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New Approaches Of Eco-tourism In The Branch Of Butterfly Watching Tours

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Introduction

Ecotourism is a fast-developing sector as a part of a sustainable economy. As a part of Ecotourism, wildlife watching activities became a new trend and special interest tourism activity in recent years.

The global economy of nature-based tourism includes wildlife watching as a crucial activity. Additionally, observing wildlife is generally considered a tool for sustainable development because it is an environmentally friendly activity that does not include consuming or commoditizing wildlife. Even though there are no exact numbers on the effects of wildlife tourism on the world economy, it is a very lucrative and highly engaged tourism industry sector. Wildlife tourism is significant in developing countries as well. By 2030, it is projected that 57 percent of all international tourists will visit developing countries. Most of the World's biodiversity is found in developing countries, where nature-based tourism has also started to grow. As a kind of nature and niche tourism, butterfly watching is increasingly popular and significant around the globe.

Butterflies are among the few insects that people adore for their stunning colors, short lifespan, daytime activity, ability to fly, harmless nature, and general representation of peace and harmony. Thus, aesthetics grabs focus as a crucial part of wildlife observation. Many people consider butterflies to be among the most beautiful creatures on Earth. There have been about 19,000 butterfly species identified worldwide. There are 59 species of butterflies in the UK¹ and over 500 across Europe.²

Life Cycle of a Butterfly

Butterflies belong to the Lepidoptera order of the insect (Insecta) class. Along with common species, there are also (endemic) species that prefer only certain regions or areas. Butterflies are plant-selective; eggs are placed on or near a suitable food plant. Adult butterflies drink nectar from flowers. The life cycle of a butterfly has four stages: the egg, the caterpillar (larva), the pupa (cocoon), and the butterfly (Figure 1). Butterflies are fascinating because of things like their mysterious and exciting life cycles.

¹ Butterflies. Butterfly Conservation. (n.d.). Retrieved December 22, 2022, from <https://butterfly-conservation.org/butterflies>

² Haahtela, T. (2019). *Butterflies of Britain and Europe. A photographic guide.* Bloomsbury Publishing PLC. p 8



A)



B)



C)



D)

Figure 1. Stages of the life cycle of the Small Bath White (*Pontia chloridice*) butterfly, A. Egg B. Caterpillar (larva), C. Pupa, D. Adult individual,³

Butterfly Watching

Butterfly watching is a hobby concerned with the observation and study of butterflies. Equipment choices include low-power binoculars, a butterfly field guide, and a camera. Butterflies may be seen when trekking or hiking in a forest or mountains, and this activity includes watching and observing butterflies in their natural environment. Butterfly watching is a vital wildlife watching activity that is expanding quickly throughout the world. Butterfly watching goes by various names in English (butterfly watching; butterfly viewing; butterflying; butterfly tourism). Compared to many other creatures, butterflies are more appealing insects and are easier to see and capture on camera. Butterflies have always gotten attention because of the wide color range on their wings. (Figure 2). They are also essential for pollination and are signs of a healthy ecology and habitat.⁴

³ Photoarchive of Alperen Yayla

⁴ Why butterflies matter. Butterfly Conservation. (n.d.). Retrieved December 22, 2022, from <https://butterfly-conservation.org/butterflies/why-butterflies-matter>



Callophrys mystaphia



Papilio alexanor



Aglais io



Freyeria trochylus

Figure 2 Photos of some butterfly species ⁵

Butterfly Watching Tours

Nature offers tremendous tourist potential with its flora-fauna diversity, aesthetics, and natural attractiveness. Nature-based tourism, often known as ecotourism, uses these potentials in harmony with nature. Examples of ecotourism include walking, boat trips, photo safaris, cave tourism, wildlife observation, and botanical and mountain tourism. They are also crucial components of alternative tourism for tourist places and activities with specialized interests. Butterfly watching is a perfect tourist activity, particularly for solo and small group tourists, to not disturb the natural existence of animals since it is tourism that should be done in nature. In the postmodern World today, it is evident that insects play a part in nature observation, tourism experiences, recreational activities, and entertainment. The observation of butterflies from various insect species is a popular tourist activity in Europe, the United States, and Asia. Many people also visit national parks and wild areas to see butterflies. Because of various events (such as the Coronavirus and intensive urbanization) and a shift in how the World views vacation (from mass tourism to special interest tourism), interest in nature-based tourism is increasing.

⁵ Photoarchive of Alperen Yayla

Observing butterflies, in particular, has become a popular kind of environmental tourism and niche interest travel in recent years.

Chapter I: Determining the Potential Areas Around Europe And Turkey for Eco tourism and Butterfly Tours

1.1.Criteria For Deciding the Eco-touristic Areas and For Butterfly Tours

The great majority of ecotourism destinations are found in nations with untouched natural environments that have not been affected by industry. The majority of ecotourism locations on the globe are in impoverished or developing countries, including tropical areas, island countries, and mountainous regions. The World's top ecotourism destinations now include Antarctica, Australia, Central, and Latin America, the Caribbean and Pacific Islands, New Zealand, Southeast Asia, Southeast Africa, and the Pacific and Indian Oceans. Some of the most popular ecotourism spots include Nepal, Kenya, Belize, Costa Rica, Ecuador, Rwanda, Mexico, Botswana, Indonesia, New Zealand, India, Tanzania, Bhutan, Thailand, Madagascar, and Australia. Ecotourism generates considerable revenues in the developing countries of Kenya, Rwanda, and Nepal. Developed countries like the United States and Canada are also popular ecotourism destinations.

1.1.1.Criteria for Deciding a Potential Area for Butterfly Tours

Natural Biodiversity

Two main factors are crucial for this criterion. Isolated areas create endemism, such as mountain ranges, islands, etc. Another main factor is diverse habitats. Such as woodland clearings and meadows in riversides. Diversity creates the need for adaptation, which makes butterflies diverse. For example, in the Canary Islands, there are 40 species, 15 of which are endemic to the Canary Islands.⁶ On the other hand, in the Alps, which is Europe's most extensive mountain range, there are 30 endemic species.⁷ Also, there are some species called specialists in particular habitats. Large Copper (*Lycaena dispar*) could be the best example of a specialist species.⁸ The species could only be found in damp, marshy locations, and because of habitat loss, the species is described as "Least Concern."⁹ Tours must be designed to include

⁶ Haahtela, T. (2019). Butterflies of Britain and Europe. A photographic guide. Bloomsbury Publishing PLC. p 352

⁷ Haahtela, T. (2019). Butterflies of Britain and Europe. A photographic guide. Bloomsbury Publishing PLC. p 386

⁸ Rowlings, M. (n.d.). *Lycaena dispar* on eurobutterflies by Matt Rowlings. Retrieved December 22, 2022, from <http://www.eurobutterflies.com/sp/dispar.php>

⁹ Swaay, C. van. (2010). European red list of butterflies. Publications Office of the European Union. p 31

both. Mainly biodiversity hotspots are excellent choices for tours, but extra tours could be designed to find the specialist species.

Aim and Target

Every tour's aims and target species must be well-defined and described. Target species are typically regional or endemic species. Tours should be prepared to see as many species as possible. Target species are the main product, and marketing strategy should be based on target species.

Photography

On all the tours, there should be adequate time and opportunity to photograph the landscapes, flora, and fauna. In addition, some of the holidays are set up specifically for photography. The itinerary should be organized around creating photographic opportunities, and as such, a large percentage of time will be spent on it.

The group leaders must be naturalists and highly skilled wildlife experts, preferably nature photographers, to provide quality content for future tours. Also, as an integral part of the tour, the participants could seek as much advice and tuition from them.

Logistics and Transportation

As a concept of wildlife tours reaching the wilderness is a very important point. Because of this reason transportation may not be so easy. The route must be well-designed and checked daily. Alternative travel routes must be prepared for any cases. Using minibusses or jeeps would be better according to the group size. Keeping airport and hotel transfer distances to a minimum is also essential to reduce costs.

Weather and Climate

The climate and weather are vital for butterflies. There are two groups of butterflies. The first group of butterflies is mostly resting on grasses and meadows. They are easier to find in cloudy weather while resting or sleeping. The second group is resting on the tree's branches and leaves, which are very hard to find while they are sleeping.

For this reason, it is essential to prepare a tour at the right time. For example, Scandinavia has specialist species such as the Arctic blue butterfly (*Agriades aquilo*). The butterfly only appears for a short time, in particular sunny days during the summer.¹⁰ It is quite hard to calculate the seasonal changes for each season. For this reason, it is not easy to plan a butterfly tour for this route.

¹⁰ Haahtela, T. (2019). Butterflies of Britain and Europe. A photographic guide. Bloomsbury Publishing PLC. p 151

Period and Season

The butterflies have flight periods and generations. The seasonal period must be chosen correctly for that aspect. For butterflies, even a week could change the species in the field. For this reason, setting the time accurately is a very important point. Flight periods can vary by a week or so from year to year as a result of natural seasonal fluctuations and even longer in the case of spring butterflies. The emergence and resulting flight periods of species that are found in more than one habitat type (e.g. downland, heathland, or woodland clearings) can vary by at least one week (and sometimes more than two weeks). Variations of a few days occur even from site to site of the same type. The size of a colony is also an important point. Smaller than average colonies tend to have shorter flight periods. Also, recently, climate change has an effect on the flight period.¹¹

Sustainability of the Routes

The routes could be damaged due to human activity or natural disasters. Natural disasters like global warming, drought, floods, and melting glaciers are some of the things that destroy the ecological order. Another thing that does this is man-made destruction. When people make decisions without thinking about how they fit into the natural order, they affect both today and tomorrow. People can destroy nature in many ways, such as by cutting down trees to make money (for example, to build houses, new roads, or bridges) or by, reducing the amount of green space or changing the shape of farmland.¹²

For this reason, the sustainability of the areas also should be a concern while preparing the routes of the tours. Alternative routes in nearby areas could be planned. On the other hand, conservation measures are crucial for the sustainability of the routes. For example, 76% of butterflies have declined since 1976, and the decline continues.¹³ So the conservation measures should also be prepared to work with the local communities and government.

Collecting & species recording

While on the tour, no wild specimens, including picking flowers, should be collected. Since the idea of conservation is sometimes misunderstood, organizers do need to make an effort to present a considerate and responsible approach toward the environment.

It has become increasingly necessary to keep locations hidden for certain species. This is due to the known practice of collectors using tour guides and reports as information to find the

¹¹ Flight periods: Hampshire Butterflies and moths by Ashley Whitlock. Purple Emperor. (n.d.). Retrieved December 22, 2022, from <https://www.purple-emperor.co.uk/flight-periods>

¹² Türcert. (n.d.). Doğa Tahribatı ve Ekoloji. Retrieved December 22, 2022, from <https://www.ekoloji.com/ekoloji/doga-tahribati-ve-ekoloji/>

¹³ The last generation. Butterfly Conservation. (n.d.). Retrieved December 22, 2022, from <https://butterfly-conservation.org/last-generation>

species. It should be advised guests to keep the sensitive information so that they may also avoid unintentionally aiding the collection and damage to the biodiversity of the areas that have been visited and want to protect.¹⁴

Damage of Collectors to the Populations

For centuries, butterfly collectors have pursued their quests with a butterfly net. These insect enthusiasts meticulously catalog each butterfly specimen in the name of science. In the last 30 years, there has been a rise in butterflying, which is more about identifying and taking pictures of insects than catching them. Capturing, killing, and pinning butterflies for trophy hunting, which collectors do, is accelerating environmental collapse.¹⁵ For example, some recent studies estimate that since the 1970s, a large portion of insect populations around the globe have declined by approximately 45 percent.¹⁶

Amateur collecting can be very dangerous for rare species, and it could also harm the populations. Currently in many countries collecting is only allowed for scientific purposes and there are regulations by environmental administration permits.

1.1.2. Major Criterias for Planning Butterfly Tours

There are several major criteria for Butterfly tours. These are;

Group size

Group sizes must be small so that opportunities for wildlife encounters and comfort are maximized for all the guests. Group size could be 6–12 people plus 1-2 leaders. For photographic tours, the group size could range from 1 person plus a leader to 6 people plus 1-2 leaders.

Group Leaders and Field Guides

All leaders must have a wealth of knowledge and experience and a high degree of professionalism. Of equal importance, they must have an easy-going, friendly manner and have a practical, flexible approach. Their goal must be to make the experience as enjoyable and rewarding as possible. Working with local experts is also very important because they're up-to-date intimate knowledge of wildlife and culture is always invaluable.

¹⁴ About our holidays. Greenwings Wildlife Holidays. (n.d.). Retrieved December 22, 2022, from <https://greenwings.co/about-our-holidays>

¹⁵ Thompson, J. (2022, May 16). To kill or not to kill: Butterflying during the "Insect Apocalypse". Vox. Retrieved December 22, 2022, from <https://www.vox.com/the-highlight/23055318/butterfly-collection-insect-climate-change>

¹⁶ Wagner, D. L. (2020). Insect declines in the anthropocene. *Annual Review of Entomology*, 65(1), 457–480. <https://doi.org/10.1146/annurev-ento-011019-025151> p 461

Program schedule and description

Program must be well described within all the itineraries that are given to guests. Butterflies are dependent on the sun; for this reason, alternative routes must be prepared in case of bad weather. Keeping travel distances minimum has a crucial role so that more time could be spent in the area than in a vehicle and to reduce the environmental footprints.

Itinerary changes

It may sometimes be necessary to make a change in the itinerary. This will only be due to situations out of control, such as bad weather, road closures, etc. If this occurs, the tour leader should decide on an alternative option, considering all relevant factors and discussing the matter with the guests.

Grading Tour levels

Every tour may not be suitable for everyone. For example, some tours could be demanding, which means climbing to the peak of a mountain or staying in the sun with high temperatures, etc. For this reason, tours must be graded and classified for the target groups.¹⁷

1. Easy	easy for anyone
2. Moderate	for anyone of any age that is used to some form of regular walking
3. Hard/Demanding	For people with a degree of fitness or those who are prepared to feel tired at times

Accommodation

Accommodation is essential for the tour because the participants will be on the field all day long and will need a good rest for the next day's journey. The keywords are comfort and quality of service, but also supporting local economies, particularly in promoting responsible ecotourism. The locality must be situated close to the areas that will be explored throughout the tour.

¹⁷ About our holidays. Greenwings Wildlife Holidays. (n.d.). Retrieved December 22, 2022, from <https://greenwings.co/about-our-holidays/>

1.2. Recent Ecotouristic Butterfly Tours Activity in Europe and Turkey

There are several companies currently working on butterfly-watching tours. These are Greenwings holiday, Naturetrek, Wild Echo Tours, British-Bulgarian Society and Iberian Wildlife Tours.

1.2.1. Greenwings holiday

Greenwings is a company which is founded more than ten years ago. They are all experienced conservationists, particularly leaning towards all things Lepidoptera. They started their tours by hosting a local tour in Norfolk in June 2010. Since then, they have grown quickly and set up tours for watching butterflies all over Europe and beyond.

