

International Rock Gardener

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IRG begins this month with a short piece on Spring in the Babadag Mountain in Turkey by Zdenek Zvolanek. Zdenek was accompanied on this trip by his partner Zdena, in a group of four led by Ing. Václav Jošt along with Eva Holzbecher from Lelekovice.

We also present an article received via Frazer Henderson from Irina Popova and Nazgul Kenzhebaeva about the Gareev Botanic Garden, in Kyrgyzstan.

Irina is a geophyte enthusiast with an encyclopaedic knowledge and her expertise in respect of *Tulipa* was recently recognised by her inclusion within the membership of the IUCN SSC Wild Tulip Specialist Group. ([Who are we? – IUCN SSC Wild Tulip Specialist Group](#), which is a rollcall of some of the finest Central Asian botanists.)

Nazgul originally worked within the scientific staff of the gardens, then as a senior researcher within the Institute of Water and Hydropower before changing career to become a teacher. Nazgul has featured twice before in these pages - [IRG 169](#) and [IRG 179](#). The informative article from Irina and Nazgul on this botanic garden with a fine history of female leadership covers more than just alpine, rock and geophytic plants. It's good to know that IRG has a strong Kyrgyz readership.



The current laboratory and ornamental gardening staff at Gareev: Elmira Kachibekova, Gulsaiyra Aldasheva, Irina Popova, Marat Kurmanbekov, Ekaterina Saphonova and Irina Bondartova.

Cover image: *Cyclamen alpinum* by ZZ.

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---- In Turkey ----

SPRING PORTRAIT OF BABADAG MOUNTAIN

Text and photos: Zdeněk Zvolánek

In simple Turkish; baba=father and dag=mountain. In Turkey are half a dozen Babadags, i.e. Fathers of the Mountain - the one which I am describing is in the western Taurus and just above the beach of a tourist town Oludeniz south of the port Fethiye. An impressive limestone formation climbs steeply to a height of two kilometres (1970 m) and has ideal thermal conditions for spring and autumn paragliding – offered with a Turkish pilot. Warm air currents carry you from an alpine peak and descend to a beautiful long sandy beach of the Turkish Riviera. The mountain rises above the warm sea, and its surroundings are things unseen anywhere else, and so the Turks have recently built a high quality cable car to the base of the peak.

We explored the mountain in our discovery programme of the Turkish Spring. We flew from Prague, nonstop, to the airport in Antalya and hired a car with a credit card. We were, including my partner Zdena, a group of four led by Ing. Václav Jošt along with Eva Holzbecher from Lelekovice. It was a cold early March morning when we arrived then, in the afternoon when we were driving to the top of the mountain, it suddenly began to snow heavily. The road to the castle was a very narrow, steep and occasionally slightly slippery, and at 1,600

metres above sea level the road was blocked by a civilian car with a uniformed policeman. He'd had enough time there and hinted to us that if we paid cash he'd handily turn the car around to give us a ride back.



The northern ridge.

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The next day, the peak was covered in snow, and the cable car only took us to the station at 1200m. There's a high, sharp ridge with limestone walls and it proved impossible to continue to the top. So, we walked, descending gradually along the construction road towards the bottom the saddle on the northern slope of the pine and cedar forest, where we hit the asphalt road. The forest is made up of *Cedrus libani* and Calabrian *Pinus brutia*.



Cyclamen alpinum.

Václav and Eva decided then to walk 10 km back to the hotel to get the car and we made our way slowly up the winding road to the saddle. The limestone walls of the shady cuts in the roadway were subtly decorated. The lovely spring cyclamen in shades of pink with a distinctive reddish-black blotch at the base of the petals reigned there. It's an alpine formerly known as *Cyclamen trochopterathum* (described in Germany in 1975) now renamed by the intrepid English to the historic archival name *Cyclamen alpinum*. The photographer struggled here with sharp contrasts of the light in the penumbra and the swirling shape of the broad flowers and it's

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not easy with a camera to get properly below the level of the flowers. The flowers are fragrant like a mixture of violet and primrose and there are plenty of them just above small round white decorated leaves with a diameter of up to 15 mm. In the more shaded places in humic pockets and shrubs, they have grown into larger clumps.

