

# **The Altai Mountains**

## ***Central Asia's Golden Mountains***

### **A Greentours Trip Report**

**24<sup>th</sup> June – 7<sup>th</sup> July 2012**

**Led by Vladimir Kolbintsev**

#### **June 24<sup>th</sup>. Flight London – Almaty**

After a very late evening arrival in Almaty airport we drove to “Kazzhol” hotel to stay there for a night.

#### **June 25<sup>th</sup>. Ust-Kamenogorsk, Chechek Pass**

Soon after breakfast we returned to airport to get our flight to north-east corner of country in Ust-Kamenogorsk. Early afternoon, after break in town and lunch we went in “Irtysk” hotel and soon were ready to go outside of city on Chechek Pass. And it was our first touching to local nature.

#### **June 26<sup>th</sup>. Baibura Pass, Zaysan town**

It was very long day to drive (about 440 km) sometimes quite bumpy road from Ust-Kamenogorsk to Zaysan town with stop on Baibura Pass (part of Kalbinsky Hills) and continued across quiet desert and salty condition of Zaysan depression and along west and south coast of lake. Only in time of sunset we arrived in Zaysan and found our hotel to stay for two nights.

#### **June 27<sup>th</sup>. Saur Mountains, Chilikty valley**

One hour to drive soon after breakfast and we reached lowest tops of rocky ridges where Saur and Monrak mountains join together. It is a way to very wide plateau of tectonic Chilikty valley, a magnetically anomalous zone. After some botanising on slopes and couple of stops for a family of Pallas's Sandgrouse and a group of Black Vultures we turned north right in shelter nice valley in Saur Mountains in level of *Larix sibirica* woodland. By a shallow stream of

pure water we had our picnic lunch and watched nature around. On the way back we had nice stop in lower level of Saur on very old moraine with many interesting flowers. For a night we returned back in hotel of Zaysan town.

### **June 28<sup>th</sup>. Zaysan - Marble Pass – Markakol**

One hour to drive as we reached habitat of small and very dry sand dunes named Karatal Sands. We stopped to look on *Populus diversifolia* and continued to drive up to bridge across Black Irtysh River which we walked across. By lunch time we arrived to check point about Chinese border, little bit of timing and we are almost on tops of Marble Pass with wonderful view to gigantic sand dunes in China. After walking around we had another one and a half hour in the car driving in Altai Mountains as we reached famous village of Urunkhayka on the Markakol Lake coast where we planned to stay for three nights. From one house over next corner of village we saw smoke from sauna already prepared for us.

### **June 29<sup>th</sup>. Cold pass**

It was day off for driver and vehicle and we went up to Cold Pass. It took three hours of slow walking by trail on gentle slope and eventually we reached quick change of vegetation. Weather was going to change and several storms were on the way there. After botanising around and quick picnic lunch right on top of Cold Pass we started our walk down to Markakol. Fortunately missing rain patches we were back home in village to have home sauna and for dinner with caviar from local salmon named Uskuch (kind of Lenok).

### **June 30<sup>th</sup>. Austrian Road, Alatai pass, Karakaba River**

Another sunny day and we drove north of Markakol. Close after crossing river Survyenok we began very exiting driving along proper Austrian Road up on top of Alatai Pass. An hour of walk on subalpine meadows with lot of flowers and we started long but gentle climb down in Karakaba valley by track in conifer woodland. The Wryneck, Nuthatch and Grey Bullfinch were most interesting birds for this walk. And by first stream almost in bottom of valley Andrei already organized our field lunch. Later we drove to first bridge on Karakaba River but only walked on other side of stream which running in China. Vehicle brought us back on tops of Alatai Pass and since there we had another long walk down to Survyenok and later drove back home in Urunkhayka.

### **July 1<sup>st</sup>. Markakol - Kein-Kerish – Kurchum Town**

It was day of quite a long driving from Urunkhayka down back to Zaysan depression in semi-desert condition but lot of clouds and even several storms on horizon kept not very hot weather for this day. By lunch time we were already on top of Kein-Kerish Canyon which means “burned gypsums”. We managed one hour walk down on bottom of canyon mainly under clouds (and lucky in it) before heavy and dusty wind reached there with following electric storm. Little bonsai trees of *Nanophyton erinaceum* on bare ground of gypsum clays were in perfect condition.

### **July 2<sup>nd</sup>. Kurchum - Bukhtarma Lake – Maimyr**

Soon after breakfast in local cafe which was opened in morning only for us, we began another day to drive along renovated road on east coast of Bukhtarma reservoir up to entrance in Maimyr ravine. It was very early evening as we arrived on private hunting farm with accommodation adjusted mainly for hunters. Very soon lot of rains came over there and we decided to have a cup of tea and to go for good break for the rest of day. But close to dinner another local sauna was prepared for us and it steamed inside and outside.

### **July 3<sup>rd</sup>. Burkhat pass**

Morning showed that all day we can have very wet and rainy weather. But we had not much choice and no guarantee for better tomorrow and decided to drive right on tops of Narymsky ridge on Burkhat Pass. On the way we stopped in Katon-Karangay for tickets in national park. When we arrived on pass, everything was wet under cold foggy drizzle, temperature stayed about +4°C. We climbed up to expected snow patch but it was completely melted. The reason of so early season was in last winter which produced very little amount of snow and early spring. Even in such condition we found interesting flowers. After picnic under drizzle we had long walk down along north end of Austrian Road mainly in conifer level. On the way back we also stopped in seasonally wet area with warm thermal springs where we found lot of flowers including very odd *Halenia corniculata*.

### **July 4<sup>th</sup>. Dogs Hills, Maimyr valley**

Another rainy morning but some gaps in clouds above Dog Hills tempted us to drive over there. Unfortunately on top of Dog Hills we arrived under strong rain and after short walk in tall vegetation among *Siberaea altaiensis* all our clothes were completely wet. It was only way to drive back in base in Maimyr. Afternoon was bit dryer and we started walk upper right branch

of Maimyr valley. Couple of hours of sunshine and we managed to see Adder, Siberian Rubythroat and Poplar Admiral Butterfly. Our target plant was *Stelleropsis altaica* and we found it but very last little single flower because of the same reason of very early season.

### **July 5<sup>th</sup>. Maimyr - Kalbinsky Hills - Ust-Kamenogorsk**

It was already day to travel back to Ust-Kamenogorsk and soon after breakfast we left Maimyr and drove to north Vasilievskaya ferry for crossing Bukhtarma Lake. On other side we stopped in area of sand dunes and watched Zaysan Toad-headed Agamas. Our lunch spot we found already in Kalbinsky Hills where endemic species of almond, *Amygdalis ledebouriana*, grows. After last stop on top of mountains in pine woodland weather was changing again. Rest of journey in town was in very dark light and under very heavy rain.