The price varies, but the fixed costs are a single room supplement of £150 and a deposit of £150 per person.¹⁸

Recently Greenwings Wildlife Holidays making Wildlife tours for Butterflies in these areas in Europe:

Greece

False Apollo & Spring Butterflies

Due to its geographical location in a transitional area with influences from the Mediterranean, Anatolia, and Euro-Siberia, northeastern Greece features extraordinary flora and wildlife. Strong populations of the False Apollo (*Archon apollinus*), a geographically restricted and regionally endemic species, are among the butterflies of exceptional interest in the East Rodopi Mountains and will be the tour's primary goal.¹⁹

Butterflies of Corfu

Even by Mediterranean standards, the island of Corfu in the Ionian Sea is small, measuring only 39 miles long by 17 miles wide at its largest. It is located approximately 2.7 kilometers above Albania's shared border with Greece, which is closest to the Albanian mainland. The Southern

¹⁸ About Us. Greenwings Wildlife Holidays. (n.d.). Retrieved December 22, 2022, from <https://greenwings.co/about-us/>

¹⁹ False apollo & spring butterflies. Greenwings Wildlife Holidays. (n.d.). Retrieved December 22, 2022, from <https://greenwings.co/our-holidays/butterfly-holidays/false-apollo-spring-butterflies/>

Swallowtail (*Papilio alexanor*) and Eastern Orange Tip (*Anthocharis damone*) are two important species to look for in this tour.²⁰

Butterflies & Birds of North Greece

A wildlife-rich region in northeastern Greece close to the Bulgarian border, Lake Kerkini National Park, will serve as the central point for the tour. The lake is famous for its abundant birdlife and other fauna and is a place of global importance. On the boundary of southern western Bulgaria and northernmost Greece, Mount Orvilos, Mount Menikio, and Mount Belles are the main habitats for butterflies. At least 75 different butterfly species might be seen, and there's a chance for seeing 100 species of butterflies.²¹

Butterflies of Greece

It is among the best places in the area to see summertime flora and fauna, with a focus on butterflies and flowers but also on birds, reptiles, various invertebrates, and any other interesting wildlife that might be found. On a good day, either mountain can host around fifty different butterfly species, and depending on the time of year; a total of between 80 and 100 butterflies can be seen.²²

Butterflies of Mount Falakron

The excursion begins in Volakas, which is 830 meters above sea level. It serves as the entrance to the Mount Falakron, which is home to one of the nation's biggest ski resorts and is abundant in butterfly species. Vardina 2,194 m, Chionotrypa 2,211 m, and Agios Pavlos 1,768 m are among the high peaks on Mount Falakron, with Profitis Ilias being the tallest (2,232 m). The mountain occupies 960 square kilometers of land.²³

France

Butterflies & Botany of The French Pyrenees

The Pyrénées National Park was established in 1967, and its crystalline and sedimentary rock-built mountains are a national treasure without fences or restrictions, offering a refuge where wildlife is entirely free to travel around without human exploitation. The wildlife and flora inhabiting the incredibly diverse ecosystems found in the alpine, subalpine, and montane forest

²⁰ Butterflies of Corfu. Greenwings Wildlife Holidays. (n.d.). Retrieved December 22, 2022, from <https://greenwings.co/our-holidays/butterfly-holidays/butterflies-of-corfu/>

²¹ Butterflies & Birds of North Greece. Greenwings Wildlife Holidays. (n.d.). Retrieved December 22, 2022, from <https://greenwings.co/our-holidays/butterfly-holidays/butterflies-birds-of-north-greece-3/>

²² Butterflies of Greece. Greenwings Wildlife Holidays. (n.d.). Retrieved December 22, 2022, from <https://greenwings.co/our-holidays/butterfly-holidays/butterfliesofgreece/>

²³ Butterflies of Mount Falakron. Greenwings Wildlife Holidays. (n.d.). Retrieved December 22, 2022, from <https://greenwings.co/our-holidays/exploration-holidays/butterflies-of-mount-falakron/>

zones, river valleys, and escarpments are quite diverse. The butterfly flies all across the highlands and slopes.²⁴

Butterflies & Flowers of The Vercors

A mountain range in South Eastern France made up primarily of limestone, the Vercors Massif is known for its rocky plateaus and precarious upper slopes. Its gorges and mountains in the Prealps cover the départements of Isère and Drôme, and the region is protected as a National Park. It is among the best summertime flora and fauna the area has to offer, with a concentration primarily on butterflies and flowers.²⁵

Butterflies of Mercantour & Queyras

Amidst stunning terrain in a pure region of France, this 2-center butterfly-watching tour offers a wealth of butterflies, both in terms of species diversity and the total number of butterflies present. During this tour, it is typical to come across over 120 species, and frequently it is closer to 130 or more (more than a quarter of the entire species on the European continent).

With over 150 species known to exist in the area, the Mercantour National Park is one of Europe's richest butterfly habitats. More than 2,000 types of flowering plants, 400 of which are endemic to the area, are also found there. The French Hautes-Alpes, in the southern Alps, is home to the Queyras Regional Nature Park, surrounded by 3,000-meter-tall peaks. In one week in 2017, more than 130 species have been seen.²⁶

Italy

Butterflies of the Italian Alps

Piedmont is a mountainous region, living up to its name's meaning of "foot of the mountain." The Alps, which have the highest peaks (24 above 3,000 meters) and immense glaciers in Italy, surround it on three sides. The Parc National du Mercantour, which stretches over 35 kilometers along the French side of their shared border, is twinned with the Natural Park. With nearly 260 species, Italy is a remarkably diverse country for butterflies. During the tour, the participants should encounter at least 100 different species.²⁷

²⁴ Butterflies & Botany of the French pyrenees. Greenwings Wildlife Holidays. (n.d.). Retrieved December 22, 2022, from <https://greenwings.co/our-holidays/butterfly-holidays/butterflies-botany-french-pyrenees/>

²⁵ The Vercors with Richard Lewington. Greenwings Wildlife Holidays. (n.d.). Retrieved December 22, 2022, from <https://greenwings.co/our-holidays/butterfly-holidays/the-vercors/>

²⁶ Butterflies of Mercantour & Queyras. Greenwings Wildlife Holidays. (n.d.). Retrieved December 22, 2022, from <https://greenwings.co/our-holidays/butterfly-holidays/butterflies-french-alps-mercantour-queyras/>

²⁷ Butterflies of the Italian Alps. Greenwings Wildlife Holidays. (n.d.). Retrieved December 22, 2022, from <https://greenwings.co/our-holidays/butterfly-holidays/butterflies-of-the-italian-alps/>

Butterflies & Flowers of The Dolomites

The peaks that rise sharply above the valleys are known as the Dolomites, a distinctive and stunning region named for the crystalline magnesium limestone rocks that make up the peaks. These mountains have a unique shape because they emerged from the sea about 250 million years ago. The cliffs, lofty spires, and pinnacles characteristic of these mountains, which have always been a source of wonder and a favorite climbing location, were carved out of the rocks by ice and wind.²⁸

Slovenia

Butterflies of Slovenia

Slovenia is remarkably diverse for such a tiny country. After all, it is only 88 kilometers as the crow flies from the Adriatic coast's nearest point (Ankaran) to the summit of its highest peak (Triglav 2,864 meters). The country's biodiversity is reflected in its tremendous diversity in geography, temperature, and environment, but nowhere more so than in the 179 species of butterflies regularly found within its 20,000 square kilometers.²⁹

Bulgaria

Butterflies of Bulgaria

The southwest of Bulgaria has one of the widest ranges of plants and animals on the Balkan Peninsula. Here are the country's first and third-highest mountains, Rila and Pirin, with Mount Vihren at 2,916 meters and Mount Moussala at 2,925 meters, respectively. Rila National Park and Pirin National Park protect these two mountains' wide range of plants and animals. Pirin is also a UNESCO World Heritage Site. The Western Rhodope Mountain, with its rounded, pine-covered hills, and the streams and rivers that occasionally cut through deep gorges, are also explored on this tour. The Struma and Mesta rivers, two of the largest in Bulgaria, are also located in this region. The region is among the richest in Europe for butterfly diversity, with over 180 species having been recorded.³⁰

²⁸ The dolomites. Greenwings Wildlife Holidays. (n.d.). Retrieved December 22, 2022, from <https://greenwings.co/our-holidays/general-wildlife-holidays/the-dolomites/>

²⁹ Butterflies of Slovenia. Greenwings Wildlife Holidays. (n.d.). Retrieved December 22, 2022, from <https://greenwings.co/our-holidays/butterfly-holidays/butterflies-of-slovenia/>

³⁰ Butterflies & Flowers of Bulgaria. Greenwings Wildlife Holidays. (n.d.). Retrieved December 22, 2022, from <https://greenwings.co/our-holidays/butterfly-holidays/butterflies-of-bulgaria/>

Spain

Butterflies of the Picos de Europa

The Picos is the centerpiece of the 300-kilometer-long Cantabrian Mountain range, which runs along Spain's north coast. It is among the most stunning and alluring areas of the entire region. The limestone mountain range is home to around 150 butterfly species.³¹

Butterflies of Montes Universales

The Montes Universales are a forgotten part of central Spain. They aren't mountains by Alpine standards since they only rise to 1900 meters from a base of 1000 meters, but they are a unique hotspot for butterfly diversity. The region is primarily forested, with productive low-lying regions planted with wheat and grass and scrub areas that receive light grazing. Several formerly used grazing sites are now empty.

The Reserva Nacional de Montes Universales is between Teruel and Cuenca in the center-east of Spain. It is about 180–200 km east of Madrid and 140–150 km northwest of Valencia. The mountain range includes the Sierra de Albarracin and runs roughly from the south-east to the northwest. It separates the Serrania de Cuenca in the southwest from the A23 Teruel–Zaragoza motorway in the east. The Tagus River starts here, but there are a lot of dry riverbeds that only get water when it rains or when the snow melts at the end of winter. Expected summertime temperatures range from 29 to 36 °C, with very little rain.³²

Turkey

Kackar Mountains National park and Coruh Valley

The Kackar Mountains, located in southeastern Turkey along the Black Sea, are a part of the Caucasus range and, as such, are recognized as a biodiversity hotspot by the World Wild Fund for Nature and Conservation International. With more than 200 resident species, the Kackars are an incredibly rich region for butterflies.³³

The company also has additional tours to other continents.³⁴

³¹ Butterflies of the Picos de Europa. Greenwings Wildlife Holidays. (n.d.). Retrieved December 22, 2022, from <https://greenwings.co/our-holidays/butterfly-holidays/butterflies-of-the-picos-de-europa/>

³² Butterflies of montes universales. Greenwings Wildlife Holidays. (n.d.). Retrieved December 22, 2022, from <https://greenwings.co/our-holidays/butterfly-holidays/butterflies-montes-universales/>

³³ Butterflies of the Kaçkars in Turkey. Greenwings Wildlife Holidays. (n.d.). Retrieved December 22, 2022, from <https://greenwings.co/our-holidays/butterfly-holidays/butterflies-of-the-kackars-in-turkey/>

³⁴ Butterfly Holidays. Greenwings Wildlife Holidays. (n.d.). Retrieved December 22, 2022, from <https://greenwings.co/our-holidays/butterfly-holidays/>

Greece	Price	Period of the Season	Target species
Northeast Greece	£1,395	7th – 14th April	<i>Archon apollinus</i> , <i>Zerynthia cerisy</i> , <i>Lycaena ottomana</i> , <i>Zerynthia polyxena</i> <i>Gonopteryx farinosa</i> , <i>Euchloe penia</i> , <i>Pontia chlorodice</i> , <i>Pieris krueperi</i> , <i>Polygonia egea</i>
Corfu Island	£1,395	8th – 15th May	<i>Papilio alexanor</i> , <i>Gonepteryx cleopatra</i> , <i>Anthocharis damone</i> , <i>Lycaena ottomana</i>
Lake Kerkini National Park	£1,395	6th – 13th June	<i>Satyrium spini</i> , <i>Tarucus balkanicus</i> , <i>Polyommatus daphnis</i> , <i>Cupido osiris</i> , <i>Lycaena dispar</i> , <i>Brenthis daphne</i> , <i>Argynnis niobe</i> , <i>Nymphalis polychloros</i> , <i>Melanargia larissa</i> , <i>Kirinia roxelana</i> , <i>Erebia medusa</i>
Mount Parnassos- Peloponnese region	£1,395	19th – 26th June	<i>Charaxes jasius</i> , <i>Papilio alexanor</i> , <i>Pieris ergane</i> , <i>Polyommatus escheri</i> <i>Polyommatus admetus</i> , <i>Colias aurorina</i> , <i>Aricia anteros</i> , <i>Turanana taygetica</i> , <i>Polyommatus coelestina</i> , <i>Chilades trochylus</i> , <i>Polyommatus iphigenia</i>
Mount Falakron	£1,195	28th June – 5th July	<i>Pseudochazara orestes</i> , <i>Erebia melas</i> , <i>Polyommatus nephohiptamenos</i>

			<i>Polyommatus eleniae</i> <i>Gonepteryx</i> <i>farinosa</i> , <i>Kirinia roxelana</i> , <i>Melitaea trivialis</i> , <i>Tarucus</i> <i>balkanicus</i> , <i>Lyceana</i> <i>thersamon</i> , <i>Coenonympha</i> <i>leander</i> . <i>Neptis sapho</i> , <i>Neptis rivularis</i> <i>Apatura</i> <i>metis</i> .
France	Price	Period of the Season	Target species
Eastern French Pyrénées	£1,495	25th May – 1st June	<i>Euphydryas desfontainii</i> , <i>Zerynthia rumina</i> , <i>Pyronia bathseba</i> , <i>Melanargia ines</i> , <i>Iphiclides</i> <i>feisthamelii</i> , <i>Lysandra</i> <i>hispana</i> , <i>Erebia triarius</i> ,
Vercors Massif	£1,495	30th June – 7th July	<i>Carterocephalus palaemon</i> , <i>Erebia oeme</i> , <i>Erebia</i> <i>alberganus</i> , <i>Limenitis</i> <i>Populi</i> , <i>Brenthis ino</i> , <i>Phengaris rebeli</i> , <i>Agriades</i> <i>glandon</i> , <i>Lopinga achine</i>
The Mercantour National Park- The Queyras Regional Nature Park	£1,495	24th June – 1st July	<i>Aricia nicias</i> , <i>Parnassius</i> <i>apollo</i> , <i>Parnassius</i> <i>phoebus</i> , <i>Boloria pales</i> , <i>Boloria napaea</i> <i>Euphydryas cynthia</i> , <i>Oeneis glacialis</i>
Italy	Price	Period of the Season	Target species
Natural Park of the Maritime Alps	£1,395	16th – 23rd June	<i>Papilio alexanor</i> , <i>Euphydryas maturna</i> , <i>Boloria titania</i> , <i>Zerynthia</i> <i>cassandra</i> , <i>Agriades</i>

			<i>orbitulus, Erebia meolans, Limenitis populi</i>
The Dolomites	£1,395	June – July	<i>Melitaea diamina, Coenonympha gardetta, Lysandra coridon, Erebia ligea</i>
Spain	Price	Period of the Season	Target species
Butterflies of the Picos de Europa	£1,495	3rd – 10th July	<i>Parnassius apollo, Maculinea nausithous, Heteropterus morpheus, Lycaena virgaureae, Lycaena hippothoe, Agriades pyrenaicus, Laeosopsis roboris, Erebia lefebvrei Erebia cassioides</i>
Butterflies of Montes Universales	£1,350	30th Jul – 5th Aug	<i>Erebia zapateri, Polyommatus nivescens, Lysandra caelestissima, Lysandra albicans, Aricia morronensis, Chazara prieuri, Hipparchia fidia, Polyommatus fabressei,</i>
Slovenia	Price	Period of the Season	Target species
Butterflies of Slovenia	£1,395	10th – 17th June	<i>Lycaena dispar, Phengaris alcon, Limenitis populi, Apatura iris, Euphydryas maturna, Aricia eumedon, Coenonympha oedippus</i>
Bulgaria	Price	Period of the Season	Target species

Butterflies of Bulgaria	£1,395	28th June – 6th July	<i>Polyommatus dorylas</i> , <i>Apatura iris</i> , <i>Pyrgus alveus</i> , <i>Pyrgus cinarae</i> . <i>Lycaena candens</i> , <i>Polyommatus eroides</i> , <i>Phengaris arion</i> , <i>Tarucus balkanicus</i> , <i>Melitaea aurelia</i> , <i>Boloria graeca</i> , <i>Coenonympha glycerion</i> , <i>Erebia ottomana</i> , <i>Hipparchia fatua</i>
Turkey	Price	Period of the Season	Target species
Butterflies of the Kaçkars in Turkey	£1,495	10th – 19th July	<i>Turanana endymion</i> , <i>Rubrapterus bavius</i> , <i>Agriades dardanus</i> , <i>Maculinea arion</i> , <i>Polyommatus aedon</i> , <i>Lysandra corydonius</i> , <i>Scolitantides orion</i> , <i>Lycaena thersamon</i> , <i>Lycaena ochimus</i> , <i>Lycaena candens</i> , <i>Satyrium abdominalis</i> , <i>Chazara bischoffii</i> , <i>Hipparchia parisatis</i> , <i>Pseudochazara geyeri</i> , <i>Coenonympha symphita</i> , <i>Pontia chloridice</i> , <i>Melitaea interrupta</i> , <i>Thaleropis ionia</i>

1.2.2. Naturetrek

Naturetrek has combined tours mainly. Birds, mammals, butterflies, orchids, etc. The tours are not focused on finding target species. They are focused on to see as much as species they can during the tours. For this reason, tours are focused on butterfly hotspots.

