

# The Tien Shan

## *The Mountains of Heaven*

### A Greentours Trip Report

5th – 22nd June 2008

Led by Vladimir Kolbintsev, Anna Ivaschenko and Paul Green

Trip report by Paul Green

#### Day 1      Thursday 5<sup>th</sup> June      Departure/Arrival

I flew from Dublin into Heathrow to meet the group in my bright red T-shirt with Greentours written across the top, too bright for some of the group, who had mostly come from across Britain while Hilary and John had flown in from Norway and Alain had come from Paris. The only plant I could see flowering along the runway at Heathrow was Common Mallow. Our plane left on time arriving at Almaty at around 3.20 pm. We met up with Vladimir and headed off for our hotel the lovely wooden-built Vorota Tuyuk Su.

#### Day 2      Friday 6<sup>th</sup> June      Tjuk-su Gate

We were welcomed by rain when we first got up but this soon cleared to be a mainly sunny day. Anna joined us for breakfast and was introduced to the group. Our first excitement was when we saw two Lammergeier soaring over the mountains just after breakfast.

The three mini-buses took us up the very bumpy rocky track, we drove as far as it was safe. There were flowers everywhere – *Gagea filiformis* was in fine form and Anna explained how to id. the three species of *Viola* we were seeing. *Viola acutifolia* pointed leaves, *Viola biflora* with yellow flowers and *Viola altaica* which had dark purple flowers or pale cream flowers. There were a number of *Tulipa heterophylla* flowering. Hannah spotted the first Himalayan Rubythroat a female sitting on a rock. Golden Eagles were seen soaring and a Kestrel was hovering. A Black-throated Accentor was seen and it was not long before Vladimir spied *Paraquilegia anemonoides* with his binoculars. This soon had majority of the group climbing up the steep slope to see it. At the same time the sky was turning black and thunder could be heard. Before some had reached the plant, light rain had started. Lunch was taken in the hotel.

The rain cleared for a walk after lunch. Two Red Squirrels were seen at the base of a tree, one had

no tail. We crossed over the river to the other side of the valley where Joan found *Hedysarum neglectum* with large spikes of pink flowers. *Paraquilegia anemonoides* was calling again! Some of the group were too weak to say no and headed on up to see it as we had to be back for 7.30 for dinner.

### Day 3      Saturday 7<sup>th</sup> June      Chimbulak ski-lift

We woke to a superb sunny morning. There was still no hot water for our showers. A good hearty breakfast was had by all before we set off down the road to the ski lift. Corncrakes were heard, sounding just like the noise made when winding up a clock. *Orobus luteus* was in very large numbers along the road banks. Common Rosefinches were seen sitting in the tops of firs and a Cuckoo was heard. *Astragalus alpinus* was seen in plenty and *Lappula tianschanica* with tiny pale blue flowers like forget-me-nots grew along the roadside. We all braved the ski lift to be greeted by a mass of *Gentiana verna* and Anna found an albino form. Snowcock were heard and after a hunt two were seen flying by Vladimir and after searching for a very long time one was seen sitting on a rock by a small number of the party. Pat found a nice patch of Snowdon Lily, Hilary came across a large spread of pale yellowed flowered *Sibbaldia tetrandra* and Alain saw some of the bright yellow flowered *Saxifraga macrocaylx*. We returned to the hotel for a late lunch.

Late afternoon we set off on a steep path up behind the hotel. There were many patches of *Ramischia obtusata* all in bud still. Pat was the only person to see a stoat which she got a good photo of. We all took a rest by a few fine blooms of *Trollius lilacinus*. A Nutcracker was seen flying over and the droppings of Black Grouse were looked at. *Saxifraga cernua* was found on the slope, with small red bulbils in the leaf axils.

### Day 4      Sunday 8<sup>th</sup> June      Chimbulak, Almaty, and the train

The mini-buses took us down the road and dropped us off by a wooded path where we walked to see Coralroot Orchids which unfortunately had finished flowering. We returned to the road and continued down. The bushes of *Rosa albertii* were a mass of white flowers, a kestrel was hovering nearby. It was worth the steep walk down to the meadow as there were many spikes of the purple *Dactylorhiza umbrosa* with *Carex pallescens* (Pale Sedge) mixed in with the orchids. There were many Tien Shan Apollons flying around. There were grey wagtails by the bridge bobbing about on the rocks. There were many bushes of the yellow *Rosa platyacantha*, lots of yellow spikes of *Eremurus altaicus* and another yellow flowered plant was *Sedum hybridum*. A hobby flew over head. *Allium fetissoyii* with pink heads was very common and Vladimir found one with white flowers. John was the first to spot the wonderful *Codonopsis clematidea* with pale blue large bell shaped flowers. *Stachyopsis oblongata* with large pink flowers and long pointed leaves put on a fine show for us. Two Yellow-legged Tortoiseshell were seen sitting on a rose and a hermit (looks like a grayling) was photographed by many sitting on a rock. We returned to our hotel for a late lunch and to get ready for the train journey.

It was very hot down in Almaty and seemed even hotter and stuffier on the train. Once the train was moving we soon started seeing rollers, rose-coloured starlings and bee-eaters sitting on the wires.

## Day 5      Monday 9<sup>th</sup> June      Kuyuk Pass, Karasai Gorge and Berkara

We were met by Yevgeny and taken to his hotel in Jabagly in the bone shaker (bus). After being shown to our rooms and unpacking and having breakfast we headed off for a long hot tiring day. A pair of Golden Orioles were seen in the garden of the hotel. Our first stop was a field on the roadside as Vladimir had spotted the yellow spikes of *Delpinium semibarbatum* from the bus and Joan found *Scabiosa micrantha*. There were many central asian marbled whites and from the bus large flocks of rose-coloured starlings. Our next stop of the day was on the roadside in Kuyuk Pass. *Scabiosa songarica* was covered with more central asian marbled whites, the butterfly of the day. There were many very tall spikes of *Eremurus tianschanicus* some taller than Anna. The skin of a mountain racer snake was seen. There were scattered clumps of the very spiny *Rhaphidophyton regelii* with small purple flowers. Barbara was lucky to see a marsh frog in the stream. Many eastern meadow browns were on the wing.

Our next port of call was at the Karasai Gorge mainly a bird stop. A number of red headed buntings were seen as well as pied wheatears. A tawny pipit was sitting on a rock and a short-toed eagle flew over head. The group had wonderful views of an Egyptian vulture sitting by its nest, which even the non bird-watchers of the group enjoyed. Good views were also had of eastern rock nuthatch and on the sky-line on the rocks a chukar was seen.

We made our way to a lake for our lunch stop. We all sat in the shade of the bus as it was mighty hot by this time. The birds were very good: red-crested pochard, marsh harrier, black-winged stilt, common tern, collared pratincoles, and Hannah spotted the only little ringed plover we saw. On the lake shore grew the tiny *Limosella aquatica* (Mudwort) and also there were a few plants of *Verbascum blattaria* (Moth Mullein).

Our last stop of the day was a wooded stream valley at Berkara. Nightingales were singing away and *Salvia deserta* put on a fine display of purple spikes. A lesser grey shrike was seen and a number of Asian Paradise Flycatchers were watched but they never stayed still for very long. Spotted flycatchers were seen as were Indian sparrows. *Arum korolkovii* was in fruit and *Pyrus regelii* had one fruit. Liz found a nest of a red headed bunting with four blue spotted eggs. On our return journey a montagu's harrier was seen flying low over the ground.

## Day 6      Tuesday 10<sup>th</sup> June      Ters Lake and Koksai Gorge

It was a cooler start to the day which was very welcome! On our way to our first destination we stopped by a damp area. Moorhens were seen and we all enjoyed seeing muskrats. Nightingales were singing away and a white-winged woodpecker flew from a tree. The highlight of the stop was five black storks flying over, spotted by Joan.

We made another unscheduled stop on the roadside. *Salvia sclarea* was abundant and there were also a large number of *Salvia aethiopsis*. There were many red flowered *Roemeria refracta* and *Linaria popovii* with purple flowers as an arable weed.

Our third stop was for vultures. There were ten vultures in all, one Egyptian the smaller of the three species, five griffon and four black vultures. We could also see lapwings, ruddy shelduck and black-headed wagtails. *Convolvulus lineatus* was growing along the roadside.

The vegetation was very dry at Ters Lake and there were very few plants still flowering. A grey heron was seen and after much hunting three demoiselle cranes were first seen by Fred. Anna found a few plants of *Scutellaria androsovii* and Joan found purple *Aster canescens*. Further along the road we stopped to see thousands of rose-coloured starling on the dam of the lake, an incredible site! Fred saw a hoopoe from the bus and a long-legged buzzard was sitting on the ground.

The Koksai Gorge was reached for our lunch stop. We sat looking across to Kirgizstan. *Hypericum scabrum* (flat headed) put on a very good show. Unfortunately most of the *Gentiana olivierii* had finished flowering, despite this we did find a plant with white flowers. Alf and Hannah were the first to see the saker (falcon). There were a number of Alliums including: *Allium barsczewskii* (pink flowers) and *Allium caesium* (blue flowers). Hannah found the beautiful purple *Orobanche coelestis*. We moved up the gorge where there were a number of black-winged whites on the wing and *Hypericum elongatum* (pointed flower spikes) was common. Several quail were heard and two Orsinei's snakes were seen, Anna held one down with her stick for the group to take photos. Alain flushed up a little bustard which was sitting on a nest of four eggs. *Eremostachys speciosa* was flowering well with a very woolly head of yellow flowers. Alpine lidless skinks were very common. On our return journey Hilary spotted two black-bellied sandgrouse.

## Day 7      Wednesday 11<sup>th</sup> June Horse ride to the Mountain House

Golden Orioles were seen in the garden again before breakfast. The buses took us to meet our horses and horseman. We set off at a slow pace to the half-way house stopping once for a break from our horses. *Iris sogdiana* was dotted everywhere, mainly with creamy yellow flowers but there were also a few blue flowers of this iris. While the horseman got our lunch ready the group walked over to the waterfall. *Campanula alberti* gave a fine display of blue along the rock crevices, a challenge for the photographers as it was growing on the vertical rock face and not easy to get at. *Morina kokanica* was a lovely plant with pink and white flowers. After our meal and a siesta we merrily went on our way. During the afternoon Alain unfortunately came off his horse, landed awkwardly and fractured his wrist. A splint was put on his arm and Alain and I went down in the

lorry to the hospital.

## Day 8      Thursday 12<sup>th</sup> June      Ulkun Valley

Vladimir lead the way up the valley, the stragglers were kept busy with all the new species of plants Anna was showing them. Up a side gully above the scree were a few bright red *Tulipa greigii* and several plants of *Gagea minutiflora* and *Gagea filiformis*. Headed to a snow patch where on the bare soil were pink *Corydalis ledebouriana* and many yellow *Tulipa dasystemonoides*. Dropped a little down the valley where the horseman had ridden up to meet the group with the lunches. Had an enjoyable meal and a little siesta in the warm sun before heading up another valley to see *Primula minkwitziae*. Vladimir put a snake on the snow to cool it for the group to take their photos. *Juno coerulea* a blue iris was seen flowering. Alpine choughs and five ibex were seen. John gave a talk in the evening on the plants they had seen that day showing specimens of the more interesting species.