### **July 6<sup>th</sup>. Ak-Baur, Almaty**

In morning we had plenty of time before our flight. After a quick look on collection of prehistoric stone men about local museum we drove back in Kalbinsky Hills in historical site of Ak-Baur. Andrei showed some kind of stone hedge with astronomic points and collection of paintings on walls of little cave in granites. Many Long-tailed Susliks were very active in that area. Afternoon we took our flight to Almaty and after settle in "Kazzhol" hotel decided to have good rest.

### **July 7<sup>th</sup>. Kosmostation**

This day was for excursion in nearest part of Ile-Alatau National Park where we drove very high up to Kosmostation and walked on elevation up to 3400 m. Weather was good and we had look on some special plants like *Trollius lilacinus* and *Paraquilegia anemonoides* and many others. One Lammergeyer was flying above us and few Grey Marmots were still active around. We also walked on Gaish Plateau about observatory and for last dinner returned back in city to visit book shop with some nature history books, very close to "Kazzhol" hotel. And very early morning group drove to airport to take a flight back in UK.

# Systematic List Number 1

## Plants of Altai, Kalbinsky and Saur Mountains

### *Equisetaceae*

*Equisetum palustre* - damp depressions by road south of Markakol.

*Equisetum pratense* - damp woodland margins at low-mid levels, Markakol and Maimyr.

### *Athyriaceae*

*Cystopteris fragilis* - sheltered rocks at mid-high levels, Cold Pass, Austrian Road, Maimyr.

### *Polypodiaceae*

*Polypodium vulgare* - rocks in pine woods in Kalbinsky Hills.

### *Pinaceae*

*Abies sibirica* - Austrian Road, Karakaba.

*Larix sibirica* – Saur, around and above Markakol, Austrian Road, Maimyr.

*Picea obovata* - around and above Markakol, Austrian Road.

*Pinus sibirica* - dominant in higher forest on Burkhat Pass and down on Austrian Road.

*Pinus sylvestris* - locally dominant in central part of Kalbinsky Hills.

### *Cupressaceae*

*Juniperus pseudosabina* - drier slopes at all levels: Cold Pass and Burkhat Pass.

*Juniperus sabina* – Baibura Pass, Saur, Marble Pass, north of Markakol.

*Juniperus sibirica* – Cold Pass. Burkhat Pass.

### *Ephedraceae*

*Ephedra dahurica* - Kein Kerish and Marble Pass.

*Ephedra distachya* - Baibura Pass.

### *Liliaceae*

*Eremurus altaicus* - Kalbinsky Hills, Saur, Marble Pass.

*Erythronium sibiricum* - grassland at mid-high levels, Cold Pass, Burkhat Pass.

*Fritillaria verticillata* – Baibura Pass, Marble Pass, in seeds only.

*Lilium martagon* - Kalbinsky Hills, Marble Pass, around Markakol, by Austrian Road.

*Lloydia serotina* - Burkhat Pass.

*Tulipa altaica* – Marble Pass, Kein Kerish, in seeds only

*Tulipa biflora* - Kein Kerish, in seeds only.

*Tulipa heteropetala* - stony south-facing slope of Marble Pass, in seeds only.

*Tulipa patens* - Kalbinsky Hills, in seeds only.

*Veratrum lobelianum* - around and above Markakol.

## ***Alliaceae***

*Allium caesium* - Marble Pass, Kalbinsky Hills.

*Allium ledebourianum* - stream sides and marshy sites above and around Markakol.

*Allium senescens* – Marble Pass.

*Allium tulipaefolia* - large fruiting on arid slopes at Kein Kerish.

## ***Amaryllidaceae***

*Ixiolirion tataricum* - steppe grassland in Kalbinsky Hills, Saur, Marble Pass.

## ***Iridaceae***

*Iris bloudowii* – Maimyr valley, seeds.

*Iris ruthenica* - mainly at mid-levels, Kalbinsky Hills, Markakol, Burkhat Pass.

*Iris scariosa* - south-facing slope on Marble Pass, Baibura Pass, Bukhtarma, seeds.

*Iris halophila* (=sogdiana) – Chilikty valley.

*Iris haematophylla* - lush vegetation above spring-fed saltmarsh in Zaysan desert, seeds.

## ***Orchidaceae***

*Dactylorhiza fuchsia* - around and above Markakol.

*Dactylorhiza incarnate* - marshes above Markakol, by Karakaba River.

*Dactylorhiza umbrosa* - at lower altitudes in Bukhtarma valley, warm spring.

*Herminium monorchis* - at lower altitudes in Bukhtarma valley, warm spring.

## ***Salicaceae***

*Populus diversifolia* – sandy desert Karatal.

*Populus laurifolia* - south end of Austrian Road, by Bukhtarma River, Maimyr.

*Populus nigra* - along rivers in steppe areas, Kalbinsky Hills.

*Populus tremula* - Kalbinsky Hills, southern Austrian Road.

*Salix caprea* - damp scrub at low-mid levels of Markakol.

*Salix pentandra* - by rivers at low-mid levels of Markakol.

*Salix sp.* - dwarf birch scrub and rocks at high levels of Burkhat Pass.

## ***Betulaceae***

*Betula pendula* - woodland at all levels, Kalbinsky Hills, Markakol and Maimyr.

*Betula rotundifolia* - Cold Pass, Burkhat Pass.

## ***Urticaceae***

*Urtica cannabina* – roadsides in Kalbinsky Hills, Maimyr.

*Urtica dioica* – very common.

## ***Polygonaceae***

*Oxyria dygina* - Burkhat Pass.

*Persicaria bistorta* - Burkhat Pass.

*Polygonum alpinum* - Kalbinsky Hills.

*Polygonum nitens* – Cold Pass, Burkhat Pass.  
*Polygonum undulatum* - Burkhat Pass.  
*Polygonum sp.* - Kein Kerish.  
*Rheum altaicum* - Kalbinsky Hills.  
*Rheum nanum* - Kein Kerish,  
*Rumex acetosa* - Markakol, Austrian Road and Burkhat Pass.

### ***Chenopodiaceae***

*Anabasis sp.* - arid cliff top at Kein Kerish.  
*Haloxylon aphyllum* - locally common in Zaysan depression (Saxaul).  
*Chenopodium suecicum* - ruderal habitats in Urunkhayka.  
*Halimione verrucifera* - salt-steppe in the Zaysan depression.  
*Halocnemum strobilaceum* - Zaysan depression.  
*Kochia krylovii* - dry and saline semi-desert at Kein Kerish.  
*Nanophyton erinaceum* - arid bad lands at Kein Kerish.  
*Salsola sp.* - arid cliff top at Kein Kerish.

### ***Portulacaceae***

*Claytonia joanneana* - gaps in dwarf birch scrub on Burkhat Pass.