In cultivation in Bohemia, they grow well in sunny crevices and are quite frost hardy.

The rock walls of the northwestern notches are shared with always compact cyclamen plants and low forms of the armoured *Ceterach officinarum*. A little later here, blooming from small shapeless tubers, comes the low anemone *Anemone blanda*, (below) and a little earlier the clearly yellow *Eranthis cilicica*. The famous extra spring bulb of this vast mountain is

Sternbergia

candida; white and rare. After a long and almost fruitless search, the experienced gardener Eva Holzbecher found this in a warm southern rocky hillside with junipers and cedars (in stabilized debris) nearly in bloom; all thanks to an immediate telephone connection from Babadag to Borders in Moravia with the Moravian bulb grower Marcela Rýparová.



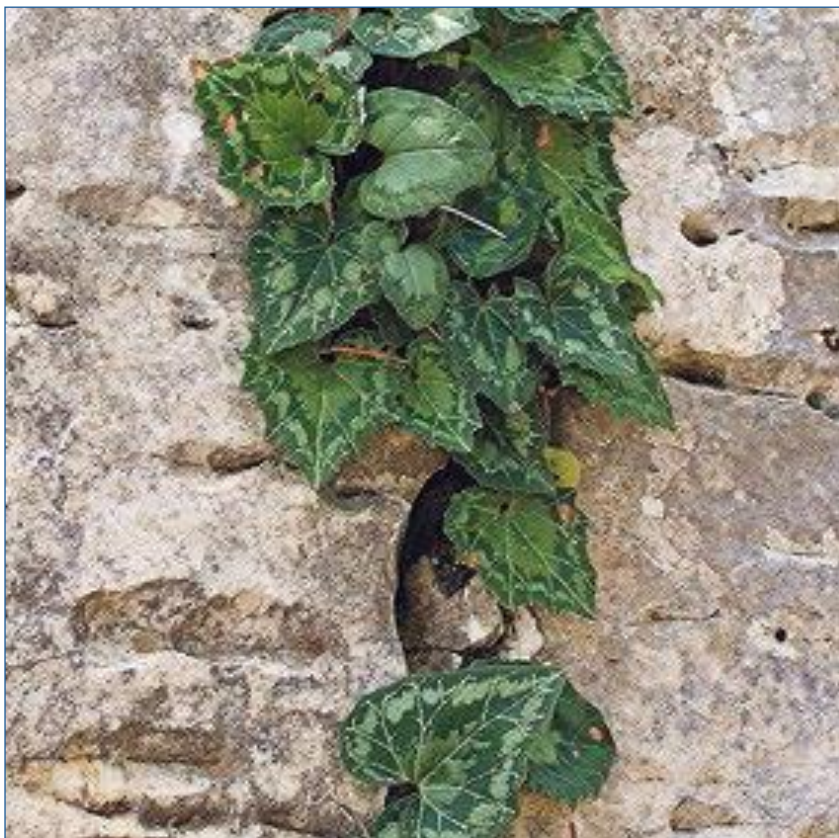
The site is so small

that it is reasonable not to describe it exactly, but this *Sternbergia* is already in Bohemia and Moravia and seems to be not very demanding.

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Sternbergia candida foliage.



Cyclamen maritimum.

At higher elevations, where we could see, there were small crocuses in bloom from a range of *Crocus biflorus*. At lower elevations we saw a few blooms on the thermophilic *Cistus creticus* shrubs and non-flowering autumn flowering plants of *Cyclamen maritimum* with beautifully decorated leaves; these are voracious plants inhabiting even the narrow crevices of limestone

perpendicular walls but need a greenhouse in winter [pers comm. Jarda Balaz].

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The vast limestone mountain of Babadag (nature reserve) has a rich flora and should be viewed in stages thoroughly throughout the year. Our March tour is just an aperitif to a richer menu. Only in spring can one admire the low pale pink *Colchicum triphyllum* and the delights of *Fritillaria crassifolia*, *Fritillaria forbesii* and *Fritillaria carica*, which were seen here by Petr Křeček.