Alain and I had a late breakfast and a very windy walk through the village. Late afternoon we were taken up to Mountain House to join the others for dinner.

The small yurt with two beds gave us the chance for those who wanted to sleep in a yurt to swap around and all who wanted too had the chance of sleeping in it.

## Day 9      Friday 13<sup>th</sup> June      Ulkun Kaindi Pass

Anna had very high blood pressure so stayed back at camp. After a hearty breakfast the horses were mounted, by now people were feeling more comfortable with a 900m climb ahead of them in beautiful sunshine. We stopped halfway to give the horses a rest. It was interesting seeing the vegetation change as we climbed from lush meadows to the bare rocky ridge of our destination of 2900m. Greeting us were the spectacular views of Bugulutor, the unclimbed 4000m peak. There were drifts of *Tulipa dasystemonoides* around the patches of snow smelt. Eight bears were seen including two cubs - not bad going in one day. The damper areas were a carpet of yellow *Allium fedtschenkoanum*. Walked along the ridge, growing in the bare rock was *Allium oreophilum*, just a couple were flowering. Alpine Lidless Skinks were numerous. There were many small plants growing in the scree including: *Euphorbia saravschanica*, *Polygonum hissaricum* and the not quite so small *Rubia regellii* with tiny yellow flowers. Made our way to a rocky outcrop where there were a few flowers on the *Paraquilegia anemonoides* and on the slope small spikes of yellow *Veronica tienschanica*. A number of Swallowtails were flying along the ridge. Griffon vultures and golden eagle were seen. On the way down Barbara thought the herbs smelt lovely as she wound down the slope.

Alain and I went on foot walking were the group had gone the day before. We were lucky to see a yellow *Juno* flowering. *Juno orchioides* to the envy of the others.

We were all suffering a little from the heat. The showers were a welcome relief. All had a rest before

our supper. Our check lists were done under candle light.

## Day 10     Saturday 14<sup>th</sup> June     Kshi Kaindy Valley

While visiting the toilet, a forest dormouse came and said 'Hi' to me. Very cute little animal!

It was another very warm day for the horse ride up to Kshi Kaindy Valley in search of a white flowered *Aquilegia* but only the hybrid could be found which had pale purple flowers (*A. atrovinosa* x *A. tianschanica*). Alain jumped as a snake slithered away from under his feet. Eastern stonechats were chatting away on the top of small bushes and on the spikes of the brownish-pink *Eremurus regelii*. *Gentiana turkestanorum* with small purple flowers was growing by the valley stream and dippers were seen on the rocks. *Allium karataviense* with broad leaves grew on the bare scree above the path. Seven ibex were on the slope and by the muddy puddles were hundreds of blue butterflies.

After our evening feast and full of wine and vodka, Vladimir went out with the telescope to find bears. A few minutes later, he found one. Some of the group thought they could see two bears but this may have been the effect of the vodka. Anyway this gave us all a good laugh, a great end to a very warm day!

## Day 11     Sunday 15<sup>th</sup> June     Baidaksai Valley

All feeling lazy today as we climbed onto our horses for another ride in the sun, at least there was a breeze blowing today to help keep us cooler. We wandered across to a rocky area where Vladimir showed us some fine Bronze and Iron Age stone carvings of animals – Ibex, Wild Boar, Red Deer, etc. There were a few clumps of the white daisy like plant *Pyrethrum tianschanicum* by the carvings. One clump of *Acantholimon alberti* had a few flowers out, a small prickly cushion plant. *Dianthus hoeltzeri* with white flowers was on the side of the path. Also on the side of the path was the very small *Inula rhizocephala* with a flat rosette and tiny yellow flowers.

We took another short ride where some fine *Onobrychis echidna* was in flower. One quail was seen and *Dactylorhiza umbrosa* looked stunning by a damp spot along with floating mats of green moss. Another short ride took us to our lunch spot. A few of us went looking for *Korolkovia severzovii* (a fritillary); but not even a seed head could be seen. *Tulipa dasystemonoides* and *Tulipa kaufmanniana* were flowering well around the snow patch. Vladimir found a central Asian green toad for us all to see. *Rosularia alpestris* had red buds ready to burst open and a few more choughs were seen. We were back early and had a lazy afternoon. A superb sunset finished off the day. We all retired early.

## Day 12     Monday 16<sup>th</sup> June     The journey down

Another warm sunny day greeted us for our walk down from the mountain house. Good views of Long-tailed Marmot were had on the rocks, they were a lovely gingery colour. *Allium hymenorrhizum* with red flowers and long exserted stamens was seen while walking across a meadow. *Euonymus koopmannii* was a spindle using the other bushes and trees to support it as it climbed up through them. Three species of *Juniperus* were seen: *Juniperus semiglobosa*, *Juniperus seravschanica* and *Juniperus turkestanica*. We came across a most superb stand of the pale blue bells of *Codonopsis clematidea* on the side of the path. Our horseman met us by a stream in the Kshi Kaindi Valley under the shade with our lunch. There were many fine stands of Round-leaved Wintergreen on the river bank. We saw two species of birch; *Betula talassica* with white bark and *Betula turkestanica* with red bark and several trees of *Sorbus persica* were seen.

After lunch most chose to ride the rest of the way down. I, Alan and Pat walked the whole way. Two black vultures were seen above the mountains. Several pale yellow butterflies (*Colias erate erate*) were on the wing. We found a large patch of *Korolkovia severzovii* in seed. Even though we were walking we took a short cut and were to the bus before the horse riders.

## Day 13    Tuesday 17<sup>th</sup> June    Asku Gorge

Large flocks of rose-coloured starlings were seen from the bus and chicory was a weed in many of the fields. We were travelling in the bone-shaker, to keep it cool the park ranger was poring water on the engine as we were going up the hill; it still needed a rest up the steep slope. This gave us a chance to enjoy the view, and look at some more new species of plant. *Rosa nanothamnus* with white flowers was enjoyed by the group. An elephant beetle was seen and a roller flew over.

We made another stop on the way this time where some lovely plants of *Roemeria refracta* with red flowers. *Hedysarum taschkenticum* with pink flowers was a nice plant. A corn bunting was sitting on the wires. *Astragalus severzovii* had large yellow flowers as did *Tragapogon turkestanicus*. *Linum pallescens* had pale blue flowers.

We headed to the Aksu Gorge a spectacular 20 mile long rift in the landscape. Despite the heat most of the party braved the walk down into the gorge. The river in the bottom was a most beautiful colour blue, looked very refreshing. This should have been a good place for seeing raptors. Because of the heat we only saw a long-legged buzzard. *Scutellaria immaculata* with very pale yellow flowers; *Onobrychis grandis* with pink flowers; *Centaurea turkestanica* and *Allium ericoaleum* both with yellow flowers were all seen in the gorge. Joan found the highlight of the gorge and that being the orangey coloured *Ungernia severzovii*.

We had our lunch under the shade of trees, the only ones for miles around. *Ranunculus arvensis* and *Scandix pecten-veneris* were weeds in the crop field. A hobby flew over.

On reaching the small village of Irsu we stopped again for a walk along the main street with its fascinating scenes of everyday Kazakh life. Indian Sparrows were sitting on the wires. Rose-

coloured starlings were nesting in some of the buildings. A hoopoe was seen and lesser grey shrike and long-tailed shrikes were sitting on the wires. We were back in good time as we had to pack ready for our next train journey.

## Day 14 Wednesday 18<sup>th</sup> June Almaty and journey to Gaish Observatory

Our train left on time, and the next morning we arrived in Almaty where we were taken to a hotel for a late breakfast. We all had large amounts to eat. We left a hot Almaty in our three minibuses for our journey up to the Observatory.

We made several stops including a pine woodland. Two Himalayan blue whistling thrushes were seen in the conifers by the river. *Moneses uniflora* (One-flowered Wintergreen) was a nice addition to our plant list. The leaves of *Goodyera repens* (Creeping Ladies Tresses) were seen under the trees. On arriving at the Observatory we were shown to our rooms, had lunch and then a rest before heading out for an afternoon stroll. It was warm and sunny for our walk. Cuckoos and Marmots could be heard calling. There were many new plants to be seen and a good number of *Potentillas* including: *Potentilla multifida* with very divided leaves, *Potentilla desertorum* fine leaves and red stems, *Potentilla nervosa* large yellow flowers, leaves silver on underside and many veins and *Potentilla evestita* had very large leaves. Vladimir showed us the most beautiful mouth watering yellow *Corydalis gortschakovii*, there seemed to be so much of it, always growing close to a bush. Plain mountain finches were seen sitting on the rocks. Yet another *Astragalus* was seen, this time *Astragalus alatavicus* with many small leaves and flowers that went from brown to a dirty yellow. I thought I saw a grey marmot only to find out it was a horse, I had not yet been on the vodka! Barbara came to my rescue and found the first grey marmot, several more were enjoyed by the group. *Chamaenaerium (Epilobium) latifolium* looked stunning on the bare ground, looks just like an extremely short Rosebay Willowherb. The plant of the afternoon was *Schmalhausenia nidulans* a very woolly thistle which had a creepy look about it. It could have been an alien from an episode of Doctor Who. A couple of Himalayan rubythroats were seen. Turkestan red pica were running about on the rocks, the most cute little animals and one was watched for some time carrying nesting material down its hole. Vladimir had a few more plants to show us, *Corydalis glaucescens*, one plant still flowering and *Allium schoenoprosoides* with small pink heads.

Before our evening meal, Alf, Alain and I played table tennis and after our meal Alf, Hannah, Moira, Pat and I went star spotting. We were lucky to see a long-eared owl.

## Day 15 Thursday 19<sup>th</sup> June Cosmos Station and Gaish Observatory

We woke to another glorious sunny day, even so it was a little on the cool side. After a hearty breakfast we headed up to the Cosmos Station, stopping half way. Liz found *Schultzia albiflora* a very low growing umbellifer. There were many fine Frog Orchids. *Lonicera semenovii* is a prostrate shrub not growing much taller than 5cm with pale lemon flowers. Several small tortoiseshells were seen. A few of the group lifted their heads up from the flowers to see an Himalayan accentor sitting on the rocks. We arrived at the Cosmos Station which looks more like a shanty town than a research

centre. Despite the shortness of breath due to the altitude we slowly climbed the slope to 3400m to be stunned by how beautiful the *Paraquilegia anemonoides* was, the words of one member “oh look at that, good grief”. On the way up the slope we found *Oxygraphis glacialis* which looks a bit like a celandine. *Saxifraga hirculus* was a lovely golden yellow and *Saxifraga oppositifolia* formed large mats with many tiny purple flowers. There was a wonderful large population of *Viola tianschanica*. Another poppy was added to the list this time a very low growing orange flowered *Papaver tianschanicum*. Several *Güldenstädt's* redstarts were seen. *Pedicularis oederi* had pale yellow flowers.