The following special selection of European butterfly tours, guided by expert butterfly enthusiasts, has been designed to allow the participants to enjoy and learn about butterflies in the company of fellow enthusiasts. All travel arrangements made by Naturetrek.³⁵

Spain

Butterflies & Moths of Andalucia

The first part of the tour is a flight to Gibraltar. The Alameda Botanic Gardens on Gibraltar and the Alcornocales Natural Park will be explored during the tour. The species like the False Eastern Knapweed Fritillary (*Melitaea pseudornata*), Green-striped White (*Euchloe belemia*), and Moroccan Orange-tip (*Colotis evagore*) should be seen. Also, the tour includes taking the cable car up "The Rock" to see beautiful views and watch the Barbary Macaques at play.³⁶

Butterflies & Moths of the Spanish Pyrenees

There are a lot of different habitats in the Spanish Pyrenees, so there are a lot of different kinds of *Lepidoptera*. From the base in the pretty hilltop village of Berdn, daily trips will be taken to look for butterflies. During the week, the group will explore foothills and valleys of the Veral and Aragon Rivers, as well as the Biniés Gorge. Target species are ringlets, skippers, blues, and fritillaries. Alpine species, including Apollo's, and numerous ringlets and blues, should be present.³⁷

Butterflies of Spain's Montana Palentina

This tour starts deep in the Palentian mountains in northern Spain. This is a remote area where most of the villages have been abandoned, and the land has been given back to wildlife. With its panoramic views and diverse ecosystems, including limestone ridges and dense oak and beech forests, the area is home to more than 100 butterfly species in July. from the bare hillsides at higher elevations to the flower-filled valleys at lower elevations.³⁸

³⁵ The wildlife travel experts. Naturetrek. (n.d.). Retrieved December 22, 2022, from <https://www.naturetrek.co.uk/>

³⁶ Butterflies & Moths of Andalucia. Naturetrek. (n.d.). Retrieved December 22, 2022, from <https://www.naturetrek.co.uk/tours/butterflies-and-moths-of-andalucia>

³⁷ Butterflies & Moths of the Spanish pyrenees. Naturetrek. (n.d.). Retrieved December 22, 2022, from <https://www.naturetrek.co.uk/tours/butterflies-and-moths-of-the-spanish-pyrenees>

³⁸ Butterflies of Spain's Montana palentina. Naturetrek. (n.d.). Retrieved December 22, 2022, from <https://www.naturetrek.co.uk/tours/butterflies-of-spains-montana-palentina>

France

France- Butterflies & Orchids of the Cevennes

The Cévennes, which are located on the edge of the Massif Central, are home to a variety of environments, including the granitic peak of Mont Lozère, huge beech and chestnut forests, and the limestone plateau of the Causses, which is divided by dramatic gorges (including the Gorges du Tarn). While exploring the area's diverse flora, visitors can find a variety of butterflies in the Cévennes National Park.³⁹

France - Butterflies of La Brenne

The region of La Brenne, also referred as "The Land of a Thousand Lakes," is home to a diverse range of habitats, including marshes, deciduous woodlands, dry heathland, and agriculture. The region, where there are almost twice as many butterflies as in Britain.⁴⁰

France - Butterflies in Normandy

There are many different habitats in Normandy where different kinds of butterflies and other animals live. One of the most significant wetlands in Europe is the Cotentin Regional Nature Park. The tour will focus on butterflies as well as the many birds and flowers in the area.⁴¹

France - Butterflies of the Pyrenees

The Parc National des Pyrénées serves as the tour's starting point. This high central part of the French Pyrenees can be explored on foot using well-maintained mountain paths for a series of leisurely day hikes to appreciate the best of the large number and diversity of butterflies to be found there.⁴²

France - Butterflies & Moths of the Vercors

The Vercors is an area in southeast France with beautiful valleys, plateaux, and mountains. A particularly rich flora may be found in the region's varied karst landforms, which in turn sustain a variety of natural history. The tour aims to observe a variety of high-altitude butterflies, such as skippers and ringlets.⁴³

³⁹ France - Butterflies & Orchids of the Cevennes. Naturetrek. (n.d.). Retrieved December 22, 2022, from <https://www.naturetrek.co.uk/tours/the-cevennes-a-butterfly-tour>

⁴⁰ France - butterflies of La Brenne. Naturetrek. (n.d.). Retrieved December 22, 2022, from <https://www.naturetrek.co.uk/tours/france-butterflies-of-la-brenne>

⁴¹ France - butterflies in normandy. Naturetrek. (n.d.). Retrieved December 22, 2022, from <https://www.naturetrek.co.uk/tours/france-butterflies-in-normandy>

⁴² France - butterflies of the pyrenees. Naturetrek. (n.d.). Retrieved December 22, 2022, from <https://www.naturetrek.co.uk/tours/france-butterflies-of-the-pyrenees>

⁴³ France: Butterflies & Moths of the vercors. Naturetrek. (n.d.). Retrieved December 22, 2022, from <https://www.naturetrek.co.uk/tours/france-butterflies-and-moths-of-the-vercors>

Butterflies of Croatia

This tour, run in partnership with Butterfly Conservation, and the fact that the country has butterflies from both southern and eastern Europe make this an exciting tour for participants. The group will search for species like Southern Festoon (*Zerynthia polyxena*), Osiris blue (*Cupido osiris*), and Ilex hairstreak (*Satyrrium ilicis*) along trails in Plitvice National Park. At the same time, the limestone gorges of Paklenica National Park are home to a more common collection of "Mediterranean" species like the Dark Green Fritillary. Finally, the group will move to the Velebit Mountains on the Dalmatian coast for the remaining two nights, where 130 different species of butterflies can be found.⁴⁴

Butterflies of Southern Greece

This wildlife tour in southern Greece takes place in the middle of summer and focuses on the wide range of butterfly species on the Peloponnese and Mount Parnassos. Both regions are well known for their abundance of butterflies, many of which are regional specialties. The tour in the Peloponnese will be centered out of a cozy guesthouse in the village of Kalavitra, particularly on Mount Chelmos's forested slopes. Over a hundred species of butterflies, in addition to a good range of wildlife, dragonflies, and flora, are present as part of the tour's conclusion on Mount Parnassos, a peak rich in folklore and home to many butterflies. This location is above the ancient ruins of Delphi.⁴⁵

Butterflies of Hungary

Hungary, which has approximately 200 species of butterflies, will undoubtedly become a favorite travel destination for participants. To find the countless fritillaries, blues, whites, coppers, hairstreaks, and graylings that thrive here, the group will spend two entire days in Aggtelek National Park. The group will be based in Bükk National Park, on the southeast edge of the Carpathians, for the second half of the vacation. The group will go between 300 and 960 meters above sea level to visit a range of environments, including beech woods and plains.⁴⁶

The Butterflies and Birds of North Macedonia

The Republic of North Macedonia is one of the best places in Europe to see butterflies. It is the most southern of the six republics that formed the old Yugoslavia. The tour includes two distinct locations and is planned to coincide with the peak butterfly season. After flying to the capital, Skopje, the group drives south to Bitoli, which is at the foot of the impressive Baba Mountains. From here, the group will travel to various heights in the Pellister National Park

⁴⁴ Butterflies of Croatia. Naturetrek. (n.d.). Retrieved December 22, 2022, from <https://www.naturetrek.co.uk/tours/butterflies-of-croatia>

⁴⁵ Butterflies of Southern Greece. Naturetrek. (n.d.). Retrieved December 22, 2022, from <https://www.naturetrek.co.uk/tours/butterflies-of-southern-greece>

⁴⁶ Butterflies of Hungary. Naturetrek. (n.d.). Retrieved December 22, 2022, from <https://www.naturetrek.co.uk/tours/butterflies-of-hungary>

and on the Galicica Plateau in search of butterflies, including the *Boloria graeca*, *Melanargia russiae*, *Lycaena candens*, and *Pseudochazara geyeri*. The tour's second part will be spent in the historic town of Kavadarci, which will serve as the group's base for three nights. A wide variety of fritillaries, skippers, blue butterflies, and other *Lepidoptera* may be found in the lowland habitats of the Vardar Valley, which the group will explore while in this location.⁴⁷

Romania's Butterflies & Moths

Romania is rich in butterfly diversity: hot summer seasons, a wide range of habitats from simmering plains to mountaintops, and, above all, the widespread use of low-intensity agricultural practices. So it is not surprise that Romania has one of the greatest butterfly populations in Europe, with 210 species listed as of 2015. The excursion starts in the Carpathians, where visitors will explore the forests and meadows of Piatra Craiului and Bucegi National Parks. From a specially designed hide deep within the forest, the party will also have the opportunity to see Brown Bears. The group then travels across the nation to the butterfly paradise of Dobrogea's rolling steppes. Finally, the group takes a lepidopterist's day off on the last day to visit the magnificent Danube Delta.⁴⁸

Sweden's Butterflies & Dragonflies

A wonderful fusion of Eastern European and Scandinavian butterfly species can be found in Sweden during the height of the summer. The group will go on daily excursions to search for species, including Purple-edged copper (*Lycaena hippothoe*) and Northern wall brown (*Lasiommata petropolitana*). The tour is headquartered in the Svartadalen area, northeast of Stockholm. The neighboring forests are home to various fritillaries, skippers, and blues, as well as some intriguing dragonflies. The group will visit a spot known as "Butterfly Road" on the Baltic coast, where Silvery Argus (*Aricia nicias*) and Large Grizzled Skipper (*Pyrgus alveus*) will be among the target species. On another day, the participants will search for the iconic (and recently documented) Large Blue (*Phengaris arion*) on an island in Lake Malaren. On the last day, the group travels to pine forests to search for Assmann's fritillary (*Melitaea britomartis*), Sweden's most endangered butterfly, the Northern grizzled skipper (*Pyrgus centaureae*), and other species.⁴⁹

Butterflies of the Swiss Alps

This general natural history vacation, which has a specific focus on butterflies and is based in the charming alpine community of Wengen, is perfect for anyone who appreciates going on

⁴⁷ The butterflies and birds of North Macedonia. Naturetrek. (n.d.). Retrieved December 22, 2022, from <https://www.naturetrek.co.uk/tours/the-birds-and-butterflies-of-macedonia>

⁴⁸ Romania's Butterflies & Moths. Naturetrek. (n.d.). Retrieved December 22, 2022, from <https://www.naturetrek.co.uk/tours/romaniyas-butterflies>

⁴⁹ Sweden's butterflies & dragonflies. Naturetrek. (n.d.). Retrieved December 22, 2022, from <https://www.naturetrek.co.uk/tours/swedens-butterflies-and-dragonflies>

walks in the breathtaking landscape and clean mountain air. The journey will be flexible during the week and cover a wide range of altitudes, from pastures, forests, and meadows in the Lauterbrunnen Valley to high alpine meadows close to the snowline. The group will look for Peak white (*Pontia callidice*), Dewy ringlet (*Erebia pandrose*), and Baton blue (*Pseudophilotes baton*) in alpine meadows. In addition, the group will search for eye-catching species at lower elevations, such as Clouded Apollo (*Parnassius mnemosyne*) and Small Apollo (*Parnassius phoebus*), and various fritillaries.⁵⁰

Butterflies of the Dolomites

The Italian Dolomites are a perfect location for butterfly species among the stunning mountain landscape of one of Europe's butterfly hotspots. The group will be in a great location to tour a variety of habitats from 900 meters in the lowlands below to 2200 meters on the Sella Pass from this base at 1500 meters. Each day will be spent on foot as the group enjoys leisurely strolls while searching for butterflies in rich meadows and wide pastures. This is a very popular single-center tour with lots of great walks. The group will enjoy the butterflies and some of the most beautiful scenery in Europe.⁵¹

Poland's Butterflies & Dragonflies

Poland is known for being one of the best places in Europe to watch birds and mammals. But it is also great for butterflies, even though they have gotten less attention until now. The group will visit two well-known locations on this eight-day, peak summer excursion: Biebrza National Park and the distinctive Bialowieza Forest. At these locations, more than 100 species of butterflies have been found. The group will search for rare butterflies such as the Limenitis Populi, one of the most sought-after butterflies on the continent, and the Moorland Clouded Yellow (*Colias palaeno*), Cranberry Fritillary (*Boloria aquilonaris*), and Violet Copper (*Lycaena helle*).⁵²

⁵⁰ Butterflies of the Swiss alps. Naturetrek. (n.d.). Retrieved December 22, 2022, from <https://www.naturetrek.co.uk/tours/butterflies-of-the-swiss-alps>

⁵¹ Butterflies of the Dolomites. Naturetrek. (n.d.). Retrieved December 22, 2022, from <https://www.naturetrek.co.uk/tours/butterflies-of-the-dolomites>

⁵² Poland's butterflies & dragonflies. Naturetrek. (n.d.). Retrieved December 22, 2022, from <https://www.naturetrek.co.uk/tours/polands-butterflies-and-dragonflies>

Spain	Price	Period of the Season
Butterflies & Moths of Andalucia	£1,295	5th Jun –9th Jun
Butterflies & Moths of the Spanish Pyrenees	£1,895	28th Jun –5th Jul
France	Price	Period of the Season
Butterflies & Orchids of the Cevennes	£1,695	17th Jun – Sat 24th Jun
Butterflies of La Brenne	£1,395	21st Jun –26th Jun
Butterflies in Normandy	£1,195	5th Jul –9th Jul
Butterflies of the Pyrenees	£1,795	7th Jul –14th Jul
Butterflies & Moths of the Vercors	£1,795	12th Jul –19th Jul
Croatia	Price	Period of the Season
Butterflies of Croatia	£1,995	14th May –21st May
Greece	Price	Period of the Season
Butterflies of Southern Greece	£1,795	10th Jun –17th Jun
Hungary	Price	Period of the Season
Butterflies of Hungary	£1,895	13th Jun –20th Jun

North Macedonia	Price	Period of the Season
The Butterflies and Birds of North Macedonia	£1,695	22nd Jun –30th Jun
Romania	Price	Period of the Season
Romania's Butterflies & Moths	£1,795	24th Jun –2nd Jul
Sweden	Price	Period of the Season
Sweden's Butterflies & Dragonflies	£1,795	26th Jun –1st Jul
Switzerland	Price	Period of the Season
Butterflies of the Swiss Alps	£2,295	2nd Jul –9th Jul
Italy	Price	Period of the Season
Butterflies of the Dolomites	£1,795	5th Jul –12th Jul
Poland	Price	Period of the Season
Poland's Butterflies & Dragonflies	£1,895	26th Jun –3rd Jul

1.2.3. Wild Echo Tours

Wild Echo, which used to be called Spatia Wildlife, is a tour and photography company focusing on wildlife. It is based in Bulgaria, but it also offers tours in neighboring Balkan countries, Turkey, the Caucasus, the Middle East, and North Africa. Tours are longer in duration and usually combine two countries.⁵³

Destinations

Early Butterflies (Bulgaria, Greece) 18th- 30th April

Bulgaria and Greece's early spring butterflies are this tour's main focus. In addition to being early, most species are rare and only occur in a small area. Therefore, various habitats will be seen during the excursion. The majority of the local species, including the *Papilio alexanor*, *Iolana iolas*, *Gonepteryx farinosa*, *Gonepteryx cleopatra*, *Anthocharis gruneri*, *Euchloe penia*, *Freyeria trochylus*, and *Proterebia afra*, could be found during the tour.⁵⁴



Butterflies of the West Balkan (Bulgaria, Serbia) 9th- 20th June

The butterfly tour, which will include different altitudes and vegetation zones, will take place in the stunning Balkan Mountains. *Boloria eunomia*, *Melitaea arduinna*, *Lycaena helle*, *Kirinia climene*, *Erebia orientalis*, and *Nymphalis vaualbum* are the tour's primary target species. A good selection of rare and beautiful butterflies. The group will travel along a section of the Serbian-Bulgarian

⁵³ Birdwatching, butterflies, mammals and wildlife photography tours to ... (n.d.). Retrieved December 22, 2022, from <http://www.wildechotours.com/en/About-us-Wild-Echo/index.html>

⁵⁴ Early butterflies tour to Greece and Bulgaria - wildechotours.com. (n.d.). Retrieved December 22, 2022, from <http://www.wildechotours.com/en/holiday-butterflies-tour-Greece-Bulgaria.html>

border on the journey. The tour will take place in the Stara Planina Mountains, also referred to as the Balkan Range in both countries, and the term given to the entire peninsula.⁵⁵



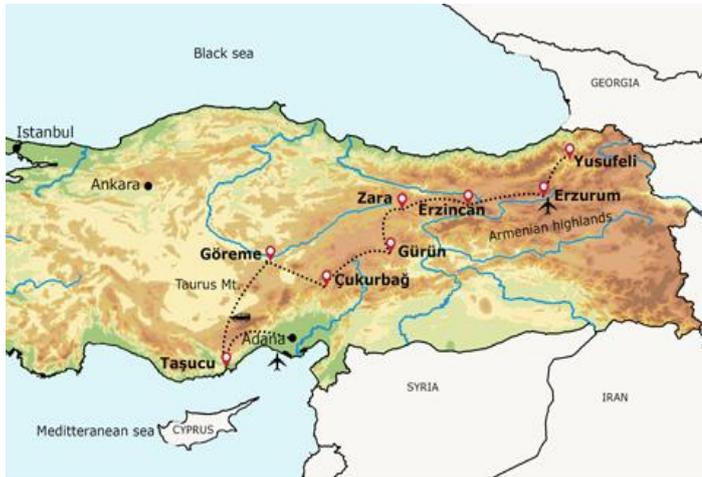
Butterflies of Turkey (Turkey) 7th - 21st July

Turkey is a big country that sits on two continents at the eastern end of the Western Palearctic, providing a massive and impressive diversity of butterflies. The central, eastern Mediterranean, and northeastern regions will be the key focus of the journey. River valleys, semiarid lands, and high mountains (up to 3,000 meters above sea level) will all be visited on this trip.

