

**Cost Action CA16208 “KNOWLEDGE CONVERSION FOR ENHANCING  
MANAGEMENT OF EUROPEAN RIPARIAN ECOSYSTEMS AND SERVICES”  
(CONVERGES) CA16208**

**Training School on Diversity and development of phytocoenological databases and using  
of different numerical methods for analysis of vegetation data**

**21-26 October, 2019, Sofia, Bulgaria**

**Aim:**

This training school (TS) will provide an essential information about steps how to develop, manage and use a new or existing phytocoenological database for riparian and floodplain vegetation studies and management, notably using TURBOVEG software. Different stages of data preparation (i.e. import, export, standardization and selection of vegetation data) using for broad-scale analysis will be presented and experienced with real data. Moreover several numerical methods for analysis of vegetation data, including ordination and classification, will be demonstrated and tested (PC-ORD, Modified TWINSpan, EuroVegChecklist Expert System). We planned during TS to analyze participant subsets for their PhD theses, projects and paper writing of scientific publications and to discuss how this data set can be used for riparian vegetation assessment.

During the TS, the potential application of the phytocoenological database for riparian and floodplain vegetation as indicator of hydro-morphological conditions (i.e. indicator species from different succession stages and environmental drivers) and anthropogenic pressures (i.e. invasive species) will be highly discussed, to promote their use in river management and assessment tasks.

TS participants are encouraged to contribute to the goals of the COST Action, e.g.:

- Synthetic presentation of the European riparian vegetation classification;
- Report about potential gaps of phytosociological knowledge about riparian and floodplain communities;
- Development of the formalized classification of riparian forests in southeastern Europe.

**Participants:**

The TS is open to all scientists working or interested in studying of riparian forest and adjacent wetland vegetation diversity and their management. Priority will be given to researches with fewer than 8 years of experience from the date they obtained their PhD or PhD students, who would like to analyze data for their PhD thesis and scientific publications. Participants are encouraged to come with personal data set with own vegetation data plots collecting following to the Braun-Blanquet approach in Excel format or any other format, which have species cover and abundance. If you do not have your own data set, we may

provide you a working data set but we should be informed in advance. All gender balance and country representativeness will be promoted. The TS is limited to 14 participants.

### **Support for selected attendees:**

There is no registration fee for TS. Selected participants will receive 800 € to cover all their travel, accommodation and food expenses. Coffee break will be provide from local organizers.

### **How to participate:**

Please e-mail a letter of motivation explaining how this TS will benefit your project and scientific career as well as your CV **to 5 July, 2019. Until 15 July all applicants will be informed online for final decision.**

### **Location:**

Institute of Biodiversity and Ecosystem Research (IBER), Bulgarian Academy of Science, Sofia, Bulgaria.

### **Scientific organizers:**

Kiril Vassilev (Dr. IBER, Bulgaria), Nikolay Velev (Dr. IBER, Bulgaria), Dejan Mandzukovski (Macedonia), Renata Čušterevska (Assoc. Prof. Dr., Macedonia), Andraž Čarni (Assoc. Prof. Dr., Slovenia); Marta Gonzalez del Tanago (Prof. Dr., Spain)

### **General information about Bulgaria and Sofia city:**

Bulgaria occupies an area of 110,910 sq km. The population is about 7.5 million. It consists mainly of ethnic Bulgarians (83.9%), with two sizable minorities, Turks (9.4%) and Roma (4.7%), and other smaller groups of different nations. The Religion is predominantly Bulgarian Orthodox. Other religious denominations include Islam (12.2%), various Protestant denominations (0.8%) and Roman Catholicism (0.5%).

Sofia is the capital and the largest city of Bulgaria and the 12th largest city by population in the European Union, with 1.4 million inhabitants.

Bulgaria has been a full member of the European Union since January 2007 after then years of negotiations with the European Commission.

The landscape is mostly mountainous with lowlands along the Danube and Maritsa rivers. The Black Sea coastline is long 378 km and covers the entire eastern country boundary. The length of the Danube bordering the country is 470 km. The highest mountain is Rila with its peak Moussala of 2925 m (the highest peak in the entire Balkan Peninsula).

