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This month Jānis Rukšāns writes about a new *Corydalis* species found during an expedition to Uzbekistan. Jānis is a tireless private researcher into plants, particularly bulbs, that he studies around the world and has worked to make many of these available to horticulture through his efforts.

Gerrit and Ibeltje Eijkelenboom complete their review of the orchids they have found on their travels in France. They include, of course, some of the plants that are growing alongside the orchids. Many thanks to these kind contributors.

If you have something to say about your favourite plants, why not join their number and submit an article or photo essay to the International Rock Gardener and/or the SRGC twice-yearly printed journal?

Contact Margaret Young, editor@internatioanlrockgardener.net or Anton Edwards, anton.edwards@icloud.com.

Cover image: Habitat of *Corydalis pskemensis*, photo by Jānis Rukšāns.

From an Aberdeen garden (Scotland) in February – photo J. Ian Young.

New *Corydalis* species (Fumariaceae) from Uzbekistan

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Summary. During an expedition to Uzbekistan new species of genus *Corydalis*, section *Corydalis* was found. Morphological differences between the new species and the similar taxon of *Corydalis glaucescens* Regel are discussed. Photographs[1] of the new and allied species are given.

Key words. *Corydalis*, Uzbekistan, Pskem river valley and ridge, geophytes.

In early June 1998 (June 6-19), Arnis Seisums (National Botanical Garden, Latvia) and the author of this article went on another expedition to Uzbekistan to search for specimens of the bulbous irises from the subgenus *Scorpiris* (juno irises) growing there, which were necessary for work on the upcoming monograph on these irises, which is being worked on by Tony Hall from Royal Botanic Gardens Kew and A. Seisums. One of the plants we were looking for was *Iris albomarginata*, which was first collected in 1903 by B. Fedchenko and described in 1936 by R. Foster. Near a small spring where we had camped for the night at an altitude of about 2700 m a.s.l., a peculiar large *Allium* species (*Allium sp. nova*, cf. *kaufmannii*), a new iris species from subgenus *Hermodactyloides* (later described as *Iris pskemensis* Rukšāns) and a very peculiar species of genus *Corydalis* (subsect. *Brevinectaria*), originally identified *in situ* by A. Seisums as *C. glaucescens,* were found. This view was also held by prominent *Corydalis* taxonomists M. Liden from Uppsala Botanical Garden and H. Zetterlund from Gothenburg Botanical Garden (personal communication).

However, their opinion caused me deep doubts. In my collection there were (and still are) grown seven samples of *Corydalis glaucescens* that I had collected myself. All of them were found only in Kyrgyzstan and Kazakhstan. Although I had participated in eight expeditions to Uzbekistan, I had never encountered specimens of *C. glaucescens* there. When checking the literature data, including the monograph by M. Liden and H. Zetterlund (1997) and the authoritative website Plantarium.ru, I did not find any information anywhere that *C. glaucescens* had been found growing in Uzbekistan. Comparing the distribution area of *C. glaucescens* (M.Liden & H..Zetterlund, 1997 – map 16) with the new species' locality, we see that they are separated by a distance of more than 200 km and several high mountain ranges,

[1] Many of the pictures used to illustrate this article are scans from old slides so do not always perfectly show the shades of colour.

which ensure the isolation of both species. The plants collected in Pskem were very different from all the specimens of *C. glaucescens* growing in my collection, as well as from the plants whose images with this name I found in the literature and on the Internet. The main features that distinguished it from *C. glaucescens* were the colour of the foliage and flowers, but especially the shape of the foliage was different. When measuring the length and width of the median lobe, the *C. glaucescens* index ranged from 2.0 to 2.86, in average 2.34 (n=10), while for the new species it ranged from 4.25 to 8.75, in average 5.97 (n=10), so the leaf lobes of the new species were on average 2.55 times longer than those of *C. glaucescens*. Compared to other specimens of *Corydalis*, which undoubtedly belong to *C. glaucescens*, it is also easy to distinguish by the colour of the leaves - they are yellowish green (vs. glaucous in *C. glaucescens*) and the colour of the flowers - they also have a yellowish tint, while the flowers of *C. glaucescens* are from pinkish to slightly bluish, rarely white.

Corydalis glaucescens 12KZ-051, Kazakhstan, nr. Kegen pass, altitude 1900 m a.s.l.

Far left: *Corydalis glaucescens* 12KZ-051 cultivated plant. Centre: *Corydalis glaucescens* 'Early Beauty' – Kazakhstan, Medeo, alt. 1800 m a.s.l. Right: *Corydalis glaucescens* 'Pink Beauty' – Ala-Archa, Kyrgyz Republic , alt. 1800 m a.s.l

Corydalis glaucescens ‘Cream Beauty’ – Ala-Archa, Kyrgyz Republic, alt. 1800 m a.s.l.

Corydalis glaucescens 12KZ-051 – leaf and flower details.

