Satureja thymbra*)

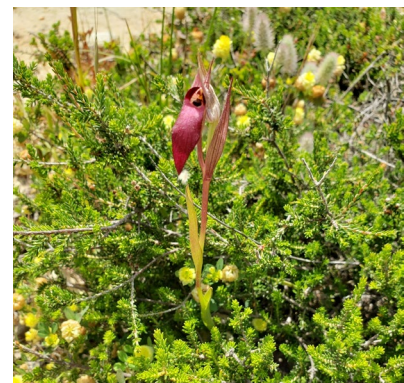
Savory of Crete or pink savory is a small shrub with closely clustered branches with small dark green leaves. In the spring and summer, you will find small pink or purple flowers growing in whorls on erect stalks. The species grow in woodland, scrubland, and along roads in rocky limestone. It has a strong aroma that makes it a popular ingredient in perfume, as a spice for cooking, and as a medicinal tea to treat digestive issues.

Common golden thistle (*Scolymus hispanicus*)

The common golden thistle is heavily spiked with spines along the leaves and stems. They can grow up to 80 cm tall and have bright yellow to orange flowers. Since ancient Greece, the plant has been used for both medicinal and culinary uses. It is widespread throughout the Mediterranean and has become invasive in other parts of the world.

Tongue Orchid (*Serapias lingua*)

Native to the Mediterranean, the tongue orchid is easily distinguished by its tongue-like lip, as the common name describes it. The slender stems have sparse, long, thin leaves with about five to six pink flowers. The bottom lip of the flower points downward, and looking inside the flower will reveal a dark brown or red spot. This species prefers moist grasslands, fields, and scrub.



Serapias lingua

Pink catchfly (*Silene colorata*)

This flowering plant often grows on sandy beaches and sandy soils far from the sea. It has pink flowers that are very distinctive, with five petals that are each divided into two large lobes. The mauve to green leaves are small and fairly sparse.



Silene colorata

Hair catchfly (*Silene sedoides*)

Endemic to Greece, the hairy catchfly is a succulent that grows close to the ground with a central body made of overlapping plump leaves and is covered with "hairs". Flowering branches typically grow straight out of the middle of the plant with bright pink flowers with five petals. Sometimes when the branches are particularly long, they grow scattered along the ground. The plant can range in color from green to dark maroon and will often contain both.

Milk thistle (*Silybum marianum*)

Native to the Mediterranean, the milk thistle has a typical purple flower and spiny, shiny green leaves. The stems have fuzz on the surface, and particularly large specimens have hollow stems. In addition to its spines, the thistle protects itself from predation due to its high nitrate content, which is toxic to cattle and sheep. As the bacteria in their guts break down the nitrate, nitrite ions are produced. These combine with hemoglobin to produce methemoglobin, blocking oxygen transport and causing oxygen deprivation.



Smyrnum perfoliatum rotundifolium

Smyrnum perfoliatum rotundifolium

This plant has a thick, central stem that can develop ridges along the length as it ages. Along the stem, single, large, round leaves grow around the stem in such a way that the stem passes through the middle of the leaves. Towards the tip of the stem, several thin branches end in flowering bodies with clusters of tiny small flowers. The subspecies name *Rotundifolium* means having round leaves, and it is also known for smelling like myrrh.

Spanish broom (*Spartium junceum*)

This distinctive shrub has tall, slender stems tipped with whorls of bright yellow flowers that have an orchid-like appearance in shape. It is common along roadsides and has little to no leaves. The flexible and strong stems are used to make ropes and brooms to this day which is why it's commonly referred to as Spanish broom. Although native to the Mediterranean, the plant is considered invasive in other parts of the world.



Spartium junceum

Symphytum davisii naxicola

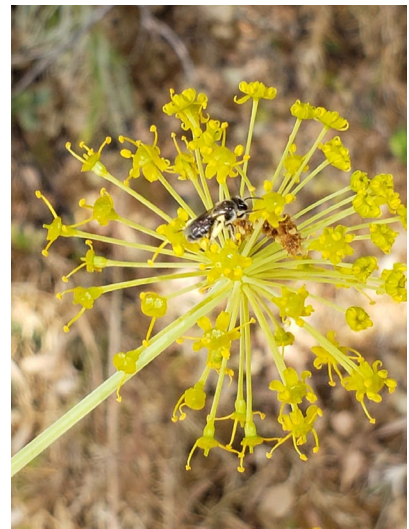
This endemic species is a small plant with deeply veined leaves and thick, hairy stems with a purple hue. The flowers grow along the end of the stem with several white bell-shaped flowers with scalloped edges. The end of the stem is often curling under itself, giving the stem a whorled profile. It grows on cliff crevices at elevations up to 900 meters.

Medusahead (*Taeniatherum caputmeduse crinitum*)

Commonly known as medusahead, the grass species has thin stems that branch at the base. The head is made of several layers of both short and long shoots. When they dry, the shoots get twisted and spread in many directions leading to their common name associated with the Greek goddess Medusa. Because it grows its deep roots in the winter, it tends to outcompete native plants for moisture which develop their roots later in the season.

Teucrium capitatum

This species grows with many thick stems. The leaves are oblong and grow around the stems in rings with gaps between each "ring" of leaves. At each ring, there is a layer of longer leaves with a layer of smaller leaves on top. Towards the end of the stem, there are several off-shoot stems. Each stem has a flowering body with many white flowers with red stamens. The entire plant is greenish-white because it is covered by a layer of fuzz.



Thapsia garganica

Thapsia garganica

This species is from a small family known as "deadly carrots." It has a thick, sturdy central stem with a sparse number of leaves along the stem. At the tip of the stem is a flowering structure with several protruding thin stems, each topped with a cluster of small yellow flowers. As the name suggests, this species is highly poisonous to animals, but root extracts are currently being studied in clinical trials for cancer treatment.

Conehead thyme (*Thymbra capitatus*)

Commonly known as conehead thyme, this perennial plant is native to the Mediterranean. It has narrow, fleshy green leaves and 10 mm long pink flowers arranged in cone-shaped clusters. The flowers are protected by overlapping red bracts and are known for their strong, exquisite aroma. Some beekeepers on Naxos exclusively feed their bees this thyme to produce the island's famous thyme honey.



Goat's beard (*Tragopogon dubius*)

Goat's beard is an annual forb that typically grows up to 60 cm but can sometimes reach heights of a 1 meter. The yellow flowerhead typically grows about 6 cm and resembles a dandelion. Its seed head is particularly identifiable and looks like that of a dandelion but is significantly larger. The roots and leaves of this plant can be eaten either raw or cooked.

Tragopogon dubius

Trifolium purpureum

The purple clover has stiff, erect, hairy stems with long, narrow leaves grouped in threes, typical of clovers. The flowers have pink slender petals growing on oblong clusters at the end of stems and appear fuzzy and hairy. They are found in sunny meadows, in abandoned fields and phrygana, and along cultivated fields.



