Botanising in the mountains and valleys of northeastern Kyrgyzstan

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19th - 29th June 2018

Report for the Merlin Trust

Index

Introduction

I first heard about the unique flora of Kyrgyzstan at a lecture given by Barry Juniper. He spoke about the fruit and nut forests in the south of the country that are the home of Malus sieversii, one of the key ancestors of today's cultivated apples. My interest was sparked and I discovered that further to these important forests, Kyrgyzstan has a rich and abundant flora, encompassing as many native species as the whole of Europe, about 10% of which are endemics. The botanical excursion with the International Hardy Plant Union to Kyrgyzstan was a unique opportunity for me to observe and study an exceptional range of flora in their natural habitats. The geography of the country covers a range of different landscapes and a diversity of vegetation, and the excursion allowed me to become acquainted with a wide range of habitats and their corresponding flora and fauna. We visited steppe vegetation, fields and pasture, woodlands and alpine meadows. The excursion was under the guidance of Dutch Botanist Brian Kabbes who has been leading botanical tours of this little-explored flora since 2011 and Meerim Kozhoshova who was our interpreter and seamlessly organised our journey.

Itinerary

Day	Date	Route	
1	19.06.18	Arrival Bishkek	Arrival at approximately 5 am in the morning the program started upon arriving at Manas Airport. Accommodation in guesthouses, later that day city tour around Bishkek
2	20.06.18	Bishkek - Chong Kemin National Park	Stay in a local guesthouse. After lunch walk and botanising in the fields
3	21.06.18	Chong Kemin National Park	Botanical walk in the Annie Djok valley
4	22.06.18	Chong Kemin - Bokonbaev	Botanising in the gorge of the Chong Say, then on to Bokonbaev
5	23.06.18	Bokonbaev - Skazka - Kochkor	Botanising in the mountains and steppes of Temir Kanat
6	24.06.18	Bokonbaev - Temir Kanat - Bokonbaev	Walk through the Skazka valley, swimming in lake Issyk Kul
7	25.06.18	Kochkor - Ak Say Valley - Kochkor	Exploring the vegetation in the Ak Say Valley
8	26.06.18	Kochkor - Burana - Bishkek	Back to Bishkek, stop at Burana to visit the archeological site and conduct a short botanical survey
9	27.06.18	Bishkek - Alamedin - Bishkek	Botanizing in the Gorge of the Alamedin National Park
10	28.06.18	Bishkek	City tour and visit to the famous Osh Bazaar
11	29.06.18	Departure from Bishkek	Transport to Manas airport

Day 1

Tuesday 19th June 2018
Bishkek

We all arrived at Manas Airport in Bishkek at 5 am having met as a group, together with our guides Brian Kabbes and Meerim Kozhoshova, at Moscow International Airport the previous evening. There were 15 participants altogether, from six different countries and horticultural backgrounds. Doris, Jürgen, Peter and Anja owned plant nurseries, Ali and Andrea were studying for the Kew Diploma, writers Sue and Cordula, Petr, a curator from Prague Botanic Garden, nature enthusiasts Henk and Ada, Garden owners Jan and Marjan and plantsman Ruurd. We met our drivers, both called Ulan, at the arrivals gate and they would accompany us on our journey through Kyrgyzstan.

It was a bright sunny morning in Bishkek, and our journey from the airport took us into the city past fields and livestock. The roadside was planted with mature trees, their bases painted white as a safety precaution because of the lack of streetlights. We arrived at our guesthouses and the group split in two. We slept until midday then ate breakfast and headed into the city. Botanising began immediately after we left the guesthouses. We saw *Campsis radicans* sprawling over many domestic walls, and Walnut, Cherry and Peach trees growing in the courtyard. This was also our first sighting of two plants that we would see many times during our time in Kyrgyzstan; *Cuscuta*, a parasitic plant that strangles its host, and *Cannabis ruderalis* which grows uncultivated in both city and countryside.

We spent the afternoon on a walking tour around Bishkek, taking in the local landmarks and acclimatising to the heat. This bustling metropolis was founded in 1852, formerly a caravan rest stop on the Silk Road and now home to over 950,000 people. Much of the centre maintains a Soviet feel, with large public squares and uniform boulevards. Soviet power was established in 1919 and continued until independence was gained on 25th December 1991, one day before the collapse of the Soviet Union. The day ended with a traditional Kyrgyz meal of fried bread, meat soup, a rose-shaped dumpling and nest salad. We settled early for bed in preparation for our first full day exploring the flora of Kyrgyzstan.


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Day 2

Wednesday 20th June 2018
Karol-Döboö Hills

Our second day began with a breakfast together in the larger guesthouse before setting off in two minivans heading east from Bishkek towards Chong Kemin National Park. Our route took us along the border with Kazakstan that was heavily guarded with fences and watchtowers. We stopped at a roadside fruit stand to pick up some watermelons for lunch and then made another stop along a roadside verge. Here we found plants we would see often in the coming days. The vegetation was a mixture of shrubs and steppe creating a matrix of plants from silver through to pink and yellow. Some plants were familiar, *Echium vulgare* and *Hippophae*, and *Salvia deserta* with its purple-red bracts and the blue-purple corolla and often found in these wasteland areas. We also saw *Apocynum venetum*, an important nectar plant for bees, and used in fibre production and medicinally to treat hypertension. As we continued along the Kazak border, the mountains all carried the pink hue, a proliferation of *Xeranthemum annum*, which we would not see again until the end of our trip.