The alpine rocks here need to be explored by some younger souls after our investigation of the area.



Zdena on the south side of Babadag.

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--- Botanical Garden News ---

A tour of the ornamental garden at the Gareev Botanic Garden, Bishkek, Kyrgyzstan By Irina Popova and Nazgul Kenzhebaeva.

The Gareev Botanical Garden, Kyrgyzstan, is a centre for the research and conservation of the biodiversity of central Asian and international flora. Situated in this small, mountainous, beautiful and floral-rich country, the garden consists of three parts: the first, which is the largest, houses the main office at Akhunbaeva Street, Bishkek; the second, which comprises two sites on either side of M. Gorky Street, Bishkek, consists of the arboretum reserve and directly opposite the main ornamental garden. A smaller, third part of the garden is located at Naryn, a small city sitting in the central Tien Shan mountain range some four hours from Bishkek.

Through the coming pages you, dear reader, will be taken on a virtual excursion of the ornamental garden. Your guides are Irina Popova, the garden's senior researcher and a long-term employee and Nazgul Kenzhebaeva, a former scientific secretary at the gardens and now a biology teacher and part-time botanical tour-guide.



Irina Popova



Nazgul Kenzhebaeva

History

But first, a brief history to set in context our tour. The botanic garden was established in 1938 as a research institute within the National Academy of Sciences of the Kyrgyz Republic. Since that time it has grown extensively and now is one of the largest botanic gardens in Central Asia, with over 6500 taxa spread across 150 hectares. The garden is included in the World Register of Botanical Gardens and is a member of BGCI ([Botanic Gardens Conservation International](http://www.bgci.org/)). It is also a member of the Council of Botanical Gardens of the Commonwealth of Independent States at the International Association of Academies of Sciences, and of

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CABCN (Central Asia Biodiversity Conservation Network – an International platform for cooperation between Central Asian countries (Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan) and the Republic of Korea).

As an active member of [IPEN \(International Plant Exchange Network\)](#) the garden participates in the exchange of seeds, cuttings, and living plants with many botanical gardens and arboretums around the world. It issues and distributes an updated electronic version of [Index Seminum](#) (a list of available seed) every year to facilitate these exchanges.

As is the case with most botanic gardens, Gareev is engaged in the collection and conservation of plant genetic resources, scientific work on the study of plants as well as broader educational and environmental activities.

Location

The gardens not only serve as a hub for research but also act as the "green lungs" of Bishkek, representing the city's primary green space. They play a crucial role in filtering and humidifying urban air, thereby contributing to a healthier living environment for residents. Furthermore, the gardens are a favoured, informal recreational spot, particularly during spring and early summer. They host various structured activities, such as yoga classes, races, and drawing sessions, while the living collection at the ornamental garden offers an educational resource that highlights the beauty of plants and their vital role in sustaining life, fostering a deeper understanding of nature conservation among the local population.

Ornamental Garden – History



Entrance Gates.

Now that we have a basic understanding of the Botanic Garden, let's step through the gates facing M. Gorky Street and explore the living collection in the ornamental garden. Here we'll find examples of our native flora as well as exotic plants, some from tropical and subtropical regions.

The floral and ornamental garden was started in 1952, under the leadership of Lyubov Krivosheeva and Yulia Potockaya. Prior to their initiative flowering plants were

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limited to a small representative sample used mainly in the design of the parterre within the Arboretum. These hardworking, inspirational women began an assemblage of ornamental herbaceous specimens, as well as tropical and subtropical plants. Their collections were established and replenished by importing live plants from other botanical gardens of the then USSR (including those of Moscow, Leningrad, Kiev, Yalta and Alma-Ata), as well as by sowing seeds obtained from a range of Soviet and foreign gardens. A year later, their work was supplemented by that of Shpak Rayisa who started a programme on broadening the scope of the ornamental garden through the collection and cultivation of the native herbaceous flora of Kyrgyzstan.