### ***Caryophyllaceae***

*Acanthophyllum pungens* - arid cliff-top and slopes at Kein Kerish.  
*Cerastium cerastioides* - Burkhat Pass.  
*Cerastium dahuricum* - at low-mid altitudes on Kalbinsky Hills and Markakol.  
*Dianthus superbis* - drier grassland in north of Austrian Road.  
*Dianthus versicolor* – Dog Hills and lower Burkhat Pass.  
*Herniaria glabra* - dry stony slope 10km north of Markakol.  
*Minuartia verna* - Burkhat Pass.  
*Moehringia umbrosa* - mossy ground in spruce forests on Cold Pass, all along Austrian Road.  
*Tunica striata* - Kalbinsky Hills, north of Markakol and Maimyr.

### ***Paeoniaceae***

*Paeonia anomala* - Kalbinsky Hills, Saur and around Markakol.  
*Paeonia hybrida* – Baibura and Marble Pass, Saur and Kalbinsky Hills.

### ***Ranunculaceae***

*Aconitum leucostomum* - Kalbinsky Hills, around Markakol, Austrian Road, Burkhat Pass.  
*Aconitum barbatum* - rocky slope in lower level of Burkhat Pass.  
*Aconitum volubile* – riparian woodland in Maimyr.  
*Anemonastrum critinum* - at high levels on Burkhat Pass.  
*Aquilegia glandulosa* - Cold Pass, Burkhat Pass.  
*Aquilegia sibirica* - rocky ground along Austrian Road and Burkhat Pass.  
*Atragene sibirica* - rocks and scrub around Markakol, and along Austrian Road.

*Callianthemum altaicum* - Cold Pass, Burkhat Pass.  
*Caltha palustris* – Saur, Markakol area and Burkhat Pass.  
*Clematis integrifolia* - dry grassland in Kalbinsky Hills, Marble Pass and Saur.  
*Delphinium elatum* – Maimyr and Kalbinsky Hills.  
*Pulsatilla patens* - Kalbinsky Hills, north of Markakol and Burkhat Pass, seeds.  
*Pulsatilla turczaninowii* – top of Burkhat Pass, seeds.  
*Ranunculus altaicus* - at high levels of Burkhat Pass.  
*Ranunculus auricomus* - woodland at low-mid levels: Markakol and southern Austrian Road.  
*Ranunculus polyanthemos* - taller grassland at and above Markakol  
*Thalictrum alpinum* - amongst dwarf birch on Burkhat Pass.  
*Thalictrum collinum* - grasslands at low-mid levels: Marble Pass and Markakol.  
*Thalictrum simplex* - Grasslands at mid-levels: Cold Pass.  
*Trollius altaicus* - Kalbinsky Hills, Saur, Cold Pass, Burkhat Pass.

### ***Berberidaceae***

*Gymnospermium altaicum* - under Cold Pass, Marble Pass, in leaves only.

### ***Papaveraceae***

*Chelidonium majus* - scree and rocky edges in Kalbinsky Hills, Maimyr.  
*Papaver croceum* - rocks at mid-level of Burkhat Pass.  
*Papaver nudicaule* – roadsides above Marble Pass, Austrian Road, Burkhat Pass

### ***Fumariaceae***

*Corydalis nobilis* - shady rocks, Markakol, Austrian Road, north of Burkhat Pass, seeds.  
*Fumaria officinalis* – roadsides in Bukhtarma valley, Maimyr.

### ***Brassicaceae***

*Berteroa incana* – roadsides, Marble Pass and Bukhtarma valley.  
*Bunias orientalis* - roadsides in Kalbinsky Hills.  
*Capsella bursa-pastoris* - ruderal habitats in villages: Urunkhayka, Maimyr.  
*Cardamine macrophylla* - stream sides, Markakol, Austrian Road.  
*Draba subamplexicaulis* - rock crevices in high levels, Burkhat Pass.  
*Erysimum cheiranthoides* - trackside north of Markakol.  
*Hesperis sibirica* - above Markakol.  
*Isatis laevigata* - stony roadsides in the Kalbinsky Hills.  
*Macropodium nivale* - sheltered moist areas by rocks high on Burkhat Pass.  
*Rorippa palustris* - disturbed damp waysides near Markakol.  
*Sisymbrium altissimum* - disturbed ground in dry steppe areas of Zaysan.  
*Thlaspi arvense* - ruderal and disturbed habitats about Markakol.

### ***Crassulaceae***

*Orostachys spinosa* - Kalbinsky Hills, Austrian Road, Saur, Marble Pass.  
*Rhodiola rosea* - rocks in high level on Burkhat Pass.



*Sedum hybridum* - rocks and dry open slopes on Kalbinsky Hills, Austrian Road.

### ***Saxifragaceae***

*Bergenia crassifolia* - rock outcrops above treeline, Burkhat Pass, Austrian Road.

*Saxifraga punctata* - streams at mid-levels, Austrian Road, Burkhat Pass.

*Saxifraga sibirica* - rocky ground, Austrian Road, Burkhat Pass.

### ***Parnassiaceae***

*Parnassia palustris* – warm spring in Bukhtarma valley.

### ***Grossulariaceae***

*Grossularia acicularis* - rocky slopes north of Markakol.

*Ribes atropurpureum* - drier woodland, Markakol, Cold Pass.

*Ribes nigrum* - Markakol, along Austrian Road.

### ***Rosaceae***

*Alchemilla krylovii* - wet grassland and stream sides above Markakol.

*Alchemilla sibirica* - drier grassland at mid-levels above Markakol.

*Amygdalus ledebouriana* - Kalbinsky Hills.

*Cotoneaster melanocarpus* - Kalbinsky Hills, Marble Pass, Cold Pass, Burkhat Pass.

*Cotoneaster uniflorus* - Kalbinsky Hills pine woods, Marble and Cold Passes.

*Crataegus altaica* - roadside north out of Markakol, Maimyr.

*Dryas oxyodonta* - Burkhat Pass.

*Filipendula ulmaria* - damp streamside, Kalbinsky Hills and Markakol.

*Filipendula vulgaris* - dry grassland and steppe, Kalbinsky Hills.

*Fragaria vesca* - dry grassland about Markakol, Maimyr, Saur.

*Fragaria viridis* - drier grasslands and scrub in Kalbinsky Hills.

*Geum rivale* - Kalbinsky Hills, Markakol.

*Malus prunifolia* - Zaisan town.

*Malus sieversii* - Marble Pass.

*Padus avium* - riverine woodland, above Markakol, Maimyr.

*Pentaphylloides fruticosa* - Cold Pass, by Karakaba River, Burkhat Pass.

*Potentilla anserina* - warm spring in Bukhtarma valley, Maimyr.

