



Romanian orchids: a neglected bounty

Nora De Angelli gives a guided tour of the orchidaceous treasures of her homeland

PHOTOGRAPHY: NORA DE ANGELLI



Liparis loeselii
grows in very
small numbers in
the shady, humid
Sphagnum bogs
of Transylvania.

ANY ACCOUNT OF Romanian orchids must begin with a brief description of the place itself. Romania is a beautiful country located ‘at the gates of the Orient’, as writer Emil Cioran put it, a crossing point of central, eastern and south-eastern Europe. It is roughly the same size as the UK, which makes it the largest country in the region. It borders Bulgaria to the south, Ukraine to the north, Hungary to the west, Serbia to the south-west, Moldova to the east and the Black Sea to the south-east. Its capital is Bucharest.

Romania has a temperate, continental climate and a very diverse geography, which combines immense plains with the subalpine hills of the steep, rocky Carpathians that they surround. The Carpathian Mountains, which cross Romania from the north to the south-west, range in elevation from 1,900m to 2,544m and host approximately 60% of the European brown bear population.

In the south-eastern part of Romania, the dry, arid steppes of the Dobrogean Plateau meet the beaches and sand dunes found on the shores of the Black Sea. Contouring the southern border of the country is Europe’s second longest river, the mighty Danube, which, after flowing 2,857km from its springs in Germany’s Black Forest, ends its journey in the Black Sea. However, just before reaching the deep-blue sea waters, the Danube forms an immense estuary known as the Danube Delta, famous as one of the greatest wetlands on Earth. This Biosphere Reserve hosts over 5,500 plant and animal species, some unique. Needless to say, a mostly unexplored country with such a diverse natural heritage is an orchid paradise.

The Orchids of Romania Project

Started in 2017, this survey ran for four years and took in everything from the chilly, rocky peaks of the Carpathians to the warm, Mediterranean climate of the Iron Gate Gorges in the south and from the dry hills of Dobrogea, to the rainy Transylvanian plateau.

This obsessive hunt was undertaken mostly in scorching summer heat or torrential rains. Often

Romanian orchids

the most elusive specimens were found hidden either within the lush vegetation of swamps aswarm with biting insects, snakes and other reptiles, or lost in the deepest, darkest, humid forests.

By autumn 2020 it was concluded that in Romania, the *Orchidaceae* is represented by three subfamilies and 26 genera, comprising approximately 71 species, 14 subspecies, 48 or 49 varieties, subvarieties and forms, six intrageneric hybrids and one intergeneric hybrid which was new to science. Additionally, seven newly discovered species, five subspecies and one other bigeneric hybrid await confirmation. The list remains open in anticipation of new discoveries.

In October 2020, *Orchids of Romania* was published containing a complete record in images and descriptions of Romania's orchids, intended as an ambassador for our wider efforts to protect and conserve the natural treasures of Romania.

Rodnei Mountains National Park

This imaginary orchid trip starts in a magical place called Rodnei Mountains National Park, situated in northern Romania. From May to September, it is home to an impressive number of orchid species but is mostly known for hosting the largest *Cypripedium calceolus* population in the country.

In mid-May, when the lady's slipper orchids are in full bloom, the Park offers one of the greatest spectacles of floral beauty and abundance in Romania. Thousands of bright, yellow pouches shine in the sun, spread over several square kilometres of subalpine, humid, calcareous meadows.

In the summer of 2019, we were lucky enough to find, in a remote area of the park, a rare *Cypripedium calceolus* var. *citrina*, with completely yellow flowers, lost among hundreds of normal specimens. In Romania, this was the only

specimen known to have flowered in the wild. The following spring this wonderful plant had been uprooted and stolen, all that remained in its place was a hole in the ground. The thief was never caught (De Angelli & Anghelescu 2020).

Transylvania – vampire territory

In the south of Rodnei Mountains National Park lies one of the most beautiful regions of Romania: Transylvania, land of myths, legends and... vampires. With a typical continental climate, Transylvania, the land beyond the forest, is a true orchid paradise.