Some of the group walked all the way down and others jumped in the buses. We had a late lunch and a lazy afternoon.

After our check lists and evening meal was out of the way a group of us went star spotting. The giant telescope gave us views of Venus, the rings of Saturn and the craters on the moon, etc. But the vision was so poor it almost looked better with our naked eyes.

## Day 16    Friday 20<sup>th</sup> June            Big Almaty Lake

We set off down the road to Big Almaty Lake, the main water supply for Almaty. The water level was very low as it had to wait for the snow to smelt before it is filled. On the dam was a purple flowered *Oxytropis brachycarpa* which was covered in fine silver hairs. The rare butterfly *Coenonympha sunbecca alexandra* was seen on the bare bank of the lake. Several ruddy shelduck were on the lake. *Ranunculus longicaulis* (with large leaves) was growing on the bare mud. The aim of our visit was to see Ibisbill which even Vladimir with his excellent skills could not find one for us. The extensive area of alluvial gravel was host to many interesting flowers: *Chamaenaerium latifolium* with large pink flowers, Hilary found one plant with white flowers. We all enjoyed seeing the very tiny annual *Gentiana karelini*, but the plant of the day must have been deep blue large trumpets of *Gentiana kaufmanniana* found by Alain. Another *Gentiana* was found by the stream this time *Gentiana falcata* with pale blue flowers. One of the most exciting plants for me was seeing the mass of minute blood red plants of Island Purslane an extremely rare plant in Britain, only known from a couple of Scottish Islands, unfortunately because of the size of the plant I could not get many members of the group spellbound about it. We continued on up the valley to a damp flush for the attractive *Pedicularis rhinanthoides*. A single Camberwell beauty was seen and a number of high brown fritillaries were on the wing. Several red-fronted serins were seen.

We returned to camp for a late lunch. A group of us ran out and watched a black kite flying low over-head before we sat down for our meal. The afternoon was a free session again.

Alain, Alf, Hannah and I went for a long afternoon walk along the track above Big Almaty Lake. The strongly scented white flowered *Dianthus kuschakewiczii* was one of the extra plants we found.

## Day 17    Saturday 21<sup>st</sup> June            Gaish Observatory and Journey to Almaty

Another sunny start to the day. We walked from the hotel. Cuckoos could be heard and a large flock of 70-80 alpine choughs were flying around. Anna showed us *Astragalus hemiphraea* with pink flowers, a species she had not seen before. Plain mountain finches were about and Vladimir saw a few Indian sparrows. We made our way over to look for a pink dandelion. We found a few and then Pat came across an area with a large number of flowers. It made a nice change from the boring yellow dandelions we see everywhere. Anna the Kazakhstan super star flower among many sat on a mound covered in *Aster alpinus* to have her photo taken. Alain and Hilary found a cushion of *Thylacospermum caespitosum* on the bank of the dried river. Several rufous turtle doves were seen on the track and to the joy of the group five marmots stood up and looked at us for some time, a great end to our visit to the observatory area.

We had lunch and got ready to drive down to Almaty. Lucky for us the clouds had come over making the journey cooler for travelling. On the way we stopped to see *Eremurus robustus* but they had finished and all that could be found was the white spikes of *Eremurus tianschanicus*. By the bus was *Echium vulgare* (viper's-bugloss) and two new plants to the list *Bryonia dioica* (white bryony) and *Humulus lupulus* (hops). After arriving at our hotel in Almaty we looked around the local market and several other shopping centres and looked around the cathedral. We sat outside for our farewell dinner, I thanked Vladimir and Anna for their hard work before we all headed back to our rooms for some sleep.

## Day 18    Sunday 22<sup>nd</sup> June    Departure and arrival home

We left the hotel at 6 a.m for the Almaty Airport. Our flight was on time leaving but because of the strong winds was late arriving as we had to fly above London for over an hour. We said our farewells and all headed off home.

## Systematic List - Plants 1

Flora of Almaty area, Big Almaty Lake, Chimbulak, Cosmos Station and Gaish  
Observatory areas

### Polypodiaceae

*Asplenium septentrionale* – rocky outcrops, Chimbulak and Cosmos Station

*Cystopteris fragilis* – common

### Ophioglossaceae

*Botrychium lunaria* – common in short turf

### Equisitaceae

*Equisetum ramosissimum* – Big Almaty Lake

### Cupressaceae

*Juniperus pseudasabina* – Tjuk-su

*Juniperus Sabina* – Chimbulak

*Juniperus sibirica* - Chimbulak

### Ephedraceae

*Ephedra equisetina* - frequent

### Poaceae

*Alopecurus pratensis* – 2

*Anthoxanthum alpinum* – Big Almaty Lake

*Bromopsis inermis* – 3

*Dactylis glomerata* - 2

*Deschampsia caespitose* – Bid Almaty Lake

*Elymus tianschanicus* - 14

*Elytrigia repens* – 3

*Helictitrichon pubescens* – 3 & 14

*Helictitrichon tienschanicum* – 14

*Hieroche odorata* – 14

*Hordeum turkestanicum* - 14

*Koeleria cristata* – 2

*Melica nutans* – 2

*Milium effusum* – 2

*Phalarioides arundinacea* - 3

*Poa alpina* – 2

*Poa annua* – 2

*Poa bulbosa* – common

*Poa pratensis* – frequent

*Poa trivialis* – Tjuk-su Gate

### **Cyperaceae**

*Blysmus compressus* – Chimbulak , damp places

*Carex melanantha* – 2

*Carex melanostaehya* – 2

*Carex pallescens* – damp spot, Chimbulak

*Luzula pallidula* – 2

*Cobresia capilliformis* – 13

### **Juncaceae**

*Juncus inflexus* - Chimbulak

### **Liliaceae**

*Eremurus altaicus* – Steep grassy meadow below Chimbulak & seen from bus on way to observatory

*Eremurus rofustus* – in seed only, on way down to Almaty

*Gagea emarginata* – Tjuk-su Gate

*Gagea filiformis* – Tjuk-su

*Gagea michaelis* – Gaish Observatory

*Lloydia serotina* – Common at Chimbulak, Tjuk-su Gate & Cosmos Station

*Tulipa dasystemon* – Gaish Observatory

*Tulipa dasystemonoides* - Chimbulak ski-lift

*Tulipa heterophylla* – Tjuk-su Gate, Chimbulak, common & Gaish Observatory

*Tulipa ostrovskiana* - Chimbulak ski-lift

### **Alliaceae**

*Allium amblyiophyllum* – Chimbulak & Big Almaty Lake, pink flowers

*Allium atrosanguineum* – Chimbulak, Tjuk-su Gate, Chimbulak ski-lift, Gaish Observatory

*Allium caesium* – below Chimbulak, steep grassy slope by rocks

*Allium fetissoyii* – Chimbulak

*Allium karelini* – Chimbulak

*Allium platyspathum* - Gaish Observatory

*Allium polyphyllum* – Chimbulak, curved leaves

*Allium schoenoprosoides* – Tjuk-su Gate & Gaish Observatory

### **Orchidaceae**

*Coralorhiza trifida* – Under trees on road below Chimbulak

*Dactylorhiza umbrosa* – locally abundant in wet flushes

*Coeloglossum viride* – Chimbulak

*Goodyera repens* – under trees below Chimbulak and on way up to Gaish Observatory

### **Salicaceae**

*Populus tremula* – by road below Chimbulak

*Salix alata* - Big Almaty Lake

*Salix cinerea* - Big Almaty Lake

*Salix iliensis* - Tjuk-su Gate

## **Urticaceae**

*Urtica dioica* – widespread

## **Santalaceae**

*Thesium alatavicum* – Chimbulak, steep grassy slope below

## **Polygonaceae**

*Koenigia islandica* – Big Almaty Lake

*Oxyria digyna* – up valley to cave & Cosmos Station

*Polygonum nitens* – Tjuk-su, Chimbulak, common

*Polygonum rupestre* - Big Almaty Lake

*Polygonum songoricum* – Tjuk-su, Gaish Observatory

*Polygonum viviparum* Tjuk-su, Gaish Observatory

*Rheum wittroeki* – Tjuk-su, Gaish Observatory

*Rumex crispus* - widespread

*Rumex tianschanicus* – Chimbulak, common

## **Chenopodiaceae**

*Chenopodium foliosum* – Chimbulak, Gaish Observatory

## **Caryophyllaceae**

*Cerastium arvense* – Tjuk-su

*Cerastium cerastoides* – Chimbulak, Gaish Observatory

*Cerastium dahuricum* – Chimbulak & Big Almaty Lake

*Cerastium pusillum* - Cosmos Station

*Cerastium tianschanicum* – Cosmos Station, Gaish Observatory

*Dianthus kusckakewiczii* – path above Big Almaty Lake

*Dianthus tianschanicus* – grassy slope by rocks below Chimbulak

*Herniaria hirsuta* - Gaish Observatory

*Melandruim triste* – Gaish Observatory, yellow flowers

*Minuartia kryloviana* – Tjuk-su Gate, Gaish Observatory, Cosmos Station

*Silene venosa* – Chimbulak

*Stellaria graminea* – Scattered

*Thylacospermum caespitosum* – Cosmos Station & Gaish Observatory, like a green cushion

*Tunica stricta* – Chimbulak, small white flowers

## **Adoxaceae**

*Adoxa moschatellina* – common at Chimbulak, journey uo from Almaty, Gaish Observatory

## **Ranunculaceae**

*Aconitum leucostomum* – Chimbulak

*Aconitum nemorum* – grassy slope below Chimbulak & Gaish Observatory

*Anemone protracta* – Tjuk-su Gate, common elsewhere

*Aquilegia atrovinosa* – Tjuk-su Gate and Chimbulak, Gaish Observatory

*Astragene sibirica* - Tjuk-su Gate and Chimbulak, Gaish Observatory

*Callianthemum alatavicum*– Tjuk-su, Gaish Observatory

*Oxygraphis glacialis* – Cosmos Station, like a lesser celandine

*Paraquilegia anemonoides* – Talgar Pass and Cosmos Station  
*Paropyrum anemonoides* – Tjuk-su Gate, Gaish Observatory, white flowers  
*Pulsatilla campanella* – Gaish Observatory  
*Ranunculus alberti* – Gaish Observatory  
*Ranunculus longicaulis* – Big Almaty Lake, large leaves  
*Ranunculus rubrocalyx* – Cosmos Station  
*Ranunculus reptans* – Big Almaty Lake  
*Ranunculus transliensis* - Chimbulak  
*Thalictrum alpinum* – Tjuk-su Gate, Gaish Observatory  
*Thalictrum simplex* – Common  
*Trollius dschungaricus* – Tjuk-su Gate, Gaish Observatory  
*Trollius lilacinus* – Talgar Pass, steep path behind hotel at Chimbulak and Cosmos Station