Corydalis glaucescens nr Almaty, Kazakhstan – herbarium scan from plantarium.ru

The *Corydalis* species found grows and reproduces well both in the open field (in the garden) and in the greenhouse in pots, forming larger flower spikes than in the wild. It reproduces well vegetatively and also sets seed. The seedlings are monotypic, practically indistinguishable from the mother plants. Since I do not have access to a genetic laboratory where I can perform DNA analysis, I used the crossing method - checking the possibilities of crossing with similar species. If the newly discovered *Corydalis* species would cross with typical *C. glaucescens* samples and these seedlings were also fertile, then most likely they would belong to the same species. Over the course of five years, artificially pollinating *Corydalis* from Pskem with pollen of *C. glaucescens* of different origin (from all 7 populations originating from Kyrgyzstan and Kazakhstan and grown by myself), using the methodology developed at the Gothenburg Botanical Garden, not a single seed was obtained. Since many species of the *Corydalis* genus are self-sterile, a vegetatively propagated clone of the new species was used in the experiment, thus excluding possible pollination within the species, and the pots with the new *Corydalis* species were placed between the pots with *C. glaucescens* specimens, also ensuring free access of natural pollinators to the flowers of both species. At the same time, after pollination with *C. nudicaulis* pollens, seeds were obtained, and F-1 generation hybrids were grown. The resulting hybrids turned out to be sterile and did not give F-2 generation seeds. In terms of foliage, they are almost identical to *Corydalis* from Pskem, but in terms of flower colour and their location in the spike, they are closer to *C. nudicaulis*. All this allowed me to regard *Corydalis* from Pskem as a new species, described here as *C. pskemensis*.

Left: *Corydalis pskemensis* in open garden – cultivated plant.

Right: *Corydalis pskemensis* cultivated in pot, inside polytunnel.

Corydalis pskemensis in the wild – Ihnachsay, Uzbekistan, alt. ~2700 m a.s.l.

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Holotype herbarium of *Corydalis pskemensis.*

Corydalis pskemensis flower details.

***Corydalis pskemensis* Rukšāns**

Type: Uzbekistan, Pskem mnt. r., Ihnachsai, ARJA-9871, 41º55'01"N 70º28'44"E, alt. 2660 m a.s.l.; cult. (specimens grown in Latvia in the garden of Jānis Rukšāns), Holotype: RIG II! (Herbarium Latvicum BOT- 16490).

Habitat and distribution – at present known only from locus classicus where it is growing in vernally very moist, even damp grassy slope near a spring.

Tuber – by shape typical to species of section *Corydalis* – elongated round and in cultivation regularly splits. Old covering sheets (remnants of previous seasons tuber) blackish brown, young tubers greenish black (vs. *C. glaucescens* which has distinctly greyish shaded young tubers).

Stems – solitary or with one branch from large, broad, ovate underground scale leaf, erect, up to 20 cm long.

Leaves – slightly yellowish or brownish shaded dull green (contrary to glaucous, bluish green leaves of closely allied *C. glaucescens*), triternate with distinctly narrowly lanceolate (length to width index = 4.25 – 8.75 average - 5.97) leaflets of central lobe; ultimate leaf lobes entire, pointed.

Bracts – distinctly lanceolate, narrow, entire, 12-20 mm long and up to 4 mm wide.

Raceme – long with 20+ flowers composed in comparatively dense spike. Flowers positioned at around 45º angle. Length of pedicels variable but usually 8-18 mm long, shorter or longer than bracts.

Flower's spur - mostly positioned at 45º angle, in young flowers more vertically, straight, only very apex slightly down curved.

Corolla – buffish pink, in young flowers even light brownish pink. Upper and lower petals slightly yellowish with dark keel (blackish or dark purplish dotted over yellowish), winged and slightly emarginated at apex, yellowish toned along crest.

Nectary – rounded, green, 1 mm or less long.

Fruit – lanceolate, up to 20 mm long and 3-4 mm wide.

Seeds – blackish brown, up to 1.5 mm in diameter with prominent elaiosome.

2n – unknown.

Etymology – named after Pskem ridge in Uzbekistan where it was found growing wild.

The monograph by M. Liden and H. Zetterlund mentions the *Corydalis glaucescens* variety 'Cream Beauty' with yellowish flowers, which I had propagated from a single specimen found in the middle of a *Juniperus sp.* bush near the Ala-Archa mountaineering camp in Kyrgyzstan. The yellowish tone in it is rather relative; it would be more correct to describe it as creamy white, but its leaflets are typical, rounded, like in other *C. glaucescens* specimens. Another specimen in the same area had pure white flowers and I gave this clone the name 'White Beauty'. The other *C. glaucescens* specimens seen in the Ala-Archa area had the typical pink flower colour. From these, the clone 'Pink Beauty' was selected. In 1975, in the mountains near Almaty (Kazakhstan), in the vicinity of the Medeo high-altitude ice rink, a very early flowering specimen was collected, which I gave the name 'Early Beauty' after propagation. Some *Corydalis sp.* is distributed in the trade under the name "*C. kaschgarica*". My specimen with this name was purchased at Potterton & Martin company. M. Liden and H. Zetterlund in their monograph associate it with *C. glaucescens*, indicating that the real *C. kaschgarica* is a completely different, non-tuberous species. However, the epithet *C. glaucescens* is also not applicable to this specimen, because its bracts, at least in the specimen grown in my nursery, are broad and have a deeply dissected margin, while the bracts of *C. glaucescens*, like the *C. pskemensis* described here, are entire and narrowly lanceolate. I have not ascertained the true name of this specimen. Of course, the possibility cannot be ruled out that under the name "*C. kaschgarica*" different *Corydalis* species are distributed, as traders often act as second-hand sellers and themselves have never seen the plants they are selling.