Trifolium purpureum

Woolly clover (*Trifolium tomentosum*)

Woolly clover is a small plant with teardrop-shaped leaves with serrated edges growing in groups of three. The flowering bodies have small pink petals growing in spiral patterns. Before flowering, it appears as a green cotton ball when they are young and starts to develop pink veins as it matures. It is native to Europe, western Asia, and northern Africa.

Starry clover (*Trifolium stellatum*)

When in bloom, this attractive plant forms spherical flowerheads of pink to red star-shaped flowers with feathery white edges. The stems appear hairy, and the leaves are in groups of three. They can be found in various habitats, including grasslands, stony areas, and uncultivated fields.

Hop trefoil (*Trifolium campestre*)

As the name suggests, the hop trefoil grows up to 30cm tall and has distinctive yellow flowers that resemble hop flowers as they grow in layers into a conical shape. The small, rounded leaves are arranged in groups of three. This species can be found in phrygana and fields and is popular as livestock feed.

Spotted rockrose (*Tuberaria guttata*)

As the name implies, the spotted rock rose is a small plant with yellow flowers, and each petal has a brown spot near the base. In some cases, the spots are large and can form a complete circle at the base of the flower. It can grow 2-30 cm tall and has long ovate leaves.

Roman nettle (*Urtica pilulifera*)

The Roman nettle can grow up to around 60 cm with slender spiny stems and heart-shaped leaves that are heavily serrated around the edges. The seeds are rounded and covered with spines making this plant highly irritable to the skin. It is common around human settlements and farmland.

Fauna

European Snake-eyed Skink (*Ablepharus kitaibelii*)

The small, slender reptile grows up to about 15 cm, including the tail. It is metallic bronze in color with two darker stripes running along its entire body. Because of its small, atrophied legs, the European snake-eyed skink slithers like a snake and is typically a ground dweller. This shy reptile hunts at twilight and can be found in dry grasses and under rocks and leaf litter. This skink is unique because it does not have eyelids, unlike other reptiles in this region.

Common Cone-Headed Grasshopper (*Acrida ungarica*)

These common grasshoppers have conical-shaped heads with long, flat bodies and can be either green or brown. Males can be about 4 cm long, and females are slightly larger at 7 cm. They are especially active in grasslands, and you can often hear males 'singing' to attract females by rubbing their wings and legs together.

Oak spider (*Aculepeira ceropagia*)

The oak spider is a common European species and can be found in most habitats. These orb-weaving spiders build their webs near the ground and inject caught prey with paralyzing venom. Males are about 7 mm long and significantly smaller than females, which can grow to about 15 mm long. As their name suggests, this species can be identified by the oak leaf-shaped pattern on their abdomens.

Chukar partridge (*Alectoris chukar*)

The chukar partridge is a small, plump, ground-dwelling bird with a gray chest and white and black bars on its wings. It has distinct red legs, beaks, and an eye ring with a black collar that crosses over the eyes. They prefer fairly remote habitats that are rocky with scattered vegetation. Although once abundant, these shy birds have suffered from overhunting and are now a rare sight.



Alectoris chukar

Pallid Swift (*Apus pallidus*)

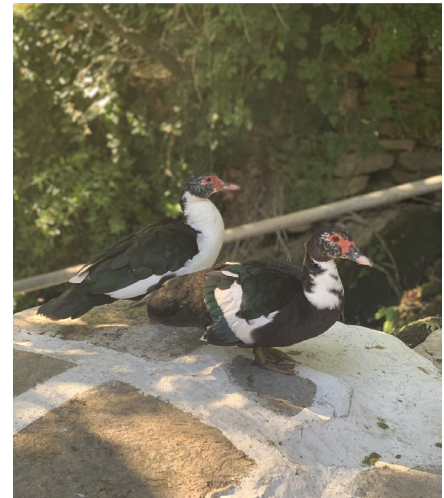
The pallid swift is a small bird with an entirely brown body aside from its distinctive white throat patch, which helps distinguish this species from the common swift. Its wings are sickle-shaped, and it has a short, forked tail. Preferring life in the air, they avoid landing on the ground and have adapted to catch insects, mate, and even sleep while in flight. This migratory species can be found in the Cyclades from March to September.

Little Owl (*Athene noctua*)

As the name suggests, the Little Owl has a compact body with a large, round head, white eyebrows, and large, yellow eyes. Its feathers are speckled gray and brown, and it commonly nests in abandoned houses, stone walls, and tree cavities. Males defend territories and can be seen at dusk perched up high, looking out for intruders or prey, which includes rodents and large insects. The Little Owl represents wisdom and knowledge, which is due to its association with the Greek goddess Athena.

Muscovy duck (*Cairina moschata*)

The Muscovy duck is fairly large, with males weighing up to 7kg and females weighing about 3kg. While both sexes have black and white feathers in various patterns, the black feathers of males are also iridescent and shiny. This species also has fleshy red wattles around the bill and eye area. Flocks of these ducks can be either feral or domesticated, raised for food and pest control in gardens.



Cairina moschata

Banded demoiselle (*Calopteryx splendens*)

The banded demoiselle is a species of damselfly found in habitats with freshwater streams and grows to about 50mm long. Males have iridescent blue bodies and translucent blue wings with a dark brown spot or 'fingerprint' towards the end of their wings. Females have iridescent green bodies with translucent yellow-green wings with a white spot towards the tip.



Male, Caloptrix splendens



Female, Caloptrix splendens

Common linnet (*Carduelis cannabina*)

The common linnet is a small songbird with a thin body and long, forked tail. Both sexes have a brown back with white and brown-streaked breasts and gray heads with short, thick gray beaks. In the summer, males develop red feathers on the breast and the forehead. This species prefers fairly open land with sparse vegetation, such as a maquis habitat. They feed primarily on seeds and can be seen in large mixed species flocks outside the breeding season.

Rock dove (*Columba livia*)

The rock dove will be recognizable to most people as a common pigeon. They have a gray body and head with iridescent purple and green feathers around their neck and throat and a black band on their wings. The rock dove can nest in caves and rocky outcroppings along the coast.

Carrion crow (*Corvus corone*)

The carrion crow is a fairly large bird that is all black but with a green sheen that can be noticeable in sunlight. The beak, also black, is thick and slightly curved. Their diet is varied, including insects, seeds, fruit, small mammals, and fish, and they are also frequently seen picking through garbage.

Common raven (*Corvus corax*)

The common raven is all black and distinguishable from the carrion crow because it is significantly bigger and has a longer, thicker beak and a wedge-shaped tail. This species mates for life, and a mated pair defends a territory that, in the Cyclades, can be a whole small island. On Naxos, the raven provides an important ecosystem function by feeding on garbage and carrion, cleaning up the environment.