### **Papaveraceae**

*Papaver croceum* – Tjuk-su Gate, yellow flowers, Gaish Observatory, Cosmos Station  
*Papaver tianschanicum* – Cosmos Station  
*Glaucium squamigerum* – Big Almaty Lake, very long pods

### **Fumariaceae**

*Corydalis glaucescens* – Gaish Observatory, pink flowers, under large tree  
*Corydalis gortschakovii* – Gaish Observatory, yellow flowers  
*Cysticarydalis fedtschenkoana* – single none flowering plant, Cosmos Station

### **Cruciferaeae**

*Alyssum turkcestanicum* – Chimbulak  
*Barbarea arcuata* – Tjuk-su, Chimbulak, yellow flowers  
*Cardamine parviflora* – below Chimbulak  
*Cardaria pubescens* - Big Almaty Lake  
*Capsella bursa-pastoris* – scattered  
*Chorispora bungeana* – Tjuk-su Gate, steep path above hotel at Chimbulak, Gaish Observatory, Cosmos Station, small plant with pink flowers  
*Draba altaica* – Cosmos Station, white flowers  
*Draba lanceolata* – Tjuk-su  
*Draba nemorosa* – Tjuk-su  
*Draba sibirica* – Cosmos Station, yellow flowers  
*Draba subamplexicaulis* – Gaish Observatory, white flowers  
*Erysimum diffusum* – scattered  
*Erysimum croceum* – Tjuk-su, path above Big Almaty Lake  
*Eutrema edwardsii* – Cosmos Station, white very hairy leaves  
*Eutrema integrifolium* – Tjuk-su, Gaish Observatory  
*Isatis tinctoria* – on dam below Chimbulak  
*Lepidium latifolium* – Chimbulak  
*Panya stenophylla* – Tjuk-su  
*Rorippa palustris* – Big Almaty Lake  
*Sisymbrium loesellii* – scattered  
*Smelowskia calycina* – Cosmos Station, white flowers  
*Thlaspi arvense* – scattered

*Thlaspi perfoliatum* - Tjuk-su Gate  
*Turritis glabra* – Chimbulak  
*Taphrospermum altaicum* – Gaish Observatory, Cosmos Station, white flowers

### **Crassulaceae**

*Clementsia semenovii* – Chimbulak, Big Almaty Lake  
*Rhodiola coccinea* – Tjuk-su, Gaish Observatory, small  
*Rhodiola linearifolia* - Tjuk-su, Gaish Observatory, like the above but much larger  
*Rosularia aplestris* – Tjuk-su Gate, Gaish Observatory  
*Sedum ewersii* – Chimbulak, Gaish Observatory  
*Sedum hybridum* – Chimbulak

### **Saxifragaceae**

*Parnassia laxmanni* – Big Almaty Lake and Gaish Observatory, a lovely plant, white  
*Ribes meyeri* – Tjuk-su Gate, steep path behind hotel at Chimbulak, Big Almaty Lake  
*Saxifraga hirculus* – Cosmos Station, Big Almaty Lake  
*Saxifraga cernua* – on slope by path above hotel at Chimbulak, Cosmos Station  
*Saxifraga macrocalyx* – Tjuk-su, Chimbulak ski-lift, steep path behind hotel at Chimbulak, Gaish Observatory, Cosmos Station, yellow flowers  
*Saxifraga oppositifolia* – Cosmos Station, purple flowers  
*Saxifraga sibirica* – Tjuk-su, Gaish Observatory, white flowers  
*Chrysosplenium nudicaule* – Tjuk-su, Chimbulak ski-lift and Cosmos Station

### **Rosaceae**

*Alchemilla sibirica* – Tjuk-su, Gaish Observatory  
*Cotoneaster multiflorus* – on way down from Chimbulak  
*Crataegus songarica* – Chimbulak  
*Geum urbanum* – scattered  
*Geum rivale* – by stream below Chimbulak  
*Pentaphylloides phyllocalyx* – Tjuk-su, Gaish Observatory  
*Potentilla asiatica* – Tjuk-su, Gaish Observatory, red stem  
*Potentilla biflora* - Tjuk-su Gate  
*Potentilla desertorum* - Gaish Observatory  
*Potentilla evestita* – Gaish Observatory  
*Potentilla gelida* – Tjuk-su, Gaish Observatory  
*Potentilla impolita* – Big Almaty Lake, leaves green above, silver below  
*Potentilla multifida* – Gaish Observatory  
*Potentilla nervosa* – Tjuk-su, Gaish Observatory  
*Potentilla orientalis* – scattered  
*Rosa albertii* – Tjuk-su, Chimbulak, Gaish Observatory  
*Rosa platyacantha* – Chimbulak, yellow flowers  
*Rubus idaeus* – Tjuk-su, Gaish Observatory  
*Rubus saxatilis* – in valley on way up to Gaish Observatory  
*Sanguisorba officinalis* – Chimbulak  
*Sibbaldia tetrandra* – Chimbulak ski-lift, Cosmos Station  
*Sorbus tianschanica* – Tjuk-su and Chimbulak, Gaish Observatory  
*Spiraea lasiocarpa* – Chimbulak

## **Fabaceae**

- Astragalus alpinus* – below Chimbulak  
*Astragalus alatvicus* – Gaish Observatory, yellow flowers  
*Astragalus hemiphracia* – Gaish Observatory, one clump on top of small mound, pink flowers  
*Astragalus lithophilus* – Gaish Observatory, Cosmos Station  
*Astragalus schanginianus* – Chimbulak area, yellow flowers  
*Cicer songoricum* – Gaish Observatory, Big Almaty Lake, purple flowers  
*Hedysarum neglectum* – over bridge in afternoon at Chimbulak, large red spikes  
*Hedysarum semenovii* – Tjuk-su  
*Lathyrus pratensis* – widespread  
*Orobus luteus* – lots on roadside below Chimbulak  
*Oxytropis almaatensis* – Chimbulak  
*Oxytropis baissanensis* – Talgar Pass, Chimbulak ski-lift – violet flowers  
*Oxytropis brachycarpa* – Big Almaty Lake on dam  
*Oxytropis chionobia* – Gaish Observatory, silver leaves, purple flowers  
*Oxytropis lapponica* – Chimbulak, Gaish Observatory, Big Almaty Lake  
*Oxytropis recognita* – Gaish Observatory, yellow flowers  
*Oxytropis sewerzowii* – Gaish Observatory, Big Almaty Lake  
*Thermopsis alpina* – Tjuk-su, Gaish Observatory  
*Trifolium pratense* – widespread  
*Trifolium repens* – widespread  
*Vicia cracca* – Chimbulak, Gaish Observatory  
*Vicia sepium* – Tjuk-su, on way up to Gaish Observatory

## **Geraniaceae**

- Erodium albiflorum* – Tjuk-su  
*Geranium rectum* – Tjuk-su, small pink flowers  
*Geranium robertianum* – Chimbulak  
*Geranium saxatile* – Tjuk-su, Gaish Observatory, large purple flowers

## **Polygalaceae**

- Polygala hybrida* – widespread

## **Euphorbiaceae**

- Euphorbia pilosa* – on roadside below Chimbulak  
*Euphorbia tianschanica* – Tjuk-su, Gaish Observatory

## **Celastraceae**

- Euonymus semenovii* – hillside below Chimbulak, red flowers

## **Tamaricaceae**

- Myricaria squamosa* – Big Almaty Lake  
*Myricaria tianschanica* - Gaish Observatory

## **Violaceae**

- Viola acutifolia* – Talgar Pass, steep path behind hotel at Chimbulak, yellow flowers  
*Viola altaica* – Tjuk-su, Chimbulak ski-lift, Gaish Observatory, flowers purple/yellow

*Viola biflora* – Tjuk-su, up steep path behind hotel at Chimbulak, small yellow flowers  
*Viola rupestris* – Chimbulak ski-lift, on way up to Cosmos Station, purple flowers  
*Viola tianschanica* – Cosmos Station, purple flowers

### **Onograceae**

*Chamaenaerium angustifolium* - scattered  
*Chamaenaerium latifolium* – Gaish Observatory, Big Almaty Lake

### **Apiaceae**

*Aegopodium alpestre* – Tjuk-su, Big Almaty Lake  
*Angelica brevicaulis* – Tjuk-su  
*Angelica decurrens* – Chimbulak ski-lift, on way up to Cosmos Station  
*Anthriscus sylvestris* – Tjuk-su, Gaish Observatory  
*Aulacospermum simplex* – Gaish Observatory  
*Conium maculatum* – scattered  
*Ferula akitschicensis* – damp meadows below Chimbulak  
*Heracleum dissectum* – Tjuk-su on way up to Gaish Observatory  
*Pachypleurum aemulans* – Gaish Observatory, Big Almaty Lake  
*Schultzia albiflora* – Cosmos Station, very small with white flowers  
*Semenovia transiliensis* – Gaish Observatory, Big Almaty Lake  
*Vicatia coniiifolia* – Tjuk-su, Gaish Observatory

### **Pyrolaceae**

*Pyrola minor* - Tjuk-su, road bank, in bud only  
*Moneses uniflora* – under trees in valley up to the Gaish Observatory  
*Orthilia obtusata* – steep path behind hotel at Chimbulak, under trees in valley up to the Gaish Observatory

### **Primulacea**

*Androsace akbajtalensis* – Chimbulak ski-lift, Gaish Observatory, Cosmos Station  
*Androsace septentcondes* – Tjuk-su Gate, Gaish Observatory, Cosmos Station  
*Cortusa brotheri* – Tjuk-su Gate, Gaish Observatory, Cosmos Station  
*Primula algida* – Tjuk-su  
*Primula nivalis* – Tjuk-su, Big Almaty Lake  
*Primula turkestanica* – Tjuk-su, Cosmos Station

### **Gentianaceae**

*Gentiana falcata* – Big Almaty Lake, by stream  
*Gentiana karelini* – Gaish Observatory, Big Almaty Lake, very small plant  
*Gentiana kaufmanniana* – Tjuk-su, leaves only seen, Cosmos Station, Big Almaty Lake  
*Gentiana verna* – Chimbulak ski-lift

### **Boraginaceae**

*Asperugo procumbens* – Tjuk-su Gate, on dam below Chimbulak  
*Echium vulgare* – below Chimbulak, roadside on way down from Gaish Observatory  
*Eritrichium villosum* – Tjuk-su, Gaish Observatory  
*Lappula tianschanica* – roadside, Tjuk-su, Gaish Observatory

*Lithospermum officinale* – Chimbulak, clump on roadside  
*Myosotis asiatica* – Tjuk-su, Gaish Observatory  
*Myosotis imitata* - Tjuk-su Gate  
*Myosotis micrantha* – Chimbulak ski-lift  
*Rhynchospermum arvense* – Chimbulak, white flowers  
*Rochelia bungei* – Chimbulak