The climate is temperate with cold damp winters and hot dry summers. In the southern parts, mostly along Struma and Maritsa rivers, there is a transition to the Mediterranean climate. The coldest month is January with average temperatures -1°C. During August the temperatures reach 30°C while average values are 23°C. The highest amount of precipitation

is during spring and only in the southernmost territories it is in the autumn. The mean annual precipitation is 450-600 mm in the lowlands and up to 1300 mm in the mountains.

Sofia is a capital and largest city of Bulgaria. The city is situated in the foot of Vitosha Mountain in the western part of the country. Being in the centre of the Balkan peninsula, it is midway between the Black Sea and the Adriatic Sea, and closest to the Aegean Sea.

Sofia has been an area of human habitation since at least 7000 BC. The recorded history of Sofia begins with the attestation of the conquest of Serdica by the Roman Republic in 29 BC from the Celtic tribe Serdi, raided by Huns in 343-347 AD and 447 AD, conquered by Visigoths in 376-382 AD, conquered by Avars and Slavs in 617 AD, and on 9th April, 809 Serdica was surrendered to Krum of Bulgaria. Bulgarian rule lasted until 1018, in 1040 and 1193-1382, which was interrupted by more than a century of Byzantine rule and by nearly five centuries-long Ottoman rule until Bulgarian rule was restored in 1878.

Sofia City Province has an area of 1344 km<sup>2</sup>. Sofia's development as a significant settlement owes much to its central position in the Balkans. It is situated in western Bulgaria, at the northern foot of the Vitosha mountain, in the Sofia Valley that is surrounded by the Balkan mountains to the north. The valley has an average altitude of 550 m.

### **Host organization:**

The TS will be organized in the building of Institute of Biodiversity and Ecosystem Research (IBER) in Sofia (<http://www.iber.bas.bg/?q=en/node/2>).

IBER was established on 1 July 2010 after merging of Institute of Zoology, Institute of Botany and Central Laboratory of General Ecology. Significant national and international researches are carried out in IBER in theoretical and applied aspects of ecology, biodiversity, environmental conservation and sustainable use of biological resources. Now the Institute has high qualified staff and the plan is to train such staff in the area of botany, mycology, zoology, ecology, hydrobiology, conservation biology, environmental genetic, evolutionary biology and other closely related scientific areas, as well as to ensure scientific information, to give methodic supply to governmental institutions and civil society structures, and to present the country in European Research Area within its competence.

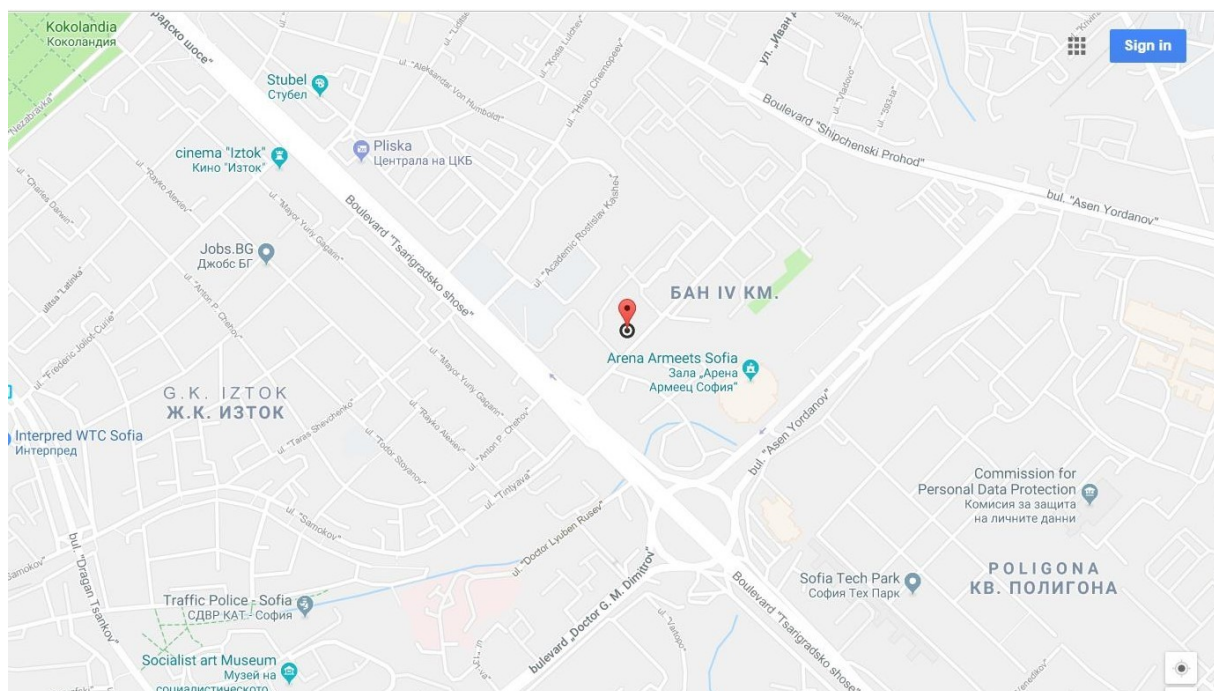
Major priority directions of IBER are:

