

ORCHIDS OF ROMANIA

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ROMANIA is a beautiful country located at the crossroads of Central, East, and Southeast Europe. Its geography is very varied, with six types of terrain: beaches and dunes on the shores of the Black Sea, the Dobrogean Plateau (part of steppe lands that stretch as far as the Caucasus and western Kazakhstan), vast plains (among these the famous Danube delta), subalpine hills, and the Carpathian Mountains. The last area sustains one of the most extensive, undisturbed forests in Europe and is home to about 60% of the European brown bear population.

Romania has a temperate continental climate with four seasons, characterized by hot summers and cold winters, with intermediate springs and autumns. A country with such diverse terrain constitutes a biodiversity paradise.

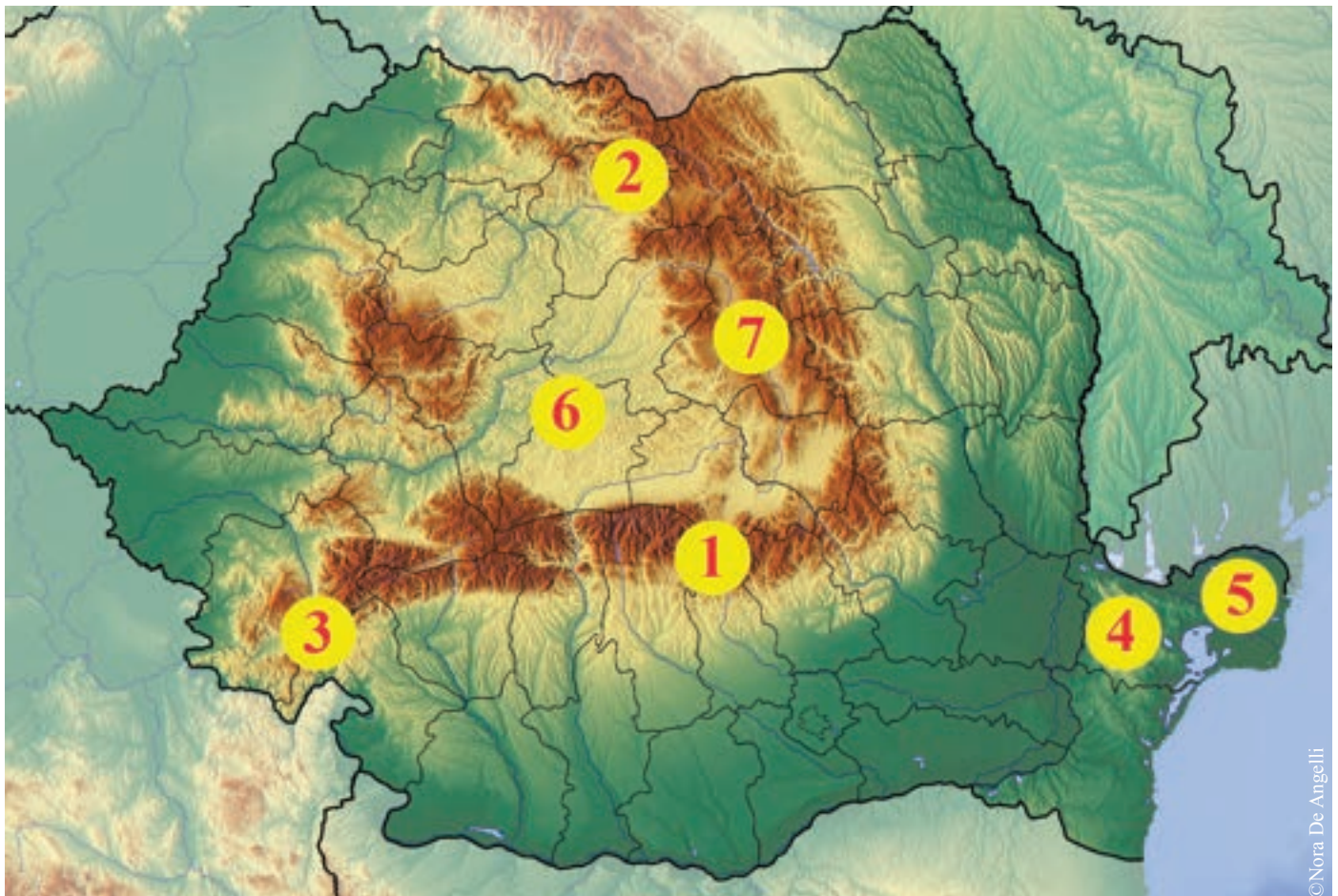
After years of study abroad, I returned to Romania to help my father complete a “small” project on the wild orchids of the Bucegi Mountains Natural Park that surrounds Sinaia, my birthplace. I soon realized that orchids were growing everywhere around the country, not only in my father’s “little corner of paradise,” the Bucegi Mountains.