From early March to late November, dozens of common or rare orchid species may be encountered, starting with *Anacamptis morio* and ending with *Spiranthes spiralis*. In many humid, alkaline meadows, the spectacular and imposing *Anacamptis palustris* subsp. *elegans* can be admired from May to June. Its hues range from dark purple to pure white (var. *albiflora*), a very rare chromatic variation in Romania.

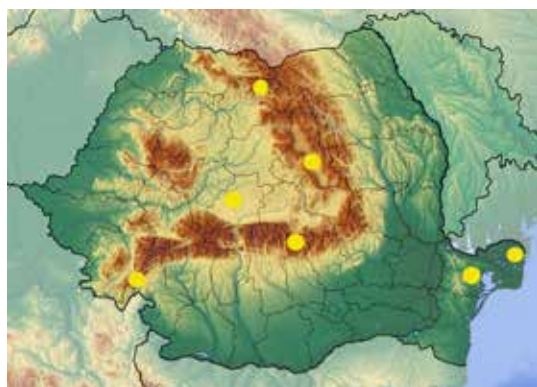
In the heart of Transylvania, *Ophrys sphegodes* appears in full flower in early May, occurring in a single location in Cluj County. A little later, early summer brings large populations of *Cephalanthera rubra*, *C. longifolia* and *C. damasonium*. The rare *C. damasonium* var. *chlorotica* is also present in various locations, in the shadow of deciduous forests. In July and August, representatives of the genus *Epipactis* are frequently encountered, such as the rare *Epipactis albensis*, which occurs in Turda Gorges (Cheile Turzii).

Transylvania is home to a few endemic *Dactylorhiza* subspecies such as the rare *D. maculata* subsp. *transsilvanica* and *Dactylorhiza traunsteineri* subsp. *schurii* which flowers from June to July in the alkaline swamps of Prejmer, Brasov County.

In the same area occurs *Liparis loeselii* but in extremely small numbers (two to four plants). Other rare species are *Herminium monorchis* and *Orchis pallens* also found in several of the calcareous, humid meadows of Brasov County. At the border with the historic region of Moldavia, in the region of the beautiful Bicaz Gorges, *Malaxis monophyllos* occurs in fairly large populations.

Terra Siculorum

A particularly interesting region in Transylvania is Terra Siculorum (Ținutul Secuiesc), a region which covers Covasna, Harghita and Mureș counties. Terra Siculorum is home to an enormous variety of orchids, among which the most abundant are *Traunsteinera globosa*, including its white variety, *T. globosa* var. *albiflora*, and *Dactylorhiza sambucina* in all its three chromatic variations – yellow, red >>



Locations of the National Parks and Protected Areas discussed in the article.



The Danube Delta Biosphere Reserve, one of the most beautiful and biodiverse deltas in the world.



Cypripedium calceolus var. *citrina* (left) in Rodnei Mountains National Park.

Ophrys sphegodes (below) occurs in a single location in Cluj County, Transylvania.





Epipactis purpurata f. *rosea* (above) at Terra Siculorum, Harghita County.

× *Pseudorhiza nieschalkii* subsp. *siculorum* (below), most interesting of Romanian orchids.



A *Nigritella* species (above) that is a new endemic taxon in Bucegi Mountains Natural Park.

Bucegi Mountains Natural Park (below), Prahova County, central Romania.



and salmon-pink. In mid-August, the rare *Epipactis purpurata* f. *rosea* can be found lurking in dark coniferous forests.

The heart of Terra Siculorum is represented by the Harghita Mădăraș mountains (1,801m), a wild, swampy natural reserve, characterized by a cool, rainy microclimate. In the swamps of Harghita Mădăraș very rare, endemic taxa are found, such as *Dactylorhiza cordigera* subsp. *siculorum* and its extremely rare variant, var. *albiflora*, *Dactylorhiza fuchsii* subsp. *sooana* and the vulnerable and delicate *Gymnadenia frivaldii* and *G. frivaldii* var. *albiflora*.