Sardinian warbler (*Curruca melancephala*)

The Sardinian warbler is a small bird that is widespread throughout the Mediterranean. The male is dark gray with a white to light gray belly, black head, white throat, and red eyes. The female is brown with a white belly, gray head, and red eyes. It is found in the open country and nests in bushes.

Four-lined snake (*Elaphe quatuorlineata*)

As the name suggests, the four-lined snake is light brown, with two sets of black stripes running along both sides of its body. This large snake can grow up to 1.2 meters and often be found in trees due to their excellent climbing abilities. Their diet includes birds, lizards, and rodents.

Cirl bunting (*Emberiza cirlus*)

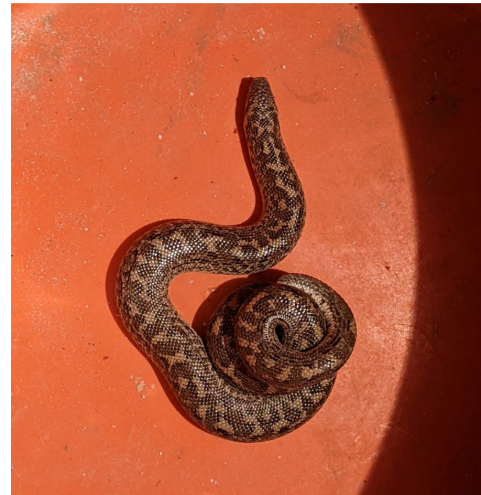
The cirl bunting is a small passerine bird with a wing span of approximately 25 cm. Males have dark brown throats and short, thick beaks. The crown of the head is olive green to black with yellow stripes above and below the eye. The body has many stripes in brown, gray, and yellow. Females have a similar color and pattern, although their colors are more muted. They can be found in grasslands and fields with shrubs and small trees. Although the cirl bunting is found throughout Southern Europe, the Mediterranean, and North Africa, they prefer more humid habitats.

Northern white-breasted hedgehog (*Erinaceus roumanicus*)

The Northern white-breasted hedgehog can get up to 25 cm long and weigh up to 1 kg. They have rotund bodies with short spines, white furry bellies, and pointed noses. They are nocturnal and come out at night to hunt for insects, snails, and small vertebrates. When threatened, the hedgehog will curl into a ball, tucking in their legs and erecting their spines to detract predators.

Javelin sand boa (*Eryx jaculus*)

The Javelin sand boa is the only species of European boa and can grow up to 80cm with a heavy body and short tail. Although color and pattern vary greatly, they are generally gray, tan, and brown with dark brown to black blotches. The belly can be yellowish to whitish. Although common, they can be elusive, spending hot days in shady crevices and under rocks. This snake is harmless to humans.



Eryx jaculus

Eleonora's falcon (*Falco eleonora*)

Eleonora's falcon is a medium-sized raptor with sickle-shaped wings and a long, slender tail. It can come in two distinct color morphs. The dark morph is dark brown, while the light morph has brown lightening to white, although individuals can have a range of coloring. This migratory species winters in Madagascar but spends most of the year (May to October) in Greece. Most recently, it has been estimated that about 85% of the world's population can be found in the Aegean Sea region. Its main prey is migrating songbirds, and Eleonora's falcon creates nests near cliffs and inlets intersecting with their migration routes.

Crested lark (*Galerida cristata*)

The crested lark is a small songbird distinguishable by its pointed, brown crest. Its body is all brown with dark brown to black spots or bars along its back and reddish underwings visible during flight. These birds do not migrate and can be found near cereal crops in the open countryside and along roadsides.

Griffon vultures (*Gyps fulvus*)

The Griffon vulture is the largest bird in the Cyclades and has a wingspan of up to 2.8 meters. It has a brown body, long, broad, dark brown flight feathers, and a white head and neck. They can be seen soaring high in the sky using thermal updrafts over mountain habitats where it prefers to nest and hunt for prey. Although there are no more nesting pairs on Naxos, they fly in daily from the nearby island of Heraklia. Like all vultures, the Griffon vulture is a scavenger and relies on the extensive goat populations of Naxos. They are currently threatened by wind turbines and poison bait traps.

Mediterranean house gecko (*Hemidactylus turcicus*)

This nocturnal gecko is tan to light pink in color, with brown spots along its body and textured skin. The belly is white, almost translucent, and the eyes are brown with a skinny, vertical pupil. This species is very common throughout the island and can often be found inside homes where they take shelter in cracks and other small areas hence their name. They are insectivorous and feed on cockroaches, grasshoppers, spiders, beetles, and other insects.

Bonelli's eagle (*Hieraetus fasciatus*)

Bonelli's Eagle is a large bird of prey with a wingspan of up to 165 cm in males and 180 cm in females. Although females are darker in color and more heavily patterned, both sexes have dark brown bodies and cream-colored bellies with black bars. Wing feathers can vary in color but typically have a black bar in the middle, and their long tail has a black band at the tip. This eagle nests on rocky cliffs, feeding on rabbits, hares, and partridges, with typically only one pair on each island. Although they are considered a species of least concern by the IUCN, their populations are declining due to collisions with power lines, habitat destruction, and increased human disturbance.

Eastern Olivaceous Warbler (*Hippolais pallida*)

The Eastern olivaceous warbler is an inconspicuous, small bird with drab gray to taupe-colored feathers. It has a long, pointed beak used to glean insects off leaves and prefers habitats with sparse bushes and trees. They can be found in the Cyclades during the summer and migrate to Sub-Saharan Africa during the winter.

Barn swallow (*Hirundo rustica*)

The barn swallow is a small migratory bird that belongs to the family Hirundinidae. Barn swallows are known for their distinctive appearance, with long pointed wings, forked tails, and blue-black backs and wings. They have a rusty-red throat and forehead, and their underparts are pale cream or white. Barn

swallows are also known for their acrobatic flight, with their wings flapping rapidly and their tails fanning out as they swoop and dive through the air to catch insects.

Yellow-legged Gull (*Larus michahellis*)

The yellow-legged gull is a large gull with a white body, gray back, and yellow legs and beak. They are very common on the Cyclades, and large colonies can be found on small islets. Opportunistic foragers, these gulls can often be found rummaging through rubbish, although they may also feed on fish, rats, and rock doves.

European hare (*Lepus europaeus*)

The largest among the hare species, the European hare, is native to Europe and Asia. It is light brown with white on its underside and black on the tips of its ears and tail. Unlike some other species, the European hare's fur does not turn completely white in the winter, though it does become grayer. They are more visible during the spring when females can be seen "boxing" males to test their determination or as a way of communicating that they are not ready to mate. These hares have a prolonged mating season and can produce three litters yearly. Because of these high reproductive rates, they can quickly become invasive, especially on islets without predators. They do not dig warrens like rabbits and eat many plants, including native and endemic species. Eliminating these important species reduces the ecosystem's biodiversity and affects other species' populations, such as insects.