After taking a pass into the mountains, we arrived at the entrance to Chong Kemin National Park where we were greeted by a special find, *Acer seminovii*, a tree endemic to central Asia. Here on the scree slopes, the acid yellow of *Arnebia guttata* shone against the sandy ground. Some petals of *Arnebia* have dark markings on them. It is thought that the plant invests in these spotted petals to attract pollinators. The pollinators think that these flowers have already been pollinated so attempt to take nectar from other flowers on the plant. The roots yield a red dye. This was also our first time seeing the beautiful *Papaver pavonium* which we would see in greater numbers later. Its dark markings towards the base of the petals creating a striking eye. We also found the seed of *Aegilops* on the ground. This genus has played an important role in the development of wheat as it is able to hybridise with *Triticum* as they are genetically similar.


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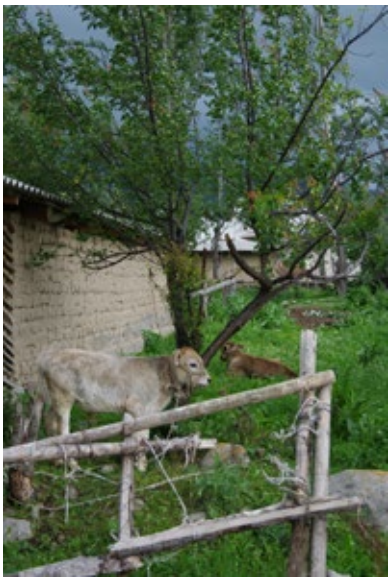
We arrived at our guesthouse in Karol-Döboö, a small rural village at the foot of mountains inside Chong Kemin National Park. We were greeted by Nora the owner. We stood in a circle as she burnt a dry branch of *Juniperus semiglobosa* to remove any negative energy, a traditional shamanistic ritual. This was followed by a beautifully prepared meal in a yurt that stood beside the guesthouse. Tables just raised off the floor were brimming with food and the circular hole at the top of the yurt was opened to let in more light.

After lunch, we set off for a walk in the surrounding hills. The weather quickly changed as a wind rose and rain began to fall. We climbed upwards, following the path of a river as it descended from the mountains and through the village. The banks of the hills were our main area of interest. We saw many forbs, the semi-parasite *Rhinanthus songaricus* and more *Cannabis ruderalis*. Amongst familiar meadow plants like *Lathyrus* and *Onobrychis* was *Codonopsis clematidea*. I had recently seen it in cultivation at Great Dixter so it was wonderful to see it here, intertwined with the undergrowth, its elevation on the hill allowing the perfect vantage point of the coloured markings inside its bell-like inflorescence. There was a large bank of *Eremurus fuscus*, reaching out into the path. Many familiar hardy perennials were present, *Geranium* and *Delphinium iliense* and the beautiful yellow rose *Rosa spinosissima* was abundant along the sides of the path. A great find was the fading flowers of *Ixiolirion tataricum*. As we passed back through the village of modest smallholdings we heard the intermittent sound of cuckoos, geese, cows and horses.

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Day 3

Thursday 21st June 2018

Annie-Djok Valley

Our third day began with breakfast together in the yurt. After which we made a short journey by van to the start of the Annie-Djok Valley. Here the soil was clay, irrigated by the spring snowmelt and groundwater making it very fertile. In this flat steppe, wildflowers were abundant. A huge area, which had the look of cultivated fields, were full of *Onobrychis arenaria*, a plant dominant in this kind of steppe, growing from the natural seed bank.

As we started moving up the valley, we passed through an Islamic graveyard. Yurt-shaped cages were placed over more recent burial mounds to keep wolves at bay. *Ligularia macrophylla* seemed to particularly like this disturbed ground. As we continued, meadow flora covered the sides of the hills, combinations of *Adonis parviflora*, *Papaver pavonium*, *Aster canescens*, *Salvia deserta*, *Allium weschnjakowii*, *Myosotis stricta* mixed together with *Cannabis ruderalis*, *Thalictrum minus ssp. asiatica* and *Nepeta nuda*. There was also a plant I recognised from Oxford Botanic Garden, *Hyoscyamus niger*, grown in our medicinal beds. *Dodartia orientalis* grew on the bank of the river and the umbel *Pimpinella saxifraga* hovered over the fresh green groundcover. Brian showed us *Taraxacum kok-saghyz*, a relic plant from Soviet times. German botanists had discovered the roots could be used to produce rubber and huge fields of it were grown here as a result. We ate lunch on the banks of the river where it flowed through a group of apple trees. Beside these were several *Elaeagnus angustifolia* trees in full bloom, a plant that has become invasive in some parts of Europe.

Our first picnic outside was a great opportunity to appreciate the huge number of insects present. The ground hummed with crickets and grasshoppers and the air was alive with flying insects. As we made our descent from the hills, we found a large area of *Delphinium iliense* and along a small brook, many *Dactylorhiza umbrosa*. Down from the hills, we walked as a group back to the guesthouse, passing cows, horses, geese and chickens feeding off the land.


