

## UPDATE FOR BULGARIA – MAES RELATED ACTIVITIES AS OF 12.2017

The European Economic Area Financial Mechanism 2009–2014 through programme BG03 Biodiversity and Ecosystem services funded the national scale mapping and assessment of ecosystems and ecosystem services outside NATURA 2000 at EUNIS 3 level.

The mapping and assessment was performed in parallel by several projects, each of whose mapped and assessed one or two of the nine ecosystem types in Bulgaria. The projects were: Freshwater Ecosystem Services Mapping and Assessment in Bulgaria (**FEMA**) – also assessing marine ecosystems, Wetland Ecosystem Services Mapping and Assessment in Bulgaria (**WEMA**), Assessment and mapping of grassland ecosystems condition and their services in Bulgaria (**IBER-GRASS**), Mapping and assessment of sparsely vegetated land ecosystem services in Bulgaria (**SPA-Ecoservices**), Toward better Understanding the Ecosystem Services in Urban environments through assessment and mapping (**TUNESinURB**), Ecosystem services mapping and assessment of heathland and shrubs ecosystems in Bulgaria outside NATURA 2000 (**SHE-BG**) – also assessing cropland ecosystems, and Forests and woodlands - ecosystem services mapping and assessment in the Bulgarian Forest territories outside NATURA 2000 network (**FOR OUR FUTURE**). The projects further performed additional activities for some ecosystem types, notably an assessment of Ecological Focused Areas (EFAs) in two pilot locations, urban mapping in two pilot cities, and a socio-economic assessment of the heathland and shrubs ecosystem services.

Before, in parallel and after the mapping and assessment, two horizontal projects ensured the coordination of the mapping projects:

- Project PDP02 - Methodological Support for Ecosystem Services Mapping and Biophysical Valuation (**MetEcoSMap**) created the Methodological Framework for assessment and mapping of ecosystem condition and ecosystem services in Bulgaria, peer reviewed by MAES members. The framework provides a national typology of ecosystems that combines the CORINE Land Cover (CLC) classes with the European Nature Information System (EUNIS) habitat classification types. In addition, water ecosystem indicators (freshwater and marine) are also structured to be as close as possible to indicators for the Water Framework Directive and Marine Strategy Framework Directive. In this manner, compatibility is ensured between the EU-level classifications used in different types of legislation. MetEcoSMap also resolved methodological issues during the mapping and assessment phase, tested the framework's landscape level mapping and assessment component – the in situ verification guide, and performed data collection for running the ESTIMAP pollination model for Bulgaria in cooperation with JRC. Meta – barcoding was also tested as a biodiversity assessment method.
- Project Improving the Bulgarian Biodiversity Information System (**IBBIS**) ensured the data collection back-end for all projects in programme BG03, including the mapping and assessment projects and some other projects that may inform ecosystem monitoring – such as East and South European Network for Invasive Alien Species - A

tool to support the management of alien species in Bulgaria (**ESENIAS-TOOLS**), citizen science and policy-related projects for biodiversity outside NATURA 2000. The IBBIS project performed consistency checking of all data at the time of its receipt, developed the necessary IT infrastructure for displaying the mapping datasets, supporting volunteer data collection and interface with the forest and Invasive Alien Species databases. After the consistency check, the mapping and assessment datasets were published online.

## REFERENCES

1. Mapping and assessment data viewers by ecosystem type:
  - Cropland: <http://eea.government.bg/flexviewers/ECOCROPS/>
  - Forest: <http://eea.government.bg/flexviewers/ECOFORREST/>
  - Grassland: <http://eea.government.bg/flexviewers/ECOGRASS/>
  - Heathland and shrubs: <http://eea.government.bg/flexviewers/ECOBUSH/>
  - Marine: <http://eea.government.bg/flexviewers/ECOMARINE/>
  - Rivers and lakes: <http://eea.government.bg/flexviewers/ECOLAKES/>
  - Sparsely vegetated: <http://eea.government.bg/flexviewers/ECOSPARSELY/>
  - Wetland: <http://eea.government.bg/flexviewers/ECOWETLAND/>
  - Urban: <http://eea.government.bg/flexviewers/ECOURBAN/>
2. Metodological Framework for assessment and mapping of ecosystem condition and ecosystem services in Bulgaria. Single parts are being uploaded to Researchgate as well. Please note the files are big – over 183 MB in total.
  - All files, in English <http://dox.bg/files/dw?a=15daf82144>
  - Part A Bratanova-Doncheva, S, Chipev, N, Gocheva, K, Vergiev, S, Fikova, R. Methodological framework for assessment and mapping of ecosystem condition and ecosystem services in Bulgaria. Conceptual bases and principles of application, ISBN:978-619-7379-21-1:  
[http://www.iber.bas.bg/sites/default/files/2018/MAES\\_2018/A1%20INTRO\\_ENG%20PRINT.pdf](http://www.iber.bas.bg/sites/default/files/2018/MAES_2018/A1%20INTRO_ENG%20PRINT.pdf)
  - Parts B1 – B9 – methodologies by ecosystem type:
    - B1 Zhiyanski, M, Nedkov, S, Mondeshka, M, Yarlovaska, N, Vassilev, V, Bratanova-Doncheva, S, Gocheva, K, Chipev, N. Methodology for assessment and mapping of urban ecosystems condition and their services in Bulgaria, ISBN:978-619-7379-03-7:  
[http://www.iber.bas.bg/sites/default/files/2018/MAES\\_2018/B1%20URBAN\\_ENG\\_PRINT.pdf](http://www.iber.bas.bg/sites/default/files/2018/MAES_2018/B1%20URBAN_ENG_PRINT.pdf)