Meadow brown (*Maniola jurtina*)

This widespread butterfly can have a variety of spot patterns; the main color is grayish to dark brown, with orange patches in the middle of the wings and a grayish-white border around the wing. Inside these patches is a black eye spot with a white dot in the center. These important pollinators can be found in most habitats on Naxos.



Maniola jurtina

Stone marten (*Martes foina*)

The stone marten is a generalist mammal with an elongated body with coarse dark brown fur and a long, thick tail. It has a white chest and long face with rounded, widely spaced ears and a pink nose. Although sometimes seen during the day, the stone marten is mostly nocturnal and especially active on moonlit

nights. Their diet is variable, including fruit, rats, and mice, and they are also known to plunder bird nests for fledglings. Although it typically hunts on the ground, the stone marten is a skilled climber and swimmer.

Kotschy's gecko (*Mediodactylus kotschyi*)

Named in honor of the Austrian botanist, Kotschy's gecko is a slender lizard native to Europe and the Middle East. They grow up to 10 cm long and have dark W-shaped bands along their backs. Unlike many geckos, Kotschy's geckos do not have adhesive pads on their toes but instead long appendages with a kink in the middle. They can typically be found in cliffs, walls, tree stumps, and other dark crevices where they can hide.

Blue rock thrush (*Monticola solitarius*)

The blue rock thrush is a species of chat, a group of small birds that subsist on an insect-heavy diet. Up to 23 cm in length, the blue rock thrush has a narrow bill. The males of the species have blue-gray plumage, while the females are darker brown with lighter brown breasts. They breed in mountainous areas, creating their nests in rock cavities.

White wagtail (*Motacilla alba*)

The white wagtail is a medium-sized passerine bird that is slender with a long, wagging tail. Both sexes have black breasts, white bellies, and gray backs. However, males have a black cap while females have a gray cap. They hunt for invertebrates in wide open fields near water. Although white wagtail populations in other parts of the world are migratory, those of the Cyclades are permanent residents that are widespread but live in small populations.

House mouse (*Mus musculus*)

The house mouse is a small mammal with typically mottled gray and brown fur, a hairless tail, a pointed snout, and rounded ears. As the name suggests, this species is heavily associated with human habitation but is found in many habitats. In the wild, they live about one year as they are heavily preyed upon by various other fauna. Due to their large litter sizes and short gestation period, they can quickly become invasive species, especially on islands, and can lead to crop devastation. Although native to India, they are now found in all parts of the world due to human movements.

Western black-eared wheatear (*Oenanthe hispanica*)

The western black-eared wheatear is a small, migratory passerine bird. It has a white crown with a black mask and beak, a beige upper back, and a black back. The breast and belly are beige to white. Its tail is its most characteristic feature, mostly white feathers with black edges and a thick black bar in the middle. These insectivorous birds are usually found in open scrubland. Its name is derived from the Ancient Greek words "oenos" and "anthos," meaning wine and flower, respectively. This refers to their migratory return to Greece as the grapevines blossom.

Northern wheatear (*Oenanthe oenanthe*)

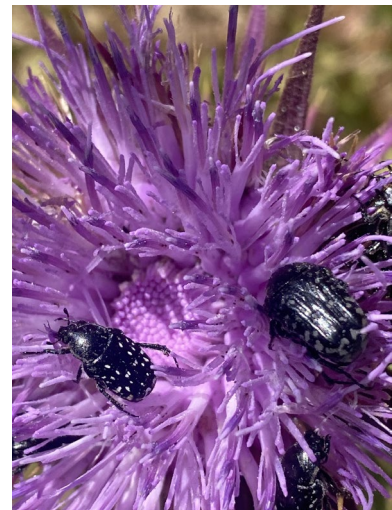
The northern wheatear is a small, passerine bird with a white tail and a characteristic t-shaped black pattern at the tip. Males are mostly gray with black wings and mask with a beige throat. Females are light brown with dark brown wings and beige throats. It has a long migration path from sub-Saharan Africa into various parts of the Northern Hemisphere, including Greenland, Canada, Asia, and Alaska in Spring. These insectivorous birds prefer rocky and barren habitats at high elevations, such as Mount Zas on Naxos.

European rabbit (*Oryctolagus cuniculus*)

The European rabbit has a white underbelly and is typically gray-brown on the back and can come in many color variations. They have long ears, and their body is no longer than 40 cm. The tail is black on top and white underneath. Their long claws are used to dig warrens and underground tunnels in which they live. These rabbits are not native to the Cyclades and have been introduced by humans, often for hunting purposes. Due to their rapid reproduction and lack of predators, islets, where they are introduced, become overtaken by them. Not only do they eat all of the native flora, which greatly reduces biodiversity, but the combination of digging and the loss of flora also leads to soil erosion.

White-spotted rose beetle (*Oxythyrea funesta*)

The white-spotted rose beetle has an all-black body with scattered white spots and a layer of fine hair. These insects not only consume flower pollen but also feed on the organs of flowers and other tender plant parts. In addition, the larvae feed on the feet, which contributes to it being classified as a pest. They are widely spread in the Mediterranean and can be easily spotted on flowers along trails.



Oxythyrea funesta

House sparrow (*Passer domesticus*)

The house sparrow is a small bird that is common around the world. Males have black, white, and brown markings, while females and juveniles are light brown and gray. An opportunistic eater, it is strongly associated with human settlements but can be found in various habitats and climates. Their most common predator, due to their association with humans, are cats, although they are preyed upon by many different birds of prey. Due to their perceived lustfulness, sparrows are associated with Aphrodite, the Greek goddess of love.

European shag (*Phalacrocorax aristotelis*)

The European shag is a large cormorant that is all black except for its yellow throat patch. Breeding adults also have a green sheen on their feathers. This seabird can swim underwater for a considerable distance and depth but does not have waterproof feathers. Because of this, they can be often seen

spreading out their wings to dry off in the sun. They nest on rocky ledges and in crevices and will rarely be found inland.

Jumping spider (*Philaeus chyrsons*)

This species of jumping spider is common and can be found throughout the island. Typically only about 7-12mm, males are distinguishable by their bright red abdomen with a black 'eye' while females have a brown abdomen with two white stripes. As their name suggests, these spiders use their jumping skills to hunt, which you may be able to observe during the day, which is their preferred hunting time. These spiders pose no harm to humans.



Philaeus chyrsons

Erhard's wall lizard (*Podarcis erhardii*)

Erhard's wall lizard is endemic to the Balkans and can be found on many of the Aegean Islands, including the Cyclades. This small lizard is about 7 cm long with a tail twice the length. Although color varies, they usually have a green upper body and a brown lower body and tail. In addition, females are often striped, and males often have a net-like pattern. You will often find them on and in old stone walls and other dry, rocky habitats with low, dense vegetation.