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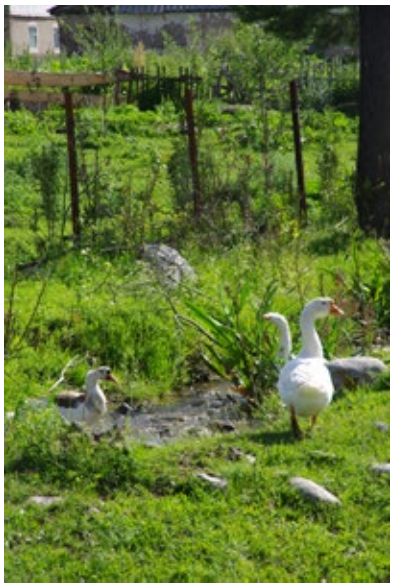
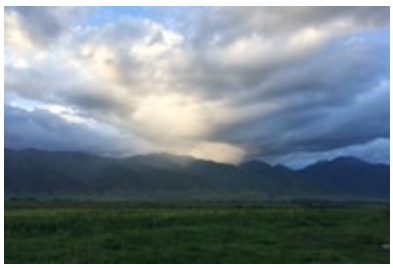
Before dinner, I made a return journey into the hills by the guesthouse with Ruurd and Petr. The day had been very bright and it was good to see these plants again in this context rather than the rain of the previous day. It was also possible to climb further up the slopes and see things at closer proximity. *Dictamnus angustifolius*, *Linum heterosepalum* and *Aconitum leucostomum* looked wonderful in the afternoon light. It was also a chance to look again at *Phlomoides speciosa*, *Dianthus kuschakewiczii* and *Astragalus sewerowii*. Petr also found a grass snake that was resting on the side of a slope. I went to the river in the evening to see the sunset in the mountains; it was raining in the distance.



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Day 4

Friday 22nd June 2018

Bokonbaev

I began the day early getting up before breakfast to see the river in the morning light. It was a very clear morning and I found a large area of *Papaver pavonium* which looked very striking in the early morning sun. After our breakfast of semolina, we left the guesthouse, leaving Chong Kemin National Park along the Chong Say Valley. We stopped in the dry valley to look at the flora in the rain shadow of the mountain. The mountainside was scattered with *Verbascum songaricum* as far as we could see. This species is found only in the Tien Shan, self-seeding into the scree alongside shrubs and lower growing plants. Nestled in the rocks were two members of the Papaveraceae family, *Glaucium corniculatum*, which has striking orange and red markings on its petals, and *Glaucium fimbrilligerum*, with a yellow flower and very long arching seedpods. This was our first opportunity to see *Eremurus tienschianicus* in close proximity although the spike was only just starting to flower. It was growing on the more lush banks descending to the river and at higher elevations on the valley side. By the roadside, *Clematis orientalis* scrambled through an Almond tree. *Malus sieversii*, an ancestor of most of the apples we cultivate, bore small green fruits and the beautiful white flowered *Rosa beggeriana* made large shrubby mounds. Looking up the valley side small communities of plants were clinging into crevices.

Back on the road, we could see amazing sandstone rock formations of this young mountain range. By midday, we had arrived at the Issyk Kul Biosphere territory National Park. Lake Issyk-Kul is a vast saline body of water fed by 118 rivers and streams, and no outlet, the second largest saline lake after the Caspian Sea. It is surrounded by mountains some of which feed it with mineral-rich snowmelt. Issyk-Kul means 'warm lake', as it also fed by a hot spring that means it never freezes. We stopped and ate at a war memorial by the lake where a grove of trees had been planted to prevent erosion. The ancient Karakol Sheep grazed in between the trees and mosquitoes festooned the shoreline.


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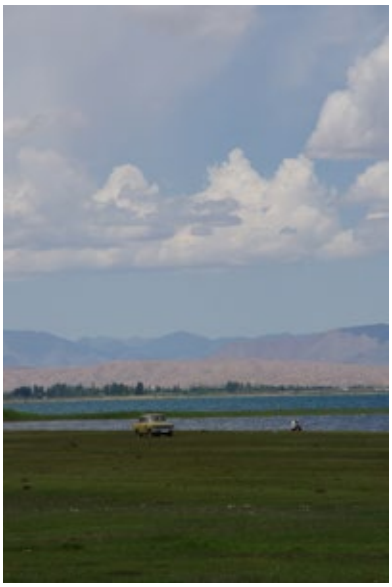
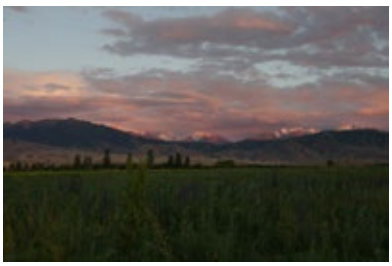
As we continued our journey alongside the lake, the environment became more arid. Sue, from Israel, said it reminded her of the Negev Desert. We made the second stop on the roadside. Here the flora was very shrubby and plants we had seen previously were now stunted in the very dry conditions. Here *Clematis songarica* was only a foot high. Scattered around the feet of many of the shrubs *Cynomorium* shot up from the bare earth. These parasitic plants resemble sea creatures in flower and are highly prized in Chinese medicine; it is believed the plants provide a remedy for impotence. There were many members of Fabaceae present here, *Thermopsis turkestanica*, *Caragana leucophylla*, *Glycyrrhiza uralensis* and *Halimodendron halodendron*. *Nitraria schoberi* made small compact bushes covered in light blue buds opening to white flowers. The lilac of *Limonium* flowers punctuated this landscape of muted tones.



