

Five days pre-conference excursion - Mountains of Sicily (27 June – 2 July 2023)

The excursion begins in front of the Central Railway Station of Palermo at 8:00 a.m. on June 27th and ends at the port of Milazzo at approximately 3:30 p.m. on July 2nd.

The Sicilian territory is predominantly hilly or mountainous: one fourth of the island is at more than 700 m a.s.l.; two thirds range between 300 and 700; one sixth below 300 m a.s.l. We will visit the three main mountain districts of Sicily: Mt. Etna, the largest active volcano of the Mediterranean Region; Nebrodi Mts., the smoothest and most forested part of the so-called Sicilian Apennines; Madonie Mts., the highest and most heterogeneous mountain system of the Sicilian Apennines. Oro-Mediterranean vegetation, rare species, scenic views and the still surviving traces of traditional land management will be the main attractions of our hikes.

NOTE: **hiking time** refers to the approximate time spent walking/moving on terrain. We are supposed to make frequent stops along the trail, to observe vegetation/rare plant species/scenic views. The time spent in this way, as well as for lunch/technical breaks, is **not** included in the computation of the hiking time. The pre-conference excursion will include hiking on mountain trails up to 15 km long, with an elevation range up to 750 m uphill and 840 downhill. Hiking boots and outdoor wear for all temperatures between 12 and 35 °C will be needed. Be prepared to spend the whole day outside, including many hours in very sunny places, with no shade at all and temperatures up to 35°C (95°F), occasionally windy. Please consider this before you register!

Apart from Etna, the main elevations of Sicily (ranging from 1400 to 1979 m) are aligned along the north-Eastern corner of the island, from the Strait of Messina up to the valley of the Torto River. Basing on geomorphological and structural features, three sectors can be recognized, from east to west: Peloritani-, Nebrodi- and Madonie Mountains. Peloritani are constituted by the oldest outcrops of Sicily: a complex of different metamorphic rocks (gneiss, schistose and phylladic alternations) partially covered by sedimentary sandstones and limestones. Nebrodi are mostly consisting of quartzose sandstone rocks, clayey and siltose depositions belonging to the Numidian Flysch. Madonie are formed by carbonatic, dolomitic and quartzitic outcrops, frequently interrupted by outcroppings of salty clay and layers of halite.

First day (June 27, 2023) – Madonie - Vallone Madonna degli Angeli and Monte San Salvatore

8.00 a.m. Departure from Palermo Central Railway Station

Program

On Madonie Mts., many different geological units are represented, creating a wide variety of substrata, from alkaline to acidic, from loose and sandy to compact and clayish. Our hike will develop along the contact area between limestone and metaquartzites, giving us the chance to appreciate most of the local endemites, including the most famous one: *Abies nebrodensis*, currently limited to a small valley (1440-1600 m a.s.l.) subjected to periodical fogs, where it colonizes initial soils with an arenaceous-quartzitic matrix. The Madonian fir is one of the last representatives of a Tertiary climactic vegetation, that has been displaced by the arrival of the beech in Sicily, during the cold phases of the Quaternary. Once arrived in the summit areas of Mt. San Salvatore, we will appreciate the acidophilous pulvinate communities of *Armerion nebrodensis* (hedgehog heats). Walking back along the ridge up to the limestone outcrops, we will observe the transition between these communities and the basiphilous ones ascribed to the alliance Cerastio-Astragalion

nebrodensis, before descending towards Contrada Pomieri across the contact zone between the *Anemone apenninae-Fagetum sylvaticae* and the *Ilici aquifolii-Quercetum austrotyrrhenicae*.

6.30 p.m. check-in at Rifugio Marini (Piano Battaglia, Petralia Soprana)

Trail: Length: 9.5 km. Hiking time: 5 hours, Elevation range: 800 m.