Podarcis erhardii

Freshwater crab (*Potamon potamios*)

The freshwater crab is a species native to freshwater habitats in Europe, including the Mediterranean region, the Black Sea, and parts of western Asia. It has a flattened, oval-shaped body, and its shell can vary from greenish-brown to reddish-brown. It has two large pincers that are used for capturing and manipulating food. The crab's eyes are on stalks, which can move independently of each other, allowing it to see in multiple directions at once. This crab is a bottom-dwelling species found in various freshwater habitats, including streams, rivers, and ponds. It feeds on various food items, including insects, small fish, and other invertebrates.



Potamon potamios



Pyrrhocoris apterus

Firebug (*Pyrrhocoris apterus*)

As its common name suggests, the firebug is an insect with a red body with black coloration and black legs. Although their coloration pattern can vary, they generally have a triangle-shaped spot at the head pointing down and two round spots on either side. These insects do not fly and feed on mallows and especially on lime trees.

Black rat (*Rattus rattus*)

Common around the world, the black rat is about 13 to 18 cm with a long tail and can vary in fur color from light brown to black with a lighter belly. They are generalist omnivores and eat a wide variety of foods which makes them serious pests for farmers. On islands like Naxos, they also threaten sea birds whose eggs can be easy prey for the black rat.

Common stonechat (*Saxicola torquata*)

The common stonechat is a medium-sized bird of the Old World flycatcher family. Males have a black head and back with a white half-collar. The chest is orange to red, which fades from light orange to white towards the belly. Females have a brown head and back with an all-orange chest and belly. As their name suggests, their calls sound like two rocks being tapped together. They can be found in fields and meadows with low, dense shrubs.

Collared dove (*Streptopelia decaocto*)

The Eurasian collared dove is medium-sized and combines gray, beige, and light pink. It also has a black collar and beak and red feet. This species is widespread around the world and considered invasive in many areas. According to a Greek myth, a hard-working maid was unhappy that she was only paid 18 coins a year and begged the gods to let the world know how little she was compensated by her mistress. Zeus, therefore, created the dove dubbed "deca-octo" or "eighteen".

Red admiral (*Vanessa atalanta*)

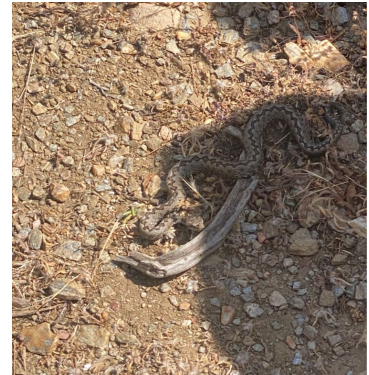
The red admiral is a black butterfly with orange or red bands across the middle of the wings and along the bottom edges with white spots on the tips. They are common in many habitats but prefer moist woodlands to feed on overripe fruit.



Vanessa atalanta

Nose-horned viper (*Vipera ammodytes*)

The nose-horned viper is about 50 cm long and has a triangular-shaped head with a distinctive soft horn on the tip of the nose. Males are gray with a black zig-zag pattern along their back, while females are light brown with a dark brown zig-zag pattern. Although venomous, they are not easily provoked and then not to be aggressive. They prefer rocky and dry hillsides, where they hunt for lizards, centipedes, and small mammals.



Vipera ammodytes

Appendix VI: Species of Cultural Significance

From the Temple of Demeter to Mount Zas, the ancient trails of Naxos wind through landscapes that are rooted in Greek culture, folklore, and legends of Antiquity. Many flora and fauna species encountered on the paths have direct connections to ancient Greek mythology and cultural folk stories that have shaped many Greek beliefs over centuries. Some flora species even have specific medicinal, culinary, or manufacturing uses. Below is a listing of species found on Naxos that have a specific cultural significance or a mythological connection. This information can be utilized to educate hikers about the flora and fauna on each trail and enhance the hiking experience. Additionally, it can be used by local teachers in Naxos to engage children in the stories, myths, and uses of the plants and animals around them. The species below are included both in Appendix VI and in Appendix V. Each species included in this list is highlighted here for its significance to Greek culture. The following resources were utilized to assist in identifying each species and describing its cultural significance:

- Antypas, M., Gavalas, J., Karameta, E., Konstantinidis, Th., Legaki, Eir., Bazos, I., Pafilis, P., Foufopoulos, J. (2017). *Biodiversity on Greek Paths of Culture in the Lesser Cyclades*. Carras, C., Lazoglou, M., Pafilis, P., Stebili, K., Foufopoulos, J. (eds.). Foundation A.G. Leventis.
- Baumann, Hellmut. *Greek Wild Flowers and Plant Lore in Ancient Greece*. 1982. Translated by William T. Stearn and Eldwyth Ruth Stearn, The Herbert Press Ltd, 1993.
- *Personal accounts (Dr. Johannes Foufopoulos and Dr. Sheila Schueller)*

Flora:

Greek horehound (*Ballota acetabulosa*)

This native plant is an evergreen shrub with tall hairy branches with heart-shaped leaves that are heavily veined and hairy. The flowers are clumped in layers growing up the length of the branches, and can be white to pink. Interestingly, the flowers of this plant can be used, in part, for a makeshift candle. Before electricity, Greeks would take the empty shell of a large snail, fill it with olive oil, and place the bract of a flower lightly on top. When lit, the hairs on the petal draw up the oil, and the stem acts as a wick, creating a flame.

Medusahead (*Taeniatherum caput-medusae crinitum*)

Also known as Medusahead, the species of grass has thin stems that branch at the base. The head is made of several layers of both short and long shoots. When they dry, the shoots get twisted and spread in many directions leading to their common name associated with the Greek goddess Medusa. Because it grows its deep roots in the winter, it tends to outcompete native plants for moisture which develop their roots later in the season.



Ballota acetabulosa

Spiny bear's breech (*Acanthus spinosa*)

Mature spiny bear's breech has tall, thick stems from a dense rosette of leaves that are deeply cut with spiny edges. This plant is very widespread in Greece and symbolizes the perpetuity of plant cycles. This symbol was often reproduced on Macedonian and Greek jewelry throughout Antiquity (Baumann, 1993, p. 189).



Acanthus spinosa

Cretan maple (*Acer sempervirens*)

Unlike most maples, the Cretan maple is one of the only evergreen species in the *Acer* genus. Native to the Mediterranean, it is both drought and heat tolerant, making it well adapted to the climate. In Greek mythology, the *Acer* species was sacred to Phobos, a dreadful demon and companion of Ares, the god of war. According to myth, this elegant tree inspired fear in men because of the way its leaves turned red in autumn (Baumann, 1993, p. 48).

Allium staticiforme

Native to Greece and Turkey, these small wild onions have underground bulbs and tall, thin stems. These are topped with a tight cluster of many small white or pink flowers and smell strongly of garlic or onion. Part of the Garlic family, this species was known by the ancient Greeks as a symbol of physical strength and for its stimulating medicinal properties. According to myth, the gods despised this plant because of its odor, and believers in the gods never entered a temple after having eaten garlic. Medicinally, the ancient Greeks mixed it with honey to treat skin blemishes, scabs, and leprosy (Baumann, 1993, p. 184).