I can't exclude that in Gothenburg BG and in my nursery under name of "*C. kaschgarica*" different *Corydalis* species were grown.

Shape of leaflets in *Corydalis pskemensis* and *C. glaucescens*: Top row - on the left *C. pskemensis*; in middle *C. glaucescens* Kazakhstan Dzhungarian Alatau, 1500 m a.s.l.; on the right *C. glaucescens*, Ala-Archa, Kyrgyz Republic. Bottom row – on the left *C. pskemensis*; next to right – *C. glaucescens*, Kazakhstan, 12KZ-51; further to right – Medeo, Kazakhstan; last on the right - *C. glaucescens,* nr. Bishkek, Kyrgyz Republic.

Corydalis nudicaulis Varzob, Tajikistan

Corydalis nudicaulis Vahsh, Tajikistan

Corydalis nudicaulis,
Afghanistan.

Below:
Hybrid between *Corydalis pskemensis x nudicaulis*

Corydalis pskemensis x *nudicaulis* herbarium (RIG II, Herbarium Latvicum BOT-16521)

Corydalis "kashgarica"

Leaves and flowers of so-called *Corydalis "kashgarica"*

Our tent at locus classicus of *Corydalis pskemensis* – standing Jānis Rukšāns, sitting – Arnis Seisums

The story of our expedition to Ihnachsay, Uzbekistan.

The Pskem River flows between two mountain ranges. To the north, it borders the Ugam Range and Kazakhstan, and to the northeast, the Pskem Range and Kyrgyzstan. It is not entirely clear what the Soviet cartographers' considerations were when they added this valley, which stretches like a long, narrow tongue between the two neighboring countries, to Uzbekistan, because it is inhabited mainly by Kazakhs and Kyrgyz. There were no problems in Soviet times, but now it has become a very restless area. We were there twice, in fact, we used the last opportunity, because later the valley was completely closed to foreigners, and a thorough document check was carried out on the only road leading there. Our car was also kept there before, but both times we were driven by the driver of the First Deputy Minister of Defense in an army vehicle, and we were allowed into the valley. In 2001, when we were arrested in the mountains during our last trip to Uzbekistan and interrogated by the Ministry of Internal Affairs (accused of being Muslim mercenaries from the Baltic), we were told that in the Pskem Valley, unreliable villages had been wiped off the face of the earth with the help of napalm. There are a lot of interesting plants there, so much later I asked the tourism companies again about the possibilities of visiting this valley, but the answer was that it was a

completely closed zone, where no exceptions were allowed. However, with the change of the president of Uzbekistan, it is now open to tourists again.

In 1998, we went to the Pskem Valley, just over the village of Pskem, where on the opposite (left) bank of the river lies its tributary, the Ihnachsay, with a gorge of the same name. There, our main goal was to find *Iris albomarginata*, better known by the later name *I. coerulea*. The biggest problem was that no one knew where it was actually collected. It was described based on plants collected by Boris Fedchenko in August 1903, with the label indicating that they were found in a place called Sjemesas. No one could say where such a “Sjemesas” was located. We did not find such a name even on the most detailed military maps. My colleague Arnis Seisums in St. Petersburg, where Fedchenko's herbaria and diaries are kept, studied his collections in detail, paying attention to the dates, and so he found that the herbarium of this iris was collected somewhere between Urungachsay (gorge on right bank of Pskem river, visited by us a year before), and Lake Ihnachkul on the left bank of the Pskem.

The departure to Pskem was delayed. I had severe food poisoning (most likely from the fish that our house guest Volodya Vinogradov in Uzbekistan treated us to), accompanied by terrible vomiting and diarrhea with a very high temperature. Now I understand why I felt so tired all afternoon. However, I got to bed, but after a moment I felt such a pain that I had to run to the toilet. I don’t even remember having had such terrible diarrhea before. And if the reader of these lines could still imagine what the toilet in friend’s house looked like back then – a leaning, staked hut in the corner of the garden with a large hole in the floor, without lighting, where for even a healthy person was a real ordeal to use, then for me, overcome with fever, running there every now and then at night was a real inquisition. Somewhere towards morning, it suddenly dawned on me that I had to flush my stomach. I ran out again and put my finger in my throat. It's good that I have yesterday's tea left. I drank four cups with difficulty, and my finger is stuck in my throat again. Since it's already starting to get light, Volodya has woken up and, having heard what's going on, comes with a large cup of warm water. I pour it down my throat again, until it starts to rinse, and spit it out, and so on a couple more times, until clean water comes back.

