Naturalistichno

Bee Eden

**NATURALISTICHNO ASSOCIASTION NON-PROFIT ORGANISATION**

**http://www.naturalistichno.org**

# PILOT PROJECT FOR BIOLOGICAL SURVEYING OF MELLIFEROUS FLORA AND POLLINATORS IN THE WESTERN BALKAN MOUNTAINS FLORISTIC REGION IN BULGARIA

## Summary of the project

The main objective of this scientific pilot project is to study the species diversity and resources of melliferous (including medicinal and aromatic) plants and the pollinating bee fauna in the floristic region of Western Balkan mountains, Bulgaria. The project is aiming at acquainting, exploring and conserving organism groups of important species as well as utilizing natural resources in a sustainable way for the well-being of the ecosystems while supporting the local people. The project will be implemented by a Bulgarian non-profit organisation in collaboration with scientists and branch representatives from the Bulgarian Academy of Sciences, University of Forestry in Sofia, Medical University of Sofia, the Bulgarian Organic Beekeeping association. It will take place over 2 years: December 2017 – December 2019 and will bring benefits in scientifc, environmental, social and economical directions. The project will bring opportunities to lay the foundations for complex ecosystem studies and to unite different directions in science as well as to stimulate the work of local environmentalists, beekeepers, herbalists and nautralists; to focus the attention of the government institutions, national and international organisations, the Bulgarian and European society on very important issues for the future of the Bulgarian and European biodiversity, pollinating services and food sovereignity.

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## Area of surveying

Western Balkan Mountains floristic region (From Teteven mountaints to Vrashka chuka peak)

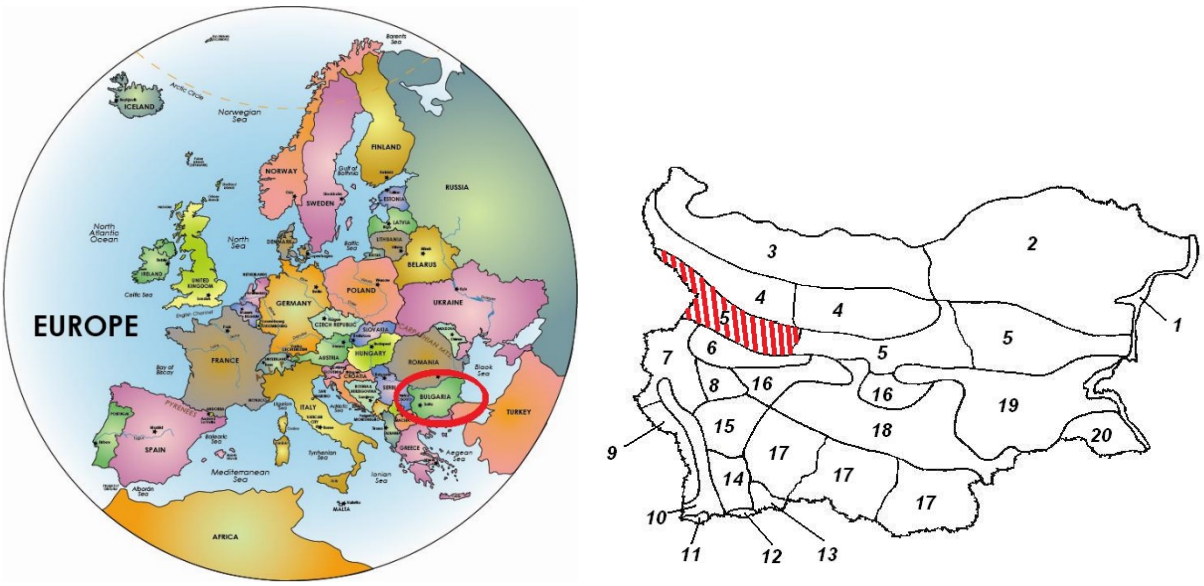


*Fig. 1. Position of Bulgaria in Europe and position of Floristic region Western Balkan mountains in Bulgaria.*

## Duration of the project

2 years: December 2017 – December 2019

## Financial budget of the project

**Total project cost – 102 800 leva (50 400 Euro / 504 000 SEK)**

**Received grant from Enterprise for Management of Environmental Protection Activities at the Ministry of Environment and Water in Bulgaria, equal to 50% of the total cost – 49 900 leva (24 950 Euro / 249 500 SEK)**