The tour will start in the province of Adana and go to many places that are influenced by the Mediterranean, such as the Goksu River, the Mediterranean coast, the deep, rocky Limonlu River valley, and Kargicak. We'll spend days three and four in the Aladaglar Mountains (Aladaglar National Park). The group will travel to Cappadocia (a UNESCO World Heritage Site) the next day and stay there for one night. The excursion will eventually come to a stop in Topuzdagi, one of the mountain passes, where you may admire the flowering vegetation and rough rocky slopes. After visiting the Cappadocia region, the excursion will move farther north to Darende, Gokpinar, and Zara. The tour will stop at some of the most well-known tourist destinations during the coming days, including Girlevik Waterfalls, Palandoken, and Tortum Waterfalls. Finally, the excursion will end in the Kaçkar Mountains and Kaçkar National Park, where participants will learn about the general high mountain flora.⁵⁶

⁵⁵ Butterflies tour in Bulgaria and Serbia - wildechotours.com. (n.d.). Retrieved December 22, 2022, from <http://www.wildechotours.com/en/Bulgaria-Serbia-butterfly-holiday.html>

⁵⁶ Butterflies of Turkey - wildechotours.com. (n.d.). Retrieved December 22, 2022, from <http://www.wildechotours.com/en/Butterflies-Turkey-tour.html>



Scarce Butterflies (Bulgaria) 8th - 19th June

The rarest butterflies in Bulgaria are the subject of this journey. *Muschampia tessellum*, *Heteropterus morpheus* and *Melitaea arduinna*. However, there are more than one hundred species of butterflies in various habitats. Most of the tour will be spent in eastern Bulgaria, where most classic tours don't go and which hasn't been studied in great detail, so it's possible that new things will be found. A number of historical sites, like the Thracian tumulus at Ispirih, which is on the UNESCO World Heritage List, will also be available for participants on the tour.⁵⁷



Butterflies of the Balkans (Bulgaria, North Macedonia, and Greece) 9th - 20th June

This extraordinary journey combines three nations and enables exploration of some of the most important butterfly habitats on the Balkan Peninsula. The tour will go to Bulgaria, Macedonia, and Greece over the course of fifteen days in search of uncommon and difficult-to-find butterfly species. More than 130 species are expected to be seen during the tour, ranging from beautiful species like *Euphydryas cynthia*, *Parnassius apollo*, *Limnitis Populi*, *Apatura iris*, and *Lycaena dispar*

⁵⁷ Scarce butterflies of Bulgaria - Wildechotours.com. (n.d.). Retrieved December 22, 2022, from <http://www.wildechotours.com/en/Scarce-butterflies-tour-Bulgaria.html>

to rare and difficult-to-find species like *Erebia orientalis*, *Pseudochazara cingovskii*, *Hipparchia fatua*, *Polyommatus andronicus*, and *Polyommatus nephohiptamenos*.⁵⁸



Jewels of Macedonia (Greece, North Macedonia) 1st- 9th August

This tour is primarily focused on two butterfly species that are not typically seen in the spring and early summer. Being a highly local Balkan endemic that doesn't appear until after the first of August, the Grey Asian Grayling (*Pseudochazara geyeri*) requires a special trip to its lovely home range in North Macedonia's Galitchitsa Mountain. This one is on the Chalkidiki Peninsula in Greece. Approximately 100 different butterfly species, including some rarities like *Pseudochazara cingovskii*, *Euchloe penia*, *Tarucus balkanicus*, and perhaps the stunning *Colias caucasica*, will also be encountered during the tour in addition to the two main species.⁵⁹

⁵⁸ Butterflies and moths tours to Bulgaria, Macedonia and Greece. (n.d.). Retrieved December 22, 2022, from <http://www.wildechotours.com/en/Butterflies-moths-tours/index.html>

⁵⁹ Butterfly tour to North Macedonia and Greece in search of the Grey ... (n.d.). Retrieved December 22, 2022, from <http://www.wildechotours.com/en/Greece-North-Macedonia-butterfly-tour.html>



1.2.4. Iberian Wildlife Tours

Iberia, which includes the countries of mainland Spain and Portugal as well as the Balearic and Macaronesian islands, is a naturalist's dream because of its abundance of breathtaking scenery and extraordinary variety of flora and wildlife.

Their mission is to give visitors a thorough awareness of the variety of species and habitats available in each Iberian locality, as well as the contribution of humans to the flora and fauna of the region.⁶⁰

Destinations



⁶⁰ Discover the best of Iberia's wildlife. Wildlife Tours and Holidays with Iberian Wildlife Tours. (n.d.). Retrieved December 22, 2022, from <http://www.iberianwildlife.com/>

-Picos de Europa and Spanish Pyrenees only focus on butterflies

The other tours have focused on general wildlife and butterflies. For example

- Canary Islands: endemic land birds, seabirds, and other wildlife

1.2.5. British-Bulgarian Society

British-Bulgarian Society have been organizing special interest excursions to Bulgaria for 40 years. Since 2002, B-BS has held annual butterfly (and moth) tours.

Plans for a butterfly tour (flights included in price):

- **Spring Butterflies and Moths Tour** (22 April- 01 May) Price: £1,250.

This 10-day trip will take place in the mountain scenery of SW Bulgaria and northern Greece. In late April and early May, target species include: *Zerynthia polyxena*, *Anthocharis gruneri*, *Euchloe penia*, *Pieris krueperi*, *Leptidea duponcheli*, *Lycaena ottomana*, *Tarucus balkanicus*, *Scolitantides orion*, *Pseudophilotes vicrama*, *Nymphalis antiopa*, *Polygonia egea*, and *Erynnis marloyi*.

- **Midsummer Butterflies and Moths** (02- 14 July) Price: £1,490.

This 13-day trip will spend the majority of its time in the high alpine areas of southwest Bulgaria, where we anticipate seeing a great variety of species at various heights. In July, the target species include: *Zerynthia cerisy*, *Pieris krueperi*, *Pontia chloridice*, *Lycaena ottomana*, *Tarucus balkanicus*, *Aricia anteros*, *Melitaea ornata*, *Melitaea britomartis*, *Heteropterus morpheus* and *Carcharodus orientalis*.⁶¹

⁶¹ Butterflies and moths in Bulgaria. Butterflies & Moths Tours in Bulgaria | Moths/Butterflies Bulgaria. (n.d.). Retrieved December 22, 2022, from <https://www.bulgariatours.co.uk/moth-butterfly-tours-bulgaria.html>

1.3. Potential Eco touristic areas for Butterfly Tours Around Europe

The recent activity for butterfly-watching tours is already highly active in Europe, but still, some places could be a destination in Europe.

Crete and other Greek Islands (Greece)

Four endemic species can only be found on the island of Crete: the Cretan Grayling (*Hipparchia cretica*), the only member of its genus; the Cretan Small Heath (*Coenonympha thyrsis*); the sole *Zerynthia cretica*; and the Cretan Argus (*Kretania psylorita*). The four Cretan endemics can be seen in a week. However, the Cretan Festoon (*Zerynthia cretica*), which theoretically flies all summer, is largely gone by late June, as is the Cretan Grayling (*Hipparchia cretica*), which is best found in July. In June and July, the higher mountains' stony regions are home to the Cretan Argus (*Kretania psylorita*), whereas the Cretan Small Heath (*Coenonympha thyrsis*) is present all year long. With a few other remarkable butterflies, Crete is well worth a visit, although it lacks the diverse wildlife of mainland Greece.

The Dodecanese island of Samos, which is close to Turkey, is unquestionably worthwhile a visit. Mount Karvouni, their sole site in Europe, contains its unique Samos Grayling (*Hipparchia mersina*) and a few Orangebanded Hairstreaks (*Satyrium ledereri*), which are particularly local. The Eastern Brown Argus (*Kretania eurypilus*) and Southern Swallowtail (*Papilio alexanor*) are two other species found on the mountain. These are common in June and July; however, the False Apollo (*Archon apollinus*) occasionally flies earlier in the year.⁶²

Butterflies of Sicily

Nearly all of the butterfly species found on the southern mainland are represented in Sicily, along with a few more species. There are a number of species that only fly in Sicily and the north of the country, with no other places in between. In addition to the two endemic species — Sicilian Marbled White (*Melanargia pherusa*) and Sicilian Grayling (*Hipparchia blachieri*). Mt. Pelitorani is also home to the Southern Swallowtail (*Papilio alexanor*), Eastern Orange-tip (*Anthocaris damone*), Common Tiger Blue (*Tarucus theophrastus*), Weavers Fritillary (*Boloria dia*) Aetherie Fritillary (*Melitaea aetherie*), which is typically found in N Africa or southern Spain.

Corsica, Sardinia and Elba

Many of the endemic species found on Sardinia are also found in Corsica. The best butterfly habitats are found near Monte Gennargentu, where it is quite simple to locate Sardinian

⁶² Greece - european butterflies. (n.d.). Retrieved December 22, 2022, from <http://www.european-butterflies.org.uk/downloads/EBGGreece.pdf>

Meadow Brown (*Maniola nurag*) and Corsican Heath (*Coenonympha corinna*). Because it is quite black in color and flies very low to the ground amongst gloomy plants, Sardinian Blue (*Pseudophilotes barbagiae*) is particularly elusive. Although it might be theoretically possible to plan a single trip to see all of the Sardinian/Corsican endemics, since all species do fly at some point in June, at least two visits will likely be necessary to be able to see the early-emerging species, such as the Corsican Dappled White (*Euchloe insularis*), which typically emerges in March or April but has a less numerous second brood in May or June, as well as the Corsican Grayling (*Hipparchia neomiris*). Elban Heath (*Coenonympha elbana*) and Villa's Blue (*Plebejus villai*) are the main attractions in the island of Elba. Villa's Blue (*Plebejus villai*), an endemic to Elba, was just identified in 2005.⁶³

Butterflies of Canary Islands

Around 40 species of Lepidoptera live in the Canary Islands, and more than a quarter of them can't be found in anywhere else. The western islands of the archipelago are home to four endemic butterflies: Canary Grayling (*Pseudotergumia wyssii*) occurs as separate races on all the western Canary Islands, where it is particularly associated with rocky slopes at middle attitudes; Canary Islands' Large White (*Pieris cheiranthi*), an endangered species which is found in laurel forests on Tenerife, La Palma, La Gomera, Gran Canaria; Canary Speckled Wood (*Pararge xiphioides*) (Tenerife)

Additionally, the African Migrant (*Catopsilia florella*), which first appeared in the Canaries in 1965 and spread to all of the islands by 1995, is not known to breed anywhere else in Europe. It is a resident of the laurel forests and only completes its life cycle in the Canaries and Madeira, though as a migrant, it may reach western Europe. Similarly, Gran Canaria is the only European location for the Desert Babul Blue (*Azanus ubaldus*), a butterfly that is primarily found in North Africa.⁶⁴

Butterflies of Madeira and Azores

West of Northwest Africa is where the volcanic islands of Madeira are found. In reality, the island's major environment, the "laurissilva," or Laurel forests, are these evergreen forests and thickets. Most endemic butterfly species primarily inhabit these plant communities.

The Azores have nine different butterfly species. The sole indigenous butterfly species is the Azores Grayling, which has three local species or subspecies. The Large White that lives in the archipelago is also a sub-species that is only found there. Monarchs (*Danaus plexippus*) have

⁶³ Italy - european butterflies. (n.d.). Retrieved December 22, 2022, from <https://european-butterflies.org.uk/downloads/EBGItaly.pdf>

⁶⁴ European butterflies. (n.d.). Retrieved December 22, 2022, from <http://www.european-butterflies.org.uk/downloads/EBGSpain.pdf>

colonized parts of the islands and also occasionally migrate from the Nearctic, together with the American Painted Lady (*Vanessa virginiensis*).⁶⁵

Butterflies of Cyprus

Cyprus is a big island and is located between Europe and Asia, 70 km from Southern Turkey, and it has a typical arid Eastern Mediterranean summer climate, all of which work together to limit the number of confirmed butterfly species to 52, although not all of them are resident. Although endemic species only make up around 10% of the island's butterfly fauna, the island is relatively rich in them. There are three endemic species: Cyprus Grayling (*Hipparchia cypriensis*); Cyprus Meadow Brown (*Maniola cypricola*); Paphos Blue (*Glaucopsyche paphos*) Others, such as the Southern White Admiral (*Limenitis reducta*), White-banded Grayling (*Pseudochazara anthelea*), and Lattice Brown (*Kirinia roxelana*), can only be found at higher altitudes. Examples of these species include the Little Tiger Blue (*Tarucus balkanicus*), Small Desert Blue (*Chilades galba*), and Millet Skipper (*Pelopidas thrax*). Main locations may typically be found in lowland areas close to the water as well as at intermediate to higher altitudes in the Troodos and Pentadaktylos (Kyrenia) Mountain ranges.⁶⁶

Butterflies of Lapland

In the Nordic and Baltic countries, there are no more than 130 species of resident butterflies. 16 of them reside in the harsh conditions of Fennoscandia's most northern region. Another 15 species have a stronghold or separate subspecies that only live in the far north.⁶⁷ Many of them are darker than their southern relatives in order to absorb the warm solar rays more effectively.⁶⁸

Butterflies of Sierra Nevada

The Sierra Nevada, which rises to a height of 3,479 meters and is sometimes referred to as the "roof of mainland Spain," is comparable to the Pyrenees in terms of butterfly diversity and degree of endemism. The species include Zulich's Blue (*Agriades zullichi*), Nevada Blue (*Polyommatus golgus*), Spanish Zephyr Blue (*Plebejus hespericus*), Spanish Brassy Ringlet (*Erebia hispania*) and Nevada Grayling (*Pseudochazara hippolyte*). Additionally noteworthy are the Spanish Fritillary (*Euphydryas desfontainii*) and Lorquin's Blue butterflies (*Cupido lorquini*).⁶⁹

⁶⁵ Butterflies & Moths of Azores. Azores Wildlife. (n.d.). Retrieved December 22, 2022, from <https://www.azoreswildlife.com/butterflies-moths-of-azores>

⁶⁶ European butterflies. (n.d.). Retrieved December 22, 2022, from <http://www.european-butterflies.org.uk/downloads/EBGCyprus.pdf>

⁶⁷ Hahtela, T. (2019). Butterflies of Britain and Europe. A photographic guide. Bloomsbury Publishing PLC. p 392

⁶⁸ JKT - pictures of butterflies and Moths. JKT - Pictures of Butterflies and Moths. (n.d.). Retrieved December 22, 2022, from <http://www.tyllinen.eu/>

⁶⁹ Las Mariposas Diurnas de Sierra Nevada. Las mariposas diurnas de Sierra Nevada. (n.d.). Retrieved December 22, 2022, from https://www.juntadeandalucia.es/medioambiente/portal/landing-page/-/asset_publisher/4V1kD5gLiJkq/content/las-mariposas-diurnas-de-sierra-nevada/20151

AREA	Period of the Season	Target species
Crete and other Greek Islands	4th week of May	<i>Zerynthia cretica</i> , <i>Hipparchia cretica</i> , <i>Coenonympha thyrsis</i> , and <i>Kretania psylorita</i> , <i>Hipparchia mersina</i> , <i>Satyrium ledereri</i> , <i>Kretania eurypilus</i> , <i>Papilio alexanor</i> , <i>Archon apollinus</i>
Butterflies of Sicily	4th week of April	<i>Melanargia pherusa</i> , <i>Hipparchia blachieri</i> , <i>Anthocaris damone</i> , <i>Tarucus theophrastus</i> , <i>Melitaea aetherie</i>
Corsica , Sardinia and Elba	May-June	<i>Coenonympha corinna</i> <i>Maniola nurag</i> , <i>Euchloe insularis</i> , <i>Hipparchia neomiris</i> <i>Plebejus bellieri</i> , <i>Plebejus villai</i> , <i>Pseudophilotes barbagiae</i>
Butterflies of Canary Islands	February-March	<i>Pieris cheiranthi</i> <i>Hipparchia wyssii</i> , <i>Pararge xiphioides</i> , <i>Cyclirius webbianus</i> , <i>Vanessa vulcanica</i> <i>Catopsilia florella</i> , <i>Azanus ubaldus</i>
Butterflies of Madeira and Azores	June-July	<i>Hypolimnas misippus</i> <i>Gonepteryx maderensis</i> <i>Hipparchia maderensis</i> <i>Pararge xiphia</i> , <i>Hipparchia azorina</i> , <i>Vanessa virginiensis</i>
Butterflies of Cyprus	April-May	<i>Hipparchia cypriensis</i> , <i>Maniola cypricola</i> , <i>Apharitis acamas</i> , <i>Glaucopsyche paphos</i> , <i>Chilades galba</i> ,
Butterflies of Lapland	June-July	<i>Carterocephalus silvicola</i> , <i>Colias tyche</i> , <i>Colias hecla</i> , <i>Colias palaeno</i> , <i>Lycaena helle</i> , <i>Agriades optilete</i> , <i>Agriades aquilo</i> , <i>Coenonympha tullia</i> , <i>Coenonympha hero</i> , <i>Oeneis norna</i> , <i>Oeneis bore</i> , <i>Oeneis jutta</i> , <i>Argynnis laodice</i> , <i>Nymphalis vaualbum</i> , <i>Euphydryas iduna</i> , <i>Boloria aquilonaris</i> , <i>Boloria chariclea</i> , <i>Boloria freija</i> , <i>Boloria polaris</i> , <i>Boloria thore</i> , <i>Boloria frigga</i> , <i>Boloria improba</i>

Butterflies of Sierra Nevada	2th week of July	<i>Agriades zullichii</i> , <i>Polyommatus golgus</i> , <i>Erebia hispania</i> , <i>Pseudochazara hippolyte</i>
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1.4. Potential Eco touristic areas for Butterfly Tours Around Turkey

Turkey is a relatively large country with a range of ecosystems compared to other European countries. The Trakia region has European forests, the Black Sea region has Caucasian forests, central Anatolia has step areas, and all the regions have different mountain ranges. This diversity leads to a large number of endemic species and biodiversity. The research about Turkish flora and fauna is still conducting. In the last years, two new species have been described, and more than ten new species have been added to the checklist. The described species are *Neolycaena soezen*⁷⁰ and *Polyommatus alibalii*⁷¹. The species added to the lists are: *Melitaea britomartis*, *Pontia glauconome*, *Boloria eunomia*, *Precis orithya*, *Cacyreus marshalli*, *Callophrys herculeana*, *Cupido staudingeri*, *Tomares dobrogensis*, *Satyrium pruni*, *Polyommatus aroaniensis*, *Polyommatus orphicus*, *Azonus jesus*, *Princeps demoleus*.⁷² The activity for butterfly watching tours are much lower than Europe and it has an immense potential for Ecotourism and butterfly-watching tours.