I almost died. The huge doses of very strong medications supposedly normalized my stomach, but now the temperature was starting to rise. +37.7° C, then +38.3° C, after a couple of hours it was already over +39° C. But I was shaking with cold shivers. They treated me to tea with honey and warmed me up. Volodya called the driver and postponed the departure for another day. We cancelled one route and extended the Pskem direction by one day, and after two days I finally felt more alive than dead, although I was still very weak. Therefore, Volodya arranged for his godson to accompany us and carry my backpack. Since our tent was too

narrow for three, it was better to endure a few nights than to cancel the route altogether. I wasn't completely relieved of work; as soon as I could get up, I started cleaning the seeds collected on the previous route. We had brought seed pods of *Iris magnifica* and *I. warleyensis* from the Aman-Kutan (Tahta-Karacha) mountain pass. They still looked green, but the seeds were already ripe. While *I. magnifica* had only one pod with a seed beetle larva, *I. warleyensis* had practically all the pods infested. Now, by cleaning them, at least half of the collected seeds were saved.

Iris magnifica from Tahta-Karacha pass. Seeds of it were collected before going to Ihnachsay.

Iris warleyensis from Tahta-Karacha. Seeds of it were collected before going to Ihnachsay.

Iris warleyensis at Tahta-Karacha: on the left, white mutation pictured in 1981.

Far left: *Allium* species nova

Left: *Iris pskemensis*

Iris pskemensis

We left at seven in the morning. We planned to drive to Lake Ihnachkul and then walk to the Sarvaitugan Pass at an altitude of 3,594 m, or at least as far as the snow cover would allow. According to the military map, the pass opens only in July. However, as usual, the map turned out to be very misleading, and the highway that supposedly ran to the lake was really just a trail. With the army “jeep” at our disposal, we got across the bridge over the Pskem River, but the bridge over the next stream was so shaky that we didn’t risk driving on it. We had to walk further. After about half an hour, a downpour began, which turned the road into a slippery clay mess and for us – into a real Golgotha. Our feet slipped in the wet clay, got stuck with a triple

layer of clay, and even the hems of our trousers up to the knees were covered in thick clay armour. The excess weight, even though it felt like there were weight balls hanging from your feet, wasn't the worst part, the most terrible thing was the slipping. Our legs went in different directions and back. While we were walking on a horizontal surface, it was okay, you could hold on, but when you started climbing up, you slipped back half a step with every step.

And then we met the local “racketeers”. They said there is a nature park here, they are the park rangers, where are our vouchers? We have to go back to the village to draw up a report, fines, etc. No reservations or objections are of any use. Since we are foreigners, we were charged a triple fee. I ask Arnis in Latvian – how many sums (official local currency) do we have? Arnis refuses, saying that it is around 3000. I offer them a thousand - That is nothing, came the reply. I say that we do not have much with us, we can give a maximum of 2000, (it is the amount for which we can buy 10 one and a half litre bottles of Coke), and I would add that we do not need any receipts. The local men discuss in their own language (apparently deciding who will run after the vodka) and in the end agree, and even tell us the way forward. Only then does it dawn on us that we have been cleverly cleaned. Ah well, not too bad, only 20 Euros.

When the trail took us to the local beekeeper's house, I was so pumped up that when I heard an invitation to stay for a cup of tea, I agreed on the spot without thinking (usually we try to avoid such loss of time). We are treated to last year's honey and slices of unleavened bread. They say that in winter there was a 3-5 m thick layer of snow here, but the bees wintered well under the snow. They also told us the way ahead. We were about to say goodbye when Arnis suddenly asked if they knew where a certain Sjemesas is located? We are surprised to learn that we have already reached the place we are looking for. This place is called Sjemesas and in translation it means - the confluence of three rivers, Sjemesas, it is around here. On the right is Kensai, on the left - Ihnachsay, below - Pskem, and in the middle - Sjemesas.

Around there is a large grass almost the height of a person, and in it from one place a gigantic *Tulipa kaufmanniana*. So tall I never seen such before. They already had big seed pods, but this year the spring and early summer had been very wet, and most of the seed pods had rotted, just like here if we want to get tulip seeds from an open field. In the middle was also *Fritillaria sewerzowi* – just as huge and with equally partially rotten seed pods. The climb was steep, and although I was unladen, it was not easy. There was no place to pitch a tent here, nor anywhere to settle down. We walked forward in slow doom. I counted the steps in my mind. A hundred, another hundred, more… Finally, we reached a small side turn-off with a flat surface. It is the first place where we could pitch a tent, and we did so immediately. A little to

the side and below, in a small bend, a spring bubbled out of the ground – we didn't have to go far for water.

While I prepared to cook, the tireless Arnis trudged forward down the slope, while I waded through the long grass to the spring. The grass had hidden a small landslide, and having taken a step forward, I suddenly flew two metres down on my feet, right into a small swamp that had formed at the source of the spring. Now I was soaked through and through. But I was rewarded with a wonderful, large *Allium sp.* with up to 5 cm long, white petals and a stem about a metre long – Arnis later named it *Allium kaufmannii*. This was one of the rare cases when Arnis was mistaken. The real *A. kaufmannii*, although similar, is smaller and has purple-violet flowers. When I showed the photos to Reinhard Fritsch, another recognized authority on this genus, we concluded that it was a new, as yet undescribed species. On the way back, I somehow managed to dig one out of the heavy, sticky clay with extraordinary effort, but it doesn't grow in Latvia. Such bogs are places with a very specific ecology. You should know what the moisture conditions are like in the other seasons, whether it dries out in the summer or the soil is wet all the time. Without knowing this, it is very difficult to introduce a plant. Species growing in such places can often have very different requirements. Unfortunately, my age and physical abilities prevent me from even thinking about returning and collecting this unusual species again (I didn't take the herbarium sheets with me then).