Orchids of Romania Project

That is how the project Orchids of Romania started, spanning four years and becoming an obsessive hunt for wild orchids in the whole country. By the autumn of 2020, we concluded that in Romania, orchids are represented by three subfamilies and 26 genera and comprise approximately 71 species, 14 subspecies, 48 varieties, subvarieties, and forms, six intrageneric hybrids, and one intergeneric hybrid, new to science. Kew does not recognize all of the subspecies, varieties, and forms at the time of publication of this article.

We are also currently studying seven newly discovered species and five subspecies waiting to be confirmed in the near future. The species list remains open, hoping that discoveries will be made each year.

To give you a brief picture of the orchid richness of my country, I will present a few species, some endemic to Romania or very rare, and others spectacular or newly discovered.



National Parks in Romania: 1) Bucegi Mountains Natural Park, 2) Rodnei Mountains National Park, 3) Iron Gates Natural Park, 4) Dobrogea (Dobruja) Plateau – Babadag, 5) Danube Delta Biosphere Reserve, Letea Forest Protected Area, 6) Transylvania – The Land of Vampires, 7) Harghita Mădăraș Protected Area.



Bucegi Mountains Natural Park

Bucegi Mountains Natural Park

Bucegi Mountains Natural Park is situated in the center of Romania, in Prahova County. The highest point is approximately 2,200 meters (7,218 feet), with a continental alpine climate, with chilly summers and long, cold winters. Nevertheless, when spring arrives, the place transforms itself into a floristic paradise.

The park is home to the famous European vanilla-scented orchids, *Nigritella austriaca**, *Nigritella miniata**, *Nigritella bicolor**, *Nigritella rhellicani**, and two newly discovered species that cover the alpine, high plains in June and July.

In mid-June, at sub-alpine altitudes of about 800 to 1,200 meters (2,525 to 3,937 feet), *Epipogium aphyllum* can be found growing in abundance deep in the humid, dark mixed forests. This enigmatic ghost orchid can be found in large populations, mimicking to perfection the colors of the bed of dead leaves that cover the forest floor.



Epipogium aphyllum



*Nigritella rhellicani**



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*Ophrys oestriifera**

Other spectacular species found in the park are *Ophrys insectifera* and *Ophrys oestriifera**. Another surprising species found in Prahova County is the beautiful *Cypripedium calceolus*. Several double-headed plants, with an inflorescence with two large flowers, belong to a unique, isolated population of about 40 to 45 individuals that have been under my father's careful observation over the last fifty years. The location is unknown to the public, and this has helped the plants survive undisturbed and produce beautiful flowers each year at the beginning of May.

Rodnei Mountains National Park

Another magical place where the lady's slipper orchid forms populations of hundreds of individuals is in Rodnei Mountains National Park, situated in the north of Moldova, Romania's most easterly historical region.

In the summer of 2019, we were lucky to find the rare *Cypripedium calceolus* var. *citrinum*. The sepals and lateral petals are completely yellow like the labellum due to a lack of anthocyanin pigments, so the flowers appear entirely yellow. In Romania, this was the only specimen known to have flowered in the wild, but in the spring of 2020, this unique plant was uprooted and stolen. The thief was never caught.



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Cypripedium calceolus

Iron Gates Natural Park

Now, it is time to travel southwest for a change of landscape, along the mighty river, the Danube, Europe's second-longest river, after the Volga, flowing 2,900 km (1,802 miles) from its source in Germany's the Black Forest to the Black Sea. This region presents particular climate variability.