Smearwort (*Aristolochia rotunda*)

Commonly known as smearwort, this plant has tubular flowers with a dark purple to brown flap with a yellow-green body. The leaves are disproportionately large compared to the smaller flowers and are heart-shaped and heavily veined. The genus name, *Aristolochia*, comes from two Greek words meaning "the best" and "childbirth", hinting at its historical use to induce pregnancy and abortions depending on the progress of the pregnancy.

Onion Weed, Pink Asphodel (*Asphodelus fistulosus*)

As its name implies, the onion weed is common and invasive in many parts of the world, including the Mediterranean. It has elegantly striped petals and narrow leaves that made it the most decorative species of the Elysian fields considered by the ancient Greeks. According to Greek mythology, the Elysian fields were "a land of the blest of the west of the earth where only the songs of gods and heroes slain in combat dwelt" (Baumann, 1993, p. 68).

Capparis spinosa

During the blooming season, the caper bush is distinguished by its fragrant, large white to light pink flowers with long purple stamens. The leaves are thick, round, and glossy. Common in Mediterranean cooking, capers, the flower buds of these plants, are often used as a vegetable or seasoning and prepared pickled or salted. The caper bush has several medicinal uses, including curing gastrointestinal distress in Ancient Greece (Baumann, 1993, p. 132).

Centaurea raphanina

According to Greek mythology, the 'great centaurea' is the plant of the centaur physician Chiron, teacher of Achilles. Chiron used this plant to tend to his wounds from a poisoned arrow from Hercules. However, his wounds did not heal and Chiron became immortal. Dioscorides called this plant 'chironias' or 'blood of Hercules' and believed it to be an efficacious remedy for injuries (Baumann, 1993, p. 73). This species is common and endemic to Southern Greece, and the leaves can be collected and also eaten in salads.



Centaurea raphanina

Cerastium runemarkii

These plants have hairy stems and grow in sparse clumps. The flowers have white petals that turn light green towards the middle. Each petal is deeply lobed, giving them a heart shape. Endemic to Greece, this plant is grown in a high alpine range and is known to be only contemplated by the gods. According to Greek legend, this mouse-ear-shaped species were used to adorn flower crowns at the marriage of Zeus and Hera in the garden of the Hesperides (Baumann, 1993, p. 208).

Chrysanthemum coronarium

These large, attractive daisies can be up to 6 cm wide with an orange center surrounded by numerous petals. These petals start orange-yellow in the middle of the flower and gradually fade to yellow and eventually white at the tips. Called by the ancient Greeks as *Dios ophrya*, or 'eyebrow of Zeus', this plant is known in mythology to protect one against malignant demoniac influences and witchcraft. It was also highly valued as a flower for crowns and decorated sanctuaries and representations of the gods. The tender shoots can be eaten raw or steamed. In fact, this plant has been eaten in Athens since the beginning of the nineteenth century (Baumann, 1993, p. 85).



Chrysanthemum coronarium

Spiny chicory (*Cichorium spinosum*)

As the name suggests, the spiny chicory has stalks that are rigid and come to a point giving the whole plant a spiny appearance. Its long leaves are sometimes serrated and used in cooking to add to salads or as a nutritious leafy green side. It was considered by the ancient Greeks as good for health and was highly valued as a medicinal plant throughout all of Antiquity. In certain areas of Greece, 'chicory coffee' is made from the roasted roots of this species (Baumann, 1993, p. 131).

Cretan Rockrose (Cistus creticus)

The flowers of the Cretan rockrose have five petals that are bright pink with a wrinkled texture and yellow to orange stamens. The leaves are small and fuzzy with wavy edges. The flowers of this plant create ladanum, a resin that has a pleasant smell and is still used in producing perfume today. The ancient Greeks used this resin to make ointments and tinctures and as a candle to burn for its scent. In Crete, during the Middle Ages, monks gathered the resin from this species from the beards of he-goats that were browsing near the bushes (Baumann, 1993, p. 89 - 92).



Cistus creticus

Delphinium staphisagria

This attractive plant is native to the Mediterranean and has dark purple to blue flowers with five petals, each with a green dimple at the tip. It has large leaves that can be up to 15 cm across with hairy stems. The entire plant is toxic to humans and was called *phthiroctonon* or louse-killer in Ancient Greece due to its traditional use as a medicine to kill lice.

Violet larkspur (Delphinium peregrinum)

The violet larkspur is a flowering plant that usually has one central stem that branches. The flowers are shades of purple with a distinctive spur that curves upwards, resembling the tail of a scorpion. The genus *Delphinium* comes from the Greek word *delphis*, meaning dolphin, which points to the flowers' shape. Most parts of the plants contain chemicals that are toxic to livestock. This plant is also known as "the violet of Mount Olympus" (Baumann, 1993, p. 209).



Dracunculus vulgaris

Vampire lily (Dracunculus vulgaris)

The vampire lily has a large, central, maroon-purple flower in a conical shape with a large dark purple stigma in the center. It releases a foul stench similar to rotting meat to attract pollinators and can also self-heat to 18 degrees Celsius. The stem has an interesting black-and-white pattern, which the ancient Greeks associated with snakes in a mystical chthonic concept. Commonly found in kermes oak forests, the dragon arum can grow up to 1 meter and is used as a motif in Minoan paintings and art. Today, this plant is known as one of the strangest curiosities of the floral world (Baumann, 1993, p. 184).

Sea holly (*Eryngium maritimum*)

Sea holly has silver-blue or bluish-green leaves that are leathery, stiff, and spiny. The blue to purple flowers grow in round clusters from spiny bracts. This species was very well known to pharmacists in Antiquity. Dioscorides prescribed 'erungion' for swollen areas of the body as the old name for the species is 'erougarein' meaning 'which deflates'. Another possible etymology is from the Greek word "eruggareun" meaning belch, as the plant was used to treat ailments such as trapped gas. This silvery-grey plant thrives on sandy shores in Greece, but is highly prized as a souvenir and is threatened by tourists (Baumann, 1993, p. 123).



Mediterranean spurge (*Euphorbia characias*)

Mediterranean spurge is an evergreen shrub that can grow more than 1 meter tall. Long, slender leaves grow radially from several tall stems. According to Dioscorides, many euphorbias possessed medicinal properties. However, the thick milky sap of these plants irritates the skin and can be poisonous if absorbed. Hippocrates emulators, called 'euphorbium', recommended this sap for ancient Greeks afflicted with dropsy (Baumann, 1993, p. 122).