In 1964, a significant development occurred when a laboratory was created for the introduction and acclimatization of ornamental flowers. Under the leadership of yet another female botanist, Lyubov Krivosheeva, three researchers and three laboratory assistants started developing horticultural selections and new varieties of phloxes, paeonies and gladioli.

The enterprising work of the laboratory and the living collection were taken to a new level between 1980 and 1987 under the direction of Yulia Potockaya. During this time the country's native *Rosa* species were collected and successful selections were made within the genera of *Dahlia*, *Hemerocallis*, *Aster*, *Primula* and *Phlox*.

In 1988, yet another female botanist, Larisa Semykina, was appointed to the lead position. Under her tenure the garden expanded its collection of tropical and subtropical plants, and focused on selections from *Gerbera*, *Hippeastrum* and *Saintpaulia* genera.

Iraida Assorina, who worked in the laboratory and the living collection from 1967 to 1990, continued the work on *Iris*, *Campanula*, *Tulipa*, and other native bulbous plants. She undertook a lot of work on the conservation and reproduction of rare and endangered wild plants in Kyrgyzstan and numerous expeditions were organized all over the country to collect endemic plants. At the same time Valentina Vandysheva and her team worked on medicinal, aromatic and lawn plants.

The scientific staff expanded during the period 1960 to 1990 and included Usman Dzhakipov, Lyudmila Denisova, Suyiko Kozhokulova, Margarita Moiseeva, Irina Saphonova, Galina Astapova, Musa Yangshansin, Nelya Khabibrakhmanova, Irina Pak; laboratory assistants Evgenia Shubina, Lyudmila Voronina and Elena Popova, as well as florist master Tatiana Masich.

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Following in the long-line of female leadership, the laboratory and ornamental garden is currently headed by Irina Bondartova. The team today, however, is now much, much smaller.

Current Staff at the garden.

Hopefully, that review has given you an insight into the breadth and range of the work undertaken to date within the ornamental garden.

The Glasshouse



We'll start our tour at the glasshouse, which is a dominant feature in the garden and is the only large conservatory in the country. In our 'garden-under-glass' visitors are instantly transported to dry, tropical or subtropical regions of the world. Here you will see cacti and various succulents as well as palms and equatorial, exotic delights.

The glasshouse was initially constructed just after the end of Great Patriotic War (1941-1945). It comprises of two linked parts, the greenhouse and the 10 metre-high Palm House. As funds were received, plants were brought from various botanic gardens including Moscow, Leningrad, Tomsk, Omsk and Minsk.

A triumvirate of female horticulturalists, Lyudmila Denisova, Larisa Evdokimova, and Tatiana Pashinina worked on the creation of the glasshouse's substantial plant collections. More recently, Larisa Semykina, has continued that work and has invested, over many years, a lot of effort and energy in the creation and preservation of our collection of tropical and subtropical plants.

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On entering the glasshouses visitors are often greeted by one of our three resident cats. They not only provide a friendly welcome but also control rodents and other unwelcome visitors. Anfisa, shown here, is a third generation resident.

Currently, about 500 species, varieties and forms of exotic plants from different countries grow in the glasshouse. In the Palm House many of our palms are well-established with some resident there between 40 and 60 years.

Two prominent specimens in the Palm House:



This *Washingtonia filifera* (known as the desert fan palm, California fan palm or California palm) is native to the southwestern United States and Baja California, and in nature will reach 15 metres. Here it has grown to 10 metres and its top already touches the Palm House ceiling.

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This splendid *Chamaerops humilis* (European Fan Palm) is about 40 years old with a height of almost 4 metres. It blooms briefly, but memorably, in March, with bright, small, yellowish-lemon flowers. The seeds are not formed. After blooming, decorative brown branches remain, which can be used for dry winter bouquets. The species is native to the western Mediterranean coastal region though it can now be found growing outside as far north as southern England. The Kyrgyz winters, however, are too severe to even attempt to grow this species in the open garden.