*Estimated participation of Naturalistichno organization members – 3000 leva (1500 Euro / 15 000 SEK)*

**Needed co-financing - 49 900 leva (24 950 Euro / 249 500 SEK)***

***The co-financing can be acquared in several parts from different sources.**

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# Team

## Project leader

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## Vice project leader

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## Administration

**Dimitar Palov** – Lawyer of Naturalistichno association

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## Scientific experts

**Prof. DsC Alexander Tashev** /University of Forestry/ – botanist, melliferous flora

**Assoc. Prof. DsC Antonina Vitkova** /Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences/ – conservation, resource assessment and monitoring of medicinal and aromatic plants

**Assoc. Prof. DsC Maria Lazarova** /Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences/ – pollen analysis

**Assoc. Prof. DsC Malina Delcheva** /Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences/ - resource assessment and monitoring of rare medicinal and aromatic plants

**Assoc. Prof. DsC Ekaterina Kozhuharova** /Physical faculty, Medicinal university – Sofia/ – medicinal plants, syndromes and ecology of pollination, bees as pollinators

**Engineer Petko Simeonov** /Chair-person of Association of organic beekeeping in Bulgaria/ – organic beekeeping

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## Background

Today we are facing a very serious and growing problem affecting humanity, namely the disappearance of bees and other pollinators. Pollinators are predominantly insects - wild and domestic bees, butterflies, moths, flies, etc., which feed on pollen and nectar produced by the flowers of the plants. To satisfy their nutritional needs, each pollinator visits many flowers, doing so it transports pollen from one flower to another thus pollinating the plants. Pollinators are a functional ecological group that is extremely important for the biodiversity of nature and the diversity of our table. Today, from the food products that mankind consumes, 30% are direct products reaching us thanks to pollination (IPBES, 2016). Also, dependent on pollination are crops used for feeding farm animals. About 90% of all wild plants exist due to pollinating insects and about 10% of the crop plants (IPBES, 2016). The economic value of the "pollination services" worldwide provided by bees is reaching 235-577 billion euros (IPBES, 2016). Unfortunately, at present, bees and other pollinators have been scientifically proven to decline and disappear due to many factors including: urbanization impacts, changing land conditions, climate change, diseases and pests, etc. For couple of decades the demographic growth on the Earth is increasing rapidly which leads to increased demand of territories and resources for urbanization (United Nations, 2014). The land use changes of big territories are characterized by extreme fragmentation and great loss of natural habitats and ecosystems. Meanwhile, in response to the food needs of mankind, intensification of industrial agriculture is happening accompanied by growing monocultures and the use of different synthetic chemical materials during their cultivation such as synthetic fertilizers, pesticides, insecticides and neonicotinoids that have a negative or lethal effect on a large number of pollinators, including bees. This inevitably leads to the loss of various species of flora and fauna, with strongly negative trends being observed in less adaptable and vulnerable species. Such are some of the rare melliferous plants and some of the pollinators, including the honey bee (*Apis mellifera* L.). Data from recent research shows that the loss of the honey bee populations is up to 53% in Europe (Greenpeace, 2013). In response to this, programs and measures to protect pollinators in the European Union and worldwide are in place or are being implemented, as bees are a strategic resource for each nation but also the entire human race and world’s biodiversity.

Major threats to the melliferous flora are: global climate change leading to an increase in average annual temperatures and rainfalls, resulting in changes in habitats of melliferous plants species and their reduction in percentage; disturbance and destruction of natural habitats with the construction of photovoltaics and infrastructure which results in changing meadows and pastures into arid lands. Excessive collection of phytomass when the melliferous plants are also medicinal. Change of the purpose and the way of permanent land use - plowing of meadows and pastures and turning them into agriculture lands, which results in fragmentation and loss of natural habitats of the melliferous plants species. Over grazing and trampling. Construction of ski slopes, lifts and roads passing through habitats rich in melliferous plants.