*Potentilla argentea* - drier grassland, Kalbinsky Hills.

*Potentilla bifurca* - drier grasslands at low-mid levels, Kalbinsky Hills and Marble Pass.

*Potentilla chrysantha* – woodland and meadows at low levels, Markakol.

*Potentilla palustris* - swamp woodland and marshes, Markakol

*Potentilla erecta* - dry or open steppe grasslands, Marble and Cold Passes.

*Rosa acicularis* - low scrub, Kalbinsky Hills, Markakol.

*Rosa platyacantha* - Kalbinsky Hills.

*Rosa spinosissima* - Austrian Road, Bukhtarma valley, Maimyr.

*Rubus idaeus* - Markakol.

*Sanguisorba officinalis* - Markakol, Cold Pass, Austrian Road, Maimyr.

*Sibiraea altaiensis* – on tops of Dog Hills.  
*Sibbaldia procumbens* - short turf, Burkhat Pass.  
*Sorbus sibirica* - scattered in conifer forests, north from Burkhat Pass.  
*Spiraea hypericifolia* - Kalbinsky Hills, Marble Pass, north of Markakol.  
*Spiraea media* - scrub at all levels, Kalbinsky Hills, Markakol.  
*Spiraea pilosa* - north of Austrian Road.

### ***Fabaceae***

*Alhagi kirghisorum* - roadsides in semi-desert of Zaysan depression.  
*Astragalus alopecurus* – roadsides near Chinese border.  
*Astragalus alpinus* - by Karakaba River.  
*Caragana arborescens* – river sides in Maimyr valley.  
*Caragana frutex* - Kalbinsky Hills, Saur, Kein Kerish, Bukhtarma valley.  
*Halimodendron halodendron* - steep dry slopes at Kein Kerish, Karatal sands.  
*Lathyrus gmelinii* - Kalbinsky Hills, around and above Markakol.  
*Lathyrus pisiformis* - Kalbinsky Hills, and north of Austrian Road.  
*Medicago falcate* - around Ust-Kamenogorsk, Chechek Pass.  
*Medicago lupulina* – roadsides in Bukhtarma valley.  
*Medicago sativa* - near Zaysan north ferry.  
*Melilotus alba* – roadsides around Ust-Kamenogorsk, Chechek Pass.  
*Melilotus officinalis* - roadsides around Ust-Kamenogorsk, Chechek Pass.  
*Sophora alopecuroides* - overgrazed areas throughout Zaysan depression.  
*Thermopsis alpina* - stony slopes at high altitudes, Burkhat Pass.  
*Trifolium lupinaster* - at mid-high levels, Markakol, Austrian Road, by Karakaba River.  
*Trifolium pratense* - Bukhtarma valley, Maimyr.  
*Trifolium repens* - nutrient-rich grassland around Markakol.  
*Trigonella arcuata* - open grassland, Cold Pass.  
*Vicia tenuifolia* – roadsides, Kalbinsky Hills, Bukhtarma valley, Austrian Road.  
*Vicia sepium* - lush meadows and open forest, Markakol, Cold Pass.

### ***Geraniaceae***

*Geranium affine* - Kalbinsky Hills.  
*Geranium albiflorum* - Kalbinsky Hills, above Markakol, Burkhat Pass.  
*Geranium collinum* - Markakol, by Austrian Road, north of Burkhat Pass.  
*Geranium pseudosibiricum* - forest edges, around Markakol.

### ***Zygophyllaceae***

*Zygophyllum plerocarpum* - arid cliff-top of Kein Kerish.

### ***Peganaceae***

*Peganum harmala* – disturbed soil in Zaysan depression.

## ***Rutaceae***

*Dictamnus angustifolius* - scrub and sunny slopes, Kalbinsky Hills and around Markakol.

*Haplophyllum perforatum* - dry steppe grassland near Chinese border.

## ***Polygalaceae***

*Polygala hybrida* - Kalbinsky Hills and Cold Pass.

## ***Aceraceae***

*Acer negundo* - naturalised in Kalbinsky Hills and Ust-Kamenogorsk.

*Acer tataricum* - Kalbinsky Hills.

## ***Malvaceae***

*Alcea nudiflora* - Kalbinsky Hills, Marble Pass.

*Lavatera thuringiaca* – common between Katon-Karangay and Ust-Kamenogorsk.

## ***Thymelaeaceae***

*Daphne altaica* - low scrub on sheltered slope on Marble Pass.

*Stelleropsis altaicus* – Maimyr valley.

## ***Hypericaceae***

*Hypericum elongatum* - dry grassland, Marble Pass, and north from Markakol.

*Hypericum perforatum* - dry or disturbed grassland, Marble Pass, Kalbinsky Hills.

*Hypericum scabrum* - dry grassland, Marble Pass, Kalbinsky Hills.

## ***Violaceae***

*Viola altaica* - often abundant: Cold Pass, Burkhat Pass.

*Viola biflora* - sheltered rocks, Markakol, Austrian Road, Burkhat Pass.

*Viola disjuncta* - grasslands at mid-levels, Kalbinsky Hills, above Markakol, Austrian Road.

*Viola palustris* - damp mossy willow scrub at and above Markakol.

*Viola rupestris* - occasionally on rocky ground, Cold Pass, all along Austrian Road.

## ***Onagraceae***

*Chamaenerion angustifolium* - around Markakol, Maimyr, Saur, Kalbinsky Hills.

## ***Apiaceae***

*Angelica decurrens* - rocky stream sides, Markakol and by Austrian Road.

*Anthriscus sylvestris* - lush grassland and forest margins around Markakol.

*Bupleurum krylovianum* - drier grassland from Markakol to the Austrian Road.

*Bupleurum longifolium* (= *aureum*) - Kalbinsky Hills, Cold Pass, Austrian Road.

*Bupleurum multinerve* - high-level ridges above Burkhat Pass.

*Eringium* sp. - old cemetery in Zaysan desert.

*Ferula krilovii* - less saline parts of the Zaysan desert, Kein Kerish.

*Ferula* sp. - dry slopes at Kein Kerish, low fennel, with few leaves.

*Heracleum dissectum* - at low-mid levels around Markakol and southern Austrian Road.

*Heracleum sibiricum* - spruce forest and scrub margins: above Markakol.

### ***Ericaceae***

*Vaccinium myrtillus* - spruce forest and rocks Cold Pass, Austrian Road, Burkhat Pass.

*Vaccinium vitis-idaea* - under dwarf birch scrub and spruce forest at Burkhat Pass.

### ***Pyrolaceae***

*Orthilia secunda* - mossy ground in conifer forest by Austrian Road.

*Pyrola minor* - under storey in spruce forest, Austrian Road.

*Pyrola rotundifolia* - conifer forest and dwarf birch thickets: Burkhat Pass, Austrian Road.