- Structure and functioning of biotic communities, ecosystems and landscapes in the present and in the past.
- Diversity of organisms and their ecological and evolutionary relationships on all levels: from genetic and population to ecosystem level.
- Origin, development history and dynamics of biota and its components: flora, mycota and fauna.
- Scientific basis for conservation of living nature: identifying of threats and developing of methods for their removing or limiting.

- Approaches and methods for sustainable management of protected nature objects.
- Approaches and methods for sustainable management of biological resources, incl. studies on resource importance of species and communities not used before.
- Ecology and biology of species of economical and social importance, incl. approaches and methods for assessment; limiting the impact and regulation of density of invasive species, pests, parasites and other organisms of importance to medicine, nature protection, agriculture, forestry, fishery, hunting, managements of bio-resources and other human activities.
- Scientific basis of ecological risk assessment, the quality of environment and impact on it, elaboration of approaches and methods for biodiversity assessment, bio-monitoring and safety systems.

Nowadays the scientific staff of IBER comprises 132 persons.

IBER includes 3 building on the territory of Sofia city. The TS will be held at address Academic Georgi Bonchev str 23, Sofia, Bulgaria (previous Institute of Botany, see map below).



## Transport

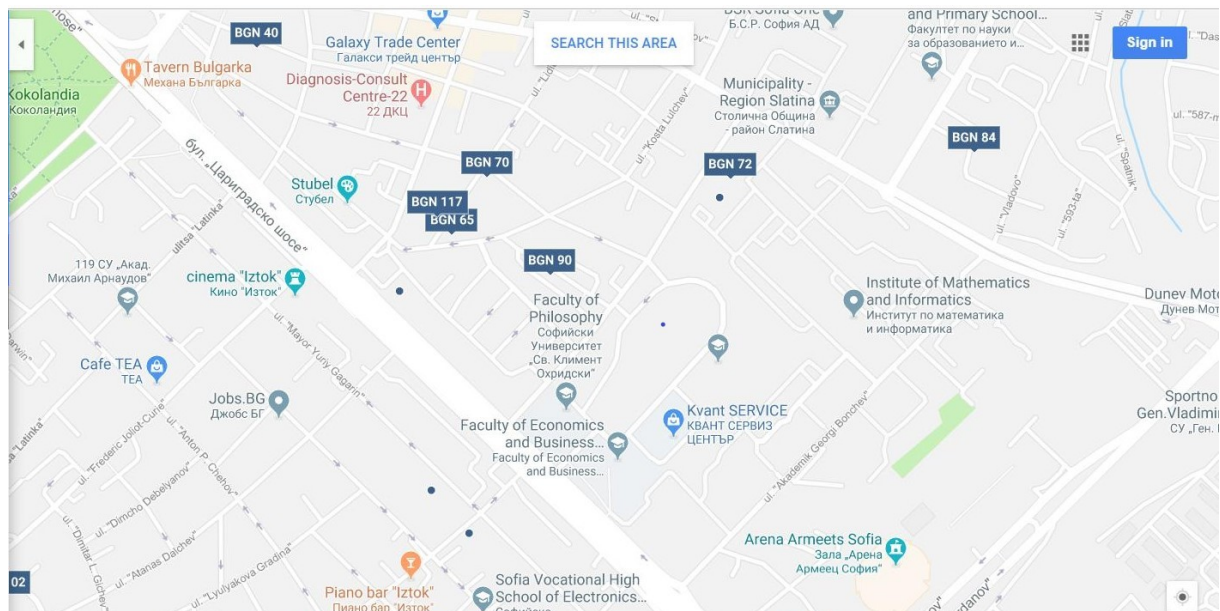
The building of TS is situated in eastern part of the city and has suitable connection with city public transport network. You may use bus and trolley to reach city center (about 10 minutes). From Sofia airport (<https://www.sofia-airport.bg/>) you may take a bus directly to the institute. On the other hand closest metro station is on distance about 0.7 km (10 minutes walking). Tickets (one way: 1.6 LV = ca. 0.8 EUR) can be purchased from the ticket machine at the platform or in the bus or trolley from the driver (cash only). Detailed information about public transport in Sofia you may find here: <https://www.sofiatraffic.bg/en/transport/121/marshrutna-mrezha>.

