# **Photo Story**

# 17<sup>th</sup> EDGG Field Workshop photo diary Inner Alpine dry valleys of the south-eastern Alps (Italy, Switzerland, 1-11 June 2023)

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Over the last two decades, a standardized EDGG sampling methodology (Dengler et al. 2016) has been refined and applied to collect a large amount of data across the entire Palaearctic realm. A series of field workshops have been conducted by the Eurasian Dry Grassland Group to gather biodiversity data using this standardized methodology. These workshops have played a crucial role in aggregating, exchanging, and standardizing collected data among specialists working in various countries and fields.

The data gathered through this methodology are stored in the GrassPlot database (Dengler et al. 2018). This extensive database contains standardized, high-quality multi-taxa biodiversity data, along with certain environmental and structural data. It has been utilized for numerous publications, some of which are still in progress. These publications aim to analyse various aspects of biodiversity at regional and continental scales, ranging from floristic and phytosociological to ecological aspects such as biodiversity patterns and drivers.

The 17<sup>th</sup> EDGG Field Workshop involved 12 participants from seven different countries (Italy, San Marino, Switzerland, Germany, Austria, Ukraine and Turkey) with varying levels of experience and expertise in different fields, from vascular plants to cryptogams. Seven local botanists from the organizing institutions accompanied the group, providing technical and logistical support.

Following the successful Field Workshops conducted in the Inneralpine dry valleys of Austria (2018; Magnes et al. 2021) and Switzerland (2019; Bergauer et al. 2022), the aim of the 17<sup>th</sup> Field Workshop was to fill the data gaps in the dry valleys of the Eastern Alps. The 11th EDGG Field Workshop has already investigated the three most significant areas of Austria, including small areas of Carinthia and Styria, Puster and upper Drau valley, and the Inn valley in Tyrol. Similarly, Switzerland, comprising the Engadine, the valleys of Central Grisons (Rhine and tributaries), and the Valais (Rhone valley), was the focus of the 12<sup>th</sup> EDGG Field Workshop.

For this reason, it was decided to conduct the Field Workshop in the south-eastern Alps, spanning across the Italian regions of Trentino-Alto Adige and Lombardy, as well as Switzerland. With the support of three local institutions, the Institute for Alpine Environment – Eurac Research, the Free University of Bolzano, and the Museum of Nature South Tyrol, it was possible to study the whole complex of target valleys: Eisack/Isarco, Adige/Etsch, Val Venosta/Vinschgau and Val di Sole (Autonomous Province of Bolzano and Trento, Trentino-Alto Adige region), Valtellina (Lombardy region) and Val Müstair/Münstertal (Switzerland).

In terms of vegetation types, our focus was on extensively grazed dry grasslands, along with visits to some semi-dry hav meadows, between 382 and 1763 meters in altitude. Specifically, data collection took place in the moderately dry valleys of Eisack/Isarco, Adige/Etsch, Valtellina, Valcamonica and Val di Sole, and the most extreme dry valley system in the Eastern Alps: Val Venosta/Vinschgau and Val Müstair/ Münstertal. The average annual precipitation in these climatically extreme valleys typically ranges between 450 and 700 mm, in combination with high solar radiation. The eastwest orientation of the Val Venosta/Vinschgau valley and its geographical position result in an annual precipitation of below 500 mm in some localities. Since the end of the last ice age, this exceptional environment has fostered the development of a highly diverse thermophilic flora, adapted to conditions that are otherwise absent or rarely found in the Alps.

Among these species, many belong to taxa typical of the steppe-like grasslands of Central and Eastern Europe, which are isolated from their main distribution range, and thus found at the westernmost limit of their range. Some taxa have even formed endemic genetic lineages or subspecies (Kirschner et al. 2020). This diverse steppe-like element is enriched by widespread Central European dry grassland species and some (sub-) Mediterranean species adapted to summer drought.

The three main valley systems described above were explored in three consecutive stages, with two to three days spent in each, staying in country hotels in strategically chosen locations. Transfers required the use of two 9-seater minibuses and some additional cars provided by the organizing team.