I washed the potatoes in the spring, peeled them and went to the camp to cook. My wet feet were freezing. Arnis, in turn, brought some reticulata iris bulbs to our camp. Of course, they had long since bloomed, but the almost white colour of the bulbs was already of interest. Moreover, we are at an altitude of 2500–2800 m. Until now, only one species of reticulata iris was known in Uzbekistan – *Iris kolpakowskiana*, which grows in the foothills, and its bulbs are yellow in Uzbekistan. When this iris bloomed for the first time in our collections next spring, it turned out that we had discovered a new, not yet described species with very beautiful flowers. The fall of outer petals are almost black with a narrow white border, while the inner petals are light purple and twisted. I later described it as the Pskem iris – *I. pskemensis*. The next morning, I went for water again and stumbled upon another interesting plant. I had even trampled a couple yesterday. What a sight! It is a *Corydalis*, it resembles *C. glaucescens*, but its leaves are much different than those collected elsewhere, and the flowers are also of an unusual, creamy-yellowish pink colour. I was almost one hundred percent sure that it deserved the name of a new species, but this was disputed by the greatest authority on this genus – Magnus Liden. I yielded to his opinion, but only for the time being... *Corydalis*, of course, can be very variable, but are they so extreme? This was more characteristic of Far Eastern species, but not of Central Asia.

In the following days we crossed the small branch of the ridge and continued until the snow stopped further progress up. We spent two nights in a tent, and, of course, we also found the *Iris albomarginata* we were searching for in that area. While Arnis climbed up, I took a short rest and walked around the tent and went to get water to cook our meal. And there it was – the *I. albomarginata* that Arnis was looking for.

Gully where *Iris albomarginata* was first spotted

I didn't have to go up at all, it was right near the tent, in a small ravine with a stream of drinking water. First, several specimens that the waters of the melting snow had carried down from higher altitudes into the depression formed by this stream, but later we found also a larger population higher up the mountain. The most valuable find in my opinion, in this place, was an unusually massive *Fritillaria sewerzowi*, which even in nature had reproduced vegetatively, which this species usually does not do. Its bulbs were also huge: I only collected a couple, because I still felt very weak. Unfortunately, my entire collection of large fritillaries died a few years later from a strange rot, reminiscent of fusarium, which I had probably brought with me when buying fritillaria bulbs in China (there was a company there that offered fantastic plants, including many bulbous plants never seen before in Europe, although not always with the correct names). In total, this place brought us 30 varieties of bulbous and similar plants. At that time no digital cameras existed, and we used quite expensive colour films, so not so many pictures were made. But a few I did get and scanned later – those are attached here.

Fritillaria sewerzowi

Eremurus lactiflorus

Variability of *Iris albomarginata* at Ihnachsay.

Iris albomarginata at Ihnachsay.

Iris albomarginata at Ihnachsay.

Iris korolkowii

Gymnospermium albertii

Gymnospermium albertii

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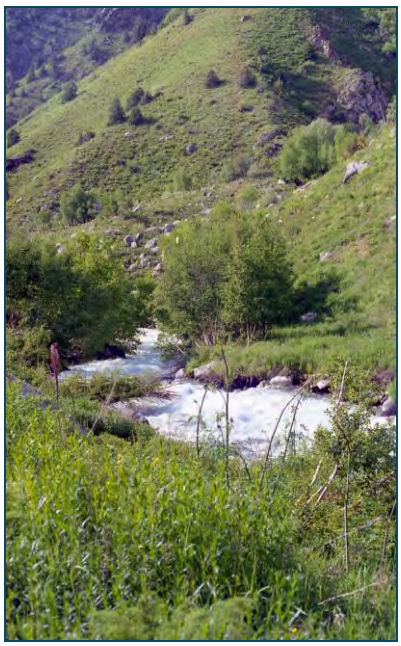
Paeonia hybrida *Tulipa kaufmanniana* - tall form from low altitudes in cultivation.

Tulipa kaufmanniana short form growing at much higher altitudes.

Above right: Natural hybrid between *Tulipa bifloriformis* (the single flower on right) and *T. dasystemon.*

Tulipa tschimganica at Ihnachsay, altitude around 3000 m.

Crocus alatavicus – at an even higher altitude than *Tulipa tschimganica.*



Lush vegetation at start of June at lower altitudes in Ihnachsay.

Corydalis ledebouriana

Below: *Corydalis ledebouriana* and *Fessia puschkinioides* (on left)

Jānis Rukšāns – short rest at Ihnachsay whilst colleagues are running around in search of *Iris albomarginata*.