### ***Primulaceae***

*Androsace lactiflora* - Kalbinsky Hills, Markakol, Austrian Road, Bukhtarma valley.

*Androsace maxima* (= *turczaninovii*) - dry habitats in semi-desert at Kein Kerish.

*Androsace septentrionalis* – Saur, Markakol and north to Austrian Road.

*Cortusa altaica* - Markakol, Austrian Road, Burkhat Pass.

*Primula longiscapa* - moist grassland, Markakol, Cold Pass, Karakaba, Bukhtarma valley.

*Primula macrocalyx* – Saur, Kalbinsky Hills, Karakaba, Burkhat Pass, in seeds only.

### ***Plumbaginaceae***

*Limonium gmelinii* - edges of spring-fed saltmarsh in Zaysan depression.

*Goniolimon speciosum* - Kein Kerish and Marble Pass.

### ***Gentianaceae***

*Gentiana grandiflora* - Cold Pass, Burkhat Pass.

*Gentiana uniflora* (= *krylovii*) - Cold Pass, Austrian Road, Burkhat Pass.

*Halenia corniculata* - seasonally wet grassland on warm springs in Bukhtarma valley.

*Swertia obtusa* - above Markakol, Burkhat Pass.

### ***Polemoniaceae***

*Polemonium caeruleum* - Kalbinsky Hills, around Markakol, Cold Pass.

### ***Convolvulaceae***

*Convolvulus arvensis* - roadsides and dry grassland, Ust-Kamenogorsk, Chechek Pass.

### ***Boraginaceae***

*Cynoglossum officinale* - dry grassland, Kalbinsky Hills and Markakol.

*Echium vulgare* - roadsides, Marble Pass, Cold Pass.

*Lappula microcarpa* – dry habitats in Zaysan depression.

*Lappula squarrosa* – roadsides in Bukhtarma valley.

*Mertensia pallasii* - Saur.

*Myosotis alpestris* - at mid-high levels, Cold Pass, Burkhat Pass.

*Myosotis cespitosa* - spring line marsh north of Markakol.

*Nonea pulla* - dry grassy roadsides along east side of Bukhtarma Lake.

### ***Lamiaceae***

*Dracocephalum imberbe* - rocks along Austrian Road.

*Dracocephalum grandiflorum* - grassland at mid-high levels, Cold Pass, Burkhat Pass.

*Dracocephalum peregrinum* - lower Maimyr valley.

*Dracocephalum ruyschiana* - drier grasslands, Kalbinsky Hills, Saur, Marble Pass, Markakol.

*Eremostachys molucelloides* - arid grassy steppe, Zaysan depression.

*Glechoma hederacea* - grass verges in Bukhtarma valley.

*Lagochilus daicanthophyllus* - arid hummocks at Kein Kerish.

*Lagochilus pulcher* - low level of Saur Mountains.

*Lamium album* - lush grassland, Markakol.

*Leonurus glaucescens* - dry grassland, Kalbinsky Hills, Austrian Road.

*Mentha longifolia* - Markakol, Maimyr.

*Nepeta pannonica* - grasslands about Markakol (including Cold Pass).

*Neteta sibirica* - Maimyr valley.

*Origanum vulgare* - scrub and meadows, north of Markakol.

*Phlomis brachystegia* - drier grassland, Kalbinsky Hills, Marble Pass, Austrian Road.

*Prunella vulgaris* - track to Cold Pass, Maimyr, Bukhtarma valley.

*Salvia deserta* - roadsides and steppe grassland, Kalbinsky Hills and Zaysan depression.

*Scutellaria orientalis* - bluffs and rocks, Kein Kerish, Saur, Austrian Road, Burkhat Pass.

*Scutellaria sieversii* - shorter grassland at mid-levels around Markakol.

*Scutellaria galericulata* - warm spring grassland in Bukhtarma valley.

*Thymus altaicus* - southern Austrian Road and Burkhat Pass.

*Thymus serphyllum* - dry grassland, Kalbinsky Hills.

*Ziziphora clinopodioides* - Kalbinsky Hills, Marble Pass, north of Markakol.

### ***Solanaceae***

*Physochlaina physaloides* - rocks at high levels of Burkhat Pass.

*Hyoscyamus niger* - ruderal habitats in Urunkhayka.

*Hyoscyamus pusillus* - gravel ridges in Zaysan desert.

*Solanum dulcamara* - rough roadsides, Ust-Kamenogorsk and Marble Pass.

### ***Scrophulariaceae***

*Dodartia orientalis* - on old cemetery in Zaysan desert.

*Lagotis integrifolia* - open areas in dwarf birch scrub on Burkhat Pass.

*Linaria altaica* - rock crevices on Austrian Road.

*Linaria pedicellata* - sandy desert on west cost of Bukhtarma Lake (yellow, branched).

*Linaria ramosa* - sandy desert on west cost of Bukhtarma Lake (lilac toadflax).

*Pedicularis amoena* - flushes at mid-high levels, Cold Pass.

*Pedicularis oederi* - on top of Burkhat Pass.

*Pedicularis resupinata* - lush grasslands, Kalbinsky Hills, around and above Markakol.

*Pedicularis tristis* - gaps in dwarf birch scrub on Burkhat Pass.  
*Pedicularis elata* - above Markakol under Cold Pass, Austrian Road.  
*Rhinanthus songoricus* - Marble Pass and Bukhtarma valley.  
*Verbascum phoeniceum* - dry steppes, Kalbinsky Hills, Saur, in seeds only.  
*Verbascum songoricum* - Bukhtarma valley, around Ust-Kamenogorsk, Chechek Pass.  
*Veronica beccabunga* – streamsides, Markakol.  
*Veronica longifolia* - margin of Austrian Road, Bukhtarma valley.  
*Veronica multifida* - dry grassland, Kalbinsky Hills (white-flowered).  
*Veronica porphyriana* - rocks on Austrian Road.  
*Veronica serpyllifolia* - moist turf by streams at and above Markakol, Austrian Road.  
*Veronica spicata* - drier grassland, Kalbinsky Hills, Marble Pass, Cold Pass, Karakaba River.  
*Veronica teucrium* - Kalbinsky pine woods, Markakol, Cold Pass.  
*Veronica sp.* - at very high levels on Burkhat Pass.

### ***Orobanchaceae***

*Orobanche alsatica* – rocky east coast of Bukhtarma Lake.

### ***Plantaginaceae***

*Plantago major* - paths near Markakol.  
*Plantago media* - Kalbinsky Hills, elsewhere in Bukhtarma valley.

### ***Rubiaceae***

*Galium boreale* - lush grassland, Kalbinsky Hills, Markakol, Burkhat Pass.  
*Galium palustre* - swamp birch woodland at Markakol.  
*Galium verum* - drier grasslands at all levels, Kalbinsky Hills, and Burkhat Pass.

