



# European Vegetation Archive Data Request Form



To obtain data from the European Vegetation Archive (EVA), including the ReSurveyEurope Database, please first enquire the EVA database administrator Ilona Knollová (ikuzel@sci.muni.cz) whether the data that meet your needs are available. If they are, please fill in the form below and submit it to Ilona or another member of the EVA Coordinating Board (or ReSurveyEurope Board if you ask for data from the ReSurveyEurope Database).

- Applicant's name:

Wilfried Thuiller

- Applicant's institutional address:

Centre national de la recherche scientifique (CNRS), Grenoble

- Applicant's e-mail:

wilfried.thuiller@univ-grenoble-alpes.fr

- Project title:

EUNIS Habitat Maps: Enhancing Thematic and Spatial Resolution for Europe through Machine Learning

- Are you asking for core EVA data (non-repeated vegetation surveys) or for ReSurveyEurope data (repeated vegetation surveys)?

Core EVA data. Only coordinates, location uncertainty, date of recording and assignment to EUNIS habitat type level 3 of the vegetation plots are requested

- Brief description of the aims and methods of the study:

The EUNIS habitat classification is essential for categorising European habitats and supporting European policy on nature conservation and to implement the Nature Restoration Law. As such, to meet the growing demand for detailed and accurate habitat information, we will provide spatial predictions for 260 EUNIS habitat types at EUNIS level 3, together with validation and uncertainty analyses.

Firstly, using ensemble machine learning models together with high-resolution satellite imagery and other climatic, terrain and soil variables, we produced an European habitat map at a 100-m resolution indicating the most likely EUNIS habitat at level 3 for every location across Europe. Predictions will be validated for three independent countries, namely for France, the Netherlands and Austria. We will also provide information on uncertainty and the most probable habitats at level 3 within each EUNIS level 1 formation. Products can be further refined with accurate and local land cover data. This product is thus likely to be particularly useful for restoration but also conservation purposes.



# European Vegetation Archive Data Request Form



Secondly, we will compare various deep learning approaches (CNN, ViT, hierarchical models) to predict EUNIS habitats. This will take the form of a comparative method paper where methods are compared on the same input data and evaluated on independent datasets.

Thirdly, we will predict the EUNIS habitats at 1km resolution for both current and future conditions, to map areas of risk, ecosystem disruption and potential for restoration for conservation.

As a side note, the EVA dataset will be combined with additional open-access datasets such as the French Forest Inventory.

- Will someone else be involved in data editing or analysis in addition to the applicant?

Sara Si-Moussi, Stephan Hennekens, Sander Mûcher

- Estimated time of delivery of results (e.g., manuscript submission):

End of 2024

- Geographic area needed (e.g., countries or range of geographic coordinates):

Europe, Turkey, Macaronesia and Archipelago

- Do you need plots to be georeferenced? If so, what is the minimum accuracy of plot location (in metres or kilometres) needed for your project?

Yes. Accuracy should be less or equal 1000m. Also include plots that do not have a location uncertainty given.

- Vegetation types needed (syntaxa):

All level 3 EUNIS habitat types

- Other data selection criteria:

All plots from 1990 onwards till present and assigned to one or multiple level 3 EUNIS habitat type

- Envisaged publications:

- A data paper to be submitted to Scientific Data to present the 1000m resolution EUNIS maps.
- A comparative method paper on deep learning approaches to predict habitats in Europe.
- Global change impacts on EUNIS habitats at 1km resolution.

- Data deposition. Some journals require data used for the analysis to be stored in a public repository to ensure the repeatability of the analysis. According to EVA Rules, you are not allowed to store the original vegetation-plot data obtained from EVA. However, if you plan to publish in such a journal, you may deposit a reduced EVA-derived dataset that (1) would make it possible to repeat the analysis published in the



## European Vegetation Archive Data Request Form



paper and (2) does not contain any information not used in the analysis. For example, such a dataset can contain only a subset of species (e.g., only angiosperms or only neophytes), or replace species names with codes, or replace species cover values with presences/absences, or remove all the header data, or replace the exact plot coordinates by coarse grid-cell coordinates etc. If you plan to deposit reduced information from vegetation plots, please describe here what might be deposited. If the project developed so that you needed to deposit more information than specified here, you would need to ask specific permission from the Custodians of the EVA databases used in your analysis before the dataset is deposited.