Second day (June 28, 2023) – Madonie - Piano Battaglia and Pizzo Carbonara

8.30 a.m. Departure from Rifugio Marini (Piano Battaglia, Petralia Soprana)

Program

The carbonatic summits of Madonie are spotted by thousands of closed hollows, known as sinkholes or dolines. These are generally small but can be up to 40 m in depth and 500 m or more in diameter. Sinkholes develop by a variety of karstic processes: collapse, suffosion or solution, depending on the land morphology and on the proximity with loose material originating from the neighbouring quartzitic sandstones. We will wander amidst the dolines and observe the how the vegetation adapts to the gradient summit-flank-hollow, in a landscape dominated by mountain pasturelands (*Cirsietalia vallis-demonis*, *Holoschoenetalia* and *Poetalia bulbosae*), mostly obtained by millennial stockbreeding to the detriment of beechwoods. After reaching the top of Mt. Carbonara (1979 m), the second highest peak of Sicily, we will descend a carbonatic, south facig slope with vegetation of *Cerastio-Astragalion nebrodensis*.

6.00 p.m. Back to Rifugio Marini (Piano Battaglia, Petralia Soprana)

Trail: Length: 7.7 km, Hiking time: 4.5 hours, Elevation range: 550 m

Third day (June 29, 2023) – Etna - southern side

8.00 a.m. Departure from Rifugio Marini (Piano Battaglia, Petralia Soprana)

Program

Etna - southern side: from "Schiena dell'Asino" to "Piano del Vescovo", through Valle del Bove.

The single most relevant landmark of the island is Mt. Etna (currently standing 3329 m), the biggest volcano of the Mediterranean region. It dominates the Eastern side of Sicily, with multiple layers of erupted materials that cover an area of 1190 km², with a basal circumference of 140 km.

We will climb 700 m of altitudinal range along the southern rim of Valle del Bove, an huge horse-shoe shaped caldera on the eastern flank of the volcano, resulting from a progressive collapse of older volcanic edifices, which took place (with distinct phases) between 60,000 and 9,000 years ago. From the top of the rim (a rocky ridge called "Schiena dell'Asino"), we will have an impressive view over the caldera: a 5 km wide and 7 km long depression surrounded by steep slopes (between 400 and 1,000 m high), where several magmatic dikes and rocky ridges emerge in consequence of selective erosive processes. The name Valle del Bove means "Valley of the Ox" and it seems to recall the time when (until 1991), the valley bottom was covered by lush pastures, freely grazed by herds of cows and sheep. Nowadays, Valle del Bove is the place where much of Etna's lava flows are converging, making it the only place of stunning wilderness in Sicily. We will walk through the thorny cushions of the *Astragalus siculus* dominated vegetation (*Rumici-Astragaletea siculi*) and, after a couple of km bordering the southern side of the valley floor (making nice observations on the recolonization patterns on recent lavas), we will escape from Valle del Bove through the beechwoods above Piano del Vescovo, i.e. the extreme southern limit of the distribution range of the European beech (*Fagus sylvatica*).

6.00 p.m. Check-in: Hotel Airone (Zafferana)

Trail: Length: 8.7 km. Hiking time: 4.5 hours, Elevation range: 740 m uphill and 1200 m downslope.

Fourth day (June 30, 2023) – Etna - North-Eastern side

8.30 a.m. Departure from Hotel Airone (Zafferana)

Program

Downslope from the central cone, Etna displays several hundred minor cones, the so-called “temporary” cones, shaping this huge mountain as one of the world’s largest polygenetic volcanoes. We will start our walk from the eruptive vents of 2002, near Piano Provenzana, and, after a short climb across Rumici-Astragaletea siculi vegetation, we will walk along a gently sloping diagonal descending towards Monti Sartorius, a complex of small cones dating back to 1865.