We made our way to Bokonbaev where we stopped at the Bazaar to get food for the next day. The market was full of small shops selling biscuits and sweets. Vegetable stalls lined the road alongside a tiny flower stall that sold *Pelargonium*, *Tagetes* and *Tulipa* bulbs. We left the stalls and drove to the yurt camp where we would be staying the night. It was a short distance from Issyk Kul and we walked to the lake edge before dinner passing a disused Soviet Beach Resort. The surrounding vegetation was a mixture of small meadow areas and a similar, more arid landscape we had seen on our journey there. We were able to see a beautiful sunset over the mountains just outside the camp. After dinner, we were treated to a performance of traditional Kyrgyz music. We slept two people per yurt on mattresses on the floor. The yurts were very cool and pitch dark inside.

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Day 5

Saturday 23rd June 2018

Skazka

After breakfast we left the yurt camp, stopping just down the road to look at a beautiful wildflower meadow, brimming with *Echium vulgare*, *Lathyrus pratensis*, *Onobrychis arenaria* and *Artemisia dracunculus*. Then we began our journey to Skaska. Following along the edge of the lake, we passed numerous Soviet Resorts built for tourists that never came. Huge murals and stylised sculptures spoke to a utopian future that never manifested itself in Kyrgyzstan.

We turned off the lakeside road and into 'Fairytale Canyon' where we began our walk into the Skaska Valley. One of the most dominant plants in the landscape was *Ephedra glauca*; sending out runners; one plant can colonise large areas of ground, its silvery reduced foliage perfectly adapted to these arid conditions. Again we found the opportunist parasite *Cuscuta monogyna*, scrambling across woody shrubs. Similarly, *Clematis songarica* had climbed up and colonised host shrubs, covering them with a froth of flowers. The succulent *Rosularia platyphylla* was dotted throughout the canyon, nestled in cracks and crevices, wherever it could take hold and *Centaurea turkestanica* found a home on the near vertical rock face.

Sandstone walls were covered in holes, homes for solitary bees. *Allium oreoscordum* occurred in large numbers and we could see the unusual woven tunic at the base of the stem. Ancient looking *Convolvulus pseudocantabricus* clung to the side of the rock. Similarly small cushions of *Anabasis tianschanica* which could easily be 100 years old, having 5-6 meter tap roots penetrating the rock. We saw *Lagochilus seravschanicus*, one of the few species in Lamiaceae with spines and small prostrate *Juniperus sabina*, a plant very out of place as its usual habitat is wet alpine meadows.


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We ate lunch at the foot of the 'fairytale castle', a staggering rock formation that gave the canyon its name. Climbing up to the top offered stunning views across the mountains and the lake. In the afternoon, we found a spot by the lake and went for a swim in the refreshing water. The lake is very deep, at its maximum reaching a depth similar to that of the North Sea. The beach was surrounded by scrubland where we found *Perovskia scrophularifolia* and *Orobanche*. We finished the day, returning to the bazaar and then home for a dinner of buckwheat and potatoes and carrots and a dessert of lemon cake and condensed milk.


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Day 6

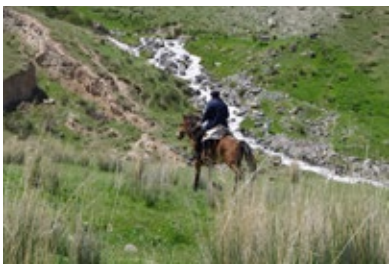
Sunday 24th June 2018

Temir Knat

After a breakfast of fried eggs and drinking yoghurt, we set off in the vans for the mountains. We arrived at a meadow plain by a river and rolling hills that rose into the mountains. Alongside the river, a Bactrian camel native to Central Asia was tethered next to a ruined building. These camels have been used as pack animals here since ancient times, their tolerance for high altitudes made them ideal animals for travelling in caravans along the Silk Road. Crossing the river, we found a meadow covered in orchids and primula. The taller *Dactylorhiza salina* intermingled with the shorter *D. umbrosa* and *Primula longiscarpa* rose up from the damp sward. We made our first sighting of *Leontopodium fedtschenkoanum* which we saw again later as we climbed the mountain. To get to the outcrop we would climb, we crossed a straight road, either side of which persisted a sea of yellow brassica flowers, planted in the Soviet times.

We ascended the mountain following a stream that passed smallholdings with a few animals, cows, donkeys and horses. Animal dung was being dried to be used as winter fuel. From this point, all the flora we saw was very small in stature, all hugging quite low to the ground. The meadow we had been walking through became more and more rocky, with plants scattered through cracks and crevices. *Pyrethrum karelinii* and *Aster serpentimontanus* flowers rose from small hummocks of leaves and small clusters of *Androsace akbaitalensis*. The natural geology and splitting of the rock had created perfect shelters for these opportunist plants, at times as if the vegetation had been cultivated like a botanic alpine collection, each species finding a situation in which to survive.