Southwestern Romania is characterized by a typical Mediterranean climate, significantly milder and far more humid than the rest of the country. This region is where the Danube first meets Romania and forms the longest and most spectacular gorges in Europe by separating the southern Carpathians from the Balkan



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Iron Gates Natural Park

Mountains. This fantastic region is called the Iron Gates Natural Park and is located on the border between Serbia and Romania.

The Park is an orchid paradise with dozens of species—some found only in this region—such as the beautiful *Anacamptis papilionacea* and its natural hybrid with *Anacamptis morio*, *Ant. × nicodemii*, both of which form large populations in different parts of the park. The self-pollinating *Ophrys apifera* is also frequently found there.

While undertaking research in the park in 2017, we were fortunate to find in one remote location a single individual of the exceptional *Anacamptis × olida* nothosubsp. *paparistoi*, a hybrid between *Ant. coriophora* and *Ant. morio* subsp. *caucasica*, both abundant in this region.



Cypripedium calceolus var. *citrinum*



Anacamptis papilionacea visited by the grasshopper *Isophya speciosa*.



Anacamptis morio, the alba form.



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Flowers of *Anacamptis × nicodemi*
and the rare butterfly *Parnassius mnemosyne*.



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Anacamptis × olida nothosubsp. *paparistoi*



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Dobrogea Gorges (Cheile Dobrogei)



Anacamptis pyramidalis

Babadag Forest Nature Reserve

At the south-eastern limit of Romania, we reach the Dobrogea (Dobruja) Plateau. The climate here is warmer and drier (even arid) than in the rest of the country. Some Mediterranean species grow here because of the climate, making it a very special reserve.

One of the best orchid sites in Dobrogea is the Babadag Forest Nature Reserve. Despite the scorching summer temperatures that may reach over 40°C (104°F), the forest is surprisingly rich in orchids. The most spectacular and imposing of all is, without a doubt, *Himantoglossum calcaratum* subsp. *jankae**, occasionally growing to 1 meter (3 feet) in height. It flowers in July and attracts its pollinators with its strong, goat-like scent (unpleasant for us).

Other species include *Anacamptis pyramidalis* and the abundant *Orchis purpurea*. They present a wide chromatic diversity. The rare white variety of *Orchis purpurea* can be encountered here. Also, at the beginning of May, the beautiful Violet Limodore, *Limodorum abortivum*, appears in the shady forest margins.

Danube Delta Biosphere Reserve

Southeast Romania, neighboring the Dobrogea Plateau, is the site of a natural wonder—the Danube Delta. Considered the most beautiful and biodiverse delta in Europe, this Biosphere Reserve was declared a UNESCO World Heritage Site in 1991. The delta is renowned as one of the greatest wetlands on earth, harboring an impressive number of aquatic and terrestrial species of fauna and flora, some unique. This coastal wildlife paradise consists of 23 natural ecosystems



Himantoglossum calcaratum subsp. *jankae**



Limodorum abortivum

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formed within the Danube River's immense estuary, just before the river flows into the Black Sea. It forms an intricate labyrinth of alluvial plains, marshes, rivers, canals, streamlets, reed islands, and lakes. The richness of nutrients found in the mixing of freshwater and seawater and the sediments brought by the river make this hydrological basin one of the most biodiverse natural habitats in the world.

Letea Forest Protected Area

Hidden in the heart of the delta is the mysterious Letea Forest, the oldest natural reserve in Romania, dating back to 1938. Getting there involves several hours of boat travel on the canals, followed by a car safari, all under the watchful eye of a specialized guide. This lush forest grows entirely on alluvial sand dunes. It closely resembles a tropical jungle, with wild lianas and silk vines (*Periploca graeca*) entwined like enormous tentacles around the branches of ancient trees.

This magic place hides two of the most interesting orchids, *Epipactis danubialis** and *Epcts. guegelii*, both endemic to Romania. *Epipactis danubialis* was discovered in 1986 by the Czech botanist Jaroslav Rydlo during an expedition to the Letea Forest. In 1988, Karl Robatsch (1929–2000), a well-known Austrian chess player and botanist, also visited Letea Forest and, in 1989, described this very rare species as *Epipactis danubialis* Robatsch & Rydlo.