The list of plants collected at Sjemesas:

9864 - *Iris albomarginata*
9865 - *Iris pskemensis*
9866 - *Fritillaria sewerzowi* - black f.
9867 - *Allium species nova*
9868 - *Eremurus regelii*
9879 - *Tulipa bifloriformis x dasystemon*
9880 - *Allium tianschanicum*
9881 - *Allium carolinianum*
9882 - *Allium tschimganicum*
9883 - *Allium sewerzowi*

9869 - *Iris korolkowi*
9870 - *Tulipa* sp.
9871 - *Corydalis sp.n. glaucescens* aff.
9872 - *Colchicum luteum*
9873 - *Corydalis darwasica*
9874 - *Fritillaria stenanthera*
9875 - *Tulipa kaufmanniana*
9876 - *Gymnospermium albertii* - seeds
9877 - *Tulipa bifloriformis*
9884 - *Fritillaria sewerzowi* - vegetative
9885 - *Crocus alatavicus*
9886 - *Allium karataviense*
9887 - *Tulipa tschimganica*
9888 - *Eremurus lactiflorus* - seeds
9889 - *Allium caesium*
9890 - *Allium hymenorhizum*
9891 - *Allium barsczewskii*
9892 - *Fessia puschkinioides*

Another night was passed at the spring where the new species were found, and then the driver was waiting for us in the village. On the way, he stopped by the side of the highway, where local farmers sell koumiss, and bought me a one-litre bottle of this fermented milk drink. I drank it, a little timidly, and all my ailments disappeared as if they had never happened. My strength and energy returned – a real miracle cure for stomach ailments.

Acknowledgments.

I would like to thank my long-time travel partner Arnis Seisums, who planned and prepared our expedition routes in both Central Asia and Turkey. I would also like to thank Vladimir Vinogradov from Tashkent, Uzbekistan, gardener of the former President, who is now watching us from the edge of the clouds - without his help, our Uzbek expeditions would never have been possible. I would also like to thank Henrik Zetterlund and Magnus Liden for the interesting and fruitful discussions, the plant samples that were never denied, and all our other travel partners. Many thanks also to Eugenius Dambrauskas from Lithuania, who helped me restore many *Corydalis* specimens when many of them suddenly died in my nursery from some unspecified fungal (?) disease. Without his contribution, this study would not have been possible. Of course, I cannot forget my family, especially my wife, Guna Rukšāne, who always supervised and maintained the collection while we were wandering around.

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Orchids in southern France - part three - the month of June

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Part 1: The early ophrys in March and June - see IRG 175

Part 2: The orchids in the month of May - see IRG 180

Part 3: The orchids and other species in the month of June

1. Aveyron. 10 June 2021-15 June 2021
2. Drôme southern part. 15 June 2021-18 June 2021

1. Aveyron: 10 June-15 June 2021

Our residence was the small village of Viala-du-Pas-de-Jaux in the heart of the National Parc des Grandes Causses and more specifically the Causse du Larzac. Known for its wealth of orchids. It is very easy to reach via the A75 motorway and the Millau viaduct. The Causses are a group of limestone plateaus at an altitude of 700 to 1200m in the southern part of central France. There are rock formations, caves; rivers have carved deep gorges, such as the famous Tarn with its beautiful Gorges du Tarn. The climate is harsh; hot summers and harsh winters.

Viaduct de Millau.

Our village in the heart of the Causse du Larzac has 100 inhabitants and a sturdy tower. Our accommodation is called l 'Erable from the Gîtes de France organisation. It's good and cheap.

Ophrys aveyronensis: This is the species of the department. It is endemic to the Causse du Larzac. It is a late orchid, flowering in late May and early June. It is quite rare, but we soon found it anyway. The flower is quite variable, you can find them with simple markings on the lip, to a very detailed pattern.

Ophrys aveyronensis

Ophrys aymoninii is also endemic to les Causses with its calcareous plateaus. Its broad yellow margins are striking. Although it resembles *Ophrys insectifera*, there is no evidence of hybridisation. It is a spectacular species and hard to find.

Ophrys aymoninii

Ophrys insectifera is a widespread species. It can be found from central Europe to Scandinavia. Although widespread, it is still quite rare. Also, *Ophrys insectifera* is difficult to find due to its small size, but once found, you soon see more. It is a long-stemmed orchid with small slender flowers, with two divergent side lobes. Notable is the broad band across the centre of the lip in the shape of a shield. This is the speculum. It is bluish grey.

Ophrys insectifera

Ophrys scolopax: These are rather large plants up to 60cm tall with medium-sized flowers. The sepals are white, pink, lilac or purple. The lip is 3-lobed, the lateral lobes are small, triangular and pointed. The middle lobe is strongly curved, scolopaxoid. The speculum is bluish-grey or purple-brown with a yellow or white margin, forming an X. We often see an ocellus, an eye. The appendage is broad and protrudes forward.

Ophrys scolopax

Orchis militaris has unstained (plain) leaves. The 3 sepals form a helmet, (In English; a hood) white or greyish-lilac. That colour clearly contrasts with the colour of the lip, making these plants which can be distinguished from afar. The lip is shaped like a male, a soldier, hence its name. On the lip are purple spots. At the underside, the lip splits in two to make the “legs”.

Orchis militaris

Anacamptis pyramidalis. The fields and roadsides in this part of France are coloured red by the thousands of flowers of this orchid.

Gymnadenia conopsea. They are large plants up to 60cm with a dense inflorescence, with 20 to 80 small purple flowers.