Early spring butterflies of the Mediterranean region (Adana, Hatay)

The region's Mediterranean slopes exhibit a Mediterranean climate. Winters are pleasant and rainy, while summers are hot and dry. The climate changes to a continental one around lakes and on the northern slopes of mountains. These regions also have steppe-like vegetation. Winter periods are cold and snowy, and summer periods are hot and dry. Additionally, there are pine forests around. Spring starts early in the Mediterranean region of Turkey, especially in the southern parts.

Spring Butterflies of Mediterranean Mountains (Antalya)

In terms of biodiversity, Antalya is an important area in both Europe and Turkey. There are more than 190 resident butterfly species living in the area. In spring, the butterflies start flying in the southern slopes earlier than in other areas and regions.

⁷⁰ A new species of blue from Turkey, *Neolycaena Soezen seven*, sp.n ... (n.d.). Retrieved December 22, 2022, from https://www.researchgate.net/publication/296771869_A_new_species_of_blue_from_Turkey_Neolycaena_soezen_Seven_spn_Lepidoptera_Lycaenidae

⁷¹ Un nouvel *Agrodiaetus* de Turquie (Lepidoptera, Lycaenidae) - researchgate. (n.d.). Retrieved December 22, 2022, from https://www.researchgate.net/publication/336564950_Un_nouvel_Agrodiaetus_de_Turquie_Lepidoptera_Lycaenidae

⁷² Trakel Kelebekler için Bilgi Kaynağı. TRAKEL. (2022, December 22). Retrieved December 22, 2022, from <https://www.trakel.org/>

Central Anatolia steppes (Ankara- Eskisehir)

The lowest part of the Central Anatolian plain is where the Central Anatolian steppe is found in Turkey's Central Anatolia region. It is divided into three main sections and a number of minor ones. The ecoregion has an average height of 1,000 m and is primarily made up of plains and river valleys. The ecoregion's boundaries are defined by mountains and plateaus.

Butterflies of Amanos Mountains(Osmaniye- Hatay)

Amanos Mountains: They reach from northeast to southwest. From sea level to 800 meters, the area has typical Mediterranean vegetation, including pine and scrub, and then, above 800 meters, there are forests of Turkish oak (Austrian oak) and black pine. In addition to beech forests, the area between 1,200 and 1,900 meters also has mixed deciduous woodlands. There are several European and Siberian influences in this area. Areas above 2,000 meters typically have a mountain steppe structure. The Iranian-Turanian components are widespread in this area. The Amanos Mountains have a particularly diverse butterfly population as a result of these characteristics. In the north of Hatay are the southern slopes of the Keldag. Mountain steppes are present in this area above the tree line at the height of 2,100m. The peak of the Amanos is a hill called Migirtepe in the center of the range, which rises to a height of 2,240 meters. Between Belen-Iskenderun and Kirkhan, at an elevation of 1,800 meters, there lies a mountain called Dazdag. The most abundant butterfly field is in Kizildag, which is northwest of Antioch. Black pine forests can be found between 1,200 and 1,800 meters above sea level, but there are also forest lands and woodlands near river bottoms and on north-facing hills. Mount Musa is situated in Samandag, in the south. There are several endemic and special species in the region. Bolland's Blue (*Polyommatus bollandi*) is a species which endemic to the mountains.⁷³

Butterflies of Aladaglar National Park (Kayseri-Nigde)

Aladaglar National Park is located within the borders of the Kayseri, Nigde, and Adana provinces. The area has interesting geological and geomorphological features and is generally a hilly area in the Taurus mountain range. It serves as a crossing point between Central Anatolia's steppe climate and the Mediterranean climate. The mountain is home to a diverse range of flora and wildlife. Aladaglar National Park has more than 180 species of butterflies. Aladag Skipper (*Pyrgus aladaghensis*) is an endemic species of the national park that only could be found here, and the population of the species is not dense.

⁷³ Atahan, A. (2018, October 21). Hatay'ın kelebekleri [butterflies of hatay]. Academia.edu. Retrieved December 22, 2022, from https://www.academia.edu/37578993/Hatay%C4%B1n_Kelebekleri_Butterflies_of_Hatay_

Butterflies of Antalya and West Taurus Mountain (Antalya)

The Akdaglar, Bey, Katrancik, Dedegol, Sultan, and Geyik Mountains are the highest point of the Western Taurus Mountains, and its 3,086-meter-high Kizlar Sivrisi is situated in the Elmali district. With the mountains covered in limestone layers, karst forms are pretty prevalent. In addition, several valleys, lakes, underground water sources, plateaus, plains, and plateaus are located between the mountain ranges. Trees like oak, blackberry, wild olive, red pine, and wild cyclamen, and flowers like daisy may all be found in the Taurus Mountains, which are home to a diverse range of plant species. For the diversity of butterflies, there are more than 170 species of butterflies that could be found in the region, which is almost equal to the whole species of Antalya.⁷⁴

Mount Nemrut (Adiyaman)

The Malatya Mountains to the north and west encircle Mount Nemrut, which occupies the northeastern portion of Adiyaman Province. Due to the presence of plant communities adapted to various altitudes, the area is rich in habitat diversity. It is remarkable for its biological richness as well as its archaeological and cultural aspects. The Mount Nemrut peak is listed as a UNESCO World Cultural Heritage site. For the aspect of butterflies, there are more than 130 species of butterflies in the area. Its unique is that whole 3 *Cigaritis* species fly together (*Cigaritis acamas*, *Cigaritis cillisa*, *Cigaritis maxima*). Also, in the area, Mesopotamian Blue (*Polyommatus dama*) is flying, which is a species critically endangered in the World.

Butterflies of Siirt and Botan River

Southeast Turkey's Siirt Province is home to the Botan River. The Botan River's headwaters, which largely run through the Van Province, is frequently referred to as "Catak." Along the Botan River, the region has a subtropical and Mediterranean climate. The climate is significantly colder in the mountain ranges. More than 170 different species of butterflies can be seen there. Some of them, including the recently discovered Desert Bath White (*Pontia glauconome*), have been added to Turkey's list of butterflies. New discoveries are still very much possible in the area.⁷⁵

⁷⁴ Book of Butterflies of Antalya by Alperen Yayla

⁷⁵ Determination of butterflies' potential in tourism diversification ... (n.d.). Retrieved December 22, 2022, from https://www.researchgate.net/profile/Volkan-Genc-2/publication/356553017_Determination_of_Butterflies'_Potential_in_Tourism_Diversification_Based_on_a_Route-Planning_Case_Study_in_Botan_Valley_National_Park_Turkey/links/61ab2a5daade5b1bf5026efd/Determination-of-Butterflies-Potential-in-Tourism-Diversification-Based-on-a-Route-Planning-Case-Study-in-Botan-Valley-National-Park-Turkey.pdf

Spring	Period of the Season	Target species
Early spring butterflies of the Mediterranean region (Adana, Hatay)	3th week of March	<i>Euchloe belemia</i> , <i>Ypthima asterope</i> , <i>Archon apollinus</i> , <i>Pyrgus melotis</i> , <i>Tomares nesimachus</i> , <i>Chilades galba</i> , <i>Chilades trochylus</i> , <i>Zerynthia cerisyi</i>
Spring Butterflies of Mediterranean Mountains (Antalya)	3th week of April	<i>Anthocharis damone</i> , <i>Anthocharis gruneri</i> , <i>Gonepteryx farinosa</i> , <i>Pontia chloridice</i> , <i>Papilio alexanor</i> , <i>Zerynthia cerisyi</i> , <i>Tarucus balkanicus</i> , <i>Polyommatus bellis</i> , <i>Lycaena ottomanus</i> , <i>Callophrys herculeana</i> , <i>Tomares nesimachus</i> , <i>Ypthima asterope</i> , <i>Muschampia nomas</i> , <i>Spialia orbifer</i> , <i>Rubrapterus bavius</i>
Central Anatolia steppes (Ankara-Eskisehir)	2th week of May	<i>Tomares dobrogensis</i> , <i>Neolycaena soezen</i> , <i>Polyommatus cornelius</i> , <i>Zerynthia deyrollei</i> , <i>Zegrus eupheme</i> , <i>Euchloe penia</i> , <i>Leptidea duponcheli</i> , <i>Proterebia afra</i> , <i>Lycaena ochimus</i> , <i>Zerynthia polyxena</i> , <i>Colias alfacariensis</i> , <i>Euphydryas orientalis</i>
Summer	Period of the Season	Target species
Butterflies of Amanos Mountains (Osmaniye- Hatay)	2th week of June	<i>Polyommatus bollandi</i> , <i>Carcharodus stauderi</i> , <i>Spialia osthelderi</i> , <i>Polyommatus antiochenus</i> , <i>Polyommatus syriacus</i> , <i>Cigaritis cilissa</i> , <i>Cigaritis acamas</i> , <i>Chilades galba</i> , <i>Polyommatus bassoni</i> , <i>Plebejus nichollae</i> , <i>Melanargia titea</i> , <i>Melanargia syriaca</i> , <i>Pseudochazara telephassa</i>

Mount Nemrut (Adiyaman)	2th week of July	<i>Melitaea perseae</i> , <i>Erynnis marloyi</i> , <i>Cigaritis acamas</i> , <i>Chilades galba</i> , <i>Cigaritis cilissa</i> , <i>Cigaritis uighurica</i> , <i>Polyommatus poseidon</i> , <i>Polyommatus dama</i> , <i>Chazara bischoffi</i> , <i>Hipparchia parisatis</i> , <i>Coenonympha saadi</i> , <i>Melanargia grumi</i> , <i>Pseudochazara pelopea</i> , <i>Pseudochazara telephassa</i> , <i>Pontia chloridice</i>
Butterflies of Aladaglar National Park (Kayseri-Nigde)	3th week of July	<i>Colias chlorocoma</i> , <i>Colias aurorina</i> , <i>Chazara anthe</i> , <i>Pseudochazara beroe</i> , <i>Pseudochazara mniszecii</i> , <i>Chazara bischoffi</i> , <i>Pseudochazara geyeri</i> , <i>Pseudochazara mamurra</i> , <i>Polyommatus actis</i> , <i>Glaucopteryx astraea</i> , <i>Polyommatus cilicius</i> , <i>Polyommatus cornelius</i> , <i>Polyommatus eurypilos</i> , <i>Polyommatus isauricus</i> , <i>Polyommatus menalcas</i> , <i>Polyommatus ossmar</i> , <i>Polyommatus poseidon</i> , <i>Polyommatus pseudactis</i> , <i>Polyommatus pyrenaicus</i> , <i>Polyommatus sigberti</i> , <i>Polyommatus wagneri</i> , <i>Polyommatus phyllis</i> , <i>Polyommatus alcedo</i> , <i>Polyommatus alcestis</i> , <i>Polyommatus syriacus</i> , <i>Polyommatus hopfferi</i> , <i>Polyommatus iphigenia</i> , <i>Lycaena asabinus</i> , <i>Lycaena ochimus</i> , <i>Carcharodus stauderi</i> , <i>Pyrgus aladaghensis</i> , <i>Spialia phlomidis</i>
Butterflies of Antalya and West	4th week of July	<i>Thaleropsis ionia</i> , <i>Charaxes jasius</i> , <i>Danaus chrysippus</i> , <i>Zizeeria karsandra</i> , <i>Chilades trochylus</i> ,

Taurus Mountain (Antalya)		<i>Lycaena asabinus, Lycaena ochimus, Polyommatus lycius, Tarucus balkanicus, Polyommatus sertavulensis, Polyommatus cornelius, Pieris krueperi, Colias aurorina, Hyponephele kocaki, Hyponephele wagneri, Pseudochazara lydia, Spialia phlomidis, Maniola telmessia</i>
Shores of Lake Van and Nemrut Caldera (Van-Bitlis)	3th week of May	<i>Callophrys mystaphia, Callophrys danchenkoi, Callophrys paulae, Tomares callimachus, Tomares romanovi, Polyommatus rosei, Zerynthia deyrollei, Proterebia afra, Anthocharis damone, Zegrus eupheme</i>
Autumn	Period of the Season	Target species
Butterflies of Siirt and Botan River	2th week of September	<i>Pontia glauconome, Colotis fausta, Junonia orithya, Danaus chrysippus, Pieris persis, Hipparchia parisatis, Pseudochazara pelopea, Gegendes nostradamus, Muschampia proteides, Zizeeria karsandra, Chilades galba</i>

Chapter II Contribution of Eco-touristic Butterfly Tours to Rural Sustainable Economic Development

2.1. The Role of Butterfly Watching Tourism in the Rural Sustainable Economic Development

Butterfly watching is among the tourism activities of Europe, the USA, and Asia. Many people visit different areas to see butterflies. The expansion of tourism and travel during the past 20 years has been noteworthy. Worldwide, domestic tourism has increased as more people travel, have more money to spend, and spend more time doing so. Tourism related to wildlife watching has also increased in popularity.

Butterfly watching and other wildlife watching activities contribute significantly to the tourism sector and have a positive direct and indirect economic impact on many countries and communities, particularly those in developing countries. Compared to more specialized ecotourism, wildlife watching appeals to a broader spectrum of individuals, and opportunities to participate in wildlife watching are increasingly a consideration in visitors' holiday decisions.

By increasing public awareness of the observed animals and their habitats, generating income for the rural economy and conservation, and establishing jobs for local communities, this type of tourism can significantly benefit economic development.

Butterfly watching is a popular activity in many communities, and many people frequently spend significant amounts of money to see specific species of butterflies. Tours for endemic and rare species are becoming more popular every day.

2.1.1. Economic Activities Related To Butterfly Watching Tourism

Many people travel abroad each year looking for butterflies and moths. In addition, eco-tours bring valuable income to many European countries and developing countries around the World.⁷⁶

Except for the Butterfly watching tours, other activities related to butterflies are currently more popular. These are a part of butterfly watching tourism and are in several popular destinations. The main reason for this popularity is the massive population of butterflies and successful marketing. There is also another kind of approach, which is butterfly houses for watching the tropical species, and they are located nearly all over the World.

The Valley of Butterflies in Rhodes/Greece

The Valley of Butterflies is on the western side of the island of Rhodes, about 27 km from the city of Rhodes and 5 km southeast of the village of Theologos. It is a natural reserve, the only one of its kind. As the names indicate, this area is a lush, green valley full of a day flying Jersey Tiger (*Euplagia quadripunctaria*) moths in the spring and fall.

From June 1 to September 30, adults pay 5€, and kids under 12 get in for free. From October 1 to May 31, adults pay 3€, and kids under 12 get in for free.⁷⁷

Butterfly Valley in Fethiye/Turkey

Butterfly Valley is an area that is near the town of Oludeniz in the district of Fethiye in the province of Mugla. It is the area that is just on the other side of the Mediterranean sea across from the Valley of Butterflies in Rhodes. Surrounded by steep rocky walls reaching 350 meters, the Valley got its name from the more than 80 species of total Lepidoptera (Butterflies and moths) it hosts, especially the day-flying moth Jersey Tiger (*Euplagia quadripunctaria*). The number of the species is quite low if it is compared to the butterfly species in Turkey, but as it is an excellent example of good marketing, it is addressed and presumed by the public as the wealthiest area for butterflies. Also, unlike the Valley of Butterflies in Rhodes, the area is not designed or protected to preserve the butterflies. There are restaurants, a bar, a diving school and camping sites, and a hotel which is a totally tourist facility to lure the tourists in the summer season.⁷⁸

⁷⁶ Why butterflies matter. Butterfly Conservation. (n.d.). Retrieved December 22, 2022, from <https://butterfly-conservation.org/butterflies/why-butterflies-matter>

⁷⁷ A dreamy place full of butterflies. Valley of Butterflies - Rhodes | A unique landmark of natural beauty. (2022, November 17). Retrieved December 22, 2022, from <https://valleyofbutterflies.com/>

⁷⁸ Kelebekler Vadisi – saklı cennet. Kelebekler Vadisi – Saklı Cennet. (n.d.). Retrieved December 22, 2022, from <https://kelebeklervadisi.com.tr/>

The Monarch Winter Migration

Migrating Monarch (*Danaus plexippus*) butterflies travel in groups of about 20 million individuals. Depending on the wind and other weather conditions, they can travel between 80 and 120 nautical miles per day. The butterflies take advantage of rising warm air currents by gliding on the thrust they provide. They only need to flap their wings when the air current weakens or when they want to change their flight path. This method makes good use of their energy and gives them the strength to make the long journey.