The discovery of *Epipactis danubialis* is reminiscent of tales of nineteenth-century orchid hunters in the jungles of South America and Asia. It occurred before 1989, during the dark communist times in Romania. In 1986, following a cultural-scientific collaboration between



Danube Delta

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*Epipactis danubialis**



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Epipactis guegelii

Romania and Czechoslovakia (now the Czech Republic), ornithologists were invited to carry out a scientific expedition in the Letea Forest. Among them was Jaroslav Rydlo, a specialist in European orchids, who had a keen and practiced eye for *Epipactis*. He found a group of these plants but could not identify them precisely because the flowers had withered. However, he realized that they were different from other known species of *Epipactis*.

Two years later, Karl Robatsch, impressed by Rydlo's descriptions of the unknown species, decided to search for these plants in Letea Forest. Knowing the exact location, he found a few individuals and photographed them for later study. But just before leaving the reserve, he was arrested by the secret police, the Securitate, and



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A grasshopper (*Chorthippus dorsatus*) on *Spiranthes spiralis*.

his camera and films were immediately confiscated. Robatsch was detained and accused of espionage while his films were developed. To the disappointment of the Securitate, the films contained only a few insignificant images of wild plants. No longer suspected of being a spy, Robatsch was released but expelled from the country. The following year, he published a detailed description of the small plants, which he called *Epipactis danubialis* Robatsch & Rydlo, *Linzer Biologische Beiträge*, 21 (1-2): 296 (1989).

In July 1995, Robatsch discovered the Romanian endemic *Epipactis guegelii*, growing along with *Epipactis danubialis* in remote areas of the Letea Forest. He published a full description in 1997 in the *Journal Europäischer Orchideen* (J. Eur. Orch. 28 (4): 767 (1997)).



Fagaras Mountain Range, Transylvania.



Anacamptis palustris subsp. *elegans* var. *albiflora*
with a *Melolontha melolontha*.

Transylvania – The Land of Vampires

I cannot end my story without talking about one of the most beautiful regions of Romania—one of myths, legends, and...vampires. Transylvania, the land “beyond the forest,” is a true orchid paradise with a typical continental climate. From the beautiful and picturesque hills of Maramures and the Apuseni Mountains to the Terra Siculorum, dozens of rare orchid species may be encountered between early March, such as *Anacamptis morio*, and in late November *Spiranthes spiralis*.

The most spectacular is the imposing, one-meter (3 feet) tall *Anacamptis palustris* subsp. *elegans*, in a wide range of colors, from deep purple to pink and even white.

The other end of the spectrum is represented by three tiny, inconspicuous, extremely rare species in Romania, occurring only in Transylvania. *Malaxis monophyllos*, flowering in July, is found in Bicaz Gorge. *Herminium monorchis* and *Liparis loeselii*, flowering in June to July, occur in small populations of only two to eight individuals in the wet meadows and swampy areas of Brasov County.

One of the most abundant and beautiful species in Transylvania is the chromatically versatile *Dactylorhiza sambucina*. It presents two distinct color morphs, yellow and red, with an intermediate salmon-pink one. These contrasting chromatic variations deceive pollinators, which after learning to avoid the nectarless yellow flowers, land on their red or peach-colored neighbors, ultimately accomplishing the pollination of the species.

Transylvania is also home to a few endemic *Dactylorhiza* subspecies such as *Dact. traunsteineri* subsp. *schurii**, flowering in Braşov County between June and July, and *Dact. cordigera* subsp. *siculorum** and its rare *albiflora* form, found in Terra Siculorum,



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Malaxis monophyllos



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Herminium monorchis



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Dactylorhiza sambucina



Dactylorhiza cordigera subsp. *siculorum**

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Gymnadenia frivaldii

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Dactylorhiza traunsteineri subsp. *schurii**

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which covers Covasna, Harghita, and Mureș counties. *Dactylorhiza maculata* subsp. *transsilvanica**, first discovered in Transylvania by the Hungarian botanist Károly Rezső Soó von Bere (1903–1980), is another important representative of the local flora.