We will see beautiful Calabrian pine forests, exploited since ancient times for timber and resin (pitch) production. The Calabrian pine forest (*Pinus calabrica*) represents the zonal vegetation in the N-NW flank of Mt Etna, but most often it represents a seral stage of oak- or beechwoods (depending on elevation). At the end of the trail, ending up in the East-facing flank of the Volcano, i.e. the moistest and coolest part of the oro-mediterranean vegetation belt on Mt. Etna, we will cross the Aetnean birchwood (*Betula aetnensis*), which has its optimal stands right in the tableland surrounding Monti Sartorius.

7.30 p.m. check-in at Relais Villa Miraglia (Cesarò)

Trail: Length: 8 km. Hiking time: 4 hours, Elevation range: 280 m uphill and 670 m downslope.

Fifth day (July 1, 2023) – Nebrodi - Monte Soro

8.30 a.m. Departure from Relais Villa Miraglia (Cesarò)

Program

The Nebrodi mountains consist of a series of reliefs, on average 1500 m high, aligned from east to west, with steep flanks and rounded peaks. Monte Soro (1847 m) is the highest elevation of Nebrodi Mts. and it is formed by Cretaceous flyschoid outcrops, subdivided into two members: a clayey-calcareous lower member and a clayey-arenaceous upper member. The elevation favours the condensation of moisture and the smooth morphology, along with the abundance of clay deposits, favours the development of luxuriant beechwoods and small wetlands, masking the "Mediterraneaneity" of the context and conferring to the landscape a temperate nuance. We will walk in a patchwork of beechwoods (*Geranio striati-Fagion*), mountain pasturelands (*Cirsietalia vallis-demonis*, *Holoschoenetalia* and *Poetalia bulbosae*) and small lakes (some of which artificially enlarged) colonized by helophytic and aquatic vegetation. Traces of traditional land uses are still very evident ("Hudelandschaft", influenced by large herbivores) and, every now and then, we will also enjoy scenic views on Mt. Etna and on the Tyrrhenian Sea, with the Aeolian Islands.

7.00 p.m. back to the Relais Villa Miraglia (Cesarò)

Trail: Length: 15 km round trip, Hiking time: 6 hours, Elevation range: 400 m. This will be the longest trail of the pre-conference excursion, but we should be assisted by cross-country vehicle of the Nebrodi Regional Park, that will assist us with a shuttle service on demand, if required.

Sixth day (July 2, 2023) – Marinello

9.00 a.m. Departure from Relais Villa Miraglia (Cesarò)

Program

Short stop in Marinello, to visit the Marinello coastal system, located in the Gulf of Patti, behind the Thyndari cliff (38,13°N – 15,05°E). Marinello includes five little brackish water ponds, whose shape, number and dimensions are continuously changed by the rapid evolution of coastal morphology. Arrival in Milazzo Port at 3.30 pm - end of the excursion.

DAY 1



LEFT: Piani di Quacella, seen from the crest. The rangelands (*Carduncello pinnati-Thymetum spinulosi*) are replacing the beechwood (*Luzulo siculae-Fagetum sylvaticae*), but the beech still occurs on screes and on the rocky limestone ridges (*Hieracio madoniensis-Fagetum sylvaticae*), ready to recover the lost ground. The dirt road curving on the left leads to the Vallone Madonna degli Angeli. - RIGHT: Vallone Madonna degli Angeli is a lithological boundary between mesozoic carbonates and arkosic oligocenic sandstones on the left flank, on limestones: *Geranio versicoloris-Quercetum ilicis*; on the right flank, on sandstones: *Anemone apenninae-Fagetum sylvaticae*. On screes amidst the beechwood, *Abies nebrodensis* is growing.



LEFT: Due to the combination of anthropic disturbance and competition with the beech, *Abies nebrodensis* behaves like a markedly pioneer species, limited to stony places, where it grows together with *Juniperus hemisphaerica* (*Junipero hemisphaericae-Abietetum nebrodensis*). - RIGHT: *Abies nebrodensis*: branches with cones.