The most interesting of all Transylvanian orchids must be $\times$ *Pseudorhiza nieschalkii* subsp. *siculorum*, an intergeneric hybrid discovered by biologist Hajnalka Kertész on 30 June 2020 while surveying the heathlands of Harghita Mădăraș. She spotted an odd-looking plant of which she sent me several mobile phone images. Within moments, I realized that the plant was an unexpected cross between two subspecies belonging to different genera, *Dactylorhiza fuchsii* subsp. *sooana* and *Pseudorchis albida* subsp. *tricuspidis*. Further research revealed the cross was new to science (Anghelescu et al. 2021b).

Bucegi Mountains Natural Park

Another important point on the map of Romanian orchids is Bucegi Mountains Natural Park, situated in Prahova County, central Romania.

With altitudes peaking at 2,200m and a cool climate, the Park is famous for the wide variety of *Nigritella* species that cover its alpine plains in June and July. These comprise *Nigritella austriaca*, *N. miniata*, *N. bicolor*, *N. rhellicani* and two newly discovered species (currently under study).

In mid-July, especially during rainy, humid summer seasons, the enigmatic, leafless *Epipogium aphyllum* may be found growing in abundance, deep in forests. Known as the phantom orchid, this achlorophyllous, brownish yellow orchid with pinkish white flowers is very hard to spot, as it mimics to perfection the bed of dead leaves that cover the forest floor. *Epipogium aphyllum* is considered one of the rarest European orchids but in Romania it is frequently encountered either as single plants or in groups of two to 20 individuals, usually near watercourses in the subalpine, humid regions. Other spectacular species are *Neottia cordata*, *Chamorchis alpina*, *Goodyera repens*, *Ophrys insectifera* and *Ophrys oestriifera* subs. *cornuta* (previously *Ophrys scolopax* subsp. *cornuta*).

Outside the Park, the beautiful countryside of Prahova County offers another surprising orchid,

the spectacular *Cypripedium calceolus* f. *biflorum*. The population was discovered by my father, Dan Anghelescu, approximately 50 years ago (De Angelli & Anghelescu 2020). In order to protect the plants, the location was kept secret and no official records were made at the time. During the 50 years of monitoring, gradual increase in size and spatial distribution were observed from 15–18 to approximately 40–45 individuals in 2021 (Anghelescu et al. 2021a). The only threat currently posed is increased shading due to vegetation succession.

Iron Gates Natural Park

The southern parts of Romania, which stretch along the Danube River, present particular climate variation. One such region is the Iron Gates Natural Park on the border between Serbia and Romania which is characterized by a Mediterranean climate, significantly milder and more humid than the rest of the country. This is where the Danube River first enters Romania, forming the longest and most spectacular gorges in Europe – The Danube Gorges, lying between the southern Carpathians and the Balkan Mountains.

The warm climate encourages dozens of orchid species, some found only in this region. Some examples are the large populations of beautiful *Anacamptis papilionacea*, exclusively confined to Iron Gates Natural Park, and its hybrid with *A. morio*, *A. $\times$ gennarii*. In 2017, we were very lucky to find in a remote location the unique hybrid *A. $\times$ olida* subsp. *paparistoi*, a hybrid between *A. coriophora* and *A. morio* subsp. *caucasica*, both abundant in the region. The self-pollinating *Ophrys apifera*, *O. simia* and *O. simia* var. *albiflora* are also frequently found.

Dobrogea (Dobruja) Plateau

Following the Danube River course, towards the east, at the other end of Romania, we reach the Dobrogea (Dobruja) Plateau. Here, the climate is warmer and drier (even arid) and, as such, the flora of this region is very special, containing some Mediterranean species.