This enabled access to smaller valleys and allowed the group to split into two sub-groups. This asset yielded significant results in terms of quantity: a total of 26 biodiversity plots (23 plots of 100 m<sup>2</sup>, plus 3 plots of 1000 m<sup>2</sup>) and 108 normal plots (10 m<sup>2</sup>) were successfully sampled.

#### References

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Field Workshop area: overview map (left); detailed trip map (right).

#### Day 1 – 1<sup>st</sup> June 2023

On June 1<sup>st</sup>, the participants travelled to Bozen/Bolzano, a centrally located city in the Autonomous Province of Bolzano, South Tyrol. An icebreaker event was organized at the Museum of Natural Sciences, where after an introductory meeting by the organizers and a brief refreshment break, participants had the opportunity to visit the museum's exhibition rooms with the curator of botany, Thomas Wilhalm.



Arrival in the city of Bozen/Bolzano, South Tyrol.



Welcome to the Natural Science Museum and icebreaker event with the local organizing team (Jürgen Dengler, Andreas Hilpold, Camilla Wellstein and Thomas Wilhalm).

#### Day 2 – 2<sup>nd</sup> June 2023

The first field day took place in Castelfeder, a hillside complex located south of Bolzano in the Adige Valley. What makes this place unique is its status as a natural hotspot within a heavily man-transformed landscape. The valley floor, fertile and wide like most glacially carved valleys, serves as valuable space for vineyards and apple orchards in a totally mountainous region. It is also traversed by an important transit route, the Brenner motorway connecting Austria and Italy. Castelfeder is designated as a protected area, and its most valuable environments include extensively grazed dry meadows, chestnut groves, and small wetlands.



Introduction to the special dry flora of the area and first surveys in Castelfeder.



Magnificent view of the Adige Valley from Castelfeder. In the background the Etsch/Adige river, apple orchards under canvas, vineyards and villages in the foothills.



Working moments (and deserved lunch break) of the two groups.



Final checks and a glance from above before going.

#### Day 3 – 3<sup>rd</sup> June 2023

The fine weather continued to accompany the group on the third day. In the morning, the group was split into two, and thanks to the 9-seater minibus, sampling could be conducted simultaneously. One group drove eastwards along a section of the Eisack/Isarco river (to localities Trumbichl and Teis), while the others remained around Bolzano (Moritzing, Gries). Here, on the south-facing slopes directly above the city, there are sunny and very hot stations that facilitate the naturalization of several *Opuntia* species, which were introduced at the end of the 1800s.



Sampling sessions on the steep slopes in dry grasslands.



Views of the sampled slopes next to Terlan/Terlano.



A rich world of cryptogams.



Communities with different Opuntia species and Orlaya grandiflora.



Exploring dry grasslands in Trumbichl.



Fieldwork in Eisak/Isarco Valley.



Identification and arrangement of samples in the evening at the hotel hall.

#### Day 4 – 4<sup>th</sup> June 2023

On this day, the journey westwards began: the groups mixed and split up to explore the dry south-facing slopes with plant communities dominated by *Stipa capillata* and *S. pennata*. After passing Merano, we reached the slopes at the beginning of Juval where we spent the morning (and temporarily lost the penetrometer... two hours of fear!). In the afternoon, despite the arrival of rain, we decided to climb to higher altitudes and split into two groups again. A warm and delicious meal in a traditional restaurant brought smiles back to our faces after this sudden change in temperature.



Contrast between vegetation rich slopes and intensive apple orchards in the valley floor.



Moments of concentration during the fieldwork.



The rainy afternoon ends with a very appreciated hot meal.

### Day 5 – 5<sup>th</sup> June 2023

The previous evening we relocated to the Iris Hotel in Mals/Malles, as the upcoming day and the next two were scheduled to take place in the upper Vinschgau. Despite being the driest of the Alpine valleys involved in the workshop, the rain persisted. In the morning, it accompanied us during surveys on the meadows of Tartscher Bichl, while in the afternoon, both groups moved to Tartscher Leiten.



View from different perspectives of the arid common pastures on Tartscher Bichl.



Wet sampling...



A wide variety of bryophytes and vascular plants (Thymus species to be checked on the right).