In addition to palms there are many other large exotic plants including:



Agave americana (Century plant) is an attractive plant with its rosettes of spiny toothed, glaucous-green variegated leaves. It has bloomed in the glasshouse only once, 20 years ago when it sent up panicles of 4 metres of green-yellow flowers. No seed was set as there are no natural pollinators. It is native to south-western USA and Mexico.

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Musa textilis is a really interesting plant. Despite it being a banana its fruit is not edible and instead the plant is grown commercially for its fibre, known as Manila Hemp, that is extracted from its petioles. The fibre is used in rope making as well as in paper products. Our specimen, which like all bananas is herbaceous, is more than 40 years old. It blooms annually, and its attractive fruit sets much seed. The plant is native to the Philippines.

This is a very beautiful *Strelitzia reginae* with an inflorescence that that looks like the head of a fire-bird. This species and its cousin *Strelitzia nicolai*, with its white flowers, are much admired by visitors. As natives of southern Africa these ornamental plants are popularly grown as houseplants in temperate regions.



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Another attractive species which draws the eye amongst the dense green foliage of the glasshouse is *Hibiscus rosa-sinensis* (Chinese Hibiscus) which is indigenous to eastern Asia but is now planted widely across much of the tropics and subtropics.



The densely planted glasshouse with many tropical and subtropical specimens.

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When the fruits of our tropical plants have ripened we often, if safe to do so, of course, serve them to visitors. So, you could find yourself enjoying delicacies like pineapple guavas (*Acca sellowiana*) or Brazilian cherries (*Eugenia uniflora*).



The glasshouse also has an extensive collection of cacti and succulents which is under the care of Galina Uliyanova, a volunteer.

Galina Uliyanova tending a small part of the cacti and succulent collection.

A few of her many, many charges are shown here:



Astrophytum capricorne



Astrophytum myriostigma

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Mammillaria albilanata



Greenovia diplocycla



Cleistocactus colademononis

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Opuntia microdasys cristata

The Field Laboratory

We'll leave the glasshouse behind and move now to the Field Laboratory which is engaged in the study and preservation of the most viable, decorative species that are adaptable to the growing conditions within Kyrgyzstan for use in gardening or floriculture.

The staff seek to create new varieties that, in addition to being beautiful and decorative, are also resistant to heat, drought, pests and diseases, and are easy to propagate.

Work is currently ongoing in the selection of suitable plants within the genera of *Gladiolus*, *Hemerocallis*, *Phlox*, *Primula*, *Iris*, *Dahlia* as well as annual bedding plants.

The main selection methods are inter-varietal hybridization, inbreeding, and selection in spontaneous populations. The best forms are selected for transfer to the State Variety Testing Station for further evaluation. Many of the varieties and forms created are zoned for use in different climatic regions of the country and some are already widely used in floriculture of the country.

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Results

Over the years, the Laboratory team has been instrumental in the creation or identification of more than three thousand suitable species, varieties and forms. These include *Iris* (250 varieties), *Gladiolus* (40 varieties and 70 hybrids), *Paeonia* (30 varieties), *Phlox* (40 species selections and varieties and 80 hybrid forms), *Heimerocallis* (40 varieties and more than 100 hybrids), *Hosta* (50 species selections and varieties) and annual flower crops (approximately 20 species selections, varieties and hybrids).



Iris creations – the result of the Field Laboratory.

Popular commercial plants created include *Aster dumosus* 'Blue Issyk-Kul', *Gladiolus* 'Aleshka' and GG. 'Viktor', 'Ai-Churek', 'Kyzyl-Gul', 'Khan Tengri', *Paeonia* 'Kyrgyzstan', *P.* 'Bibisara', and *Iris* 'Karagat'.

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The Natural Geophyte Collection

Now we will inspect the collection of native herbaceous plants of Kyrgyzstan, which is the responsibility of the garden's natural flora curator, Irina Popova. This will surely be the area of most interest to the many rock and alpine gardeners around the world.