## Project goals

- The project aims to lay the foundations for a new type of scientific research that will help to explore, conserve, support and make sustainable development of melliferous plants and wild pollinators while helping the beekeeping and humans needs of resources.
- Explore the main threats to melliferous plants and their habitats and what are the main threats to pollinating bees in the Western Balkan Mountains floristic region.
- Localization and mapping of economically significant plant communities actively used for honey bee foraging. Determination of the species diversity of wild and domestic bees in the region, the biology and behavior of bee colonies to the melliferous flora.
- Pollen analysis will be carried out to determine the botanical origin of honey and the percentage of individual melliferous plants. Pollen analysis and honey will also be used to determine possible chemical pollutants for the environment. Resource surveys will provide real data on the quality and quantity of available bee-based food base. Statistical data processing will determine the preferred melliferous flora and the available species of plants and bees in the area under investigation.
- Educational, scientific and private "Ecological Pollinators Gardens" under the "Bee Eden" Project, implemented by the "Naturalistichno" Association, will be created by collecting reproductive material of plant species authorized or not contrary to the Medicinal Plants Act (2000) and the Biodiversity Act (2002).

## Expected results

- The species composition of the melliferous flora will be determined - native, sedentary and invasive plant species.
- The economically significant plant communities with determined species composition will be mapped and their quantitative assessment will be assessed - the available resources from melliferous plants will be evaluated.
- On the basis of the species composition of the melliferous plants, a scientific basis for the possibilities of using accessible, varied and sufficient forage for the bee colonies in the area will be established as well as the possibilities of creating pollinators gardens with local flora species will be examined. This will help beekeeping and, at the same time, preserve the biological equilibrium in the area and elsewhere.
- The study will be a prerequisite for the conservation of the biodiversity of melliferous plants in the area. It will prevent the loss of plant diversity and the conservation of melliferous plants which habitats are outside the existing protected areas of the area and are at high risk of destruction.
- The species composition of pollinators will be determined in the area - wild and domestic bees, which will contribute to the compilation of a list of pollinators species in Bulgaria.
- Pollen analyzes will be carried out to identify the effective melliferous flora in the area and possible chemical pollutants for the environment.
- Information from beekeepers in the area about the biology and behavior of bee families will be gathered in order to establish conservation and sustainable development of pollinators.
- Establishment of guidelines and measures for the conservation and regional sustainable development of melliferous plants and pollinators.
- By implementing this pilot project, it will be possible to involve the general public and local governmental structures as well as national and international institutions and organisations in nature conservation activities in relation to the conservation of

plant biodiversity, including melliferous plants and their habitats in the area of research, as well as pollinators – wild and domestic bees.

- The data from the survey will be used by the Ministry of Environment and Water in implementing the Biodiversity Conservation Policy, the Regional Inspectorate of Environment and Water and the municipalities responsible for the surveyed area to achieve the sustainable use and preservation of melliferous plants. They will also be used by the Ministry of Agriculture and Food and local beekeepers to achieve effective and efficient development of beekeeping in the area.
- The results obtained will be presented and promoted in an attractive way, as promotional, information and educational materials in Bulgarian and English language. The results will also be presented at round tables at local and national level.

## Benefits to meet national and international biodiversity conservation goals

The results obtained from the project will be in line with national and European policies in the field of biodiversity conservation.

Nationally:

1. The National Strategy for the Biodiversity conservation
2. Strategic Plan for Biodiversity 2011-2020

Internationally:

1. The Global Strategy for the Conservation of Plants 2020 -

*Strategic goal* I: Knowledge, documentation and assessment of plant diversity;

*Strategic Goal III:* Sustainable and Fair Use of Plant Diversity;

*Strategic Goal IV*: Education and awareness on plant diversity, promoting its role in providing sustainable livelihoods and its importance for life on Earth;

2. Strategic Plan on Biodiversity 2011-2020 - *Strategic Goal C*: To improve the state of biodiversity by protecting ecosystems, species and genetic diversity;

*Strategic goal D*: To increase the benefits of biodiversity and ecosystem services for all;

3. Protocol from Nagoya - under Article 6 - Access to genetic resources; Article 9 - Contribution to Conservation and Sustainable Use; Article 11 - Cross-border cooperation; Article 17- Monitoring the use of genetic resources.

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