### **Lamiaceae**

*Dracocephalum grandiflorum* – Tjuk-su, Gaish Observatory, large deep purple flowers  
*Dracocephalum imberbe* – Gaish Observatory, pale purple flowers  
*Dracocephalum integrifolium* – Chimbulak  
*Dracocephalum nutans* – Tjuk-su, Gaish Observatory, blue flowers  
*Dracocephalum stamineum* – Big Almaty Lake  
*Eremostachys speciosa* – Chimbulak, yellow flowers  
*Lamium album* – Tjuk-su, Gaish Observatory  
*Mentha asiatica* – scattered  
*Nepeta pannonica* – roadside, Tjuk-su  
*Origanum vulgare* – below Chimbulak  
*Phlomis oreophila* – Tjuk-su and Chimbulak  
*Phlomis pratensis* – below Chimbulak  
*Prunella vulgaris* – Gaish Observatory  
*Scutellaria transiliensis* – on rocks on steep meadow below Chimbulak, yellow flowers  
*Stachyopsis lamiiflora* – steep meadow below Chimbulak  
*Stachyopsis oblongata* – Chimbulak  
*Thymus seravschanicus* – Tjuk-su, Big Almaty Lake some with white flowers  
*Ziziphora clinopodioides* – scattered

### **Scrophulariaceae**

*Lagotis integrifolia* – Gaish Observatory  
*Pedicularis alatauica* – Tjuk-su Gate, Cosmos Station, pale pink flowers  
*Pedicularis dolichorrhiza* - Tjuk-su  
*Pedicularis macrophila* – Tjuk-su and Chimbulak, large pink flowers  
*Pedicularis oederii* – Gaish Observatory, with bi-coloured flowers (cream & brown)  
*Pedicularis rhinanthoides* – Big Almaty Lake, flowers bi-coloured (pink & white)  
*Scrophularia incisa* – scattered  
*Veronica beccabunga* – by stream below Chimbulak, Big Almaty Lake  
*Veronica biloba* – Tjuk-su  
*Veronica chamaedrys* – Chimbulak  
*Veronica porphyriana* – valley below Gaish Observatory, Gaish Observatory  
*Veronica verna* - Tjuk-su Gate

### **Plantaginaceae**

*Plantago major* – widespread

### **Rubiaceae**

*Galium turkestanicum* – Tjuk-su

### **Caprifoliaceae**

- Lonicera hispida* – Tjuk-su, Gaish Observatory, white large flowers  
*Lonicera humilis* – Tjuk-su, Gaish Observatory, low creeping bush, white flowers  
*Lonicera karelini* – Tjuk-su, red flowers  
*Lonicera microphylla* – Chimbulak  
*Lonicera olgae* – Chimbulak  
*Lonicera semenovii* – Gaish Observatory

### **Valerianaceae**

- Patrinia intermedia* – Chimbulak  
*Valeriana turkestanica* – Chimbulak, Gaish Observatory

### **Campanulaceae**

- Adenophora himalayana* - Gaish Observatory  
*Campanula glomerata* – meadow below Chimbulak  
*Codonopsis clematidea* – below Chimbulak

### **Asteraceae**

- Achillea millefolium* – widespread  
*Alfredia nirea* – Big Almaty Lake, like a thistle, pink flowers  
*Artemisia absinthium* – scattered  
*Artemisia aschurbajevii* – Tjuk-su Gate, Gaish Observatory  
*Artemisia dracunculus* – widespread  
*Artemisia vulgaris* – Chimbulak  
*Aster alpinus* – common about Gaish Observatory and Cosmos Station  
*Crepis multicaulis* – Tjukj-su and Chimbulak, Big Almaty Lake, very small yellow flower  
*Erigeron aurantiacus* – Tjuk-su and Gaish Observatory  
*Erigeron heterochaeta* - Gaish Observatory  
*Erigeron lachnocephalus* - Gaish Observatory  
*Erigeron oreades* – Big Almaty Lake  
*Erigeron seravschanicus* – Gaish Observatory, pink flowers  
*Gnaphalium supinum* – Gaish Observatory, Cosmos Station  
*Hieracium echioides* – Tjuk-su Gate  
*Hieracium aurantiacum* - Tjuk-su Gate  
*Leontopodium fedschenkoanum* – Tjuk-su and Gaish Observatory  
*Leontopodium ochroleucum* – Tjuk-su and Gaish Observatory  
*Ligularia macrophylla* – Tjuk-su and Chimbulak, Gaish Observatory  
*Ligularia narynensis* – Big Almaty Lake  
*Pyrethrum parthenium* - Big Almaty Lake  
*Saussurea gnaphaloides* – Cosmos Station, very hairy grey leaves  
*Schmalhausenia nidulans* – Gaish Observatory, Big Almaty Lake, the strange very hairy thistle  
*Solidago virgaurea* – Talgar Pass and Gaish Observatory  
*Taraxacum officinale* – scattered  
*Tragopogon turkestanicus* – Chimbulak  
*Tripleurospermum inodorum* – widespread  
*Tripleurospermum ambigum* – Gaish Observatory, white flowers  
*Tussilago farfara* – widespread

## Systematic List Number 1a      Plants

Flora of the Kuyuk Pass, the Karasai Gorge, Berkara, Ters Lake, Taskol Lake, the Tuyuk Pass, the Koksai Gorge, the journey to the mountain house, the Ulkun Valley, the Ulkun Kaindi Pass, the Baidaksai Valley, the journey down from mountain house, and the Aksu Gorge

### **Polypodiaceae**

*Asplenium ruta-muraria* – in cave in the Asku Canyon

*Asplenium viride* - rocks in Ulkun Valley

*Cystopteris fragilis* – rocky areas

### **Ophioglossaceae**

*Botrychium lunaria* - well grazed areas

### **Equisitaceae**

*Equisetum arvense* – by path on way down

*Equisetum ramosissimum* – frequent

### **Cupressaceae**

*Juniperus semiglobosa* – frequent

*Juniperus seravschanica*– widespread

*Juniperus turkestanica* – widespread

### **Ephedraceae**

*Ephedra equisetina* – widespread

*Ephedra fedtschenkoana* – Ulkum Kaindi Pass

*Ephedra regeliana* – day 6, very small and low to the ground & Asku Canyon

*Ephedra intermedia* – day 6

### **Typhaceae**

*Typha angustifolia* - by lunch stop at lake

*Typha latifolia* - Ters Lake

### **Potamogetonaceae**

*Potamogeton lucens* - in lake by lunch spot

### **Poaceae**

*Achnatherum caragana* – Baidaksai Valley

*Aegilops cylindrical* – day 11 & 12

*Agropyron pectinatum* - Baidaksai Valley

*Agrostis turcestanica* - Kski Kaindy Valley

*Alopecurus pratensis* – widespread

*Avena fatua* - Baidaksai Valley

*Botriochloa ischaemum* - Kski Kaindy and Baidaksai Valleys

*Brachypodium sylvaticum* – Kski Kaindy Valley

*Bromopsis inermis* – widespread  
*Bromus danthoniae* - Kski Kaindy and Baidaksai Valleys  
*Bromus japonicus* – Kski Kaindy and Baidaksai Valleys  
*Calamagrostis epigeios* – Kski Kaindy and Baidaksai Valleys  
*Dactylis glomerata* – widespread  
*Elytrigia repens* – Kski Kaindy and Baidaksai Valleys  
*Elytrigia trichophora* – widespread  
*Festuca valesiaca* – widespread  
*Hordeum bulbosum* – widespread  
*Hordeum leporinum* - Baidaksai Valley  
*Koeleria cristata* – Kuyuk Pass & Baidaksai Valley  
*Leymus aemulans*- Kuyuk Pass & Baidaksai Valley  
*Melica canescens* – Kshi Kaindy Valley  
*Melica inaequiglumis* – Ulkun Kaindi Pass & Baidaksai Valley  
*Milium effusum*- Kshi Kaindy Valley  
*Phleum alpinum* – Baidaksai Valley  
*Phleum paniculatum* - Kshi Kaindy Valley  
*Phleum pheleoides* – widespread  
*Phragmites australis* – widespread, damp areas  
*Piptatherum sogdianum* – Ulkun Kaindi Pass & Kshi Kaindy Valley  
*Poa angustifolia* – widespread  
*Poa bulbosa* – widespread  
*Poa nemoralis* – Kshi Kaindy Valley  
*Poa relaxa* – Ulkum Valley & Ulkun Kaindi Pass  
*Stipa capillata* – Baidaksai Valley  
*Stipa caucasica* - widespread  
*Stipa kirghisorum* – Berkara & Kshi Kaindy Valley  
*Taeniatherum crinitum* - Baidaksai Valley

### **Cyperaceae**

*Holoschoenus vulgaris* - Karasai Gorge

### **Araceae**

*Arum korolkovii* – Berkara

### **Juncaceae**

*Juncus compressus* – by lake at lunch stop

*Juncus inflexus*– by damp area in village of Irsu

### **Colchicaceae**

*Colchicum luteum* – Kski Kaindy Valley, leaves only

### **Liliaceae**

*Eremurus altaicus* – on way down from mountain house

*Eremurus cristatus* – small plant

*Eremurus fuscus* – Koksai Gorge, meadow brown-yellow flowers

*Eremurus lactiflorus* – Kski Kaindy Valley & Baidaksai Valley

*Eremurus regellii* - Kuyuk Pass, Koksai Gorge, Ulkun Kaindi Pass & Kshi Kaindy Valley  
 pink/orange flowers  
*Eremurus tianschanicus* – Koksai Gorge, white flowers  
*Gagea capillifolia* – Koksai Gorge  
*Gagea dshungarica*– Koksai Gorge, Ulkun Valley & Ulkun Kaindi Pass  
*Gagea emarginata* – on way up to the mountain house  
*Gagea filiformis* – widespread  
*Gagea minutiflora* – Koksai Gorge & Ulkun Kaindi Pass  
*Gagea turkestanica* - Ulkun Kaindi Pass  
*Gagea ugamica* – Koksai Gorge  
*Gagea vvedenskyi* – Koksai Gorge & Ulkun Kaindi Pass  
*Korolkovia severzovii*- Berkara wooded valley & on way down from mountain house seed pods only  
*Polygonatum roseum*– Tuyuk Pass  
*Polygonatum severzowii* – on way up to the mountain house  
*Rhinopetalum stenanthemum* – On way up to the mountain house  
*Tulipa dasystemonoides* – Ulkun Valley  
*Tulipa greigii* – day 5 in seed & Ulkun Valley  
*Tulipa kaufmanniana* - Karasai, in seed only  
*Tulipa ostrovskiana*– Kuyuk Pass in seed  
*Tulipa turkestanica*- Kuyuk Pass in seed

