EVA Annual report (2023)

Dear EVA friends,

This is the 7th annual report of the European Vegetation Archive (EVA) summarizing the status of our database consortium, projects, and publications.

In March 2023, there are 105 EVA databases that include **1,960,415 vegetation plots**, of which 89% are georeferenced, and 60% are assigned to phytosociological syntaxa. Of these plots, 70% may be accessed under the semi-restricted regime and 19% under the restricted regime, while the other 11% are open access. In addition to the core EVA data, we have compiled **78,102 plots** for **ResurveyEurope**, an initiative for collecting and analyzing fine-scale plant community resurvey data from Europe (more info here). These plots include **278,643** observations from all around Europe. The ResurveyEurope team is working on integrating more datasets.

In total, EVA data have been made available for **178 research projects** (see the full list here).

The EVA consortium published **10 papers** in the last year (since the last annual report). We highlight new pan-European studies using EVA data for producing disturbance indicator values (Midolo et al. 2023) and Ellenberg-type indicator values (Tichý et al. 2023) for European plants. The later study is associated with another publication that originated from the same EVA project that combines existing data sets of ecological indicator values in Europe, though not using the EVA data (Dengler et al. 2023). These papers will provide a significant contribution to the ecological assessment of European plants in their habitats. In addition, Kambach et al. (2023) show evidence of the importance of habitat typologies in exploring the relationships between plant traits and climate. A new repository of vegetation plot data from arable habitats in Central Europe is now available thanks to Glaser et al. (2022) and the contribution of EVA. We also highlight a classification study for the alliances of European oak-hornbeam forests and related vegetation types (Novák et al. 2023), and a work revealing the patterns of neophyte invasions in European heathlands and scrub (Kalusová et al. 2023). The EVA datasets on alpine grasslands were also used to investigate the drivers of European alpine diversity (Malanson et al. 2022, 2023). Last but not least, EVA data was used to advance our understanding of the ecology and distribution of the genus *Woodsia* (Bezsmertna et al. 2022) and the invasion of *Euphorbia paralias* in Australia (Giulio et al. 2022), thus projecting our database beyond Europe.

Since the database started in 2012, EVA has contributed to **70 journal papers**, 11 technical reports, and 102 presentations at scientific conferences. For an updated list of all publications, please visit the EVA webpage.

We congratulate the EVA project leaders and all data contributors for these achievements and look forward to seeing new projects and results next year!

Borja Jiménez-Alfaro, Ilona Knollová and the EVA Coordinating Board

March 2023

EVA projects FINISHED in the last year

- Diversity and syntaxonomic revision of the European oak-hornbeam forests – Milan Chytrý
- Relationship between local abundance, regional co-occurence and rangewide niche characteristics in vascular plants – Ute Jandt
- Large-scale assessment of alien plant invasions in European grasslands – Irena Axmanová
- Alien plant invasions in European scrub vegetation – Veronica Kalusová
- Modelling *Euphorbia paralias* realised niche in native and invaded ranges – Silvia Giulio

EVA projects CANCELLED in the last year

- Toward a mechanistic description of land uses for ecological studies: Building a Vegetation - Land-use converter for Europe – Anne Mimet
- Diversity and synecology of forests with *Tilia tomentosa* – Irena Šapić
- Trait-disturbance relationships in the European vegetation – Gabriele Midolo

NEW EVA PUBLICATIONS

Bezsmertna O., Hleb R., Orlov O., Vasheniak I., Podpriatov O., Kvakovska I., Danylyk I., Kamleitner K., Ragulina M., Babytskiy A., Rubanovska N. & Lysenko T. 2022. **The genus *Woodsia* R. Br. in Ukraine (*Woodsiaceae*)**. Thaiszia 32: 029-054.

Dengler J., Jansen F., Chusova O., Hüllbusch E., Nobis M.P., Van Meerbeek K., Axmanová I., Bruun H.H., Chytrý M., Guarino R., Karrer G., Moeys K., Raus T., Steinbauer M.J., Tichý L., Tyler T., Batsatsashvili K., Bita-Nicolae C., Didukh Y., Diekmann M., Englisch T., Fernández-Pascual E., Frank D., Graf U., Hájek M., Jelaska S.D., Jiménez-Alfaro B., Julve P., Nakhutsrishvili G., Ozinga W.A., Ruprecht E.-K., Šilc U., Theurillat J.-P. & Gillet F. 2023. **Ecological Indicator Values for Europe (EIVE) 1.0.** Vegetation Classification and Survey 4: 7-29. (not using EVA data)

Giulio S., Cao Pinna L., Carboni M., Marzialetti F., Acosta A.T.R., Garbolino E. & Jucker T. 2022. **Invasion dynamics and potential future spread of sea spurge (*Euphorbia paralias*) across Australia's coastal dunes**. Journal of Biogeography 49: 378– 390.