Our extensive collection of geophytes includes *Eremurus* (10 species), *Tulipa* (16 species), *Iris*, *Allium* and *Fritillaria* and a representative selection of those genera is shown below:



Eremurus regelii



E. lactiflorus



E. fuscus



Tulipa tarda



Tulipa talassica



Juno zenaidae (syn. *Iris zenaidae*)



Iris alberti



Juno kuschakewiczii (syn. *Iris kuschakewiczii*)

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Iris halophila var. *sogdiana*



Allium altissimum



Korolkovia sewerzowii (syn. *Fritillaria sewerzowii*). On right, note the yellow internal colour which contrasts with the chocolate-purple reverse tepal colouration.

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Now we will have a look at some of the plants in the collection that are within the Red Book of Kyrgyzstan, which is an inventory of threatened native species.



Juno orchioides (Carr.) Vved. is a species endemic to the northern and western Tien Shan in Kyrgyzstan and is found in the Kyrgyz, Talas, Chatkal, Pskem and Sandalash mountain ranges. It has been cultivated in the Botanic Garden since 1970. Several times live plants have been brought from the foothills of the Kyrgyz mountain range, the last time being in 2010.



Fritillaria eduardii A. Regel ex Regel syn. *Petilium eduardii* (Regel) Vved. This species grows in the Turkestan mountains. It has been cultivated in the garden since 1980. It was collected many times, but after a few years it fell out of the collection; the bulbs died from excessive watering and/or fusarium. It was last collected in 2010 and still survives.

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Tulipa anadroma Z.Botsch. This is an endemic, found in a small area near Sary Chelek within the Chatkal mountain range. Since 1970 the species has been repeatedly collected.



T. anadroma is probably the most graceful and elegantly exquisite of all the yellow-flowered tulips.

Tulipa greigii Regel is an endemic of the north and west Tien Shan In Kyrgyzstan where it is found in the Kyrgyz and Talas mountain ranges. Since 1970, it has been repeatedly collected from the foothills of the Kyrgyz mountain range, most recently in 2010. According to the colour of the perianth, six forms are described in the collection. It is of great importance and value for selecting new varieties of cultivated tulips, for floriculture.



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Tulipa kaufmanniana Regel is an endemic of the western Tien Shan. It is one of the most beautiful early-blooming tulips, characterized by high intraspecific variability and consequently widely used in selection. It has been cultivated in the Garden since 1970 being collected many times in the Chatkal mountain range. According to the colour of the perianth, there are six forms in the collection (white, yellow and red).

Tulipa kolpakowskiana Regel is a north Tien Shan endemic (Kyrgyzstan and Kazakhstan). In Kyrgyzstan, it grows in the Kyrgyz mountain range around the Issyk-Kul hollow. This species often hybridizes with *Tulipa ostrowskiana*. It has been



repeatedly collected for the garden since 1970 with the latest collection of bulbs in 2008.

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Tulipa ostrowskiana Regel is another endemic of the north Tien Shan, where it grows in the Kyrgyz mountain range in Kyrgyzstan. It has been present in the garden since 1970, when it was first collected. There have been subsequent acquisitions, the last being in 2016.

Tulipa zenaidae Vved is an endemic which has a limited distribution range. It was collected and brought to the garden many times from the foothills of the Kyrgyz mountain range. The last collection was made in 2010. It comes in two natural colour perianth forms: red and yellow.



Tulipa rosea Vved. is a rare endemic of the Turkestan Mountain range. It has been in the collection for more than 50 years, though it has fallen out of the collection several times due to soil issues and excessive watering. The last time it was collected was in 2020.

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Tulipa tetraphylla Regel grows in the Issyk-Kul basin, and the western and inner Tien Shan in the country. It has been in the collection for more than 30 years, although it fell out of the collection several times for various reasons. It was last collected in 2010 and in culture, it is undemanding and blooms abundantly.



Tulipa affinis Z.Botsch. is an endemic of the northern Alai-Pamirs (Uzbekistan, Kyrgyzstan, Tadjikistan). In Kyrgyzstan, it grows in the Turkestan Mountain range. The last time it was collected for the garden was in 2019 and it continues to persist.

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Signage at the entrance of the wild tulip nursery enclosure in the garden.