Deep within the remote, wild swamps of the Harghita Mădăraș protected area, *Gymnadenia frivaldii*, a vulnerable orchid of singular beauty, is found.

Cephalanthera rubra, *Ceph. longifolia*, and *Ceph. damasonium* occur in large populations within the ancient Transylvanian forests. *Epipactis* is also widely represented in Transylvania, including the rare *Epcts. pontica*, *Epcts. albensis*, and *Epcts. purpurata* f. *rosea**.



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Cephalanthera rubra

A Natural Hybrid New to Science

Probably the most interesting of all Transylvanian orchids is *×Pseudorhiza nieschalkii* nothosubsp. *siculorum*, an intergeneric hybrid discovered for the first time by the biologist Hajnalka Kertész on 30 June 2020, during a field trip to Terra Siculorum. While researching the orchid species of the Harghita Mădăraş heathlands, Hajnalka spotted an odd-looking plant that, from a distance, resembled *Pseudorchis albida* subsp. *tricuspis*. After parting the dense grass surrounding the plant, she realized it was not *Pseudorchis albida* subsp. *tricuspis*. She sent me several mobile phone photos, which completely surprised me! I realized that the plant was a miracle of nature—an unexpected cross between two subspecies in different genera, *Dactylorhiza fuchsii* subsp. *sooana** and *Pseudorchis albida* subsp. *tricuspis*.

After detailed morphological and genetic analyses, we concluded that we had discovered a unique combination, an intergeneric hybrid that proved to be new to science.

In years to come, I hope that our orchid research will continue, and discoveries will be made in this region of breath-taking scenery and rich history. It is not surprising that HRH The Prince of Wales fell in love with this magical place and decided to call it his “second home,” investing a lot of time and effort into promoting Transylvania to the world.



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×Pseudorhiza nieschalkii nothosubsp. *siculorum*

**Orchids of Romania:* Notes from the Editor

While not all accept the names of genera and species found there, the *Orchid Digest* uses the World Checklist of Selected Plant Families (WCSP) for the accepted names. The WCSP is an international collaborative program (view compilers and plant family reviews here: <https://wcsp.science.kew.org/compilersReviewers.do>) that provides the latest peer-reviewed (view reviewers here: <https://wcsp.science.kew.org/reviewers.do>) and published opinions on the accepted scientific names and synonyms of selected plant families. The list allows you to search for all the scientific names of a particular plant or the areas of the world in which it grows.

Here is a list of the accepted names for the synonyms found in the *Orchids of Romania* article in the order found in the article. Throughout the article, this is indicated by the orchid name followed by an asterisk.

Nigritella austriaca (accepted name: *Gymnadenia austriaca*)

Nigritella miniata (accepted name: *Gymnadenia miniata*)

Nigritella bicolor (accepted name: *Gymnadenia bicolor*)

Ophrys oestriifera (accepted name: *Ophrys holosericea* subsp. *holosericea*)

Himantoglossum calcaratum subsp. *jankae* (accepted name: *Himantoglossum calcaratum* subsp. *rumelicum*)

Epipactis danubialis (accepted name: *Epipactis atrorubens*)

Dactylorhiza traunsteineri subsp. *schurii* (accepted name: *Dact. majalis* subsp. *lapponica*)

Dactylorhiza cordigera subsp. *siculorum* (accepted name: *Dact. majalis* subsp. *cordigera*)

Dactylorhiza maculata subsp. *transsilvanica* (accepted name: *Dactylorhiza maculata* subsp. *maculata*)

Dactylorhiza fuchsii subsp. *sooana* (accepted name: *Dactylorhiza maculata* subsp. *fuchsia*)*

About the Author



Nora De Angelli graduated in Molecular Biology from the University of Bucharest and studied for other degrees in the Netherlands and London. She is now working for a PhD in Orchidology at the University of Agriculture and Veterinary Medicine in Bucharest. Together with her father, Dan Anghelescu, she published a

beautiful book on the orchids of Romania, which can be ordered from the author.

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Dactylorhiza fuchsii subsp. *sooana**

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