Glaser M., Berg C., Buldrini F., Buholzer S., Bürger J., Chiarucci A., Chytrý M., Dřevojan P., Follak S., Küzmič F., Lososová Z., Meyer S., Moser D., Pyšek P., Richner N., Šilc U., Wietzke A., Dullinger S. & Essl F. 2022. **AgriWeedClim database: A repository of vegetation plot data from Central European arable habitats over 100 years**. Applied Vegetation Science 25: e12675.

Kalusová V., Chytrý M., Večeřa M., Svenning J.-C., Biurrun I, Kintrová K., Agrillo E., Carli E., Ecker K., Garbolino E., Šibíková M. & Axmanová I. 2023. **Neophyte invasions in European heathlands and scrub**. Biological Invasions 25.

Kambach S., Sabatini F.M., Attorre F., Biurrun I., Boenisch G., Bonari G., Čarni A., Carranza M.L., Chiarucci A., Chytrý M., Dengler J., Garbolino E., Golub V., Güler B., Jandt U., Jansen J., Jašková A., Jiménez-Alfaro B., Karger D.N., Kattge J., Knollová I., Midolo G., Moeslund J.E., Pielech R., Rašomavičius V., Rūsiņa S., Šibík J., Stančić Z., Stanisci A.,

Svenning J.C., Yamalov S., Zimmermann N.E. & Bruelheide H. 2023. **Climate-trait relationships exhibit strong habitat specificity in plant communities across Europe**. Nature Communications 14, 712.

Malanson G.P., Pansing E.R., Testolin R., Abdulhak S., Bergamini A., Ćušterevska R., Marcenò C., Kuzmanović N., Milanović Đ, Ruprecht E., Šibík J., Vassilev K., Willner W. & Jiménez-Alfaro B. 2022. **Explanation of beta diversity in European alpine grasslands changes with scale**. Ecosphere 13: e4066.

Malanson G.P., Testolin R., Pansing E.R. & Jiménez-Alfaro B. 2023. **Area, environmental heterogeneity, scale and the conservation of alpine diversity**. Journal of Biogeography 50: 743– 754.

Midolo G., Herben T., Axmanová I., Marcenò C., Pätsch R., Bruelheide H., Karger D. N., Aćić S., Bergamini A., Bergmeier E., Biurrun I., Bonari G., Čarni A., Chiarucci A., De Sanctis M., Demina O., Dengler J., Dziuba T., Fanelli G., Garbolino E., Giusso del Galdo G., Goral F., Güler B., Hinojos-Mendoza G., JansenF., Jiménez-Alfaro B., Lengyel A., Lenoir J., Pérez-Haase A., Pielech R., Prokhorov V., Rašomavičius V., Ruprecht E., Rūsiņa S., Šilc U., Škvorc Ž., Stančić Z., Tatarenko I. & Chytrý M. 2023. **Disturbance indicator values for European plants.** Global Ecology and Biogeography 32: 24– 34.

Novák P., Willner W., Biurrun I., Gholizadeh H., Heinken T., Jandt U., Kollár J., Kozhevnikova M., Naqinezhad A., Onyshchenko V., Pielech R., Rašomavičius V., Shirokikh P., Vassilev K., Wohlgemuth T., Večeřa M. & Chytrý M. 2023. **Classification of European oak–hornbeam forests and related vegetation types**. Applied Vegetation Science 26: e12712.

Tichý L., Axmanová I., Dengler J., Guarino R., Jansen F., Midolo G., Nobis M.P., Van Meerbeek K., Aćić S., Attorre F., Bergmeier E., Biurrun I., Bonari G., Bruelheide H., Campos J.A., Čarni A., Chiarucci A., Ćuk M., Ćušterevska R., Didukh Ya., Dítě D., Dítě Z., Dziuba T., Fanelli G., Fernández-Pascual E., Garbolino E., Gavilán R.G., Gégout J.C., Graf U., Güler B., Hájek M., Hennekens S.M., Jandt U., Jašková A., Jiménez-Alfaro B., Julve P., Kambach S., Karger S.N., Karrer G., Kavgacı A., Knollová I., Kuzemko A., Küzmič F., Landucci F., Lengyel A., Lenoir J., Marcenò C., Moeslund J. E., Novák P., Pérez-Haase A., Peterka T., Pielech R., Pignatti A., Rašomavičius V., Rūsiņa S., Saatkamp A., Šilc U., Škvorc Ž., Theurillat J.-P., Wohlgemuth T. & Chytrý M. 2023. **Ellenberg-type indicator values for European vascular plant species**. Journal of Vegetation Science 34: e13168.