In recognition of the Tien Shan being widely held as the centre of origin and diversity for the genus *Tulipa* a project was initiated in 2019, which ran to 2022, to preserve Kyrgyzstan's wild tulip flora.

This project, implemented jointly with the WWF (World Wildlife Fund) and the public foundation Bioresurs of the National Academy of Sciences of Kyrgyzstan, was managed by Shalpykov Kaiyrkul. The project involved the creation of a dedicated nursery within the garden for the conservation and propagation of wild tulip species. This now falls under the custodianship of Irina Popova.

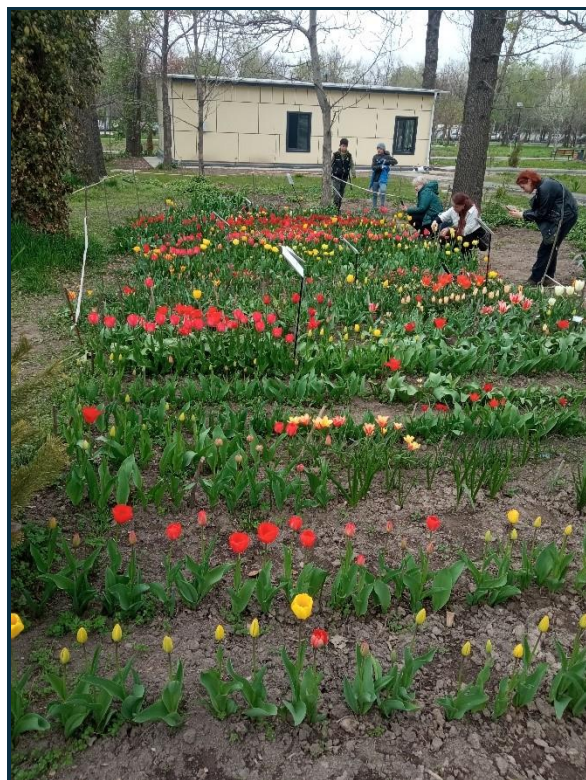


One of the key aspects of the nursery is to ensure that seed is produced from all the wild origin stock in order to preserve species. In this we have been successful even with notably difficult species like *Tulipa heterophylla* which grows high in the mountains (2500-4400 metres) under different climatic conditions to those we experience in Bishkek.

Tulipa heterophylla

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At the end of the Tulip project, in April 2022, a festival was held in the gardens. The festival, celebrating both wild and cultivated tulips, proved to be so successful that it was repeated in subsequent years and most recently on 20th April 2025. In addition to professional researchers from Cambridge University, botanists at Kew Gardens and members of the Kyrgyz National Academy of Sciences the festival has engaged the local population who have attended in large numbers to appreciate and learn more about both native and cultivated tulips.



Members of the public viewing some of the many tulip beds.

Irina Popova (centre)
explaining cultivation
techniques to one of the
numerous excursion groups
during the festival.



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Children enjoying a tour of the greenhouses.

Education remains as a core aim of our work in the garden, and one which staff enjoy. We offer formal lectures to researchers and ecotourists from different countries as well as garden tours to schoolchildren, students and the general public. Additionally, we provide cultivation advice to everyone that enquires. Every year, we distribute a few flowers and seeds to schools, colleges and universities and in response many schoolchildren, students, as well as employees of various organisations, volunteer to help us with tidying-up activities around the garden, like the removal of dead plant material at the end of each growing season.



Volunteers clearing the beds of waste material.

Dear readers, our virtual excursion has come to an end. We hope that you have been able to gain an understanding of the scope of our work and an appreciation of some of the many plants within the garden.

As we part, it is *au revoir* not goodbye as we sincerely hope you accept our invitation to visit the Gareev Botanic Garden in person, here in Bishkek, to enjoy our collections of native and exotic plants, to explore the many areas of the garden that we haven't yet introduced and to discuss all things plant-

related with fellow members of the global community of botanists, gardeners and horticulturalists.

[[Gareev Botanical Garden](#) Details of next year's Tulip Festival will be on the website and on Facebook.]