The further we came to the summit of the outcrop the sparser the large rocks and vegetation became. At the top, we were afforded another view of Lake Issyk-Kul and snow-capped mountains beyond.

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On our descent, the weather changed and we could see a thunderstorm brewing in the distance. The valley we walked down was more protected, here small shrubs and taller herbaceous plants were present, some of the same species we saw in the Karol-Döboö Hills, *Geranium*, *Phlomis*, *Linum*, as well as *Trollius dschungaricus* and *Parnassia laxmanii*.

Returning to our guesthouse accommodation, we had a dinner of rice, meat and salad, as well as a cake to celebrate Ruurd's birthday. We also had a discussion about corruption in Kyrgyzstan and the extreme generation gap that exists here in a society where arranged marriages are still common and most young people are moving away from rural areas to find opportunities elsewhere.


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Day 7

Monday 25th June 2018

Ak Say Valley

After a breakfast of pancakes, yoghurt and jam, we set off on a very special day of botanising. We were all loaded onto a large Soviet truck, still used to transport harvests, and drove towards the Ak Say valley, a dry riverbed which in spring carries the melting snow from the mountains down to Lake Issy-Kul. This was an opportunity not many people have been able to experience before and only the second time our guides had attempted to visit the valley during a trip.

It was hard to comprehend that the flora is able to survive in this inhospitable arid landscape and that every year the area is completely engulfed by water. Many of the plants we saw had reduced leaves so they could cope with the heat. We found *Peganum harmala* growing on the base of the valley; it is an incredible drought tolerant plant whose roots can grow to six meters below the ground and has been used in traditional and modern medicine. The seeds of this special plant can also be used to create a red dye. The thick glabrous leaves of *Zygophyllum rosowii* are also perfectly adapted to the arid conditions. Woody plants persisted here too, *Nitraria schoberi* with its star-like white and blue flowers and larger stands of *Tamarix arceutoides* and *Atraphaxis frutescens*. There were opportunists here too, *Cuscuta* twisted through small shrubs and *Clematis orientalis* rose up through others, using their support to reach the light. *Centaurea squarrosa*, *Scutellaria* and *Dracocephalum* appeared at scattered intervals along the dusty ground. Here we saw more *Cynomorium* bursting through the baked earth. The purple flowers of *Perovskia abrotanoides* and *Limonium hoeltzeri* contrasted beautifully with the muted tones of the sandstone.

After meandering through the high-sided landscape, the valley began to open out as we came closer to the lake. Swallows were nesting in the sides of the bank, darting from the carved out holes. Now the dominant plant was *Ephedra glauca*.


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We sat by the lake for lunch and then walked up a nearby hill to get a view of the lake and surrounding geography. As we climbed up the hillside, rocks were covered in lichen and desert varnish. The varnish is a thin layer of minerals, clay and microbes, which, exposed to the arid desert climate, oxidise creating different coloured films on the rocks. Where manganese oxide is present the dominant varnish will be black which was the case here. The varnish builds very slowly, at a rate of 1 to 40 micrometres per 1000 years. Here the vegetation was extremely sparse, lizards were darting between the few dwarf shrubs that have held on.

At the summit, we got a view of an almost lunar landscape of ravines and the channels that the snowmelt has carved out of this sandstone landscape, the ice-capped mountains beyond and the azure blue of Issyk-Kul. There was time for another swim in the lake before returning to the guesthouse for dinner.


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Day 8

Tuesday 26th June 2018

Burana

After packing our bags and having breakfast, we began our journey back to Bishkek. We followed the old Silk Road to Burana in the Chuy Valley. The road leaving Lake Issyk-Kul was dotted with many small stands selling dried fish, dried yoghurt balls and honey. Along the way, we made a stop at a piece of waste ground, next to a large field of *Iris halophylla*. *Lactuca tatarica*, *Geranium collinum* and *Cynomorium* had made a home in the gravel.

We arrived in Burana, a village famous for its tower. The large minaret is a remnant of the ancient city of Balasagun which was established at the end of the 9th century. It was possible to climb the tower for a view of the surrounding meadows that were dotted with stone grave markers. The meadows were filled with *Xeranthemum annuum*. Our first chance to see this flower close up after seeing it in the distance from the road where it coated the hillsides in a haze of pink. Here it grew in amongst *Achillea wilhelmsii*, *A. asiatica* and the hybrid *A. filipendulina x asiatica*. Other notable plants in the sward were the beautiful pale blue of *Allium caesium*, a purple *Orobanche*, *Eryngium macrocalyx* and *Cichorium intybus*.

After our lunch at Burana, we continued on our way to Bishkek, making one more stop by a dry riverbed. This contained a beautiful matrix of plants including a large number of *Eremurus tienshanicus*, flowering on a grassy bank. In between more *Achillea*, and we also found a beautiful single specimen of *Salvia sclarea var. turkestanica*. Its amethyst colouring beautifully contrasting with the acid yellow of the yarrow. By the afternoon we had arrived back at our original guesthouses in Bishkek.