LEFT: in the foreground: *Plantagini-Armerietum nebrodensis* (*Armerion nebrodensis*) on the arkosic oligocenic sandstones of Mt. San Salvatore; in the background: *Luzulo siculae-Fagetum sylvaticae*, and *Cerastio-Astragalion nebrodensis* on the mesozoic carbonates of Mt. Quacella. - RIGHT: Mt. San Salvatore: contact between the *Anemone apenninae-Fagetum sylvaticae* and *Plantagini-Armerietum nebrodensis*, colonizing the summit windy ridges.

DAY 2



LEFT: The massif of Mt. Carbonara, here seen from the opposite crest of Mt. Quacella, is spotted by hundreds of dolines. Hollows were traditionally used as summergreen pasturelands. - RIGHT: View of the dolines of Piano Battaglia, with *Cachryetum ferulaceae* in the foreground *Cynosuro cristati-Plantaginetum cupanii* in the flattened part of the doline.

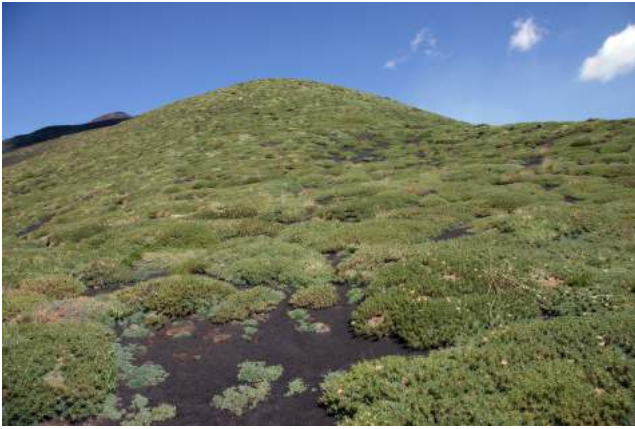


LEFT: *Cachryetum ferulaceae* develops on the overgrazed slopes of the dolines. - RIGHT: The deepest part of the active dolines hosts hygrophytic perennial meadows of *Holoschoenetalia* (here: *Eleocharito nebrodensi-Juncetum compressi* and the annual vegetation of temporary ponds (here: *Myosurus minimus*, *Spergularia madoniaca*, *Ranunculus ficaria* subsp. *bulbilifer*, *Ranunculus lateriflorus*, *Thlaspi rivale* and *Barbarea sicula*).



LEFT: Patches of *Fagus sylvatica* colonize the upper part of this doline (named Fossa di San Gandolfo). These patches were preserved for charcoal production and to shelter the livestock during the hottest hours of the day. In the foreground, summergreen pasturelands of *Cynosuro cristati-Plantaginetum cupanii* in the flattened part of the doline and *Siculosciadetum nebrodensis* in the stony hollows - RIGHT: The summit peaks of Pizzo Carbonara, colonized by the *Asperulo gussonei-Potentilletum nebrodensis* (*Saxifragion australis*) on vertical cliffs and by the *Seslerio siculae-Melicetum cupanii* (*Cerastio-Astragalion nebrodensis*) on steep stony slopes.

DAY 3



LEFT: *Astragaletum siculi* is the dominant vegetation in the oromediterranean belt of Mt. Etna. - RIGHT: The thorny cushions of *Astragalus siculus* shelter many plant species (here *Anthemis aetnensis* and *Viola aethnensis*), whose presence is manifested with brilliant colours at flowering time. For their strategy, these plants have been defined as Polstergäste (literally: the guests of the cushion), a pun for the world Poltergeist, that is a ghost supposed to manifest its presence by occasional noises.



LEFT: Valle del Bove seen from its southern rim: the crest named Schiena dell'asino. The yellow flowers on the left belong to *Hypochaeris robertia*, the most ancestral and isolated clade of its genus. - RIGHT: It's only one, but it is living there, next to the middle point of Valle del Bove. The most heroic *Festuca circummediterranea* in the world.