Alternatively, you may use taxi services to reach the city center or airport. Price is about 1 euro per km.

## Accommodation

If you wish to stay very close to the venue, the best option may be is Hotel of Bulgarian Academy of Science (<http://www.domnaucheniya.com>) Also you may find it in Booking. It is about 300 m far from the institute and expenses are 61 lv (32 Euro) for single room and 72 lv (36 Euro) for double room. About this hotel we may prepare a letter from our institute and you may use discount – about 10%.

There are many other hotels in the city center or in the neighboring part of the city. On the map below I exported from Booking a map of closest hotels (prices vary between 35 and 60 Euro; 2BGN = 1 Euro).



Alternatively, you may wish to stay closer to city center. Please keep in mind that Sofia is a very popular travel destination during last several years because of many Low cost airline destinations. Each participant may book a room according to personal preference using popular services like booking.com or trivago. Let me know if you need some additional assistance.

## Lunch & Coffee breaks

Closely to IBER there is a good restaurant (buffet), which provides a great variety of different kind of foods. Prices are affordable (about 6 Euro). Coffee break will be provide from local organizers.

## Preliminary programme

Date	Subject
21.10.2019	<ol style="list-style-type: none"><li>1. Open ceremony</li><li>2. The TS within COST Action CONVERGES: Characterization of phytocoenological databases and their role for studying of flora, vegetation and habitats in the context of riparian and floodplain communities.</li><li>3. TURBOVEG programme – presence of the programme.</li></ol>
22.10.2019	<ol style="list-style-type: none"><li>1. Testing of TURBOVEG programme<ul style="list-style-type: none"><li>- Importing procedure</li><li>- Exporting procedure</li><li>- Selection of vegetation data</li></ul></li><li>2. Excises with testing data sets about using of TURBOVEG programme</li></ol>
23.10.2019	<ol style="list-style-type: none"><li>1. Analysis of main steps for broad-scale analysis of vegetation data<ul style="list-style-type: none"><li>- Data preparation – exports and appending of different data sets</li><li>- Species nomenclature standardization</li><li>- Data selection</li></ul></li><li>2. Testing procedure with training data sets.</li><li>3. Presentation of EuroVegChecklist Expert System numerical method</li><li>4. Tour in the city center of Sofia town</li></ol>
24.10.2019	<ol style="list-style-type: none"><li>1. Presentation of division numerical</li></ol>

	<p>methods for analysis of vegetation data - Modified TWINSpan</p> <ol style="list-style-type: none"> <li>2. Presentation of agglomerative numerical methods for analysis of vegetation data - PC-ORD</li> <li>3. Exercises with testing data sets</li> <li>4. Applications in the context of riparian communities: synthetic presentation of the European riparian vegetation classification</li> </ol>
25.10.2019	<ol style="list-style-type: none"> <li>1. Excursion to Vitosha Natural Park</li> <li>2. Dinner in traditional restaurant</li> </ol>
26.10.2019	<ol style="list-style-type: none"> <li>1. Demonstration of ordination methods</li> <li>2. Analysis of participants data sets using different numerical methods</li> <li>3. Applications and links of riparian communities analysis and environmental gradients: hydromorphology</li> </ol>

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