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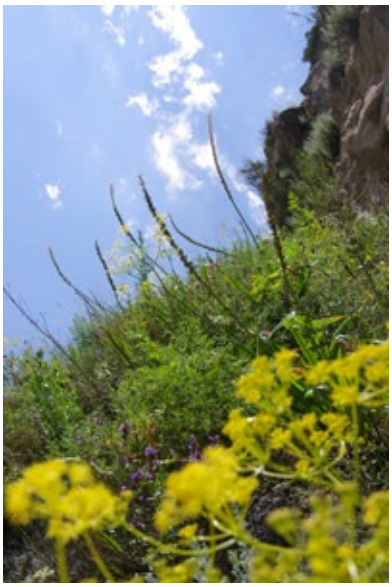
Day 9

Wednesday 27th June 2018
Ala Archa National Park

After a breakfast of pancakes, we began our last day of botanising. Driving south of Bishkek we made a short stop by a roadside meadow while a repair was made on one of our vans. Here there were beautiful combinations of plants, *Salvia deserta* growing alongside *Alcea nudiflora*, *Cannabis uralensis*, *Echium vulgare*, *Melilotus indicus* and masses of yellow and white umbels. There was a pink form of *Achillea asiatica* and the magenta *Lathyrus tuberosus* scrambling through *Hypericum perforatum.*

Ala Archa National Park in the Tien Shan mountains was established in 1976 and is named after *Juniperus semiglobosa*, a tree of great significance to the Kyrgyz people. Covering 200 square kilometres and rising to 4,895 meters at Peak Semenova Tian-Shanski, it is home to the bear and was home to the now extinct snow leopard.

We began botanising as soon as we entered the park, finding a large field full of statuesque *Eremurus tianschanicus* which had all just begun to flower. Dotted amongst the Eremurus, a blue form of *Allium filidens*, seed heads of *Tragopogon marginifolius*, a pink rose and more *Cuscuta.* We continued on foot following the mountain stream. Along the roadside, we saw *Mentha asiatica*, *Sanguisorba minor* and *Campanula glomerata.* Small *Juniperus* and *Malus sieversii* created dappled shade for *Bupleurum falcatum* and *Bryonia.* Further up a bank, we found two quite rare plants, *Astragalus sieversianus*, whose seed was covered in dense downy white hair and *Eremostachys fetisowii*, with its whorls of yellow flowers. As we walked further up the valley, more rockscapes lined the road. The rocks were covered in opportunist plants which could seed themselves in the crevices and small pockets of soil. Here we saw an *Asplenium* tucked between a boulder, and *Cerastium lithospermifolium*, *Eremurus fuscus*, *Ligularia thrysoidea*, *Ferrula*, *Hylotelephium* all clung on to the near vertical rock face.

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After stopping by the river for lunch, the landscape began to become dominated by Birch trees. Under the canopy, *Aconitum leucostomum* was thriving and showed a lot of natural variation between plants ranging from pale lilac to deep purple. There were many new species we had not seen before, *Polemonium causicum*, *Romeria refracta*, *Hesperis sibirica* and the beautiful burgundy *Aquilegia atrovinosa* residing from the river edge up to the tree line.

The final stop on our journey up the valley was a small alpine meadow by a stream where horses were grazing. It was hard to believe the flora here had not been planted as many small species scattered across the riverbanks intermingled making a tapestry of colour, punctuating the lush green of the sward. *Dactylorhiza* mixed with *Cortusa turkestanica*, *Papaver croceum*, *Potentilla* and *Geum*. It was here the vans picked us up and we made our way back through the valley and back to Bishkek.


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128


174


9


164


27


67

Day 10

Thursday 28th June 2018

Bishkek

Our last full day in Kyrgyzstan was spent exploring Bishkek. We took the vans to the Osh Bazaar. This huge market sells almost everything imaginable. Forming a human chain so as not to get lost in the sprawling maze of tiny shops and stalls, we got a taste of what the market had on offer. Cut flowers and plants for sale, a vast array of fruit and vegetables, seeds and grains, beautifully decorated bread, handmade brooms and branches of *Juniperus semiglobosa*. A tiled complex of butchers with different meats and every conceivable animal part, including the fatty tails from the Karakol sheep we had seen earlier on the trip. A corner of stalls were for recycling and reselling many reusable items such as glass jars and cardboard boxes. There were also sections for traditional dress, furniture and children's cribs, tools and equipment, some from Soviet times. We had an early dinner as most of the group were leaving very early the next morning.

Outcomes

The trip to Kyrgyzstan has had a significant impact on my professional and personal life. The opportunity to experience such a range of habitats and observe flora in such a short amount of time has been very valuable. Mentors, colleagues and horticulturists that I admire have often stressed the importance of observing how plants grow in the wild in order to best know how to grow them in cultivation. This trip allowed me to observe many genera that are grown ornamentally in the UK, growing in their natural habitat, in their natural growing conditions and plant communities. The specific focus on hardy plants relates directly to my experience working with the Gardens at Oxford Botanic Garden and will help me to improve my knowledge and understanding of many of the plants in our collection. Being able to observe plants communities in their natural habitats, seeing the natural variation within species, the sometimes challenging environments and conditions plants will tolerate, and how this affects growth and vigour has been a great insight.

I also found it fascinating experiencing a country that I had not visited before, primarily through its flora. It made me consider how botanising can be used not only as a way of discovering the natural history of an environment but also to think about the social history of a place. Often in Kyrgyzstan traces of the country's nomadic and Soviet history presented themselves in the flora, giving a picture of how humans have altered and impacted the landscape.