### **Alliaceae**

*Allium barszczewskii* - Taskol Lake, pink flowers  
*Allium caesium* - day 5 & 6 & Ulkun Valley  
*Allium coeruleum*- on way down from mountain house  
*Allium collis-magni* –Baidasksai Valley  
*Allium drobovii* - Asku Canyon  
*Allium eriocoleum* – Baidasksai Valley  
*Allium fedtschenkoanum*– Ulkun Kaindi Pass, yellow flowers  
*Allium fetissoyii* - Taskol Lake  
*Allium filidens* – Kuyuk Pass, pale blue flowers  
*Allium hymenorrhizum*- on way down from mountain house  
*Allium karataviense* - Kuyuk Pass  
*Allium kokanicum*– Ulkun Kaindi Pass  
*Allium longicuspis*- on way down from mountain house  
*Allium oreophilum*– Ulkun Kaindi Pass, purple flowers  
*Allium polyphyllum* - Tuyuk Pass,  
*Allium sewerzowii* – Ulkun Valley  
*Allium trachyscordum* – Kuyuk Pass, red flowers

### **Amaryllidaceae**

*Ixiolirion tataricum* - blue flowers, by lake on way to Karasai and Kuyuk Pass  
*Ungernia severzovii* - Koksai Gorge & Asku Canyon area

### **Iridaceae**

*Iris sogdiana* – Kuyuk Pass  
*Iris sangorica* – Koksai Gorge

*Juno coerulea* – Kuyuk Pass, Ulkun Valley

*Juno orchioides* – Baidaksai Valley

### **Orchidaceae**

*Epipactis latifolia* - Tuyuk Pass, leaves only

*Dactylorhiza umbrosa* – day 6 & on way up to the mountain house

### **Salicaceae**

*Salix alba* – Berkara and Tuyuk Pass

*Salix linearifolia* – Berkara and on way up to the mountain house

*Salix neidzwieckii* – Berkara and on way up to the mountain house

### **Betulaceae**

*Betula talassica* - Tuyuk Pass, on way down from mountain house

*Betula turkestanica*- on way down from mountain house

### **Ulmaceae**

*Ulmus laevis* – Tukuk Pass

*Celtis caucasica* - Berkara & Asku Canyon area

### **Urticaceae**

*Parietania judaica* - Karasai Gorge & Asku Canyon

*Urtica dioica* – scattered

### **Polygonaceae**

*Atraphaxis laetevierens* – on way up to the mountain house

*Astraphaxis pyrifolia* - Kuyuk Pass, roadside

*Atraphaxis virgata* - Asku Canyon area

*Oxyria digyna* – Ulkun Valley

*Polygonum alpinum* – Tuyuk Pass

*Polygonum amphibium* - Ters Lake

*Polygonum aviculare* – Ters Lake and on way up to the mountain house

*Polygonum coriarium* – Ulkun Valley

*Polygonum hissaricum* - on way up to the mountain house

*Polygonum nitens* - and on way up to the mountain house

*Polygonum viviparum* - Tuyuk Pass

*Rheum maximoviczii* – Berkara

*Rumex crispus* - scattered

*Rumex tianschanicus*– Baidaksai Valley

### **Chenopodiaceae**

*Ceratoides krascheninnikowia* – day 5

*Ceratoides papposa* – day 5

*Chenopodium album* – Ters Lake & in village of Irsu

*Rhaphidophyton regelii* – Kuyuk Pass

*Suaeda acuininata* - by lake on way to Karasai

*Kochia prostrata* - by lake on way to Karasai and Ters Lake

*Salicornia europaea* - by lake on way to Karasai

### **Caryophyllaceae**

*Allochrysa gypsophiloides* - day 5 & Asku Canyon area  
*Arenaria griffithii* – Ulkun Valley  
*Arenaria leptockados* – Taskol & on way up to the mountain house  
*Cerastium bungeanum* - Taskol  
*Cerastium cerastoides* – Ulkun Valley  
*Cerastium dahuricum*– Ulkum Kaindi Pass  
*Cerastium inflatum*– Taskol  
*Cerastium lithospermifolium*– Ulkum Kaindi Pass  
*Dianthus hoeltzeri*– Ulkum Kaindi Pass  
*Dianthus karataviensis*– Taskol & Asku Canyon  
*Dianthus tetrolepis*– Berkara and Taskol, Baidaksai Valley  
*Gypsophila cephalotes*– Kuyuk Pass  
*Herniaria caucasica* – scattered  
*Melandrium turkestanicum* - on way down from mountain house  
*Minuartia meyeri* – Tuyuk Pass, on way down from mountain house  
*Minuartia verna* – Tjuk-su  
*Silene brachuica* – Taskol Lake  
*Silene conica* – by lake on way to Karasai  
*Silene volgensis* – Taskol Lake  
*Stellaria graminea* – scattered  
*Vaccaria pyramidata* - Asku Canyon area

### **Ranunculaceae**

*Aconitum rotundifolium*– Ulkum Kaindi Pass  
*Aconitum talassicum* – by the half way house  
*Adonis parviflora* – on way up to the mountain house  
*Anemone protracta* – Ulkun Valley  
*Aquilegia atrovinosa* – day 5 and on way up to the mountain house  
*Callianthemum alatavicum*–Ulkum Kaindi Pass  
*Clematis orientalis* – on way up to the mountain house  
*Delphinium albomarginatum*– Berkara  
*Delphinium confusum* – on way up to the mountain house and Ulkun Valley  
*Paraquilegia anemonoides* – Ulkun Valley and Ulkun Kaindi Pass  
*Pulsatilla campanella*–Ulkum Kaindi Pass  
*Ranunculus arvensis* – on the way and back to the mountain house  
*Ranunculus paucidentatus* – Ulkun Valley  
*Ranunculus polyanthemis*- on way down from mountain house  
*Ranunculus rufosepalus*–Ulkum Kaindi Pass, red sepals  
*Ranunculus songoricus* –Ulkun Valley  
*Ranunculus severzovii* – Ulkun Valley  
*Thalictrum isopyroides*–Ulkum Kaindi Pass  
*Thalictrum minus*– Tuyuk Pass  
*Thalictrum simplex* – scattered  
*Trollius altaicus* – Ulkun Valley and Ulkun Kaindi Pass and other places

### **Berberidaceae**

*Berberis oblonga* – Tuyuk Pass and on way up to the mountain house

### **Papaveraceae**

*Papaver croceum* – Ulkun Valley

*Papaver litinowii* – red flowers

*Roemeria refracta* – Koksai Gorge and on way up to the mountain house

*Glaucium fimbrilligerum* – Kuyuk Pass

*Glaucium squamigerum* – day 6

### **Fumariaceae**

*Corydalis ledebouriana* – Ulkun Valley

### **Capparidaceae**

*Capparis herbacea* - by lake on way to Berkara and at Berkara

### **Cruciferaeae**

*Alliaria petiolata*– Berkara

*Alyssum turkcestanicum*- on way down from mountain house

*Barbarea arcuata*– Baidaksai Valley

*Brassica campestris* – Karasai Gorge and Taskol Lake area & field near Asku Canyon

*Camelina microcarpia* – Taskol Lake

*Cardaaria pubescens*– Taskol Lake area

*Capsella bursa-pastoris*- on way down from mountain house

*Crambe orientalis*– Kuyuk Pass and Tuyuk Pass and fields near Asku Canyon

*Draba huetii*– Kuyuk Pass

*Draba melanopus*–Ulkun Kaindi Pass

*Erysimum diffusum* - scattered

*Erysimum humillinum* – Ulkun Valley

*Euclidium syriacum* - Asku Canyon area

*Megacarpa orbiculata* – day 5 and on way up to the mountain house

*Neurolooma albidum* – on way up to the mountain house

*Sisymbrium brassiciforme* – day 5

*Sisymbrium loesellii* – scattered

*Thlaspi perfoliatum* – day 5 and on way up to the mountain house

*Thlaspi arvense* – scattered

*Turritis glabra*- on way down from mountain house

### **Crassulaceae**

*Clementsia semenovii* – Baidaksai Valley

*Pseudosedum longidentatum* – Ulkun Valley

*Rhodiola heterodontha* – Baidaksai Valley

*Rosularia aplestris* – Ulkun Valley

*Rosularia turkestanica*– Baidaksai Valley

*Sedum alberti*– Tuyuk Pass, leaves brown, Baidaksai Valley

*Sedum pentapetalum* - Asku Canyon area

## **Saxifragaceae**

*Ribes meyeri*–Ulkum Kaindi Pass

*Saxifraga alberti*–Ulkum Kaindi Pass

*Saxifraga sibirica*–Ulkum Kaindi Pass

## **Rosaceae**

*Agrimonia asiatica*– Berkara

*Alchemilla sibirica* – may have seen it on day 7

*Amygdalus petunnikovii* – on way up to the mountain house

*Cerasus erythrocarpa* – on way up to the mountain house

*Cerasus tianschanica* – day 5 and on way up to the mountain house

*Cotoneaster karatavievus*– Berkara

*Cotoneaster multiflorus* - Tuyuk Pass

*Cotoneaster oliganthus* – Ulkum Valley

*Cotoneaster pojarkovae*–Ulkum Kaindi Pass

*Cotoneaster suavis*–Ulkum Kaindi Pass

*Crataegus pontica* - Asku Canyon area

*Crataegus turkestanica*– Karasai Gorge

*Geum urbanum*- on way down from mountain house

*Malus niedzwetzkyana* – Tuyuk Pass

*Malus sieversii* – Tuyuk Pass

*Orthurus kokanicus*- on way down from mountain house

*Padellus mahaleb* – on way up to the mountain house

*Pentaphylloides phyllocalyx* – Ulkun Valley

*Potentilla desertorum*– Tuyuk Pass, Asku Gorge

*Potentilla evestita* - day 5

*Potentilla fedtschenkoana* – Ulkun Valley

*Potentilla gelida*–Ulkun Kaindi Pass

*Potentilla hololeuca* – Ulkun Valley

*Potentilla orientalis* – scattered

*Potentilla pamiroalaica* – Ulkun Valley

*Potentilla reptans* - Berkara

*Potentilla soongarica* – Berkara

*Potentilla pedata*– Kuyuk Pass and Tuyuk Pass

*Poterium polygamum* – scattered

*Prunus divaricata* - Berkara

*Pyrus regelii* – Berkara

*Rosa albertii* – Tuyuk Pass

*Rosa beggeriana* – on way up to the mountain house

*Rosa corymbifera* – day 5

*Rosa fedtschenkoana* – on way up to the mountain house, large white flowers

*Rosa hissarica*– on way up to the mountain house, small white flowers

*Rosa kokanica*– Berkara

*Rosa maracandica* – yellow flowers

*Rosa nanothamnus*- Asku Gorge

*Rosa persica* – very small beautiful flowers

*Rubus caesium*- Berkara, - on way down from mountain house

*Rubus idaeus* - Asku Canyon area  
*Sanguisorba alpina*- on way down from mountain house  
*Sanguisorba officinalis*- on way down from mountain house  
*Sorbus persica* – on way up to the mountain house  
*Spiracanthus schrenkianus* – Berkara  
*Spiraea hypericifolia* – Berkara and Tuyuk Pass  
*Spiraea pilosa* – on way up to the mountain house