### ***Caprifoliaceae***

*Linnaea borealis* - mossy ground in spruce forests along Austrian Road.  
*Lonicera altaica* – Markakol (blue berries).  
*Lonicera microphylla* - rocky slopes along Austrian Road.  
*Lonicera tatarica* - Markakol.  
*Lonicera sp.* - stony south-facing slopes on Marble Pass (low shrub, orange berries).  
*Lonicera sp.* - low scrub, around Markakol, Burkhat Pass (lemon flowers).

### ***Adoxaceae***

*Adoxa moschatellina* - moist woodland, Markakol, Cold Pass, Austrian Road.

### ***Valerianaceae***

*Patrinia intermedia* - dry grassland, Marble Pass, Markakol.  
*Patrinia sibirica* - rocky outcrops in high-levels on Burkhat Pass.  
*Valeriana rossica* - Marble Pass, Cold Pass.

## ***Dipsacaceae***

*Scabiosa ochroleuca* – Kalbinsky Hills, Chechek Pass, Bukhtarma valley.

## ***Campanulaceae***

*Adenophora lilifolia* - rocky slopes in mid-levels on Burkhat Pass.

*Campanula altaica* - Kalbinsky Hills, Cold Pass, Markakol, Austrian Road.

*Campanula glomerata* - Saur, Marble Pass, Austrian Road, Bukhtarma valley.

*Campanula sibirica* - Kalbinsky Hills, Marble Pass, Bukhtarma valley.

## ***Asteraceae***

*Achillea millefolium* - roadsides and driest grassland, Kalbinsky Hills, Markakol.

*Achillea (Ptarmica) ledebourii* - grassland at mid-upper levels: Cold Pass.

*Alfredia cernua* - lush meadow around Markakol, Maimyr.

*Antennaria dioica* - drier grassland, Kalbinsky Hills, Cold Pass, Austrian Road, Burkhat Pass.

*Arctium tomentosum* - forest margins and coarser vegetation, Markakol.

*Artemisia absinthium* - roadsides and rough grassland, Markakol.

*Artemisia dracunculus* - margins of Austrian Road, Bukhtarma valley.

*Aster alpinus* - rocky grassland at high levels, Kalbinsky Hills, Cold Pass.

*Aster altaicus* - drier grassland and steppe, Kalbinsky Hills, Bukhtarma valley.

*Carduus songoricus* - rough grassland, Kalbinsky Hills.

*Centaurea squarrosa* - in eastern Kalbinsky Hills.

*Centaurea ruthenica* – Kalbinsky Hills.

*Cicerbita azurea* - by Austrian Road, Bukhtarma valley.

*Cichorium intybus* - roadsides Ust-Kamenogorsk, Bukhtarma valley

*Echinops sp.* - Kalbinsky Hills.

*Erigeron altaicum* - dry grassland, Cold and Burkhat passes (white, one-headed).

*Erigeron krylovii* - Cold Pass, Alatai Pass (rose-pink).

*Gnaphalium sylvaticum* - drier path side in willow scrub at south end of Austrian Road.

*Hypochoeris maculata* - dry south-facing grassland, sites north of Markakol.

*Lactuca sibirica* - rough grassland, north of Markakol, Austrian Road.

*Ligularia sp.* – warm spring in Bukhtarma valley.

*Onopordum leptolepis* - roadsides in steppes of Bukhtarma valley.

*Rhaponticum carthamoides* - lush grassland Cold Pass, Alatai Pass, Burkhat Pass.

*Sausurea frolovii* - Cold Pass, Kalbinsky Hills.

*Scorzonera radiata* - grassy slopes on Burkhat Pass.

*Senecio jacobaea* - disturbed ground about Bukhtarma north ferry.

*Senecio nemorensis* - Kalbinsky Hills, Cold Pass, Markakol.

*Serratula cardunculus* - lush grassland north of Markakol.

*Serratula kirgisorum* – Zaisan faced slopes of Saur and Altai.

*Tanacetum millefolium* - at lower levels, Kalbinsky Hills, north of Markakol.

*Tanacetum tanacetoides* - dry grassland, Marble Pass.

*Taraxacum altaicum* – rocky slopes on tops of Cold and Burkhat Passes.

*Taraxacum officinale* - widespread.

*Tragopogon pratensis* - roadsides, Ust-Kamenogorsk and Markakol.

*Tussilago farfara* - damp roadsides, Saur, Markakol, Maimyr.

*Xanthium strumarium* - disturbed and damp ground about Ust-Kamenogorsk.



## Systematic List Number 2

### Plants of the Tien Shan: Gaish & the Kosmostation

#### ***Pinaceae***

*Picea schrenkiana*

#### ***Cupressaceae***

*Juniperus pseudosabina*

*Juniperus sabina*

*Juniperus sibirica*

#### ***Liliaceae***

*Lloydia serotina*

*Tulipa dasystemon* (seeds)

*Tulipa heterophylla* (seeds)

#### ***Alliaceae***

*Allium atrosanguineum*

#### ***Orchidaceae***

*Coeloglossum viride*

*Corallorhiza trifida*

#### ***Polygonaceae***

*Oxyria digyna*

*Polygonum alpinum*

*Polygonum nitens*

*Polygonum songoricum*

*Polygonum viviparum*

*Rheum wittrockii*

*Rumex acetosa*

#### ***Caryophyllaceae***

*Cerastium cerastoides*

*Minuartia kryloviana*

*Minuartia meyeri*

*Thylacospermum caespitosum.*

#### ***Ranunculaceae***

*Aconitum leucostomum*

*Aquilegia atrovinosa*

*Astragene sibirica*

*Callianthemum alatavicum*  
*Oxygraphis glacialis*  
*Paraquilegia anemonoides.*  
*Paropyrum anemonoides*  
*Pulsatilla campanella*  
*Ranunculus alberti*  
*Ranunculus rubrocalyx*  
*Thalictrum alpinum*  
*Trollius dschungaricus*  
*Trollius lilacinus*

### ***Papaveraceae***

*Papaver croceum*  
*Papaver tianschanicum*

### ***Fumariaceae***

*Corydalis gortschakovii*

### ***Cruciferaeae***

*Barbarea arcuata*  
*Chorispora bungeana*  
*Draba altaica (white flowers)*  
*Draba sibirica (yellow flowers)*  
*Draba oreades (yellow flowers)*  
*Erysimum croceum*  
*Smelowskia calycina*

### ***Crassulaceae***

*Rhodiola coccinea*  
*Rhodiola linearifolia*

### ***Saxifragaceae***

*Saxifraga hirculus*  
*Saxifraga macrocalyx*  
*Saxifraga oppositifolia*  
*Saxifraga sibirica*  
*Chrysosplenium nudicaule*