One of the most famous orchid places in Dobrogea is the Natural Reserve Babadag Forest. Despite the lack of rains and summer temperatures which may reach 40–43°C, the forest is surprisingly rich in orchids. Between July and August, the spectacular *Himantoglossum calcaratum* subsp. *jankae* is found flowering in the shadow of the deciduous forests, alongside *Anacamptis pyramidalis*, *Orchis simia* and *Platanthera chlorantha*. Considered one of the most imposing European orchids, *Himantoglossum* plants often reach over 1m in »

height. The tall inflorescences may bear up to 200–300 purple-greenish flowers each with the bifurcated tongue-like median lobe of the labellum which earns them the name lizard orchids. The pollination of *Himantoglossum* orchids is based exclusively on deceit and mimicry, as this orchid bears nectarless flowers. The flowers have a sweet, sometimes unpleasant, scent and they are also called goat orchids because of the presence of caproic acid, which emits a strong and unpleasant odour of goats (Arditti 1992).

A few other representative species are *Orchis purpurea*, which is extremely abundant and presents a wide chromatic diversity. Very rarely the white-flowered *Orchis purpurea* var. *albiflora* can be encountered. Also, at the beginning of May, the beautiful violet limodore, *Limodorum abortivum*, shows up in the shady forest margins.

Danube Delta Biosphere Reserve

Finally, we come to the last wonder in this brief article: the Danube Delta, one of the most beautiful and biodiverse deltas in the world. The Biosphere Reserve was declared a UNESCO World Heritage Site in 1991. This coastal wildlife paradise, comprising 23 natural ecosystems, is found within the Danube River's immense estuary, just before the river flows into the Black Sea. It consists of an intricate labyrinth of alluvial plains, marshes, rivers, canals, streamlets, reed islands and lakes.

Hidden in the heart of the Delta, is the mysterious Letea Forest, the oldest natural reservation in Romania, dating to 1938. An expedition to the forest involves a several-hour boat trip on the canals, followed by an expedition by car, all under the watchful eye of a specialist guide. This lush forest is formed entirely on alluvial sand dunes and closely resembles a tropical jungle, with wild lianas and silk vines (*Periploca graeca*) entwined like enormous tentacles on the branches of the ancient trees.

This magic, wild place hides two of the most interesting species of orchids, *Epipactis danubialis* and *Epipactis guegelii*, both endemic to Romania. The discovery of *Epipactis danubialis* is an adventure story to rival any of the old 19th century orchid hunters' tales from the jungles of South America or Asia. However, in our case, the action takes place before 1989, during the dark days of communism in Romania. In 1986, as part of a cultural-scientific collaboration between Romania and Czechoslovakia, a group of

naturalists was invited to carry out a scientific expedition in the Letea Forest. Among them was the botanist Jaroslav Rydlo, a specialist in European orchids. Rydlo, who had a particularly keen and experienced eye for *Epipactis*, found a group of *E. danubialis*. Though their flowers were already withered he realized that the plants were totally different from the species of *Epipactis* known to date.

Two years later, in 1988, Karl Robatsch, stimulated by Rydlo's descriptions, decided to go in search of these plants on an expedition on his own. Having the precise information of the location, he found and photographed a few individuals. But just before leaving the reservation, he was caught by the local communist police (Securitatea) and his camera and films were confiscated. Even more alarming, Robatsch was immediately detained and accused of espionage, while his films were being developed for examination. To the disappointment of the communist Securitate, the pictures showed only a few insignificant images of wild plants. Robatsch was released and expelled from socialist Romania. The following year, he published for the first time a detailed description of the small plants which he called *Epipactis danubialis* (Robatsch 1989).

The other endemic species, *Epipactis guegelii* was first discovered by the same Karl Robatsch, during his second expedition to the Letea Forest in 1995. It may be found growing sympatrically with *Epipactis danubialis* in very remote areas within the Letea Forest. ○

Nora De Angelli is studying for a PhD in Orchidology and with her father, Dan Anghelescu is co-author of *Orchids of Romania*.

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Peles Castle (left), built for King Carol I in Sinaia, Prahova County, central Romania.

Orchis simia (below left) at Iron Gates Natural Park.

Anacamptis x gennarii (below) makes a resting place for the rare butterfly *Parnassius mnemosyne*.