### **Fabaceae**

*Astragalus alopecias* – Taskol Lake area  
*Astragalus andaulgensis* – Baidaksai Valley, yellow flowers  
*Astragalus anisomerus* – Tuyuk Pass  
*Astragalus ashuturi* –Ulkum Kaindi Pass, dirty yellow flowers  
*Astragalus atrovinosus* – Berkara  
*Astragalus fedtschenkoanus* –Ulkum Kaindi Pass  
*Astragalus krauseanus* – Berkara  
*Astragalus macrotropis* – Tuyuk Pass  
*Astragalus mucidus* – Tuyuk Pass  
*Astragalus neo-lipskyanus* – Tuyuk Pass, on way down from mountain house  
*Astragalus pachyrrhizus* – day 5  
*Astragalus platyphyllus* – Tuyuk Pass  
*Astragalus pteroccephalus* – Tuyuk Pass, many spines  
*Astragalus schrenkianus* - day 5 & Asku Canyon area  
*Astragalus severzowii* – day 5  
*Astragalus sieversianus* – scattered  
*Astragalus skorniakovii* - Asku Canyon area  
*Astragalus tibetanus*- on way down from mountain house  
*Astragalus ugamicus* – Ulkun Valley  
*Cicer songoricum*–Ulkum Kaindi Pass  
*Chesneya ternata*– Tuyuk Pass  
*Glycyrrhiza aspera* – day 5  
*Glycyrrhiza glabra* – day 5 & 6  
*Vexibia alopecuroides*– Tuyuk Pass and on way up to the mountain house  
*Vexibia pachycarpa* – day 5 & 6  
*Hedysarum acutifolium*– Kuyuk Pass area  
*Hedysarum fedtschenkoanum* – on way up to the mountain house  
*Hedysarum flavescens*– Kuyuk Pass area  
*Hedysarum sewerzovii* - Asku Canyon area  
*Hedysarum taschkenticum* - Asku Canyon area  
*Lotus tenuis*– On way to Berkara  
*Lotus pratensis* – widespread  
*Medicago lupulina* – scattered  
*Medicago minima* – on way up to the mountain house  
*Medicago tianschanica* – scattered  
*Melilotus officinalis* - Taskol Lake  
*Melissitus tianschanicus*– Tuyuk Pass, yellow flowers  
*Meristotropis tryphylla* – white flowers

*Onobrychis chorassanica*– Tuyuk Pass  
*Onobrychis echidna* – pink flowers, spiny fruits  
*Onobrychis grandis* - Asku Canyon area  
*Onobrychis sativus*– Tuyuk Pass, on way down from mountain house  
*Oxytropis albovillosa* – Ulkun Valley  
*Oxytropis aulieatensis* – Tuyuk Pass and Ulkun Valley  
*Oxytropis pilosissima*– Tuyuk Pass  
*Oxytropis talassica* – Ulkun Valley  
*Oxytropis trichocalycina* – Baidaksai valley, pink flowers  
*Trifolium fragiferum*- Berkara  
*Trifolium pratense* – scattered  
*Trifolium repens* – scattered  
*Vicia kokanica* – Ulkun Valley  
*Vicia tenuifolia* – Ulkun Valley

### **Geraniaceae**

*Erodium cicutarium* – Taskol Lake area  
*Geranium collinum* – Tuyuk Pass, on way down from mountain house  
*Geranium divaricatum* – Berkara, on way down from mountain house  
*Geranium pratense* – Chimbulak and Tuyuk Pass  
*Geranium pusillum* – Karasai Gorge  
*Geranium saxatile* – on way up to the mountain house

### **Linaceae**

*Linum altaicum* – on way up to the mountain house, blue flowers  
*Linum corymbosum* – small yellow flowers, day 5  
*Linum olgae* – pink flowers, on way up to the mountain house and Ulkun Valley  
*Linum pallescens*– Tuyuk Pass, blue flowers

### **Zygophyllaceae**

*Peganum harmala* – on way to Karasai Gorge & Asku Canyon area

### **Rutaceae**

*Dictamnus angustifolius* – Ulkun Valley  
*Haplophyllum latifolium* - Asku Canyon area  
*Haplophyllum perforatum* – day 5 & 6

### **Polygalaceae**

*Polygala hybrida* – widespread

### **Euphorbiaceae**

*Euphorbia falcata*– Tuyuk Pass  
*Euphorbia humilis* – Ulkun Valley  
*Euphorbia jaxartica* day 5 & 6 & Asku Canyon area  
*Euphorbia lamprocarpa* – day 5  
*Euphorbia saravschanica*–Ulukum Kaindi Pass  
*Euphorbia talastavica* – Ulukum Valley

**Celastraceae**

*Euonymus koopmannii* – on way down from mountain house

**Aceraceae**

*Acer semenovii*– Berkara

**Balsaminaceae**

*Impatiens parviflora* - day 5

**Rhamnaceae**

*Rhamnus cathartica* – on way down from mountain house

*Rhamnus coriacea* - Asku Canyon area

**Malvaceae**

*Alcea nudiflora* – on way up to the mountain house

*Malva neglecta* Ters lake

*Althaea armeniaea* – Kuyuk Pass

**Clusiaceae**

*Hypericum elongatum* – Tuyuk Pass

*Hypericum perforatum* – scattered

*Hypericum scabrum* – Kuyuk Pass, Tuyuk Pass and on way up to mountain house

**Tamaricaceae**

*Myricaria squamosa* – Tuyuk Pass

*Tamarix ramosissima* – Karasai Gorge

**Violaceae**

*Viola modestula* – day 6

*Viola rupestris* – days 6 & Ulkum Kaindi Pass

*Viola suavis* – day 5 & on way down from mountain house

**Elaeagnaceae**

*Hippophae rhamnoides* – day 6

*Elaeagnus angustiflora* – Tuyuk Pass and on way up to the mountain house

**Onograceae**

*Chamaenaerium angustifolium* – on way up to the mountain house

*Epilobium tianschanicum*– on way down from mountain house

**Apiaceae**

*Aegopodium podagraria* – day 6 and on way up to the mountain house

*Aegopodium alpestre* – day 5 & 6

*Angelica decurrens* - Tuyuk Pass

*Anthriscus glacialis*– Baidaksai valley

*Anthriscus turkestanicum* – Baidaksai Valley, on the journey down from the mountain house

*Bupleurum tianschanicum*– Tuyuk Pass & Ulkum Kaindi Pass

*Carum carvi* – Baidaksai valley, on way down from mountain house  
*Conioselinum tataricum*– on way down from mountain house  
*Conium maculatum* – scattered  
*Elaeosticta allioides*– Tuyuk Pass  
*Elaeosticta setaceae* – Ulkun Valley  
*Ferula karatavica*– Kuyuk Pass area & fields on way to Asku Canyon  
*Ferula karataviensis*– Berkara and Tuyuk Pass, on way down from mountain house  
*Ferula kirjalovii*– Tuyuk Pass  
*Ferula penninervis* – on way up to the mountain house  
*Ferula samarkandica* – on way up to the mountain house  
*Ferula renardii* - on way up to the mountain house  
*Ferula tenuisecta* – day 5 and Ulkun Valley  
*Heracleum dissectum*– on way down from mountain house  
*Kosopoljanskia turkestanica*– Tuyuk Pass  
*Mediasia macrophylla* – by path by the half way house  
*Muretia transitoria*– day 5 & on way down from mountain house  
*Oedibasis apiculata*– on way down from mountain house & Asku Canyon area  
*Oedibasis platycarpa* – scattered  
*Pachypleurum talassicum*– on way down from mountain house  
*Paraligusticum discolor* – on way up to the mountain house  
*Ligusticum talassia*–Ulkum Kaindi Pass  
*Prangos pabularia* – day 5 & Ulkun Valley  
*Prangos uloptera* – on way up to the mountain house  
*Scandix stellata* day 5 & Asku Canyon area  
*Schrenkia congesta*– on way down from mountain house  
*Sckrenkia golickeana* – day 6 and Ulkun Valley  
*Schtschurovskia meifolia* – day 6 and on way up to the mountain house  
*Selinum coriaceum* – on way up to the mountain house  
*Seseli schrenkiana* – on way up to the mountain house  
*Torilis leptophylla*– Berkara & Asku Canyon area  
*Turgenia latifolia* – on way up to the mountain house  
*Vicatia conifolia*–Ulkum Kaindi Pass

### **Pyrolaceae**

*Pyrola rotundifolia*– Tuyuk Pass, several large patches, on way down from mountain house

### **Primulaceae**

*Anagallis arvensis*– Karasai Gorge  
*Androsace fedtschenkoi*–Ulkum Kaindi Pass  
*Androsace sericea* – Ulkun Valley  
*Cortusa turkestanica*– Tuyuk Pass and Ulkun Valley  
*Primula algida*–Ulkum Kaindi Pass  
*Primula minkwitziae* – Ulkun Valley

### **Plumbaginaceae**

*Acantholimon alatavicum*–Ulkum Kaindi Pass

*Acantholimon aulieatense* – day 5

*Limonium myrianthum* – by lake on way to Berkara

### **Oleaceae**

*Fraxinus sogdiana* – Berkara

### **Gentianaceae**

*Gentiana olivierii*– Tuyuk Pass

*Gentiana tianschanica*–Ulkum Kaindi Pass

*Gentiana turkestanorum* – Ulkun Valley

*Swertia variabilis*– Tuyuk Pass, Baidaksai valley

### **Convolvulaceae**

*Convolvulus arvensis* – scattered

*Convolvulus lineatus* – Taskol Lake

*Convolvulus pseudocantabrica* – Kuyuk Pass and Taskol Lake & Asku Canyon area

### **Cuscutaceae**

*Cuscuta brevistyla* – seen on roadside on way to Karasai Gorge, very yellow & Asku Canyon area

*Cuscuta lehmanniana* - seen on roadside on way to Karasai Gorge, the large one we saw