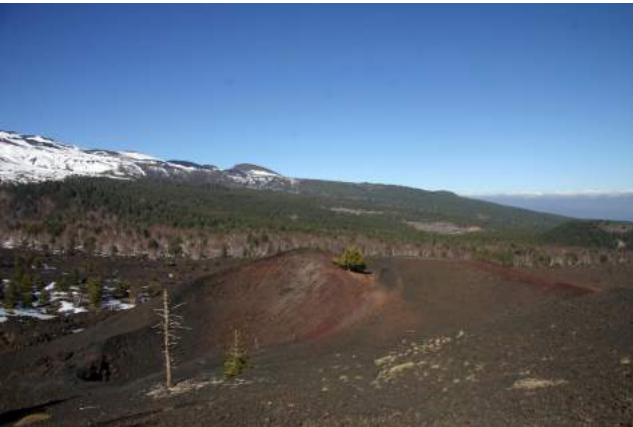


LEFT: The last survivors of a woodland erased by the eruption December 1991 - February (?) 1993. The dykes help in the retention of the organic matter and route some extra water to the trees. - RIGHT: in the bottom part of the dykes poplar (*Populus tremula*) and beech (*Fagus sylvatica*) are very frequent. In the upper part, instead, *Acer campestre*, *Sorbus sp.pl.* and *Genista aetnensis* tend to prevail.

DAY 4



LEFT: The Calabrian pine (*Pinus calabrica*) forest of Piano Provenzana has been crossed by a large lava flow in 2002. Many pines hit by the lava are still standing and their skeletal silhouettes contrast with the green pines in the background. - RIGHT: The Calabrian pine forests have been exploited since ancient times for timber and resin (pitch) production. Resin extraction was a local economic activity until a recent past. Many pines with the typical "fishbone" carving, adopted for this ancient practice, are still alive.



LEFT: springtime view of Monti Sartorius (1865), with a fringe of *Betula aetnensis* and the Calabrian pinewood in the background. - RIGHT: Dormient *Astragalium siculi*, with patches of *Juniperus hemisphaerica* and *Berberis cretica* subsp. *aetnensis*.



LEFT: *Betula etnensis* is a close relative of *Betula pendula*, The light woods dominated by *Betula pendula*, with *Adenocarpus bivonae* in the understory, are limited to the NE flank of Mt. Etna and have been described as *Cephalanthero longifoliae*-*Betuletum etnensis* (Pino-Quercion congestae). - RIGHT: *Genista aetnensis*, endemic to very restricted areas of Sardinia, Corsica and Sicily is a very important biomass producer on recent lava flows, where it can grow relatively fast, thanks to the symbiosis with nitrogen-fixing bacteria.

DAY 5



LEFT: Lago Maulazzo in early spring, surrounded by the *Ilici aquifolii-Quercetum cerridis* (Geranio striati-Fagion). - RIGHT: small lake colonized by the *Ranunculo saniculifolii-Callitrichetum brutiae* (Ranunculion aquatilis).



LEFT: Biviere di Cesarò: The muddy borders of the montane lakes are colonized by the *Eleocharido palustris-Sparganietum neglecti* (Glycerio-Sparganion). - RIGHT: Biviere di Cesarò: Fringe communities with *Paeonia mascula* and *Conopodio capillifolii-Quercetum congestae* (Geranio striati-Fagion)..



LEFT: wooded pasture (*Anemone apenninae-Fagetum sylvaticae*) are traditionally obtained by thinning out the density of the trees, in order to ensure the growth of meadows in the clearings. The basal sprouts of the beech provide additional fodder available throughout the summer. - RIGHT: Cesarò: free-ranging black porks in the *Cynosuro cristati-Leontodontetum siculi* (Cirsio vallis-demonii-Nardion). Black porks are kept on Nebrodi mountains since medieval times. Nowadays the popularity of this product is increasing, the market is enlarging and the black pork became a major source of environmental impact in many oakwoods of Nebrodi Mts.