The butterflies only move around during the day, and at night, they rest on the branches and trunks of trees.

Every year, the Monarch butterflies start to arrive in Mexico around the middle of November. They move to the Oyamel fir tree forests, which are in the forested mountains west of Mexico City. These forests are on the eastern edge of the Mexican state of Michoacán and border the state of Mexico.

When they get here, the butterflies gather on the tree trunks and stay there all winter. As the sun heats up the day, some butterflies will fly around in the forests. When the air cools down, they will fly back to the tree trunks. The best time to see butterflies is between late January and the end of March. Before late January, the air is cooler, and the butterflies don't flutter as much.

Tour prices depend on how long the tour is; prices for customized butterfly tours that start in Mexico City start at 875 \$ per person. Prices for tours that start in Morelia start at 1,045 \$ per person.⁷⁹

Texas Butterfly Festival

The Texas Butterfly Festival is an event that happens every year in the US state of Texas. A set route shows how up to 300 different kinds of butterflies could be seen in total. This unique area has no less than 11 different habitat types, from tidal wetlands to riparian forests, brushland scrub to prairie savanna. It is home to more than 1,200 plant species, 500 bird species, about 300 butterfly species, and more than 90 dragonfly species. Participants will spend three days with trip leaders exploring well-known public lands and private properties. They can expect to see more than 60 species in a single day. The event costs 375 \$ per person.⁸⁰

⁷⁹ Guide to experience the Monarch Butterflies in Mexico. Mexperience. (2022, June 8). Retrieved December 22, 2022, from <https://www.mexperience.com/travel/outdoors/monarch-butterflies-mexico/>

⁸⁰ Home. Texas Butterfly Festival- October 29- November 1, 2022. (n.d.). Retrieved December 22, 2022, from <https://www.texasbutterflyfestival.com/>

Butterfly houses

A butterfly house is a place where butterflies are raised and shown off, with the goal of creating awareness about butterflies. Butterfly houses are owned and run by museums, universities, and small, owner-run businesses.

Butterfly houses are generally open to the public. These places can be looked at with a guide or on your own. Guided tours may last about fifteen minutes, and the guide will show you all the different kinds of butterflies that are in the greenhouse that day. Stocks change because new shipments usually come in about once a week. Guides may also show butterfly eggs, caterpillars, and chrysalids and name the plants each species likes best. Most of the time, between 10 a.m. and 1 p.m. is the best time to see butterflies coming out of their pupae.

Butterfly houses usually have a lot of different kinds of butterflies from places like Africa, Malaysia, South America, Thailand, Costa Rica, the Philippines, and others. The butterflies come from a butterfly farm, which is a facility where butterflies are raised. Butterfly farms are all over the World and provide butterflies for butterfly houses.⁸¹

⁸¹ Mary McMahon (2022, November 15). What is a butterfly farm? All Things Nature. Retrieved December 22, 2022, from <https://www.allthingsnature.org/what-is-a-butterfly-farm.html>

2.1.2. Economic income of Butterfly Watching Tourism

Butterfly tourism generates income in more than one way. Tourists pay entrance fees, as well as guides, drivers, and other staff who may be with them when they go to places where they can watch wildlife. These payments are called "entrance payments." Tourists also pay for accommodation and other services when they visit places to watch wildlife.

There are also other tourist activities that generate income. At a national or regional level, the fact that tourists come to see butterflies can also be used to get them interested in other kinds of tourism, such as going to other parts of the country to see different kinds of wildlife or learning about the history and culture of that country. By giving tourists more things to do, a country can get people who come to see its wildlife to stay longer and spend more money.

Tourism's effects on the economy also help other parts of the economy grow. This is because the tourism sector needs products and services from different parts of the economy, like local businesses, farmers, and restaurant owners.

So, relatively low levels of tourism can be a much more significant boost to the local economy than high levels of tourism. Butterfly-watching tourism could help the economy on a national level.

Overall, money from tourists who go to a country to watch butterflies can enter the economy at a number of different points. A simplified model of how money moves in and out of tourism and protected areas could be a big help to both rural sustainable economic development and conservation activities.

As part of these flows, it's important that protected areas and places to watch wildlife are well-funded so that nature can be protected and tourism can be managed well. These funds can be directly obtained by charging tourists for butterfly-watching activities, and local communities can also get help with their development if they can find jobs in tourism or start successful tourism businesses. In other situations, like when it's not possible to charge tourists to watch butterflies, it may be necessary to use different methods to make sure that enough money is available for conservation, wildlife management, and rural economic development.

Contribution to Rural Sustainable Economic Development

All the economic activities related to wildlife watching tourism could have an important impact on rural sustainable economic development. In the aspect of butterfly watching tours, the tours have to aim to go naturally untouched or less touched areas in order to see a healthy population of butterflies. Mainly those areas, undeveloped rural areas or national parks, which are the areas protected by law. Either way, this way of tourism could create a sustainable economy and guarantee the future of the areas.

Tourism that focuses on watching butterflies brings in money that can be used to protect the species and their habitats. Tourists go to rural areas to see most of the wildlife they want to see. These places tend to be poorer and have fewer job opportunities than cities. In these places, butterfly-watching tourism could be a different way to make money and find work. Creating jobs in the tourism industry can require less capital investment than in many other fields. It also allows people to start their own businesses and help small businesses grow.

Most studies of the economic value of butterfly-watching tourism are based on how much money tourists spend directly on butterfly-watching trips, which is easy to measure. These studies do not include the value of other significant economic benefits that come from direct spending on butterfly-watching tourism. These benefits include boosting the economy, attracting tourists to a country or region, and protecting environmental services because butterfly watching tourism gives conservationists a reason to do so.

2.2. The Ecotouristic Butterfly Watching Tour Potential Model for Sustainable Rural Economic Development within an example of Antalya/Turkey

Antalya is the tourism capital of Turkey, and it is a city that stays lively all year long. It has a lot of potential for tourism and gets a lot of visitors every year, especially in the summer when it is Turkey's biggest international sea resort. The province of Antalya corresponds to the lands of ancient Pamphylia to the east and Lycia to the west. It has 657 km of coastline with beaches, ports, and ancient cities like Xanthos, which is a World Heritage Site. Antalya is the center of Turkey's tourism industry. About 30% of foreign tourists who visit Turkey go there. Antalya, one of the most important tourist destinations in the Mediterranean, continues to see an increase in tourism data for 2022. According to the numbers, more than 12 million people came to the city by plane between January 1 and October 16.

Antalya is the center of attention for domestic and international tourists because of its sea, sand, sun, and natural beauty. According to the data, 12,042,468 tourists flew into Antalya, one of the most popular vacation spots after the pandemic, between January 1 and October 16, 2022.

Tourism numbers for Antalya in 2022 were much higher than from January 1 to October 16 of the previous year. In the same period last year, Antalya had 7,975,643 tourists. This is 51% more than in the same period the year before, from January to October. Also, the sum of the same period over the last two years was left out of the 2022 tourism data.⁸²

Antalya, on the other hand, has a lot of potential for ecotourism because of its rough landscape. Antalya has mountains, high plateaus, bays, canyons, and waterfalls, so there are many things to do there. Most of the areas, it has a Mediterranean climate. Summers are hot, dry, and humid, and winters tend to be wet. During the summer, the temperature ranges from 28 to 40 °C. The average temperature during the winter months was between 10 and 20 °C. There is a continental climate in the interior and in the mountains. The Continental climate type is a climate seen in places far from the influence of the sea. The winters are very cold with snow, and the summers are hot and dry.

Beydaglari, which is the western part of the Taurus Mountains, is all around Antalya. Kizlar Sivrisi, which is 3,069 meters high, is the tallest mountain in Antalya. It's in the western part of Antalya Bay. The Kizlarsivrisi Teke dorugu is the most important peak, but the Bakirdagi and Tahtali mountains are also important, though not as much. On the northern side of Bakirdagi, in the Beydaglari part of the Taurus Mountains, there is also a ski resort called Saklikent.

⁸² Valiliği, T. C. A. (n.d.). T.C. Antalya valiliği. T.C. Antalya Valiliği. Retrieved December 22, 2022, from <http://www.antalya.gov.tr/>

Saklikent is the ski resort in Turkey with the warmest weather. It is known for its slogan, "Ski in the morning, the sea in the afternoon," which is especially true at the end of February and the beginning of March.

Antalya is also a very rich province when it comes to caves. It was founded at the foot of the Taurus mountain belt, which has a lot to do with the mountains. Most of the main skeleton of the Taurus Mountains is made up of limestones. These limestone formations are where most of the province's caves were made. Antalya has been found to have about 500 caves. Only a small number of them are important on a global scale. The Karain Cave is in the village of Yaca in the central district of Antalya, and Damlatas and Dim caves are in the Alanya district.

Antalya is also a unique city when it comes to cultural tourism. Its museums, ruins, mosques, and churches are all reminders of the many different cultures that lived there over thousands of years. The city of Antalya is a favored destination for cultural tourism as well as sea, sand, and sun travel because of its rich cultural legacy, historical character, and architectural landmarks that reflect its unique personality. Starting in the city center, visitors from both domestic and international countries can examine a variety of attractions that fall under the category of cultural tourism.

In the city center are the Hadrian's Gate from the Ancient Period, the Yivli Minaret, which is close to the port, and the Kaleici district and inner harbor, which are encircled by common walls from the Hellenistic, Roman, Byzantine, Seljuk, and Ottoman periods and contain about 3,000 houses that reflect Antalya's architectural history, traditions, and lifestyles.

Local and international tourists often go to historical buildings as one of their first stops in the city. Kargihan and Ortapazari Han in the northeast; the ancient cities are located in both the east and west directions; Karain Cave, which is located in the northwest and contains ancient artifacts; Kirkgoz Han and Evdirhan in the north; and the ancient cities are located on both the east and west directions are important visiting points that serve Antalya tourism, especially in terms of cultural tourism.

Famous for its 6,5 km long walls, especially the above-mentioned historical buildings and ancient settlements in and around the city center; Alanya, with its castle showing the traces of Hellenic, Roman, Byzantine, Seljuk, and Ottoman civilizations; Kas, Side, Finike, Gazipasa with their ancient cities and structures in and around the center; Elmali, which is known for its local handicrafts, festivals, and historical and archaeological structures dating back to the first ages.

Demre, known as the home of St. Nicholas (Santa Klaus), has fused with the Santa Claus tradition and opened its doors to religion tourism with the St. Nicholas Memorial Museum (Santa Claus Church), which is an example of an open-air museum in Antalya that welcome many people in terms of cultural tourism.

2.2.1. Ancient cities of Antalya

Patara

The ancient city of Patara is between Antalya and Fethiye, on the seaside at the southwest end of the Xanthos valley. Patara is one of Lycia's oldest and most important cities. In addition to its archaeological and historical value, the ancient city of Patara, which has been excavated since 1988, is essential because it is one of the few beaches where *Caretta-Caretta* turtles lay their eggs and hatchlings. This cycle has been going on for millions of years.⁸³

Perge

The ancient city of Perge is in the Aksu district, which is 17 kilometers east of the center of Antalya. The city, called "Parha," is thought to have been around during the Hittite Period. During the Roman Period, it became one of the best-run cities in Anatolia. The Antalya Museum shows sculptures that were found during excavations in the ancient city, which is known for its architecture and marble sculptures.⁸⁴

Ancient City of Side

Side was the most important port city in ancient Pamphylia. It was built on a 350-400-m-wide peninsula 80 km east of Antalya and 7 km southwest of Manavgat. Many buildings from the Ancient City of Side are still around today. Because of this, every year, a lot of people come to the city to see it. During the season, this place is visited by hundreds of thousands of people. During the off-season, it is not busy, and there aren't many people there.⁸⁵

Myra

The ancient city of Myra was built on the same name plain, which is now the center of the Demre district. The city was connected to the sea by a canal that ran west of the Myros River (Demre Stream). From Andriake Port, which was on the other side of the canal, people and goods were also moved and traded by sea. The Lycian rock tombs, Roman theater, and Byzantine St. Nicholas Church are what make the Ancient City of Myra so well-known (Santa Claus).⁸⁶

⁸³ Patara Antik Kenti. Kültür Portalı. (n.d.). Retrieved December 22, 2022, from <https://www.kulturportali.gov.tr/turkiye/antalya/gezilecekyer/patara>

⁸⁴ Perge Antik Kenti. Kültür Portalı. (n.d.). Retrieved December 22, 2022, from <https://www.kulturportali.gov.tr/turkiye/antalya/gezilecekyer/perge>

⁸⁵ Resort, E. H. & . (n.d.). ANCIENT city of SIDE. www.euphoriahotels.com/. Retrieved December 22, 2022, from <https://aegean.euphoriahotels.com/blog/side/en-US>

⁸⁶ Myra ANTİK Kenti. Kültür Portalı. (n.d.). Retrieved December 22, 2022, from <https://www.kulturportali.gov.tr/turkiye/antalya/gezilecekyer/myra>

Olympos

After Phaselis, Olympos is the second most important port city on the southern coast of Antalya. The city gets its name from Tahtali Mountain, which is 16 kilometers to the north and stands 2,375 meters tall. It is one of the Taurus Mountains' western extensions and is part of the mountain range. It is part of the Beydaglar-Olympos National Park.⁸⁷

Castle of Alanya

The castle of Alanya has always been inhabited because it is hard to get to by sea or land and because it is a natural shelter. As a result, it is one of the best-preserved of the hundreds of castles that decorate Anatolia. Its 6.5-kilometer-long walls make it look like a shining jewel on the historical peninsula where it is located.⁸⁸

Aspendos

One of the most-visited ancient cities in Antalya is Aspendos, which is known for having the best-preserved Roman-era theater not just in Anatolia but in the whole Mediterranean region. The city was built on a hill plain near Koprucay (ancient Eurymedon), one of the largest rivers in the area, about 8 kilometers east of the Serik district. The fact that the city has a name with roots in Anatolia shows that people have lived there since ancient times. Today, most people go to Aspendos to see its theaters and waterways. The city owes its transportation and growth to the Mediterranean Sea, a nearby river, and the fertile land around it. On the plain of the hill that the theater leans on, the remains of other buildings from the city can be found.⁸⁹

Phaselis

The ancient city of Phaselis is 16 kilometers west of Kemer. It is in the pine and cedar forests of the Beydaglari Coastal National Park. Phaselis is on a small peninsula that sticks out into the Mediterranean. It have been founded by Rhodesian colonists in the 7th century. Because of where it is, Phaselis is an important port city, and it has three ports. North Port is in the north of the peninsula, Military Port is in the northeast, and South Port is in the southwest. Ports, agoras, and ships are shown on city coins to show that Phaselis was an important port for trade. In addition to its rich history, Phaselis has a beautiful beach and nature. The pine trees that surrounded it and grew into the ancient city made it possible for people to visit the ancient city without being too affected by the sun in the Mediterranean.⁹⁰

⁸⁷ Olympos. Kültür Portalı. (n.d.). Retrieved December 22, 2022, from <https://www.kulturportali.gov.tr/turkiye/antalya/gezilecekyer/olympus>

⁸⁸ Alanya Kalesi. Ana Sayfa. (n.d.). Retrieved December 22, 2022, from <https://antalya.ktb.gov.tr/TR-310806/alanya-kalesi.html>

⁸⁹ Aspendos. Ana Sayfa. (n.d.). Retrieved December 22, 2022, from <https://antalya.ktb.gov.tr/TR-67535/aspndos.html>

⁹⁰ Phaselis Antik Kenti. Kültür Portalı. (n.d.). Retrieved December 22, 2022, from <https://www.kulturportali.gov.tr/turkiye/antalya/gezilecekyer/phaselis>

Termessos

The Solymos, one of the oldest groups in Anatolia, built Termessos in the Valley between the peaks of the Solymos Mountain, which is now called "Gulluk." Termessos is a very important ancient city. The ancient city is one of the most exciting ruins that have been kept in the forest. It is in the same-named National Park. Gulluk Mountain (Termessos) National Park has a lot of plants and animals, some of which are endangered, and looks like a botanical garden and open zoo. The city's ruins start with the Hellenistic Age wall near Yenicekahve on the highway between Antalya and Korkuteli and go all the way up to the top of Gulluk Mountain.⁹¹

⁹¹ Termessos. Ana Sayfa. (n.d.). Retrieved December 22, 2022, from <https://antalya.ktb.gov.tr/TR-310935/termessos.html>

2.2.2. Importance of Ancient cities for wildlife and butterflies

Antalya is one of Turkey's major cities, with a population of 2,669,318. The epidemic and the Russia-Ukraine war increased the city's growth. The population of Antalya was estimated at 2,619,832 in 2021, based on statistics derived from data from the Turkish Statistical Institute. In the city where 94,294 foreign nationals would reside in 2020, this number rose by 45.2% in the previous year to 136,946. People from a variety of nations, including those from Russia, England, Germany, Kazakhstan, the Netherlands, Afghanistan, Indonesia, the USA, Japan, and Malaysia, reside in the city, and the international population is steadily growing. One of the nations having the greatest number of foreigners in the city is Russia. Choosing Turkey and Antalya for their vacations but also changed their travel plans to move to the city.