### **Boraginaceae**

*Anchusa italica*– Berkara

*Echium italicum*– Berkara and Tuyuk Pass

*Lappula microcarpa*– Taskol Lake

*Lindelofia macrostyla* – day 5 & 6 and Ulkun Valley

*Lindelofia tschimganica*–Ulkum Kaindi Pass, orange flowers

*Lithospermum officinale*– on way down from mountain house

*Lithospermum arvense* – Baidaksai Valley

*Macrotomia ugamensis* – on way to mountain house

*Myosotis asiatica* – Ulkun Valley

*Myosotis sparsiflora* – day 5

*Onosma dichroanthum*– Tuyuk Pass & Asku Canyon area

*Rhynchospermum arvense* – on way up to the mountain house, white flowers

*Rindera echinata* - Asku Canyon area

*Rindera tianschanica*– Tuyuk Pass, small blue flowers

*Rochelia campanulata* - Asku Canyon area, blue flowers

*Solenanthus circinnatus*– Baidaksai valley

*Stephanocaryum olgae* – Ulkun Valley

*Trachelanthus korolkovii* – Ulkun Valley

*Trichodesma incanum* – day 5

### **Lamiaceae**

*Betonica foliosa* – on way up to the mountain house

*Dracocephalum bipinnatum*– Tuyuk Pass, on way down from mountain house

*Dracocephalum nutans* – on way up to the mountain house, blue flowers  
*Eremostachys karatavica*–Tuyuk Pass  
*Eremostachys speciosa* - Tuyuk Pass  
*Eremostachys tianschanica*–Ulkum Kaindi Pass  
*Lagochilus knorringianus* - Asku Canyon area  
*Lagochilus platycalyxm* – day 5 & 6  
*Lagochilus tianschanicus* – Ulkun Kaindi Pass  
*Lamium album* – on way up to the mountain house  
*Lamium amplexicaule*– Karasai Gorge  
*Leonurus turkestanicus* – on way up to the mountain house  
*Lophanthus schrenkii* – on way up to the mountain house  
*Lycopus exaltatus* – day 5 & 6  
*Marrubium alternidens*– Kuyuk Pass  
*Mentha aquatica*– Ters Lake, shore of  
*Mentha asiatica* – scattered  
*Nepeta mariae* – Ulkun Valley  
*Nepeta pannonica*– on way down from mountain house  
*Nepeta ucrainica* - Asku Canyon area  
*Origanum tythanthum* – Ulkun Valley  
*Phlomis brachystegia* – on way up to the mountain house  
*Phlomis salicifolia* day 5 & 6 & Asku Canyon area  
*Pseudoeremostachys sewerzowii* - Asku Canyon area  
*Salvia aethiopsis*– Berkara, on way down from mountain house  
*Salvia deserta* – scattered  
*Salvia sclarea*– Berkara and Tuyuk Pass, on way down from mountain house  
*Salvia virgata* – Berkara  
*Scutellaria androssovii*– Kuyuk Pass  
*Scutellaria cordifrons* – Ulkun Valley  
*Scutellaria flabellulata*–Ulkum Kaindi Pass  
*Scutellaria immaculata* - Asku Canyon, pale yellow flowers  
*Scutellaria kurssanovii* – day 5 & 6  
*Scutellaria linczevskii*Ulkun - Valley, pale yellow flowers  
*Stachyopsis oblongata* – Ulkun Valley  
*Thymus dmitrievae*–Ulkum Kaindi Pass  
*Thymus karatavicus*– Tuyuk Pass & Asku Canyon area  
*Ziziphora clinopodioides* – scattered  
*Ziziphora pamiroalaica*–Ulkum Kaindi Pass  
*Ziziphora tenuior* day 5 & 6 & Asku Canyon area

### **Solanaceae**

*Hyoscyamus niger* - day 5 & 6, often seen from the bus, fields on way to Asku Canyon

### **Scrophulariaceae**

*Buggea vesiculifera* – day 5

*Dodartia orientalis* – a strange plant with purple flowers, seen mainly on roadsides, day 5 & 6 on way down from mountain house

*Euphrasia tatarica* – Koksai Gorge

*Leptorabdos parviflora* - Asku Canyon area  
*Pedicularis dolichorrhiza* - Tuyuk Pass  
*Pedicularis korolkowii*–Ulkum Kaindi Pass  
*Pedicularis olgae* – yellow flowers, on way up to the mountain house  
*Pedicularis talassica* – on way up to the mountain house  
*Rhinanthus songaricus* – on way up to the mountain house  
*Odontites serotina*– by lake on way to Berkara  
*Scrophularia alata*– Baidaksai valley  
*Scrophularia incise* – day 6 and on way to mountain house  
*Verbascum songoricum* – on way to the mountain house  
*Veronica anagallis-aquatica*– by stream in Karasai Gorge  
*Veronica beccabunga* – by stream on way to mountain house  
*Veronica laeta*– Baidaksai valley  
*Veronica rubrifolia*–Ulkum Kaindi Pass  
*Veronica spuria* – Ulkun Valley  
*Veronica tienschanica*–Ulkum Kaindi Pass, pale yellow flower  
*Veronica verna*– Baidaksai valley

### **Plantaginaceae**

*Plantago arachnoidea*–Ulkum Kaindi Pass  
*Plantago lanceolata* – scattered  
*Plantago major* – scattered

### **Rubiaceae**

*Asperula setosa* – on way up to the mountain house  
*Callipeltis cucullaris*– Berkara & Asku Canyon area  
*Galium karataviense*– Tuyuk Pass  
*Galium pamiro-alaicum* – scattered  
*Galium serpentrionale* – day 5  
*Galium tebuissimum*– Kuyuk Pass & Asku Canyon area  
*Galium verticillatum* day 6 & Asku Canyon area  
*Rubia regelii*–Ulkum Kaindi Pass

### **Caprifoliaceae**

*Lonicera karatariense*– Karasai Gorge  
*Lonicera karelini* – on way up to the mountain house  
*Lonicera microphylla*– Tuyuk Pass & Ulkum Kaindi Pass  
*Lonicera nummulariifolia* – on way up to the mountain house  
*Lonicera olgae* – on way to the mountain house  
*Lonicera stenantha* – Tuyuk Pass  
*Lonicera tianschanica* – Tuyuk Pass

### **Valerianaceae**

*Valeriana fedtschenkoi* – Ulkun Valley  
*Valerianella dactylopylla* – Ulkun Valley

## **Morinaceae**

*Morina kokanica* – Ulkun Valley

## **Dipsacaceae**

*Scabiosa songarica* – Kuyuk Pass area and Ulkun Valley

*Scabiosa micrantha* – on way down from mountain house

## **Campanulaceae**

*Asyneuma argutum* – Ulkun Valley

*Campanula alberti* – on rocks by waterfall near the halfway house

*Campanula glomerata* - Koksai Gorge

*Campanula lehmanniana* – Ulkun Valley

*Codonopsis clematidea* - Tuyuk Pass

*Cylindrocarpa severzovii* - Ulkum Kaindi Pass

*Sergia severzovii* - Asku Canyon area

## **Asteraceae**

*Acanthocephalus amplexifolius* - Asku Canyon area

*Achillea biebersteinii* - day 5 & 6, yellow flowers, on way down from mountain house

*Achillea filipendulina* – scattered

*Achillea millefolium* – widespread

*Acroptilon australe* – day 5, pink flowers, on way down from mountain house

*Arctium tomentosum* - on way down from mountain house

*Artemisia absinthium* – scattered

*Artemisia aschurbajevii* – Ulkun Valley

*Artemisia dracunculus* – scattered

*Artemisia karatavica* – day 5

*Artemisia persica* – on way up to the mountain house

*Artemisia rutifolia* – day 5

*Artemisia santolinifolia*– Baidaksai valley

*Artemisia serotina* – day 5 & 6

*Artemisia vulgaris* - on way down from mountain house

*Aster alpinus* – Ulkun Valley

*Aster canescens* – day 5

*Bidens tripartita* – by damp area in village of Irsu

*Carduus nutans*– roadside day 5 and Tuyuk Pass, very pale flowers compared to UK plants

*Carthamus lanatus* – day 5

*Centaurea depressa* – in meadow on way up to the mountain house

*Centaurea iberica* day 5 and on way down from mountain house

*Centaurea ruthenica* – Ulkun Valley

*Centaurea squarrosa* - day 5 & 6 & Ulkun Valley

*Centaurea turkestanica* - Asku Canyon area, yellow flowers

*Chardinia orientalis* - Asku Canyon area

*Cichorium intybus* – scattered

*Cirsium sairamense* - on way down from mountain house

*Cousinia albertii* – day 5

*Cousinia caespitosa* – Ulkun Valley

*Cousinia fetissoyii* – on way up to the mountain house  
*Cousinia karatavica* – day 5  
*Cousinia microcarpa* – scattered  
*Cousinia minkwitzae* – day 6 & on way down from mountain house  
*Cousinia severtzowii* – on way up to the mountain house  
*Cousinia tianschanica* - on way down from mountain house  
*Cousinia umbrosa* – scattered  
*Doronicum turkestanica* – wooded areas day 5 & 6  
*Crepis multicaulis* - Ulkum Kaindi Pass  
*Crepis oreades*– Tuyuk Pass  
*Crupina vulgaris* day 5 & Asku Canyon area  
*Echinops karatavicus*– Berkara & Asku Canyon area  
*Echinops talassicus* – Ulkun Valley  
*Echinops tschimganicus*– Tuyuk Pass  
*Erigeron cabulicus* - Ulkum Kaindi Pass, orange flowers  
*Erigeron chorossanicus* - Asku Canyon area  
*Erigeron seravschanicus* – Ulkun Valley, pink flowers  
*Filago arvensis* – day 5 & 6, Baidaksai valley  
*Galatella chromopappus* - on way down from mountain house  
*Handelia trichophylla* day 6, Asku Canyon area, yellow flowers  
*Helichrysum maracandicum* day 5 & 6, on way down from mountain house  
*Hieracium echioides*– Baidaksai valley  
*Hieracium virosum* - Ulkum Kaindi Pass  
*Inula macrophylla*– Berkara & Asku Canyon area  
*Inula rhizocephala* - on way down from mountain house  
*Jurinea algida* - Ulkum Kaindi Pass  
*Lactuca serriola* day 5 & 6, Asku Canyon area  
*Ligularia karataviensis* – day 6  
*Ligularia macrophylla* – on way up to the mountain house  
*Ligularia songorica* – on way up to the mountain house  
*Olgaea pectinata* - Asku Canyon area  
*Onopordon acanthium* – scattered  
*Pyrethrum tianschanicum* – Ulkun Valley, white flowers  
*Pyrethrum transiliense* - Ulkum Kaindi Pass  
*Pyrethrum pyrethroides* – Ulkun Valley  
*Scorzonera franchtii* - on way down from mountain house  
*Scorzonera inconspicua* – Ulkun Valley  
*Scorzonera parviflora*– Kuyuk Pass area  
*Scorzonera petrovii*– Taskol Lake  
*Senecio dubius* - Asku Canyon area, yellow flowers  
*Serratula lyratifolia* - Ulkum Kaindi Pass  
*Serratula sogdiana*– Tuyuk Pass  
*Solidago virgaurea* – Ulkun Valley  
*Syreitschikovia spinulosa* – Ulkun Valley  
*Tanacetum pseudoachillea* - on way down from mountain house  
*Tanacetum turlanicum* – Ulkun Valley  
*Taraxacum montanum* – on way up to the mountain house

*Taraxacum officinale* – on way up to the mountain house  
*Tragopogon marginifolius*– Tuyuk Pass  
*Tragopogon pseudomajor* – scattered  
*Tragopogon turkestanicus* – on way up to the mountain house  
*Tragopogon vvedenskyi* - on way down from mountain house, yellow flowers  
*Trichanthesis radiata*– Koksai Gorge  
*Tripleurospermum inodorum* – scattered  
*Tussilago farfara* – scattered  
*Xanthium strumarium* – day 5  
*Xeranthemum longipapposum* – day 5 & 6  
*Amygdalus communis* - on way down from mountain house  
*Armeniaca vulgaris* - on way down from mountain house