#### Day 6 – 6<sup>th</sup> June 2023

On day six, the two groups split between Val Monastero/Müstair and Silandro/Schlanders - Allitz. Müstair is situated just outside the Italian border, in the Swiss canton of Grisoni/Graubünden. Here, we found time to visit the remarkably interesting monastery of St. John the Baptist/San Giovanni Battista, a UNESCO World Heritage Site renowned for its extraordinary cycle of frescoes from the Carolingian era (9<sup>th</sup> century) and the Romanesque sculptures.



Views of the Val Monastero/Müstair and visit at the monastery.



Sampling moments (and some rest).



On rocky dry slopes.



Sharing knowledge.

#### Day 7 – 7<sup>th</sup> June 2023

In the morning, we sampled meso-xeric grasslands in Matsch/Val Mazia, enjoying a breathtaking view of the entire Vinschgau/Val Venosta valley, which is also adorned with castles and ruins. Afternoon sampling once again took place in Val Monastero/Müstair, particularly in the Italian part of the valley around Taufers/Tubre and Laatsch/Laudes. Here, large portions of dry meadowland alternate with woodland, where, in the regeneration of the portions further down the valley, we also encountered *Quercus pubescens*, demonstrating the thermophilic character of these slopes.



Working together is always an enrichment.



Views of the Matsch/Val Mazia valley and our group photo.



Some field equipment: sample bags, GPS, flora of the area.

#### Day 8 - 8<sup>th</sup> June 2023

Starting from day eight, the journey continued southwest into the Lombardy region. Here, we stayed in the charming Hotel Garnì Le Corti in Grosotto, Valtellina. While most of the valley's well-exposed slopes have been extensively shaped by human activity since ancient times, thanks to a less intensive tourist economy, the valley still retains some stretches of dry grasslands. We explored certain areas in the northern part, near Bormio (Uzza, Niblogo).



Stelvio Pass: from South Tyrol to Lombardy.



Last plots in South Tyrol near Tarces/Tartsch in the morning.



Mesoxeric grasslands in Lombardy, near Bormio.



Work also continues in the evening.

# Day 9 – 9<sup>th</sup> June 2023

The exploration of Valtellina continues southwards. This day, we sampled Sondalo and Mondadizza in the morning, while in the afternoon, we moved on to Teglio and Tirano.



Valtellina valley and its grasslands.



Steepness is guaranteed!



There are also interesting places with historic villages and traditional cuisine (Pizzoccheri – a typical buckwheat pasta with potatoes, fontina cheese and Savoy cabbage).

#### Day 10 – 10<sup>th</sup> June 2023

On the last day of the Field Workshop, we were taking advantage of the return journey to visit some interesting places. We first continued along the Val Camonica, where we stopped in Edolo. In the afternoon, we head east and entered the province of Trento, making several stops in Val di Sole (specifically in Vermiglio, Castello and Terminago). Finally, we concluded our circular route by heading north to return to Bolzano/Bozen, where a welcome (and long-awaited) barbecue awaited us at the Eurac Research Institute with all our companions from this beautiful journey.



Last surveys in Val Camonica (near Edolo) and Val di Sole (Vermiglio, Castello and Terminago).



The final meeting and the barbecue at Eurac Research garden in Bolzano/Bozen.

# Selected pictures of vascular plants



Allium sphaerocephalon, Anthericum liliago, Linaria angustissima.



Astragalus exscapus, Neotinea ustulata, Onobrychis arenaria.



Sempervivum tectorum and S. arachnoideum, Globularia cordifolia, Orlaya grandiflora.



Filago minima, Melampyrum arvense, Heteropogon contortus.



Opuntia phaeacantha, Caucalis platycarpos.



Phelipanche arenaria (above) and Veronica spicata (below).



Aster alpinus (above) and Pulsatilla montana (below).



Filago lutescens, Asplenium septentrionale, Erysimum rhaeticum and Orobanche caryophyllacea.

# Selected pictures of animals



Stenopterus rufus and Cerambyx cerdo.



Podarcis muralis and Parnassius apollo.



Anacridium aegyptium and Apis mellifera.

# Selected pictures of cryptogams



Bryophyte cushions and Xanthoparmelia stenophylla.



Mediterranean hepatic Oxymitra incrassata (left) and cf. Coprinopsis nivea (right).



Rocky outcrops dominated by bryophyte cushions and lichens (left) and wet Hedwigia ciliata on a rock.

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