Euphorbia characias

Italian gladiolus (*Gladiolus italicus*)

The Italian gladiolus is an attractive plant with bright pink orchid-shaped flowers growing irregularly on long bare stems. Known as the "field gladiolus", this plant was called 'hyacinthus of Greek mythology' by the ancient Greeks due to its floral markings. *Hyacinthus* was the beloved of Apollo, who was accidentally slain by him. Greek mythology describes that a flower marked with the signs of his grief rose from his blood in the shape of the letters 'AA' or 'VV' which can be seen on the lower lip of the gladioli. The letter-like floral markings are also known in mythology to signify Demeter's grief over the abduction of her daughter Persephone (Baumann, 1993, p. 84 - 85, 211).



Gladiolus italicus

Phoenician Juniper (*Juniperus phoenicea*)

The Phoenician Juniper is a large shrub or small tree with distinctive dark, ashy brown bark that can be peeled off in strips. The blue-green leaves are scaly and arranged in pairs or groups of three. Its berries are orange-brown, grow densely, and are used as a seasoning and to flavor gin. Juniper is hard and slow-growing, which makes it an ideal wood for Greek wooden furniture, including wooden statues of the gods. Timber from this species was also used for shipbuilding in Ancient Greece because it was sacred to the god, Poseidon (Baumann, 1993, p. 37 - 38).

Lavandula stoechas stoechas

Frequently found in the Greek maquis, this wild French lavender is a small evergreen shrub with tubular bracts and small, purple, funnel-shaped flowers. This subspecies is native to the Mediterranean, but its aromatic scent is recognizable and makes it a popular herb for oils, insect repellent, flavoring, and medicinal purposes. In ancient Dioskouridis, Sroichadite wine was prepared with this lavender. According to Athenaeus, it is also highly valued as an antidote to aconite poisoning (Baumann, 1993, p. 124).

Lupinus gussoneanus

Lupinus gussoneanus is a species of lupine, a flowering plant belonging to the family Fabaceae. It is native to the Mediterranean region and can grow up to 60 cm tall. It has palmate leaves with 5-7 leaflets that are dark green. The *Lupinus* species is a bitter-tasting leguminous plant that is essential to human and animal nutrition and possesses medicinal properties. Often used as a food in times of scarcity, those who consumed this plant in Ancient Greece were called 'lupin eaters' (Baumann, 1993, p. 146).

Common mallow (*Malva sylvestris*)

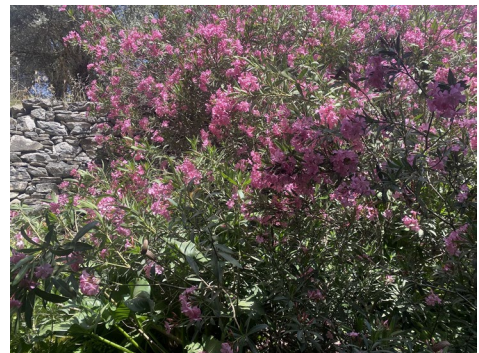
Often grown as an ornamental plant, the common mallow is known for its bright purple flowers with dark purple veins. The leaves of the plant, while young, can be boiled and eaten as a vegetable, and the seeds have traditionally been used as a yellow dye. Although less popular today, traditionally, the plant was also used medicinally for its anti-inflammatory and moisturizing properties. It was considered a notable remedy for bruises and inflammation and protected against poisonous animal bites (Baumann, 1993, p. 122).



Malva sylvestris

Oleander (*Nerium oleander*)

Because of their striking appearance and sweet scent, this species is frequently used as decorative plants in landscaping. Although they contain several toxins that are poisonous to both humans and fauna, some insects use the toxins to make themselves unpalatable to predators. However, to drink an infusion of the leaves in wine was said to benefit in the case of poisonous bites from animals (Baumann, 1993, p. 111). It has been suggested that oleander was used in Ancient Greece to induce hallucinations, such as by Pythia, the Oracle of Delphi.



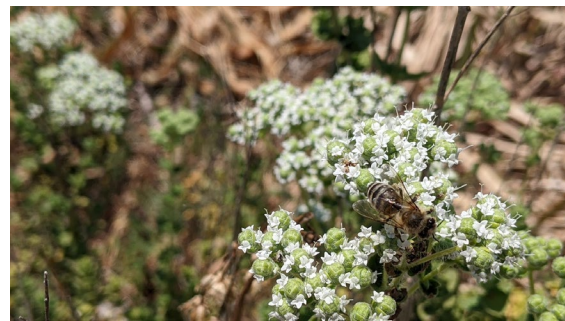
Nerium oleander

Olive Tree (*Olea europaea*)

The olive tree is perhaps the most recognizable species on Naxos and can take the form of a tree or shrub. As one of the oldest cultivated plants in the Mediterranean region, the olive tree was offered to the city of Athens by the goddess, Athena, who presented it as the “most useful present” (Baumann, 1993, p. 55). Since then, the olive branch has been an emblem of the goddess, representing the symbol of victory and peace. This species is also closely linked with worshipping the gods and is associated with the owl. Olives are thought to have been first domesticated in the third millennium BC and olive oil had a variety of uses in Ancient Greece such as for grooming and for anointing kings and athletes. It was also only used by the nobility and the wealthy in Ancient Greece. The original “eternal flame” of the Olympic games used olive oil. Today olives are mainly used for oil and eaten raw or fermented but olive wood is also popular for handicrafts and kitchen essentials due to its durability and interesting grain patterns. The olive tree palm is central in Greek plant ornamentation and has inspired Greek art with its fan shape which expresses “bursting life” (Baumann, 1993, p. 147).

Pot marjoram (*Origanum onites*)

Also called pot marjoram or Greek oregano, it has small white flowers when in bloom with large stamens. This common oregano is used both fresh and dried for cooking and various medicinal purposes due to its antimicrobial activities. The Greek word *gano* means to shine or rejoice.



Origanum onites

Arabian star flower (*Ornithogalum arabicum*)

The Arabian Star flower has six white to ivory petals with a black ovary and yellow anthers. This species is named after ‘Ornithogalon’, which translates to ‘bird’s milk’ in Greek and alludes to the pure white color of the liliaceous flowers. The ancient Greeks associated this species with purity or something remarkable and used the bulbs for food and the petals to decorate wedding wreaths (Baumann, 1993, p. 84).



Ornithogalum arabicum

African wood sorrel (*Oxalis pes-caprae*)

Native to South Africa, the wood sorrel grows along the ground, often in a dense carpet. The heart-shaped leaves grow in groups of three, and the yellow flowers have five fused petals. Its high concentration of oxalic acid gives this species a sour flavor that is fairly harmless to humans and is used in folk medicine for ailments such as tapeworms. The so-called “Bermuda buttercup” is conspicuously found in citrus plantations, fields, and roadsides in early spring (Baumann, 1993, p. 215).

Red poppy (*Papaver rhoeas*)

Most common in Greece, this species of red poppy has seeds that can be eaten alone or be used in foods such as bread, and the red dye in petals is sometimes used in wine and medicine. In ancient Greece, the dried red flowers of this species were used as a minor sedative and expectorant in medicinal cough mixtures (Baumann, 1993, p. 72).