At this early stage of my professional horticultural career, the opportunity to spend time with members of the group was invaluable. I feel indebted to the sharing of knowledge and enthusiasm of the group. It was very inspiring spending time with our guides Brian and Meerim, who run these trips as volunteers, encouraging and promoting community-based tourism in Kyrgyzstan despite it having a very limited infrastructure. Over the ten days of the trip, I made many personal connections with professionals across horticulture, botany and ecology that will continue since returning from Kyrgyzstan and will be of great value as I continue my career within botanical horticulture.

	Taxa	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9
1	*Acantholimon alatavicum*			•	•	•			
2	*Acer negundo*		•						
3	*Acer semenovii*	•		•					
4	*Achillea asiatica*							•	•
5	*Achillea filipendulina*							•	•
6	*Achillea filipendulina x asiatica*							•	
7	*Achillea wilhelmsii*	•		•				•	•
8	*Achnatherum splendens*			•					
9	*Aconitum leucostomum*		•						•
10	*Acroptilon repens*							•	•
11	*Adonis parviflora*	•	•						
12	*Aegilops sp.*	•							•
13	*Aegopodium sp.*								•
14	*Agrimonia asiatica*	•							
15	*Alcea nudiflora*							•	•
16	*Alchemilla sibirica*								•
17	*Allium caesium*							•	
18	*Allium filidens*								•
19	*Allium korolkowii*				•				
20	*Allium oreoscordum*			•	•				
21	*Allium trachyscordum*			•					•
22	*Allium weschnjakowii*		•						
23	*Anabasis tienschanica*				•				
24	*Androsace akbaitalensis*					•			
25	*Angelica decurrens*								•
26	*Apocynum venetum*	•							
27	*Aquilegia atrovinosa*								•
28	*Arabis glabra*								•
29	*Arenaria sp.*					•			
30	*Arnebia guttata*	•		•			•		
31	*Artemisia austriaca*				•				
32	*Artemisia pectinata*			•					
33	*Artemisia santolinifolia*								•
34	*Asparagus sp.*				•				
35	*Asplenium sp.*								•
36	*Aster canescens*		•	•		•			
37	*Aster serpentimontanus*					•			
38	*Astragalus sewerzowii*		•						
39	*Astragalus sieversianus*								•

	Taxa	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9
40	*Atraphaxis frutescens*						•		
41	*Avena sp.*			•					
42	*Berberis sp.*		•						
43	*Berberis sphaerocarpa*		•						
44	*Bromus sp.*	•							
45	*Bryonia sp.*								•
46	*Bupleaurum falcatum*								•
47	*Calamintha sp.*							•	
48	*Campanula glomerata*								•
49	*Cannabis ruduralis*	•							•
50	*Caragana leucophloea*			•	•				
51	*Centaurea adpressa*	•							
52	*Centaurea diffusa*								•
53	*Centaurea squarrosa*						•		
54	*Centaurea turkestanica*				•				
55	*Cerastium lithospermifolium*								•
56	*Chamaemelum sp.*								•
57	*Chichorium intybus*							•	
58	*Cicerbita thianschanica*								•
59	*Cirsium sp.*					•			
60	*Clematis alpina ssp. sibirica*					•			
61	*Clematis orientalis*			•			•		
62	*Clematis songarica*			•	•				
63	*Clematis sp.*		•						
64	*Codonopsis clematidia*	•	•			•			•
65	*Convolvulus lineatus*		•					•	
66	*Convolvulus pseudocantabricus*				•				
67	*Cortusa turkestanica*								•
68	*Cousinia umbrosa*							•	
69	*Crataegus korolkowii*		•						
70	*Cuscuta monogyna*				•				
71	*Cuscuta sinensis*					•			
72	*Cuscuta sp.*						•		•
73	*Cynomorium coccineum ssp. songaricum*		•				•		
74	*Dactylorhiza salina*					•			•
75	*Dactylorhiza umbrosa*		•			•			
76	*Delphinium iliense*	•	•						
77	*Dianthus kuschkewiczii*	•	•			•			

	Taxa	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9
78	*Dictamnus angustifolius*		•						
79	*Dodartia orientalis*		•						
80	*Dracocephalum bipinnatum*						•		
81	*Dracocephalum nodulosum*				•		•		
82	*Echium vulgare*	•							•
83	*Eleagnus asiatica*		•						
84	*Ephedera glauca*				•		•		
85	*Ephedera intermedia*	•							•
86	*Ephedera sp.*	•							
87	*Epilobium sp.*								•
88	*Eremostachys fetisowii*								•
89	*Eremostachys molucelloides*			•					
90	*Eremurus fuscus*	•							•
91	*Eremurus tienschanicus*			•				•	•
92	*Erigeron acris*								•
93	*Eryngium macrocalyx*							•	
94	*Erysimum sp.*								•
95	*Euphorbia longifolia*	•							
96	*Euphorbia soongarica*			•					
97	*Ferula sp.*								•
98	*Geranium collinum*					•		•	
99	*Geranium pseudosibiricum*	•							
100	*Geranium saxatile*		•			•			•
101	*Geum x meinschausenii*								•
102	*Glaucium cornicultaum*			•					
103	*Glaucium fimbrilligerum*		•	•	•				
104	*Glycyrrhiza uralensis*			•					
105	*Halimodendron halodendron*			•					
106	*Hedysarum schischkinii*				•	•			
107	*Hedysarum songaricum*					•			
108	*Hesperis sibirica*								•
109	*Hippophae rhamnoides*	•							
110	*Hylotelephium sp.*								•
111	*Hyoscyamus niger*	•	•						
112	*Hypericum perforatum*		•						•
113	*Iris halophila*				•			•	
114	*Ixiolirion tataricum*	•							
115	*Juniperus sabina*				•				
116	*Juniperus semiglobosa*	•							•