### ***Rosaceae***

*Alchemilla sibirica*  
*Fragaria vesca*  
*Pentaphylloides phyllocalyx*  
*Sibbaldia tetrandra*

*Sorbus tianschanicus*

### ***Fabaceae***

*Astragalus alpinus*

*Orobus luteus*

*Oxytropis chionobia*

*Thermopsis alpina*

### ***Geraniaceae***

*Geranium saxatile*

### ***Violaceae***

*Viola acutifolia*

*Viola altaica*

*Viola biflora*

*Viola tianschanica*

### ***Onograceae***

*Chamaenaerium angustifolium*

### ***Apiaceae***

*Angelica decurrens*

*Heracleum dissectum*

*Schultzia albiflora*

*Semenovia transiliensis*

### ***Pyrolaceae***

*Moneses uniflora*

### ***Primulacea***

*Androsace akbajtalensis*

*Androsace fedtschenkoi*

*Cortusa brotheri*

*Primula algida*

*Primula nivalis*

### ***Gentianaceae***

*Gentiana falcata*

*Gentiana karelini*

*Gentiana kaufmanniana*

### ***Boraginaceae***

*Eritrichium villosum*

*Myosotis asiatica*

### ***Polemoniaceae***

*Polemonium caeruleum*

### ***Lamiaceae***

*Dracocephalum imberbe*

*Phlomis oreophila*

*Thymus seravschanicus*

### ***Scrophulariaceae***

*Lagotis integrifolia*

*Pedicularis alatauica*

*Pedicularis oederii*

*Pedicularis pubiflora*

*Veronica porphyriana*

### ***Caprifoliaceae***

*Lonicera hispida*

*Lonicera humilis*

*Lonicera semenovii*

### ***Campanulaceae***

*Codonopsis clematidea*

### ***Asteraceae***

*Aster alpinus*

*Erigeron aurantiacus*

*Leontopodium fedschenkoanum*

*Leontopodium ochroleucum*

*Saussurea gnaphaloides*

*Saussurea elegans*

*Schmalhausenia nidulans*

## Systematic List Number 2      Birds

<h3 style="margin: 0;">Birds, Animals, Amphibians and Reptiles of Altai mountains in 2012</h3>		Ust-Kemen, Checek Pass	Baibura Pass, Zaisan town	Saur mts., Chiliky valley	Zaisan - Marble Pass - Markakol	Cold pass	Alatay pass, Karakoba river	Markakol - Kein-Kerish - Kurchum	Kurchum - Bukhtarma Lake - Maimyr	Burkhat pass	Dogs Hills, Maimyr valley	Maimyr - Kalbinsky Hills - Ust-Kemen	Ak Baur, Almaty	Kosmostation	
		Date:	Ju n 25	Ju n 26	Ju n 27	Ju n 28	Ju n 29	Ju n 30	J u l 1	J u l 2	J u l 3	J u l 4	J u l 5	J u l 6	J u l 7
		Day:	1	2	3	4	5	6	7	8	9	10	11	12	13
Little Grebe	<i>Podiceps ruficolis</i>				4										
Great Crested Grebe	<i>Podiceps cristatus</i>											1			
Great Cormorant	<i>Phalacrocorax carbo</i>								+			+			
Great Egret	<i>Egretta alba</i>								1						
Grey Heron	<i>Ardea cinerea</i>								1						
Black Stork	<i>Ciconia nigra</i>				2	4	3					3			
Ruddy Shelduck	<i>Tadorna ferruginea</i>		2		2					+					
Common Shelduck	<i>T. tadorna</i>									1					
Mallard	<i>Anas platyrhynchos</i>						3		1	1		3			
Gadwall	<i>A. strepera</i>						1								
Goldeneye	<i>Bucephala clangula</i>							+				1			
Black Kite	<i>Milvus lineatus</i>	3	+	4	+	40	+	+	+	+	6	+	2	1	
Montagu`s Harrier	<i>C. pygargus</i>	1	3						1	1					
Hen Harrier	<i>C. cyaneus</i>											2			
Northern Sparrowhawk	<i>A. nisus</i>					1									
Long-legged Buzzard	<i>Buteo rufinus</i>		4	3	2				1		1	1			
Eurasian Buzzard	<i>B. buteo vulpinus</i>					1	2							1	
Steppe Eagle	<i>Aquila rapax</i>			1											
Spotted Eagle	<i>Aquila clanga</i>											1			
Imperial Eagle	<i>A. heliaca</i>								1						
Golden Eagle	<i>A. chrysaetus</i>		1												
Black Vulture	<i>Aegypius monachus</i>			7											

		Day:	1	2	3	4	5	6	7	8	9	10	11	12	13
Lammergeier	<i>Gypaetus barbatus</i>														1
Northern Hobby	<i>F. subbuteo</i>		2								1				
Lesser Kestrel	<i>F. naumanni</i>	6	4										2	4	
Common Kestrel	<i>F. tinnunculus</i>		+	4	+				4	2	1	1	+	2	2
Ptarmigan	<i>Lagopus mutus</i>										dr				
Black Grouse	<i>Tetrao tetrix</i>			3		1				d			d		
Himalayan Snowcock	<i>Tetraogallus himalayensis</i>									r			r		dr
Common Quail	<i>Coturnix coturnix</i>			2	2	2	2	2	1	1	1	1	1		
Demoiselle Crane	<i>Anthropoides vigro</i>		10						2						
									(						
									1						
									)						
Corncrake	<i>Crex crex</i>														
Black Coot	<i>Fulica atra</i>		+												5
															0
Northern Lapwing	<i>Vanellus vanellus</i>		1						1						
Common Redshank	<i>T. totanus</i>								1						
Common Sandpiper	<i>Actitis hypoleucos</i>								2						
Black-headed Gull	<i>L. ridibundus</i>												+		
Caspian Gull	<i>L.cachinnans</i>		3							+			+	2	
Common Tern	<i>Sterna hirundo</i>	1								2			1		
Pallas's Sandgrouse	<i>Syrrhaptes paradoxus</i>			4											
Rock Dove	<i>Columba livia</i>	+	+					5	5	+			+	+	
Collared Dove	<i>Streptopelia decaocto</i>			+	+										
Rufous Turtle Dove	<i>S. orientalis</i>		2	2	2	1	2	5	2	4	4	4	8		1
Eurasian Cuckoo	<i>Cuculus canorus</i>		1	1		1				1	1	1			
Little Owl	<i>Athene noctua</i>			1											
									5						
Eurasian Swift	<i>Apus apus</i>	1							0						
European Roller	<i>Coracias garrulus</i>			1	+				1						
European Bee-eater	<i>Merops apiaster</i>				+				+	4			+		
Hoopoe	<i>Upupa epops</i>	1	3	2	4	1	1	1	1						
Wryneck	<i>Jynx torquilla</i>							1							
Grey-headed Woodpecker	<i>Picus canus</i>										1				
Black Woodpecker	<i>Dryocopus martius</i>					(1)									
Sand Martin	<i>Riparia riparia</i>		1		+										
Barn Swallow	<i>Hirundo rustica</i>	2	+	+	+	+	+	+	+	+	2	2	+	+	
Red-rumped Swallow	<i>H.aurica</i>		1												
House Martin	<i>Delichon urbica</i>			+	+										+
Short-toed Lark	<i>Calandrella cinerea</i>			1											
Lesser Short-toed Lark	<i>C. rufescens</i>								2						
Black Lark	<i>M. yeltoniensis</i>		2												
Shore Lark	<i>Eremophila alpestris</i>			1					1						
Skylark	<i>Alauda arvensis</i>		2	1					1	4	4	4	2		
Tree Pipit	<i>Anthus trivialis</i>			1		1	4							1	