If required by the journal, then only habitat identity and coordinates will be published. Species composition or any other information will not be published.

- **Plant trait data from the TRY consortium.** If you plan to combine your analysis of vegetation-plot data with plant trait data, you can also request a dataset of 18 gap-filled traits for a large number of plant taxa prepared by the TRY consortium. These traits include Leaf area, Specific leaf area, Leaf fresh mass, Leaf dry matter content, Leaf C, Leaf N, Leaf P, Leaf N per area, Leaf N:P ratio, Leaf delta15N, Seed mass, Seed length, Seed number per reproductive unit, Dispersal unit length, Plant height, Stem specific density, Stem conduit density, and Conduit element length. This dataset can be provided to you by the EVA manager together with the vegetation-plot data. If you use this dataset, you must inform about your project the TRY data contributors who might be potentially interested and invite them as potential co-authors, assuming they will make an intellectual contribution to your paper. The list of the TRY data contributors will be sent to you together with the gap-filled trait dataset.

No

- **Specification of the co-authorship arrangements in publications based on the requested data.** Note that the EVA Rules recommend that co-authorship is offered to a representative of each database providing data that are particularly important for the project (e.g., a relatively large proportion of the final dataset used in the analyses or data from unique vegetation types or under-represented geographic areas). This database representative should be an expert in the topic of the project (not necessarily the custodian or deputy custodian), and this person should contribute to the project more than just by providing the existing data, e.g. by intellectual contribution to the concept of the paper, preparation of new data, or helping with data analysis, interpretation of the results or writing parts of the paper (see the IAVS Code of Professional Ethics: [https://www.iavs.org/page/governance\\_code-of-professional-ethics](https://www.iavs.org/page/governance_code-of-professional-ethics)). The project leader should enable active participation by regularly informing potential co-authors about the progress of the project from its early stage. The project leader should also make final co-authorship arrangements based on the real input of the individual contributors.

We offer co-authorship to custodians of the data used in the analyses or who register for this project in the EVA online form (for more than 10,000 plot observations ) and provide intellectual contribution to the concept of the paper, help with data analysis or interpretation of the results.

- **Eligibility of the applicant to receive EVA or ReSurveyEurope data.** Specify to which EVA or ReSurveyEurope database the applicant has contributed; if the applicant is not the custodian or deputy custodian of an EVA or ReSurveyEurope database, give a name of a custodian or deputy custodian who supports this data request.

Stephan Hennekens, a collaborator of this project, is a custodian of the Dutch Vegetation Database.

- I agree with the terms of EVA Data Property and Governance Rules as approved on 26 May 2012 (<http://euroveg.org/download/eva-rules.pdf>).



# European Vegetation Archive Data Request Form



- If I ask for ReSurveyEurope data, I agree with the terms of ReSurveyEurope Data Property and Governance Rules as approved on 6 April 2022 (<http://euroveg.org/download/resurveyeurope-rules.pdf>).
- In any result obtained based on EVA core data (non-repeated vegetation surveys), I will cite the EVA report article (Chytrý et al. 2016; <https://doi.org/10.1111/avsc.12191>). In any result obtained based on the ReSurveyEurope data (repeated vegetation surveys), I will cite the ReSurveyEurope report article as soon as it is published. In addition, I will cite individual source databases used in my project (if possible, in the list of References; if not possible, at least as a list of databases in the electronic supplementary material).
- If I ask for the plant trait data from TRY, I agree to invite to my project the TRY data contributors following the list received from the EVA database manager.

[place, date] Grenoble, 01/08/2024

[applicant's name] Wilfried THUILLER