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One-way ANOVA was used to test the significant differences in soil properties between the two forests that were dominated by different vegetation and between the native and invasive shrub species. Our results indicated that the RS of *Ageratina adenophora* had significantly higher (p < P.5) SM, SOC, AP, TN, and MBC in the banj oak-dominated forest than RS of *Ageratina adenophora* in the chir pine-dominated forest. In the Banj oak forest, the RS of *Ageratina adenophora* had significantly (p < P.5) higher SOC, AP, TN, and MBC compared to the RS of native *Rubus ellipticus*. However, in the chir pine forest, SOC and TN did not vary significantly between the RS of the native and invasive shrubs. Our findings suggested that in comparison to the chir-pine forest, the banj oak forest's microclimatic conditions facilitate the successful invasion of *Ageratina adenophora.*

P.1453 Biological patterns in the global invasion of the pampas grass (Cortaderia selloana)

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Humans have always dispersed plant species beyond their natural ranges but, in the last centuries, some of these species have adapted so well to novel environments that they have changed dramatically the composition and structure of natural ecosystems. We present a global collaborative project focused on the regenerative patterns of the pampas grass (*Cortaderia selloana*, Poaceae), one of the most ecologically impact ful invasive plants globally, causing strong effects on regional ecosystems and economies. In collaboration with 25 researchers from five continents, we sampled populations in the native (South America) and invaded (North America, Europe, South Africa, Australia, and New Zealand) regions to evaluate the environmental requirements necessary for germination and establishment of the species. The global samples will be used to evaluate the genetic differentiation among populations and to investigate ecological adaptations and past pathways of introduction. In addition, we investigated the impact of local natural enemies of the

species, and the extent and potential of biological control agents in different continents. By combining ecological and genetic methods, our study provides comprehensive insights to understand the mechanisms underlying the biological invasion of **Cortaderia selloana** at the global scale, which will help managers to prevent further spread of this globally invasive plant. This study has been supported by the National Geographic Explorer grants to generate and disseminate biological information on the problem of global plant invasions.

P.1454 Ecological characterization of two dominant plant communities within Bidention tripartitae in the Ramsar sites of the SE Central Europe

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Wetlands are very fragile and endangered worldwide, and they are particularly susceptible to biological invasions. Having this background, we carried out surveys in the Ramsar sites in SE Central Europe (Southeastern part of the Pannonian Plain) to assess the presence of herbaceous invasive species in specific habitat types. Phytocenological relevés were made in the period 2011-2015 on the vegetation of tall-growing, annual wetland herbs (all. *Bidention tripartitae* Nordhagen ex Klika et Hadač 1944). The matrix for analyzes consisted of 119 relevés and 261 plant taxa. The concept of dominant and diagnostic species was used to define groups and Borhidi's ecological indices for the ecological characterization of the studied stands. Two groups of releves were identified in the analyzed stands, informally named after the dominant species: *Alisma plantago-aquatica - Aster lanceolatus* and *Mentha aquatica - Bidens frondosa* community types. The dominance of neophytes in this alliance in the surveyed Ramsar sites is due to anthropogenic influences, with *Aster lanceolatus* Willd. and *Bidens frondosa* L. being among the

most common invasive herbaceous plants recorded. *Mentha aquatic–Bidens frondosa* community was recorded in Zasavica and Obedska Bara. It is represented with 13 relevés, with the total cover 80-100%, and the presence of nine invasive species in these stands (15.24% of the total number of recorded species). *Alisma plantago-aquatica-Aster lanceolatus* community was recorded in Ludasko Lake, Koviljsko-Petrovaradinski Rit, Zasavica and Obedska bara. It is represented with 31 relevés, the total cover 98%, and the presence of seventeen invasive species in these stands (14.53% of the total number of recorded species). *Mentha aquatic–Bidens frondosa* comm. was positively correlated with the soil moisture, while *Alisma plantago-aquatica-Aster lanceolatus* comm. with nutrients.

P.1455 Invasion pathways in Colombian highlands

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Biological invasions present a significant challenge to nature conservation. Invasive species jeopardise the stability of ecosystems in natural environments and are a major cause of the worldwide extinction of native species. They can also have a negative impact on social, cultural, and economic dimensions. Invasive species are primarily transported by human activities, whether intentional or accidental, for industrial, food, ornamental, or economic purposes. Although progress has been made in characterising invasion pathways, there are still gaps, particularly in tropical mountain regions. This study identifies the most common invasive plant species in high altitude ecosystems in Colombia, as well as their main routes of introduction, spread and distribution. A systematic search of specialised databases such as the "Catálogo de plantas y líquenes de Colombia", COL, JBB, UDBC, Jstor, SIB, GBIF and Tropicos.org was used to collect and compile information on pathways. Out of the fifty-five invasive species reported for Colombia, nineteen were found above 2,800 m a.s.l. 40% of these species are widely recognised as highly invasive and have a significant impact. The most frequent invasive pathways were ornamental, reforestation and unintentional. It is suggested that a combination of airborne dispersal and intentional cultivation for harvest provides the greatest potential for invasion, taking into account both actual distribution and pathways. The information on pathways can collectively improve environmental management policies to prevent the spread of invasive and alien plants in natural environments in Colombia.

P.1456 iCONNECT – integrative CONyza NEtwork for Contemporary Trait evolution

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Rapid evolution is a common occurrence in plant invasions. However, our understanding of rapid evolution is limited because most studies underestimate among-population variation (APV) within native and non-native ranges and/or do not disentangle how population histories drive APV. Furthermore, integrative frameworks of APV-focused research are lacking but could help identifying molecular mechanisms of rapid evolution. We here present the integrative network iCONNECT. iCONNECT is an open collaboration of researchers who contribute to the sampling of *Conyza canadensis* populations across the Northern hemisphere and researchers who investigate APV in their particular research field using these sampled populations. The first study within the iCONNECT framework will be a greenhouse experiment in which 120 native and 150 non-native *C. canadensis* populations will face a competition × drought treatment combination. For the study populations, we collected field data as proxies for population history in terms of plant competitive regime, drought regime and fungal interactions in the rhizosphere. The samples will be analyzed in a coherent manner for 1) phenotypic APV (competitive ability under dry vs. mesic conditions), 2) eco-metabolomic APV (mass spectrometry analyses of root exudates), 3) APV in root-fungal interactions (amplicon sequencing), and 4) population genomics (ddRAD-

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