This city is home to 29,691 Russians who see Antalya as their second home. With 18,214 people, Kazakhstan comes in second place to Russia. With 11,620 individuals, Iran comes in third, followed by Germany (11,328), Kyrgyzstan (9,331). Antalya is the second-largest city after Istanbul in terms of real estate sales to foreigners.⁹²

The construction in and around the province increased as a result of these recent developments. The development of new residential areas also affects the urban ecology in a few different ways. For instance, turbulence and swirling currents occur when the city's average temperature rises and the average wind speed drops. The air in cities contains hundreds of chemical components, dust, smoke, etc. The ecosystem's production and quality are impacted by factors. Primarily coastal ecosystems are highly pressured areas within these changes.⁹³

On the other hand, there are a number of issues in mountainous regions. The mining quarries are the biggest problem in the area. Environmental factors affected negatively by mining activities include the overall geological structure of the land, flora, air, and subterranean and surface waterways. It is also well-recognized that attempting to operate mines close to residential areas like vineyards, gardens, olive groves, and woodland areas would result in serious and permanent damage. It is obvious to see that the vegetation perishes and the trees dry up.

On sloped soil, waste from quarries builds up and eventually slides down, making the precious land or river bed useless. Since the clay and dust from the sand piles do not settle quickly in the coastal waters of lakes and oceans, they choke out the fish by plugging their gills. The Valley in the marble quarries is ruined when calcareous water created during the stone-cutting operation

⁹² Salgın Antalya'Daki yerleşik Yabancı Sayısını Artırdı. Anadolu Ajansı. (n.d.). Retrieved December 22, 2022, from <https://www.aa.com.tr/tr/yasam/salgin-antalyadaki-yerlesik-yabanci-sayisini-artirdi/2500656>

⁹³ Kentsel Yaşam- Yapılaşma ve çevresel etkileri. (n.d.). Retrieved December 22, 2022, from <http://web.deu.edu.tr/erdin/pubs/doc56.htm>

is discharged into it. When the dust gets into the air and meets the rain, it reacts with some of the heavy metals in the dust to make acid. When the acid falls on the soil, it does more damage.

Dust is a constant in quarries. During blasting, machine excavating, lifting, piling up loose rock, crushing/sieving operations, stacking of processed material, loading onto trucks, and during transportation, dust is produced from the roadways. In limestone quarries, water is insufficient to moisten the material, especially in dry areas. Additionally, the soaking water dries out rapidly. In residential locations, dust negatively impacts the health of persons unrelated to the issue. Covering plant leaves hinders respiration and photosynthesis and dries off the plants and trees. Dust covers the flowers during the blossoming stage, inhibiting fertilization and diminishing fruit production.⁹⁴



Figure 3 Saklikent/Antalya ⁹⁵

On the other hand, overgrazing is one of the biggest problems with wildlife in Antalya. The damage of pastures is caused by unrestrained, excessive, and early grazing. Pasture regions are one of the essential ecosystems for sustaining animal production, as well as a source of biodiversity, particularly for herbaceous plants. In terms of the variety of plant species, Turkey has a more diverse flora than the majority of European countries. On the continent of Europe, there are over 12,000 taxa and 2,750 endemic plant taxa; in Turkey, which has a considerably smaller territory, there are over 11,000 plant taxa, 3,649 of which are endemic. Antalya's flora has a very diverse structure, and it is well-recognized that there are endemism hotspots. Antalya endemics are any of the about 250 endemic plant species found in Antalya.

Within these high-pressure to wildlife, the Ancient cities became the last shelters. The Ancient cities are protected areas by the Antiquities Law of 1983. For this reason, human activity is highly restricted in those areas. This gives a great opportunity for wildlife to grow in such

⁹⁴ Witchalls, S. (2022, October 27). The environmental problems caused by mining. Earth.Org. Retrieved December 22, 2022, from <https://earth.org/environmental-problems-caused-by-mining/>

⁹⁵ Photoarchive of Alperen Yayla

areas. Especially the coastal part of Antalya has intense human activity, and the small protected places are the shelters for many endangered species.⁹⁶

Butterflies of Antalya

Antalya is one of the few places in Turkey where butterflies can be seen all year round. In Europe and within Turkey, Antalya is an important region in terms of biodiversity. Antalya's butterflies are much better studied than the other provinces. The book of Butterflies of Antalya, which is the first book and field guide, contains butterflies in only one province of Turkey. According to current data, Antalya is in the first five cities with the richest number of species in Turkey. There are a total of 413 species in Turkey, and 190 of them are observed in Antalya. Antalya's richness in species is particularly evident when compared to other European countries as well. While here 190 species have been recorded, these are in the UK 57, Norway 99, Sweden 107, Finland 116, Portugal 118, Belarus 131, Poland 151, Slovenia 167, and 179 in Romania.⁹⁷

⁹⁶ Antalya çukuryayla Merasının Vejetasyon özellikleri ve ... - dergipark. (n.d.). Retrieved December 22, 2022, from <https://dergipark.org.tr/en/download/article-file/1243449>

⁹⁷ Book of Butterflies of Antalya p 10

2.2.3. Key elements for planning Rural Sustainable Economic Development Strategy According to Butterfly Watching Tours

There are several key elements for rural sustainable economic development strategy according to butterfly watching tours. These are collecting the data, analysis, and marketing strategy accordingly.

Collecting the data and analysis

The data should be collected for each district and province. The geographic and demographic data could be very diverse between areas, and the marketing strategy will be based on this information. Collecting the geographic data includes the data on climate, biodiversity, and endemism of wildlife and for butterflies, the distribution, endangerment factors, and flying periods. This data must be collected via literature review and field works.

While collecting the demographic data, several key points have an important role. Provincial and district-based demographic data, approach to possible alternative tourism activities, nature conservation consciousness, and the possibility of creating awareness about butterflies. Also, Historical features, crafts, kitchens, agricultural products, and infrastructure-superstructure status data should be collected and analyzed for developing the marketing strategy.

The data collecting could be done via surveys, literature reviews, etc. The methodology of analysis of the data could be done in various ways. On the other hand, SWOT analysis could give a wider scope while analyzing the data.

Swot analysis

Strengths:	Weaknesses:
<p>Geographical beauties</p> <ul style="list-style-type: none"> - A rich history - Biodiversity and presence of endemic species - Untouched natural environment - Young population working in the conventional tourism sector - Butterfly flies all year round - A vast and diverse geography 	<ul style="list-style-type: none"> - Elderly population - Weak infrastructure - Poor historical awareness - Weak Nature conservation consciousness - Lack of knowledge about butterflies - Butterflies only fly when the sun is out
Opportunities:	Threats:
<ul style="list-style-type: none"> - People have an idea about alternative tourism - Tourism investment opportunities in many different areas - Undiscovered natural beauties - Unexplored caves - Unstudied archaeological sites - Unexplored areas of butterflies - Possibility to prepare tour plans that can combine nature and history 	<ul style="list-style-type: none"> - The danger of complete extinction of the rural population - Destruction of natural areas, with opening quarries, hydroelectric power plant projects or new highways. - Urban growth destroying the rural areas near the city - Destruction of forest lands - Extinction of wildlife - Lack of a planned tourism investment - Road widening works in protected areas - Overgrazing

Marketing Strategy

While planning the marketing strategy for rural sustainable economic development, it is very important to communicate with local authorities in order to get their support. As it is a new kind of approach, it will not be easy for people to understand, and the process of creating the demand will be very dependent on the marketing strategy. Analyzing the funding possibilities is also a key point. As the World is facing the side effects of global warming, sustainable development has become an important thing for tackling global climate change. Since its establishment in the Treaty of Amsterdam as the overall goal of EU policy, sustainable development has been one of the core goals of the European Union.⁹⁸ Sustainable development is a fundamental concept of the European Union Treaty and a top goal for the Union's internal and exterior policy. The United Nations 2030 Agenda comprises seventeen Sustainable Development Goals that are meant to apply to all nations.⁹⁹

That's why this kind of initiative became crucial. For this reason, significant funding resources are allocated to support such initiatives. It is very important because this kind of initiative could generate income in the medium term.

Butterflies are eye-catching creatures, so producing photo and video content is very valuable. For this reason, social media management has a very key role, especially in creating awareness and demand. This is important for getting the support of local people and governments.

Using the outputs of the analysis (Swot) and planning the marketing strategy accordingly is essential. Checking the good practice examples could give an idea as well.

It is essential to focus on the strengths of the area, such as the food culture, historical areas, handcrafts, and agricultural products.

Determining the touristic areas and products to create a mixture with the tours will increase the attractiveness of the events.

Butterflies are only active in the daytime, and this limits their activities. For this case, Night time Moth watching activities could be implemented. Currently, it is an activity that is already applied in some of the butterfly watching tours.

Night Time Moth Watching

The majority of Moths are active at night, and the diversity of the species is much more than the butterfly species. For example, there are 57 butterfly species in the UK, but more than 2,500 species of moths. Moths could fly in harsher conditions and much colder weather compared to

⁹⁸ Sustainable development goals. European Commission. (n.d.). Retrieved December 22, 2022, from https://commission.europa.eu/strategy-and-policy/international-strategies/sustainable-development-goals_en

⁹⁹ Sustainable development. Sustainable development - Environment - European Commission. (n.d.). Retrieved December 22, 2022, from <https://ec.europa.eu/environment/sustainable-development/>

butterflies. This is a big advantage in many areas for winter periods. Moths are attracted to light sources at night, so a bright light source is needed. This can be a battery-powered torch or a house light. Moths are particularly attracted to UV light. A public event in which moths are seen under artificial lighting might draw attention, stimulate excitement and curiosity, and bring moths closer to individuals unfamiliar with them.¹⁰⁰



Graellsia isabellae



Philareta treitschkii

Figure 4 ¹⁰¹

Marketing Strategy for Antalya

For Antalya, the biggest opportunity is butterflies are flying all year round. In many areas in Europe and Turkey, it is impossible to see butterflies during the winter periods. Also, almost all historic places have open spaces which are protected and have an abundance of butterflies. It is possible to make a combination. On the other hand, in many rural areas, there is a possibility to come across artifacts from many different historical periods with thousands of years of history in almost every region of Antalya, even though there are serious problems in terms of the preservation of historical monuments. There are historic churches, historic traditional Dügme houses, historic mosques, and historical shrines.

The cuisine and agricultural production are quite diverse and rich. There are different meals with rice, such as Filiz and Cirisli rice. There are Kulakli, Mas, Eksili, Hamur, wheat soups, Sirik and Kaya kebabs, and desserts Gaziler and Avdan halva.¹⁰² Agricultural products are very rich, and almost every product is being produced. Eco touristic butterfly watching tours could give an opportunity for local businesses to grow.

¹⁰⁰ Night-time moth watching. Associazione Lepidotterologica Italiana - ALI. (2022, February 24). Retrieved December 22, 2022, from <https://www.lepidoptera.life/night-time-moth-watching/>

¹⁰¹ Photoarchive of Alperen Yayla

¹⁰² Antalya Sürdürülebilir Kırsal turizmin Geliştirilmesi Strateji Rehberi. (n.d.). Retrieved December 22, 2022, from <https://www.kalkinmakutuphanesi.gov.tr/dokumanflipbook/antalya-surdurulebilir-kirsal-turizmin-gelistirilmesi-strateji-rehberi/112>

There are also handcrafts such as Log, spoon, ladle and rolling pin carving, and traditional carpet weaving. The production could redesign with butterfly-related production and could be part of the tours but also could be sold via digital marketing.

Chapter III Potential risks for Eco touristic Butterfly Watching Tours

3.1. Potential risks for the future of Butterflies

Recent research indicates that the number or distribution of 76% of butterfly species has dropped since 1976. Since 1968, larger moths have dropped by 33%.¹⁰³ There are several reasons for the rapid decline. The main reason is habitat loss in several ways, such as intensive chemical use in agriculture (pesticides and herbicides), acceleration in construction, and, as a recent trend, climate change. All this pressure creates a risk factor for butterfly watching tours.

3.1.1. Adverse Effects of Habitat loss for butterflies

Chemical Pollution in the form of pesticides and herbicides

Herbicide is the general name for chemicals used to save agricultural plants from unwanted wild plants, and pesticide is the general name for chemicals used to kill harmful organisms with the same aim.

Herbicides can destroy some weeds and retard their growth in some species. Since the middle of the twentieth century, herbicide use has expanded dramatically. Agricultural production suffers considerable yield and quality losses in the absence of herbicides.¹⁰⁴ However, the widespread and irrational use of pesticides has a negative impact on the butterflies' future. Herbicides kill the host plants of the butterfly species and destroy the possibility of reproduction of butterflies.

On the other hand, pesticides, especially insecticides, are killing butterflies directly, and their adverse effects are expanding by wind, soil, and rain. During the spraying application of pesticides, a portion is lost owing to evaporation and dispersion, while the remaining portion stays on the plant and soil surface. Pesticides mixed with the air can be transferred to other areas by winds and then returned to the soil by rain, fog, or snowfall. Pesticides that reach non-target organisms and plants in this manner may leave a residue and be hazardous to them. Pesticides can cause deaths in non-target organisms such as bees, birds and fish,

¹⁰³ Home Page: Butterfly conservation. Home page | Butterfly Conservation. (n.d.). Retrieved December 22, 2022, from <https://butterfly-conservation.org/>

¹⁰⁴ Pestisitlerin önemi ve Ekosisteme etkileri- dergipark.org.tr. (n.d.). Retrieved December 22, 2022, from <https://dergipark.org.tr/tr/download/article-file/1189273>

microorganisms, and invertebrates. They can cause reduced reproductive potential in birds, fish, and other organisms.

For example, Levantine Silver-line (*Cigaritis cilissa*), which is an endangered species, In Israel, the distribution area of the species has decreased due to the establishment of apple and plum orchards in the valleys where it is found. Most of the valleys became extinct due to the widespread use of pesticides, and only a few adult individuals survived around the main population.¹⁰⁵

Adverse effects of the Acceleration in Construction

Acceleration in construction in various ways is the main reason for habitat loss. Generally, habitats are irreversibly damaged, and this causes the change in regional climate, reduces the total annual precipitation, and causes a dramatic decline in butterfly species, such as Hydroelectric power plants and dams, building new roads, and other kinds of building constructions.

Adverse effects of Hydroelectric power plants and dams

There are two types of hydroelectric power plants. These are Run-of-river powerplants and conventional hydroelectric powerplants. In run-of-river power plants, a particular gradient is achieved by directing the river into a canal or tunnel. The turbine is installed similarly to a bridge across the canal. Conventional hydroelectric plants are built by constructing dams on a stream; water is then collected in a big artificial lake. This water possesses an amount of potential energy. Therefore, these hydroelectric power facilities can provide energy even during drought years. This is the most common form of hydroelectric power plant worldwide.

Even though it is a renewable energy source, it is not an environmentally friendly energy source. Hydroelectric power plants have many adverse effects on nature. Hydroelectric power plants can cause great damage to the environment.

First, of, the river ecosystems are highly sensitive wildlife hotspots which is the construction building on. Even during the construction phase, the river to be built on it is drained to another direction by canals, which causes damage to the surrounding forests during this process. After the construction process, several events occur. First, the life of the creatures living in the stream built on it is interfered with; in this case, it causes the death of those creatures. It increases diseases in the environments where the hydroelectric power plants are located. Also, an increase in erosion and flood formation has been observed in the regions where hydroelectric power plants are built. It changes the regional climate, reduces rainfall, and increases the heat in the area.

¹⁰⁵ (PDF) red book of the butterflies in Turkey - researchgate.net. (n.d.). Retrieved December 22, 2022, from https://www.researchgate.net/publication/308305807_Red_Book_of_the_Butterflies_in_Turkey. p 47

During the operation of the power plant, a high rate of evaporation occurs in the dams. This evaporation increases the salt content of the soils in the surrounding areas and decreases the fertility of the soil.

The water collection component (dam) of a running hydroelectric power plant has an environmental impact. Due to the fact that the dam lake has a greater surface area than the river and that evaporation rises, climatic changes arise. In this manner, air humidity rises, air currents change, and temperature, precipitation, and wind events vary. In this situation, the region's nature, flora, agricultural plants, aquatic and terrestrial animal life undergoes a dramatic change, and the species that can adapt continue to remain.

For butterflies, it destroys the populations in the area, splits the nearby populations, and isolates them. Also, regional climate change affects the species directly, especially the endemic species that face the risk of extinction.