	Day:	1	2	3	4	5	6	7	8	9	10	11	12	13
Water Pipit	<i>Anthus spinoletta</i>									2				2
Sykes's Wagtail	<i>Motacilla flava beema</i>		2											
Grey Wagtail	<i>M. cinerea</i>					1	2	4		2	2			2
Masked Wagtail	<i>M. personata</i>		2	2	4	2	6	6	4	2	2	4		1
Turkestan Shrike	<i>Lanius phoenicuroides</i>							1			1			
Red-backed Shrike	<i>L. collurio</i>					1		3						
Lesser Gray Shrike	<i>L. minor</i>				2			1				1		
Steppe Grey Shrike	<i>L. pallidirostris</i>							1						
Golden Oriole	<i>Oriolus oriolus</i>				2				1		3	3		
European Starling	<i>Sturnus vulgaris</i>	2	+	+	+	2	5	5	2			2	2	
Rose-colored Starling	<i>S. roseus</i>		+		+							+	+	
Black-billed Magpie	<i>Pica pica</i>	4	+	4	+	4	+	+	+	8	2	+	4	6
Spotted Nutcracker	<i>Nucifraga caryocatactes</i>						2							1
Alpine Chough	<i>Pyrrhcorax graculus</i>													2
Chough	<i>pyrrhcorax</i>													2
Jackdaw	<i>Corvus monedula</i>	2	+		2				+			+		
Rook	<i>C. frugilegus</i>		++		+			+	+			+	+	
Carrion Crow	<i>C. corone</i>	2	4	4	4	4	6	6	8	2		+		4
Hooded Crow	<i>Corvus cornix</i>	1	+										4	
Common Raven	<i>C. corax</i>											1		
Brown Accentor	<i>P. fulvescens</i>													1
Whitethroat	<i>Silvia communis</i>									1	+	1	1	
Lesser Whitethroat	<i>S. curruca</i>	2	1			1	2				2			
Chiffchaff	<i>Phylloscopus collybita</i>					1	1				4			
Hume's Warbler	<i>P. Inornatus humei</i>													1
Stonechat	<i>Saxicola torquata</i>		3	+	4		+	+	+	+	6	4	2	2
Northern Wheatear	<i>Oenanthe oenanthe</i>		+	4	2	1	1		4	4	2	2		
Pied Wheatear	<i>O. pleschanka</i>	2	1	1	2			2	6				2	
Isabelline Wheatear	<i>O. isabellina</i>				4			4	2	2	2	2	2	
Rock Thrush	<i>Monticola saxatilis</i>								1					1
Nightingale	<i>Luscinia megarhynchos</i>											(		
Bluethroat	<i>L. svecica</i>									2		1		
Siberian Rubythroat	<i>Luscinia calliope</i>										2			
Black Redstart	<i>Phoenicurus ochruros</i>					2	1							
Guldenstadt's Redstart	<i>Phoenicurus erythrogaster</i>			1										
Mistle Thrush	<i>T. viscivorus</i>						1	1		2	6			2
Great Tit	<i>Parus major</i>				1	1		1			1		2	2
Willow Tit	<i>Parus montanus</i>					1								
Nuthatch	<i>Sitta europaea</i>						2							
House Sparrow	<i>Passer domesticus</i>	2	2	2	4	4	+	+					2	2

		Day:	1	2	3	4	5	6	7	8	9	10	11	12	13
Tree Sparrow	<i>P. montanus</i>		1	2	4	2	+	+	2	2	2	+			
Goldfinch	<i>Carduelis carduelis</i>		5												
Grey-headed Goldfinch	<i>Carduelis caniceps</i>		2	5	+	+	+	+	+	6	2	2	4	+	
Linnet	<i>Acanthis cannabina</i>			1			2						3		
Plane Mountain Finch	<i>Lecosticte nemoricola</i>														+
Grey Bullfinch	<i>Pyrrhula cineraceae</i>							1							
White-winged Grosbeak	<i>Mycerobas carnipes</i>														2
Pine Bunting	<i>Emberiza leucocephala</i>					2									
Meadow Bunting	<i>Emberiza cioides</i>			2										2	
Ortolan Bunting	<i>E. hortulana</i>										5				
Grey-necked Bunting	<i>E. buchanani</i>			1											
Red-headed Bunting	<i>E. bruniceps</i>				4			1	1				1		



# Systematic List Number 4

# Mammals, Reptiles & Amphibians

		Day:	1	2	3	4	5	6	7	8	9	10	11	12	13
Altai Mole	<i>Talpa altaica</i>	dig	di g					di g		di g	di g	di g	di g		
Mountain Hare	<i>Lepus timidus</i>										d r				
Altai Pica	<i>Ochotona alpina</i>				1										
Red Squirrel	<i>Sciurus vulgaris</i>							tai l							
Siberian Chipmunk	<i>Eutamias sibiricus</i>										4		1		
Long-tailed Suslik	<i>Spermophilus undulatus</i>		2	4							4		1	+	
Red-cheeked Suslik	<i>Spermophilus erythrognus</i>								2						
Grey Marmot	<i>Marmota baibacina</i>	hol e									1				2
Great Gerbil	<i>Rhombomys opimus</i>								h o l e						
Mole Vole	<i>Ellobius talpinus</i>			ho le											
Brown Bear	<i>Ursus arctos</i>					dr									
Weasel	<i>Mustela nivalis</i>							1							
Zaisan Toad-headed Agama	<i>Phrynocephalus melanurus</i>				1									+	
Sand Lizard	<i>Lacerta agilis</i>	3	+	2					1					1	
Common Lizard	<i>Lacerta vivipara</i>					8									
Stepperunner	<i>Eremias arguta</i>		1												
Adder	<i>Vipera berus</i>							2				1			