Himantoglossum hircinum: These are robust plants, 20 to 90 cm tall. The inflorescence is densely flowering with 40 to 80 flowers in the spike. The lip of each flower is elongated, the underside is twisted in a spiral. This species is not rare in this part of France.

Himantoglossum hircinum

Limodorum abortivum: This particular orchid is mainly found in forests, woodland species. It is a saprophyte: its roots make contact with those of trees. The plant depends on these mycorrhizal fungi. The plant has no green leaves, except for the stem, which is green. This species is cleistogamous, the flowers can open underground and self-pollination then takes place there. This is a survival strategy, which ensures the survival of the plant and the species when there is insufficient light due to overgrowth, for example.

The pictures show opened flowers. They will be able to be pollinated in the normal way.

Limodorum abortivum

Neottia nidus-avis: This species has no chlorophyll at all. They are totally dependent on symbiosis with the fungi of other plants. Those fungi occur in the calcareous wet soil under trees in deciduous forests. There they are in deep shade. They do not need sunlight for their food supply. Their range is in Eurasia as far as Japan. But the plant is rare.

Neottia nidus-avis

Orchis purpurea: These are large plants, up to 80 cm tall, with large basal upward-facing pointed leaves. The inflorescence can even contain up to 200 flowers. The lip of the flower is densely covered with purple spots on a white field.

Orchis purpurea

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Androrchis mascula: The basic colour of the flowers forming the inflorescence is crimson red, or purplish pink, even white. The plant in the picture has lilac-pink flowers. The sepals are widely spaced and touch each other back to back. The dorsal sepals form a hood with the two petals. The colour turns white towards the base (i.e. upwards, towards the stigma entrance).

Androrochis mascula

Cephalanthera rubra: This species is particularly beautiful. Although it is not rare, it is very special to find it. The leaves are narrow, oval and oblong. The lilac flower has an unusual lip. In fact, there are ridges running longitudinally, a phenomenon that I observed in the orchids found in Argentina.

Cephalanthera rubra

Herorchis morio: The feature to which you should pay particular attention, are the green veins on the inside and outside of the sepals.

Platanthera chlorantha: The spur is very long as you may see on the photo. The housings of pollinia are divergent. This species is widespread but uncommon.

Platanthera chlorantha

Linum suffruticosum subsp. *salsoloides*, (white flax). It is a short to low perennial, the leaves are linear, flowers white with a violet or pink centre.

Aster alpinus This species belongs to the composite family. The flower consists of many small florets.These are close together in the centre, so that the whole looks like a single flower. The stem of the Aster is hairy. It has lanceolate leaves, softly hairy. The tubular flowers in the centre are yellow and the sepals lilac-purple.

Aster alpinus

Carduncellus monspeliensis
The name refers to Montpellier. The leaves are toothed, the flowers are often stemless. They grow in dry habitats, rocky and stony places in hills and mountains.

Pulsatilla halleri: An important feature of this species is the dense silky hairs around the inflorescence.

Drôme south: 15 June -18 June 2021

Our stay was in the town of Die, situated in a wide valley of the river Drôme. It is centrally located. You can make trips to the north, as you are straight into the Vercors national park, with its mountain passes. To the south lie many, perhaps undiscovered orchid areas, for example the Col de Valouse.

All this is easily accessible from Die. More people seem to have discovered that because it was busy there. Many motorcyclists tour the area and the accommodations can be fully occupied. Early booking is therefore advisable. We stayed in a small bungalow in a a park belonging to the organisation VVF Sud Vercors. Not really great, but a nice swimming pool.

A number of orchids we had seen before and already described here: *Orchis militaris, Orchis purpurea, Cephalanthera rubra, Gymnadenia conopsea, Orchis (Aceras) anthropophora.*

To the Col de Rousset. June 15, 2021:

The often steep verges of the uphill road are overgrown with interesting plants. Here you can see *Globularia cordifolia.*

Cephalanthera damasonium. In a slightly shaded spot, we found this species, which does not flower particularly profusely. The buds often remain closed. But after some searching you are rewarded with a beautiful specimen. Again, the ridges (ridges) on the lip can be seen, in yellow, orange-red, as in *Cephalanthera rubra*. The plant has a loose growth habit, with large oval-shaped leaves alternating on the stem.

Cephalanthera damasonium.

The genus *Dactylorhiza* always flowers later than most other orchids. This is *Dactylorhiza fuchsii*. It is a species, which many people find difficult to identify. Many Dactylorhizas are indeed very similar, and they are perhaps the most difficult species in that respect. *Dactylorhiza fuchsii* has flowers where a deep incision can be seen between the middle lobe and the side lobes. I have two photos to make it clear. Another feature is, that this species usually has white flowers with purple markings. The leaves are mottled.

The second photo is not characteristic of the species. The white hood and the shape of the lip belong to *Dactylorhiza fuchsii*, but the deep purple colour of the lip does not. But I thought it was too beautiful not to show.

Dactylorhiza fuchsii

June 16, 2021.

On our way to the mountains, we saw our first gentians. It's always a spectacular sight, large groups with that intense blue.

This is *Gentiana angustifolia*, the narrow-leaved gentian. This sets it apart from others. The photo clearly shows the linear ground leaves.