For example, in Turkey, in the last 20 years, there has been a huge acceleration in building hydroelectric power plants. Currently, there are 708 active hydroelectric power plants in Turkey, and there are 23 more that are currently in the construction phase.¹⁰⁶

Within this extreme usage and destruction of ecosystems, the nature causes great damage to butterfly populations. Preserving the area has crucial importance for sustainable tourism. For example, The Coruh valley is under great threat due to the construction of 29 dams, large and small, for total hydroelectric power generation. The constructions of the Muratli, Borcka, and Deriner dam on the Coruh River have been completed. With the filling of these dams, half of the Coruh valley and after the construction of the Yusufeli dam, almost all of it destroyed by 2022.

The Yusufeli dam started to hold water by November 2022, for this cause the whole residential area to drown into the water and with all the nature and wildlife. This overuse of hydroelectric plants separated the habitats and put many endemic species in danger of extinction, Such as the rare endemic *Polyommatus merhaba*, whose range is restricted to the part of the Coruh Valley that is within the provinces of Artvin and Erzurum. Experts believe that the dam on the Coruh River and the abundance of hydroelectric power plants, would reduce the population of the species by at least 50 percent. In addition to rising water levels, the development of roads and electricity transmission lines will contribute to this decline. Due to all of these concerns, the habitat of the species will be reduced dramatically, and the surviving subpopulations will become geographically isolated.

¹⁰⁶ Hidroelektrik Santralleri. Enerji Atlası. (n.d.). Retrieved December 22, 2022, from <https://www.enerjiatlası.com/hidroelektrik>

There are also other endangered species in the area, such as *Erebia melancholica*, *Polyommatus artovinensis*, *Colias caucasica*, *Aricia teberdina*, *Coenonympha symphyta*. Also, the area is a biodiversity hotspot with more than 250 species of butterflies.¹⁰⁷

Greenwings Holiday and Wild ecotours already have butterfly watching tours in the area, and this situation is threatening the future of the tours in the area and causes a negative effect on the sustainability of this itinerary.

Building new roads (<https://core.ac.uk/download/35462452.pdf>)

New roads give a possibility to travel to new, possibly undisturbed and unpolluted areas. It is important to note that human disturbance on butterfly species richness in naturally isolated areas causes a negative impact on butterfly populations. The road networks cause habitat fragmentation, and this isolates the butterfly populations, but also, this increases the ratio of killing butterflies by splatter on vehicles. Structures associated with roads, such as rest areas, telegraph poles and wires, fences, bridges, and tunnels, also have adverse effects as constructions. There is also an adverse effect of pollutants impacting habitats, including noise, light, sand, dust, and other particulates such as metals.

Adverse effects of Climate Change on Butterflies

Climate change will have an impact on butterfly species' life cycles, flying periods, vital interactions, and, ultimately, survival. Studies have revealed that butterflies are among the species that have responded to climate change the most.

Due to a warmer winter, overwintering larvae were more vulnerable to illnesses and fungi, resulting in a decrease in larval survival. The most temperature-sensitive stage of the butterfly's life cycle, overwintering, will be badly impacted by temperature rises, according to these findings. As a result, the butterfly population will decline dramatically in the future decades because of climate change.

Changes in climate can also affect the flight period of butterflies. Warmer temperatures may cause multiple-brooded species to produce more offspring, but it is uncertain how this will influence egg-laying times and other life characteristics that are influenced by photoperiod (which is unaffected by climate change). The researchers discovered that the beginning of the butterfly flying period is advanced by two days for every degree of temperature rise.

¹⁰⁷ (PDF) red book of the butterflies in Turkey - researchgate.net. (n.d.). Retrieved December 22, 2022, from https://www.researchgate.net/publication/308305807_Red_Book_of_the_Butterflies_in_Turkey.

Butterflies with specialized diets, which means they only eat one or a few plants, are more sensitive to climate change due to oscillations in their food supply. However, butterflies with diversified diets are less likely to be affected.¹⁰⁸

Heatwaves and drought

High temperatures and abundant sunshine are ideal circumstances for adult butterflies to carry out their lives, including mating, visiting flowers, moving to new regions, and, most critically, laying eggs. And when temperatures become very high, butterflies simply become less active and seek refuge in the shade.

The issue for butterflies is not heat, but a lack of moisture, because dryness is lethal. The caterpillars that will hatch in the coming weeks, the adults of the butterflies that are presently enjoying the warmth, will require fresh green plants to feed on; if the plants have wilted and died due to dryness, the caterpillars will starve, and the following generation of butterflies, later this year or next year, will be much less. For example, in Turkey at 2021, the drought was extreme, and these extreme conditions also caused a wildfire disaster on the Mediterranean coast of Turkey. On the other hand, butterfly species emerged two weeks earlier than the previous year. The plants couldn't find a time and enough rain to grow, and this had a negative impact on the butterfly generations in 2022.

¹⁰⁸ How climate change affects butterflies. Wisconsin Native Pollinators. (n.d.). Retrieved December 22, 2022, from https://wisconsinpollinators.com/Articles/ClimateChange_7.aspx#:~:text=The%20increased%20cardenolide%20levels%20in,disastrous%20outcome%20for%20the%20species

3.2. Potential adverse effects of Butterfly Watching Tour on Environment

Butterfly watching tourism could have a number of adverse effects. These arise both directly from disturbance caused by butterfly watching activities and indirectly from the general background levels of disturbance from tourism. Such adverse effects can be avoided or minimized by providing sufficient resources and conservation measures for effective management, and that tourism development is subject to proper planning controls and limits. Limiting visitor numbers, accompanying visitor groups with trained tour leaders, and clear, well-defined instructions help to minimize the direct disturbance of wildlife; well-planned walkways are crucial for reducing habitat damage from trampling by visitors in heavily visited areas. Even though some species, such as those that thrive in towns and cities, have the ability to adapt easily to human presence, many species are highly sensitive to disturbance, and some of the species are in endanger.

Butterfly watching tourism requires careful planning, management, and monitoring. If it occurs without harming butterfly species or their habitats, and if it is beneficial to local communities. The purpose of planning is to create clear objectives and targets for butterfly-watching tourism, which are subsequently achieved by means of suitable management measures. Monitoring is used to determine whether objectives are being reached, and if objectives are not being met, management activities are modified and enhanced in order to meet objectives in the future. This 'adaptive management' strategy allows for the continual development of conservation, tourism, and community benefit management actions based on day-to-day management experience.

Requirements and difficulties for effective conservation management are typically quite different from those for effective tourist management and effective community development, and each requires a distinct set of skills. In planning for successful and sustainable butterfly-watching tourism, it is essential to choose locations where conservation, tourism, and community development requirements are compatible and to realize that elsewhere butterfly-watching tourism is unlikely to be successful and cannot be sustainable.

Effects of disturbance from tourism on wildlife

Butterfly watching tourism can have adverse effects on wildlife in three main ways. These are behavioral effects of disturbance, habitat damage of disturbance, and direct contact damage of disturbance. There are also risks linked with the pressures for greater tourism growth that may build up as destinations and attractions become more recognized and more popular, as well as the extreme fluctuations that can occur from year to year in the number of visitors to certain sites or areas, which could arise the pressure for habitats and could spread diseases to butterflies which threatens the next generations.

Behavioral effects of disturbance

Butterflies that are subject to disturbance will spend less time feeding or resting and more energy on trying to move away from the source of disturbance, perhaps shifting to more remote or less productive feeding grounds: they may also face greater competition from other species and be more vulnerable to predation, in these less favored feeding grounds. Butterflies are timid creatures because of the high predator pressure. They could be prey to many predators such as birds, snakes, small mammals, and other insects such as dragonflies and mantises. Also, any interruption of courting and mating behaviors, or subsequently of caring for offspring, reduces overall breeding success and poses a major danger to the maintenance and survival of the population.

Habitat damage and disturbance

Butterfly watching tourism can also result in damage to sites and habitats where species are watched. The visitors could damage the host plants and kill the caterpillars and eggs which lay on the plant. Also, the nectar plants which butterflies feed on could be damaged. Also, butterflies could stress out from the activity and could be easy prey for predators. On the other hand, any type of collection in areas could damage the habitats. This also includes leaving any kind of things in the area, such as garbage (organic and inorganic).

Direct Contact Damage of Disturbance

Direct contact with a butterfly or a caterpillar could be highly dangerous for the species. The main reason is butterflies are vulnerable creatures, and their wings are very sensitive. Within direct contact with the wings, their wings get damaged easily, and it has the ability to accelerate the fading of the colors on the butterfly's wings, erasing patterns that serve as protection against predators. Touching the butterfly's wings may result in a shorter lifespan. Also, their mating possibility will be highly reduced.

3.3. Risks of abuse of Ecotourism and wildlife watching activities

Intention is very important in this kind of business approach. An approach without a nature based mentality, the precious areas of wildlife could have great damage. The regulations are very important. The local or national authorities must define rules and criteria which are protected by law.

For example 2021, in Turkey wildfires, wildfires began on July 28, 2021, in the Manavgat area of Antalya and spread to several Turkish cities. As of August 12, 2021, eight people had died in 299 wildfires, the majority of the wildfires broke out in 53 provinces in the Mediterranean, Aegean, Marmara, Western Black Sea, and Southeastern Anatolia Regions. Additionally, more than 150 thousand hectares of forest area and settlements were turned into ash, and thousands of animals died, a huge rise from previous years.

As of August 12, 2021, 299 forest fires, 15 of which started on July 28, were entirely under control, with the extinguishment of the fire in Mugla's Koycegiz region. After this disaster, many deforested areas emerged, especially in the coastal areas of Antalya and Mugla districts. There are plenty of Eco touristic projects planned in the Manavgat/Antalya district with zoning plans for ecotourism uses, which include rural tourism facilities, boutique hotels, wellness facilities, golf facilities, sports facilities, daily facilities, workshops for natural products, camping, etc. tourism-oriented uses and social and technical infrastructure uses will take place.

This abuse is highly dangerous for the future of biodiversity, which is already highly damaged. For example, in Antalya, after the research made a year after the event, it was understood that the regional populations of the Antalya endemic orchid species (*Ophrys urtea*) found around the Oymapinar Dam have almost wholly disappeared. There is hope for the re-sprout of the orchid species.¹⁰⁹ Within this kind of fake eco touristic project, the small hope for this and other species will be perished. For this reason, the approach and intention are very important while implementing an eco touristic projects.

¹⁰⁹ Orman Yangını endemik Bitki Türlerine de Zarar Verdi. Anadolu Ajansı. (n.d.). Retrieved December 22, 2022, from <https://www.aa.com.tr/tr/yesilhat/dogal-yasam/antalyada-gecen-yilki-orman-yangini-endemik-bitki-turlerine-de-zarar-verdi/1818052>

Conclusion

The World has been losing its wilderness extremely fast in the last century, and its acceleration continues. The remaining wilderness decline is just dramatic, from 66% to 35%. Within this situation, it is evident that people will demand to visit the wilder areas in the aspect of tourism. National parks are already touristic hotspots in some countries, such as the USA, but this trend will be much more common in other countries and regions. The quality of the ecotourism approach in this decade will determine for future of wildlife and the future of humankind.

1937	2020
WORLD POPULATION: 2.3 Billion	WORLD POPULATION: 7.8 Billion
CARBON DIOXIDE IN THE ATMOSPHERE: 280 Parts Per Million	CARBON DIOXIDE IN THE ATMOSPHERE: 415 Parts Per Million
REMAINING WILDERNESS: 66%	REMAINING WILDERNESS: 35%

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Butterfly watching tours are one of the brand new approaches in the branch of Ecotourism. Butterflies have different colors and a variety of sizes and patterns. For this reason, they are eye-catching creatures and take particular attention. Even though the idea about insects is generally negative, the idea about butterflies is positive in general. Their role is crucial to change the perspective about other insects. The global insect decline is one of the big problems that the earth faces, and in the last 30 years, the numbers declined by more than 50%. Insects are vital to an ecosystem for pollination, for the food chain, and for plants and trees.

On the other hand, the knowledge about butterflies is also very shallow. Many people still think that butterflies are creatures that only live one day as an adult. For this reason, creating awareness about butterflies is another important point. Especially for local people, knowledge about butterflies is essential in order to preserve the butterflies in the region. This is a crucial step for sustainable rural economic development. This knowledge could be given via seminars, workshops, and social media channels. This kind of events should be done consistently to create awareness but also as a part of the marketing strategy. These events could be supported via

¹¹⁰ Watch David Attenborough: A life on our planet: Netflix official site. Watch David Attenborough: A Life on Our Planet | Netflix Official Site. (2020, October 4). Retrieved December 22, 2022, from <https://www.netflix.com/title/80216393>

local nonprofit organizations. If there are no suitable nonprofit organizations, they could be formed and financially supported via a tour company.

Currently, butterfly tours are designed for particular butterflies in a particular period of the year. Generally, butterflies fly for eight months in most areas; for moths species, the period extends almost all year round, and also, in harsh winter conditions, butterflies' caterpillars and eggs could be observed with a closer look. In the period of harsh winter conditions, seminars, workshops, and other kinds of events could be prepared. Potentially activities could be done all year round. For sustainable rural economic development, the tours in the area should be constant. Encouraging local entrepreneurs for this business could be the solution for this case. Local entrepreneurs will have knowledge about geography and seasonal fluctuations of butterflies but also will have the advantage of local languages, cultures, and heritages.

Moth watching activities are the next step of butterfly watching activities. Contrary to the general assumption, moths are more effective in pollination than bees and butterflies, but also some of them have appealing colors and patterns. As the diversity of moths is much higher, this gives an opportunity to increase the excitement of the event. Another advantage is some of them could fly in harsh winter conditions. On the other hand, getting knowledge about the distributions of the moths is harder than for butterflies. There is a need for a set of equipment and a light source to lure the moths, but also, as butterflies use the sunlight, moths use the moonlight. This means when there is a full moon, the need for the higher power of the light source increases. This means that for the determination of the route, the planning phase will take more fieldwork. All of this night-time moth watching activity gives a opportunity to diversify the events during the butterfly watching tours. The participants could see the butterflies in the daytime and see the moths in the nighttime. Also, participants will be able to choose between activities, and this will increase satisfaction. This gives flexibility for planning new itineraries as well.

New itinerary plannings are necessary in case of an overload of the current itineraries but also in the prevention of risk factors. For the prevention of the risk factors, zoning and planning the pathways, and watching the butterfly populations and their habitats in sufficient periods of time during the tour and afterward are very important. To see how butterflies cope with tourist disturbance and how they recover if there is a disturbance. Overall effects on population health and reproduction are the key elements for the tours. The disturbance is damaging to butterfly populations and could reduce the quality of the tourism experience.

Butterfly tour companies and enterprises also should recognize the critical role they must play in ensuring that their trips are performed properly and with little damage on the wildlife and the environment. In addition, they acknowledge the need of visitor management techniques meant to sustain healthy populations of the wildlife that their customers come to see, as well as the necessity of preventing overcrowding in order to give a high-quality experience for the participants.

General tourism developments can also be a threat to certain species. For example, coastal tourism development continues to cause serious impacts and damage to coastal butterfly species in many areas. This underlines the need for effective planning for both conservation and tourism for land use and coastal area planning to protect the key habitats from adverse effects.

As a result, in this decade, ecotouristic butterfly watching tours and other branches of the ecotourism economy will grow rapidly. The main reason is as a result of the effects of climate change, people are more aware and concerned about nature and wildlife. But also, after the dramatic destruction of nature and wildlife, the connection between people and nature is damaged. Because of this, people have more motivation to learn and discover more about nature and wildlife.

On the other hand, sustainable activities have become one of the key points in the fight against global climate change. Ecotouristic activities consist of both conservation and economic growth sustainability. For this reason, wildlife watching activities could become a very important income source for countries. Another advantage is there is no big need for investments for implementation. The main need is the conservation of the area and determination of biodiversity, and planning a marketing strategy accordingly. As a branch of ecotourism, butterfly watching tours are crucial for these activities. People in many areas do not have an idea about butterfly diversity. In addition, butterflies are very charming, with bright colors and astonishing patterns, and wing shapes. Because of this, watching the butterflies will be a very surprising and appealing activity for tourists.

Beyond the sustainability and the economic perspective, butterflies and all the natural beauties are the values the next generation has a right to see and experience in natural ways. Currently, many species are on the edge of extinction, and others are declined harshly in the last decades. The consumption idea of humanity is threatening the balance of the ecosystem, which the existence of humankind depends on.

Within all this, the creation of a better future is the only way to have a future for all living things. The conservation measures are vital, but without planning economic growth accordingly, the measures will not be enough. Butterflies have a much more important role in this despite of the general idea. Butterflies and moths regulate the vegetation by eating the plants as caterpillars and as being the prey of a variety of animals such as birds, small mammals, other insects, and even snakes. The conservation of butterflies has a very important role in rebalancing the ecosystem, and butterfly watching tours could help sustain and conserve the butterfly populations in the routes, provide sustainable economic growth and contribute to rural development.

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