	Taxa	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9
117	*Lactuca tatarica*			•				•	
118	*Lagochilus platycanthus*				•				
119	*Lagochilus seravschanicus*				•	•			
120	*Lathyrus pratensis*				•				•
121	*Lathyrus tuberosus*		•						•
123	*Lentopodium fedtschenkoanum*					•			
124	*Leonurus turkestanicus*	•	•						•
125	*Lepidium draba*			•					
126	*Ligularia heterophylla*								•
127	*Ligularia macrophylla*		•			•			
128	*Ligularia thysoidea*								•
129	*Ligusticum discolor*								•
130	*Limonium gmelinii*	•				•			
131	*Limonium hoeltzeri*						•		
132	*Limonium kaschgaricum*				•				
133	*Limonium sp.*			•					
134	*Linaria transiliensis*	•							
135	*Lindelofia stylosa*					•			
136	*Linum heterosepalum*		•			•			•
137	*Lycium ruthenicum*							•	
138	*Malus sieversii*			•					
139	*Malva neglecta*		•						
140	*Melilotus indicus*								•
141	*Mentha asiatica*	•							•
142	*Myosotis stricta*		•						
143	*Nepeta nuda*		•						•
144	*Nitraria schoberi*			•			•		
145	*Onobrychis arenaria*	•	•						
146	*Onopordum acanthium*								•
147	*Onopordum tauricum*			•					
148	*Origanum vulgare*			•					•
149	*Orobanche sp.*			•				•	
150	*Orostachys thysiflora*	•							
151	*Papaver croceum*								•
152	*Papaver pavonium*	•	•						
153	*Parnassia laxmanii*					•			
154	*Patrinia intermedia*						•		
155	*Pedicularis physocalyx*						•		
156	*Peganum harmala*					•			•

	Taxa	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9
157	*Perovskia abrotanoides*						•		
158	*Perovskia scrophulariifolia*				•				
159	*Phlomis oreophila*					•			•
160	*Phlomis pratensis*					•			•
161	*Pimpinella saxifraga*		•						
162	*Plantago lanceolata*								•
163	*Plantago sp.*								•
164	*Polemonium caucasicum*								•
165	*Polygonum coriarium*								•
166	*Polygonum viviparum*								•
167	*Potentilla sp.*	•					•		•
168	*Primula longiscapa*					•			
169	*Prunus pseudoprostrata*							•	
170	*Prunus tienshanica*	•							
171	*Pyrethrum karelinii*					•			•
172	*Rhinanthus songaricus*	•	•						
173	*Rhodiola semenovii*								•
174	*Romeria refracta*								•
175	*Rosa beggeriana*			•					
176	*Rosa kokanica*								•
177	*Rosa sp.*								•
178	*Rosa spinosissima*	•							
179	*Rosularia platyphylla*				•		•		
180	*Salix sp.*		•			•			
181	*Salvia deserta*	•	•					•	•
182	*Salvia sclarea var.turkestanica*							•	
183	*Sambucus nigra*		•						
184	*Sanguisorba minor*								•
185	*Scutellaria mesostegia*	•			•				
186	*Scutellaria przewalskii*	•		•					
187	*Sigusbeckia sp.*	•							
188	*Silene sp.*			•					
189	*Silene vulgaris*	•	•						•
190	*Sophora alopecuroides*	•							
191	*Stipa sp.*				•				
192	*Tamarix arceutoides*						•		
193	*Tamarix leptostachya*						•		
194	*Taraxacum kok-saghyz*		•						
195	*Taraxacum sp.*								•

	Taxa	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9
196	*Thalictrum minus ssp. asiatica*		•						•
197	*Thermopsis turkestanica*			•		•			
198	*Thymus marschallianus*	•							
199	*Thymus seravschanicus*					•			
200	*Tragopogon marginifolius*			•					•
201	*Trifolium repens*								•
202	*Trollius dschungaricus*					•			
203	*Urtica sp.*								•
204	*Verbascum blattaria*							•	
205	*Verbascum songaricum*	•		•					•
206	*Vicia villosa ssp. varia*		•						
207	*Xeranthemum annuum*	•						•	
208	*Ziziphora pedicellata*			•					
209	*Zygophyllum rosowii*						•		

Expenditure

	Cost	Source
Botanical Tour of Kyrgyzstan	€1450.00 (approx. £1287.89)	Kyrgyz Tourism
Insurance	£66.00	STA Travel
Return Flight to Bishkek	£566.07	Aeroflot
Spending money	£50	Personal Budget
Total	**£1969.96**	
Merlin Trust Grant	£1500.00	
Personal Expenditure	£469.96	

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