- B2 Yordanov, Y, Mihalev, D, Vassiev, V, Bratanova-Doncheva, S, Gocheva, K, Chipev, N. Methodology for assessment and mapping of cropland ecosystems condition and their services in Bulgaria, ISBN:978-619-7379-05-1  
[http://www.iber.bas.bg/sites/default/files/2018/MAES\\_2018/B2%20CROP LAND\\_ENG\\_PRINT.pdf](http://www.iber.bas.bg/sites/default/files/2018/MAES_2018/B2%20CROP LAND_ENG_PRINT.pdf)
- B3 Apostolova, I, Sopotlieva, D, Velev, N, Vasilev, V, Bratanova-Doncheva, S, Gocheva, K. Methodology for assessment and mapping of grassland ecosystems condition and their services in Bulgaria, ISBN:978-619-7379-09-9  
[http://www.iber.bas.bg/sites/default/files/2018/MAES\\_2018/B3%20GRAS SLAND\\_ENG%20PRINT.pdf](http://www.iber.bas.bg/sites/default/files/2018/MAES_2018/B3%20GRAS SLAND_ENG%20PRINT.pdf)
- B4 Kostov, G, Rafailova, E, Bratanova-Doncheva, S, Gocheva, K, Chipev, N. Methodology for assessment and mapping of woodland and forests ecosystems condition and their services in Bulgaria, ISBN:978-619-7379-08-2  
[http://www.iber.bas.bg/sites/default/files/2018/MAES\\_2018/B4%20FORE ST%20ENG%20PRINT.pdf](http://www.iber.bas.bg/sites/default/files/2018/MAES_2018/B4%20FORE ST%20ENG%20PRINT.pdf)
- B5 Velev, N, Apostolova, I, Sopotlieva, D, Vassilev, V, Bratanova-Doncheva, S, Gocheva, K, Chipev, N. Methodology for assessment and mapping of heathland and shrub ecosystems condition and their services in Bulgaria, ISBN:978-619-7379-10-5  
[http://www.iber.bas.bg/sites/default/files/2018/MAES\\_2018/B5%20SHRUB\\_ENG\\_PRINT.pdf](http://www.iber.bas.bg/sites/default/files/2018/MAES_2018/B5%20SHRUB_ENG_PRINT.pdf)
- B6 Sopotlieva, D, Apostolova, I, Velev, N, Bratanova-Doncheva, S, Gocheva, K, Chipev, N. Methodology for assessment and mapping of sparsely vegetated land ecosystems condition and their services in Bulgaria, ISBN:978-619-7379-13-6  
[http://www.iber.bas.bg/sites/default/files/2018/MAES\\_2018/B6%20SPARSELY\\_ENG\\_PRINT.pdf](http://www.iber.bas.bg/sites/default/files/2018/MAES_2018/B6%20SPARSELY_ENG_PRINT.pdf)
- B7 Apostolova, I, Sopotlieva, D, Velev, N, Vassilev, V, Bratanova-Doncheva, S, Gocheva, K. Methodology for assessment and mapping of wetland ecosystems condition and their services in Bulgaria, ISBN:978-619-7379-14-3  
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619-7379-17-4

[http://www.iber.bas.bg/sites/default/files/2018/MAES\\_2018/B8\\_FRESHWATER%20ENG%20PRINT.pdf](http://www.iber.bas.bg/sites/default/files/2018/MAES_2018/B8_FRESHWATER%20ENG%20PRINT.pdf)

- B9 Karamfilov, V, Berov, D, Pehlivanov, L, Nedkov, S, Vassilev, V, Bratanova-Doncheva, S, Chipev, N, Gocheva, K. Methodology for assessment and mapping of marine ecosystems condition and their services in Bulgaria, ISBN:978-619-7379-18-1  
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3. Mapping project websites with additional information
- Cropland & Heathland and shrubs: <http://www.ekohrasti.eu/en/>
  - Forest: <http://fof.gateway.bg/en>
  - Grassland & EFAs pilots: <http://grasslands-ecoservices-bg.eu/index.php/en/>
  - Marine & Rivers and lakes: <http://freshwater-ecoservices-bg.eu/index.php/en/>
  - Sparsely vegetated: [http://www.bio.bas.bg/botany/projects/SPA-EcoServices/index\\_en.html](http://www.bio.bas.bg/botany/projects/SPA-EcoServices/index_en.html)
  - Wetland: <http://www.iber.bas.bg/sites/default/files/projects/WEMA/> (in Bulgarian)
  - Urban & pilots: <http://tunesinurb.org/en/>
4. Invasive alien species project ESENIAS-TOOLS: [http://www.esenias.org/index.php?option=com\\_content&view=category&id=88](http://www.esenias.org/index.php?option=com_content&view=category&id=88)