In several places we saw *Cephalanthera damasonium* in roadside verges and clearings.

This species has large sword-shaped leaves, which slant away from the stem and become smaller towards the top. There begins a long flowering spike, where the flowers stand. All in all, this can become a sizeable cluster. With *Cephalanthera longifolia,* you see separate flowers that do not bloom in clusters.

Cephalanthera damasonium

We came to an area, where the ‘queen’ of orchids grew*: Cypripedium calceolus.* (Lady slipper) In many areas, this species is already extinct at the hands of man. They are picked, and what is much worse, they are dug out. People think, that in the garden this plant just continues to grow. Nothing could be further from the truth. It will die very very quickly. Those who necessarily want this plant in the garden should orientate themselves to established nurseries, where sometimes, just sometimes, you can buy a plant. The garden centre in my town once had a number of plants on sale. Apart from being very expensive, they are still difficult to grow. They require plenty of light, but little direct sunlight. The soil must be completely adapted to the plant. No clay, no sand. They require moisture, but too much rainwater is not good either. My advice: Don't get started.

In abandoned and hidden places in the Alps, there would still be places where they grow. In Germany, I have heard, there are still places, where they occur, but there they are guarded by volunteers.

Cypripedium calceolus

Cypripedium calceolus

In June, of course, the Campanulas bloom. A favourite of mine is *Campanula cochlearifolia.* You still sometimes see this species in a garden centre. It looks a great plant for the rock garden, but not easy to grow. Here's how it does well – in nature. Any other way and it's gone! That's been my experience.

Orchis spitzelii. The greatest beauty is on the inside of the helmet, or hood. Long rows of heavily spotted flowers crowd the stem. This plant is fairly unknown to orchid lovers.

Orchis spitzelii

Dactylorhia sambucina is a beautiful species, compact and in different colours; yellow and red and in between. The lateral lobes of the lip extend widely. At the base, the lip is red speckled. Between the flowers of the spike, the bracts protrude outwards, as is the case with many Dactylorhizas.

Dactylorhiza sambucina

On 18 June 2021, we took a day trip to the Alps, namely the National Park des Ecrins, to the well-known ski village of Orcieres Merlette at 1850m. The aim of this trip was to find the Alpine orchid: *Dactylorhiza alpestris.*

We parked our car at the edge of the village, where several signposts sent us up the tracks into the mountains. Almost as soon as we walked up the path, we saw them. Hundreds of specimens. They were standing with their root systems in the meltwater. The lower leaves are shorter and broader than the next, the upper leaves appearing to be bracteate. All are with rounded spots. The inflorescence is not very dense. The lip is almost not three-lobed, almost entire. The lip is marked with strong lines and stripes. Intergradation with *Dactylorhiza majalis* occurs, although *Dactylorhiza alpestris* grows mainly in pure, pure groups. On the third photo, you can clearly see how loose-flowered the inflorescence is. There seem to be more bracts than flowers.

Dactylorhiza alpestris

A path winds and climbs up to 2200m. Although the flora at this altitude was far from in bloom, we were still able to find some beautiful plants such as *Geum montanum*. This yellow Geum is widespread. It has very large rosette leaves.

Geum montanum

Gentiana verna: The spring gentian. The rosette leaves are relatively large, elliptical, long and pointed. The plant grows only a few cm high. It only barely rises above the grass.

Gentiana verna

Gentiana acaulis: The plant has trumpet-shaped blue flowers, which stand on a short stem. stem. The flowers have a green spotted throat. The ground leaves are ovate and are almost as wide as long.

Gentiana acaulis

Primula farinosa: The stem is covered with “meal”. That's where it gets its name from. The petals are lilac-red. The length is up to 20cm. It is widely cultivated, and good to use in the rock garden.

Ranunculus kuepferi: The leaves are striking. Very narrow and long, smooth-edged.

Erysimum helveticum: The leaves are linear and form a rosette.

Oxytropis halleri: The plant is stemless. There are silky hairs under and between the inflorescence, which is also striking in colour. This high-mountain plant grows up to almost 3000m in altitude. Perhaps the downy hairs are present for protection.

Another striking feature about this plant, is that it also occurs in Scotland.

The 7 km circular walk passes by Lac de Jujal.

On the shores of the lake we found *Soldanella alpina,* a favourite plant among rock plant lovers. It is known as ‘difficult’. One of the reasons it is tricky to grow it is that it thrives in meltwater, which is 0° C - nearly freezing. Growing the leaf rosette from seed is still possible. After germination, dark green round or heart-shaped leaves appear, but keeping the plant perennial is difficult. This photo, right, shows *Soldanella* at my place in a trough. The dark leaves are from *Soldanella carpatica* and the lighter green leaves are from *Soldanella montana*.

This next *Soldanella* was on the edge of the small lake, Lac de Jujal, which you see in the photo above. That lake was formed by meltwater, an ideal biotope for this beautiful *Soldanella alpina.*

Books:

Pierre Delforge: Orchidees de France, de Suisse et du Benelux (2021)

Christopher Grey-Wilson: Wild Flowers of the Mediterranean

Websites:

www.orchidsofbritainandeurope.co.uk www.elisajeanluc.fr