Papaver rhoeas

Mastic tree (*Pistacia lentiscus*)

This species is an evergreen plant ranging in size from a shrub to a small tree. Native to the Mediterranean, the species has alternate, leathery leaves growing in clusters of five to six. Notably, it has a strong resin aroma collected for the flavoring of mastic chewing gum and several other culinary and medicinal uses. Throughout Antiquity, this resin was also used to preserve wine and was incorporated by directly soaking the bark in wine jars. Mastic resin from *Pistacia lentiscus* was found aboard a ship wrecked off the coast of Turkey in 1350 BC. The resin is also used as a cosmetic (Baumann, 1993, p. 151, 159).

Eagle fern (*Pteridium aquilinum*)

The Eagle fern has large triangular-shaped fronds growing an underground rhizome. They tend to grow in dense aggregations of genetically identical fronds. Although it is known for its toxicity, it is consumed in many parts of the world. In the Mediterranean, the bracken leaves are used to filter sheep's milk and to store fresh ricotta cheese. The ancient Greeks also coiled this species into intricate designs that inspired circular stone carvings in Greek architecture. These coils are common in Nature and suggest elegance and movement. They believed that the flowerless fern was “a plant of the heavens associated with the sun” which led to more profound meanings if represented on a religious building (Baumann, 1993, p. 183, 188).



Pteridium aquilinum

Kermes oak (*Quercus coccifera*)

The kermes oak is native to the Mediterranean and characterizes the Kermes oak woodland habitat. The acorn produced by Kermes oak can be infested by insects called *Kermes vermilio* whose blood was used to dye wool, skins, and imported silks a bright scarlet color in ancient Greece. This was called the “blood of the kermes louse” (Baumann, 1993, p. 158).



Leaves, Quercus coccifera

Valonia oak (*Quercus macrolepis*)

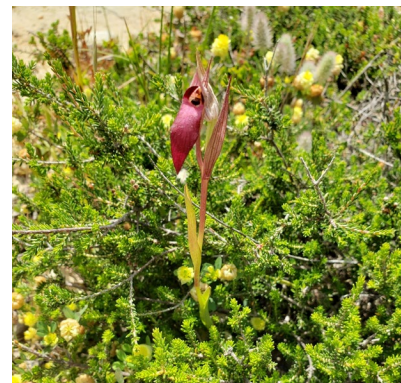
The Valonia oak is a tree that can grow up to 25 m tall and grows broadly, forming a domed canopy. The acorns grow in cups called valonia that are shaped like a sun and are used for tanning and dying. In ancient Greece, Valonia oak trees were used to ornament temples. Today, they are used to decorate and adorn many church gardens around Greece (Baumann, 1993, p. 49).

Common golden thistle (*Scolymus hispanicus*)

The common golden thistle is heavily spiked with spines along the leaves and stems. They can grow up to 80 cm tall and have bright yellow to orange flowers. Since ancient Greece, the plant has been used for both medicinal and culinary uses. Known as the “Spanish oyster plant”, this species is widespread throughout Greece and is attributed by the ancient Greeks as being a body cleanser (Baumann, 1993, p. 126).

Tongue Orchid (*Serapias lingua*)

Native to the Mediterranean, the tongue orchid is easily distinguished by its tongue-like lip, as the common name describes it. In Antiquity, doctors favored orchids for their medicinal properties as they are highly digestible. Orchids were dedicated to satyrs in Greek mythology and they are known as a symbol of fertility (Baumann, 1993, p. 216).



Serapias lingua

Pink catchfly (*Silene colorata*)

This flowering plant often grows on sandy beaches and sandy soils far from the sea. It has pink flowers that are very distinctive, with five petals that are each divided into two large lobes. These plants are covered in sticky glands. Greek legend states that shepherds often rubbed their feet on these plants to avoid being bitten by poisonous creatures (Baumann, 1993, p. 111).



Silene colorata

Milk thistle (*Silybum marianum*)

Native to the Mediterranean, the milk thistle has a typical purple flower and spiny, shiny green leaves. The stems have fuzz on the surface, and particularly large specimens have hollow stems. In Greek folklore, thistles were viewed as elegant flowers and were naturally used for fashioning garlands. It is likely that this flora was mixed with other flowers and used to decorate the statues of the gods (Baumann, 1993, p. 88).

Spanish broom (*Spartium junceum*)

This distinctive shrub has tall, slender stems tipped with whorls of bright yellow flowers that have an orchid-like appearance in shape. The flexible and strong stems are used to make ropes and brooms to this day which is why it is commonly referred to as Spanish broom. Throughout centuries, this flora has been used in Greek technology to manufacture sails of ships as the linen and hemp provided unsatisfactory resistance against salt water (Baumann, 1993, p. 162).



Spartium junceum

Teucrium capitatum

This species is a kind of germander used as a universal medical remedy throughout Antiquity. In fact, according to Greek legend, a man who seeks social importance and fame ought to smear himself with 'polion'. This 'polion' was used by doctors and nurses as a diuretic and to treat jaundice and abdominal pains. In today's modern medicine, this species is used to alleviate stomach ulcers (Baumann, 1993, p. 114).



Tragopogon dubius

Goat's beard (*Tragopogon dubius*)

Goat's beard is connected to Greek cuisine. Offered as a "gift of Demeter", this plant was named 'tragopogon' because of its "wooly-looking fruiting heads" (Baumann, 1993, p. 131). Its seed head is particularly identifiable and looks like that of a dandelion but is significantly larger. The roots and leaves of this plant can be eaten either raw or cooked and are appreciated for their sweetness.

Fauna:

Little Owl (*Athene noctua*)

As the name suggests, the Little Owl has a compact body with a large, round head, white eyebrows, and large, yellow eyes. Its feathers are speckled gray and brown, and it commonly nests in abandoned houses, stone walls, and tree cavities. Males defend territories and can be seen at dusk perched up high, looking out for intruders or prey, which includes rodents and large insects. The Little Owl represents wisdom and knowledge, which is due to its association with the Greek goddess Athena.

House sparrow (*Passer domesticus*)

Also known as Old World Sparrows, the house sparrow is a small bird that is common around the world. Males have black, white, and brown markings while females have juveniles that are light brown and gray. An opportunistic eater, it is strongly associated with human settlements but can be found in a wide variety of habitats and climates. Their most common predator, due to their association with humans, are cats although they are preyed upon by many different birds of prey. Due to their perceived lustfulness, sparrows are associated with Aphrodite, the Greek goddess of love.

Collared dove (*Streptopelia decaocto*)

The Eurasian collared dove is medium sized and a combination of gray, beige, and light pink. It also has a black collar and beak and red feet. This species is widespread around the world and considered invasive in many areas. According to a Greek myth, a hard working maid was unhappy that she was only paid 18 coins a year and begged the gods to let the world know how little she was compensated by her mistress. Zeus, therefore, created the dove dubbed "deca-octo" or "eighteen".