Seed collecting on Sakhalin Island

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Seed collected on this expedition was included in the IDS Seed Distribution list 2005

The island of Sakhalin, situated at the eastern edge of Eurasia, is a unique region of Russia, and is home to a number of interesting plants. 75% of this large island (which measures 943 km from north to south) consists of hills and mountains, and the presence of large water reservoirs have a considerable influence on the climate. Snow cover here is deeper than on the mainland, and sudden changes of temperature can occur during all seasons. The winter here is comparitively mild and long, followed by a cold protracted spring, moist cool summer and prolonged warm autumn. There are frequent mists and fogs, and often high humidity, but in spite of this the average air temperature is noticeably lower than at the same latitudes in Europe, due to peculiarities of atmospheric circulation and the cold sea currents washing Sakhalin's shores. It is interesting to note that when the famous Russian navigator Ivan Krusenstern reached the island of Hokkaido, which lies to the south of Sakhalin, on 10 May 1805, he was surprised to find that there were no leaves on the trees, and in places there was a thick covering of snow. Travellers reported that such low temperatures at this season of the year could be seen in the European part of Russia as far north as at the latitude of Arkhangelsk, but the explanation of this phenomenon was obtained only much later, when the directions of the cold currents in the Pacific Ocean from the Bering Strait down to Kamchatka, Sakhalin and Japan were studied.

There are many endemic plants on Sakhalin, including ones which are absent from the continental part of the Russian Far East, and scientists have designated a separate Sakhalin-Hokkaido floristic province which covers South Sakhalin and the Kuril isles. There is one endemic monotypic genus, *Miyakea*, a perennial member of the Ranunculaceae, which is found only on the bare rocks of the Eastern-Sakhalin Range. Most of endemics of this province are of restricted, often local, distribution, generally playing an insignificant role in the vegetation cover. The northern part of the island, meanwhile, which belongs within the Okhotsk-Kamchatka floristic province, is also of dendrological interest. It is notable that these two provinces belong to different floristic regions: Eastern Asiatic (at the south) and Circumboreal ones (at the north). We have found that most trees and shrubs introduced from Sakhalin into NW Russia and St Petersburg are winter hardy and promising for cultivation, which is why, when planning our seed-collecting trip, we decided on Sakhalin rather than other interesting areas such as those around Lake Baikal and in the Ural Mountains.

By mid-September we were in Yuzhno-Sakhalinsk, seeing some of the trees used for city planting. It was warm, 15° C, cloudy and calm after a recent typhoon. We saw the local rowan, *Sorbus commixta,* and other trees from the

area, including *Populus maximowiczii, Betula ermanii, B. platyphylla* and *Fraxinus mandshurica* var. *sachalinensis* V. Vassil., which differs from the continental population in having wider leaflets, brownish-yellow shoots and branches, and by the later development of coarse bark at trunks. It was especially interesting to see some local trees which are rare in the wild, such as old Japanese plantings of *Malus sachalinensis* and *Juglans ailantifolia*. Most of the trees were small, but one magnificent specimen of *Crataegus chlorosarca* measured about 10m high, much larger than most references suggest. Some of the main streets had good, dense hedges of *Cornus alba*, and we discovered one small tree of a local maple, *Acer ukurunduense*, not often seen in cultivation, from which we collected our first seeds.

Next morning we explored Chekhov Mountain, the summit of which is 1045m above sea level. This is one of the highest points of the Susunaysky Range, which borders the eastern side of the town of Yuzhno-Sakhalinsk. Chekhov Mountain, named after the famous Russian writer Anton Chekhov, who visited Sakhalin about a hundred years ago, is one of the sights of the area, and has been climbed by many botanists visiting Sakhalin. Local people visit it too - to pick cedar nuts (seeds of *Pinus pumila*), mushrooms, bilberry (*Vaccinium hirtum*) and rowan (*Sorbus sambucifolia*). It takes several hours to reach the top, and for a considerable part of the way one follows a narrow path through a thicket of bamboo (*Sasa kurilensis, S. senanensis* and other species). Sakhalin and the Kuril Isles are the only places in Russia where bamboo grows wild, and in the south of Sakhalin it can be an invasive garden weed.

When climbing this mountain one passes through several clearly differentiated bands of vegetation. From the foothills to around 400-500m one is surrounded by magnificent forests of large *Abies sachalinensis* and *Picea ajanensis*. which, during our visit, fortunately bore large crops of cones. Above the conifer belt is a band of small specimens of *Betula ermanii*. Here one starts to see a greater diversity of plants, with rarer species of southerly origin. We saw profusely fruiting tall shrubs of *Euonymus miniatus*, with bright pink seed pods hanging on long needled fruit-stalks, like Christmas toys. This species is considered to be a spontaneous hybrid between two other Sakhalin spindle-trees: *Euonymus sachalinensis* and *E. macropterus,* which we also saw there (see p. 50).

From 600-700m we had a beautiful view over Yuzhno-Sakhalinsk, lying far beneath on the plain and we could also see Red Mountain, named after the Kuril Cherry tree (*Cerasus nipponica*), which colours a beautiful bright red in autumn. We were interested to see plantations of *Larix kaempferi* and *Picea abies* dating from the 1930's, using larch seed from Japan, and spruce seed from Sweden; although spruce is not very wind resistant it has survived in some places.

From 700m upwards we came across *Spiraea betulifolia* and *S. sericea*. By 800m small shrubs of *Sorbus commixta* were seen, distinguishable only by the bitter taste of its inedible berries from *Sorbus sambucifolia*. This altitude marked the beginning of the alpine belt - an open windy area scattered with outcrops of bare rock. Here also was a thicket of *Pinus pumila* with a good crop of seeds -

we had arrived just in time as the season is quite short.
At the summit, above the pines, dwarf shrubs formed a carpet of mountain tundra including widely distributed species such as *Vaccinium vitis-idaea* and *Empetrum nigrum*, as well as rarer, typically Far Eastern ones like *Arctous japonica* and *Dryas tschonoskii*. We were able to collect seeds of two *Rhododendron* species - *R. camtschaticum* and *R. aureum*.
The following day we left for Vaida Mountain in the north. Here we camped by the Vitnitsa River, crossed by means of huge logs of *Picea ajanensis*, laid down instead of a bridge. Some 30 years ago there was a virgin wood of these magnificent spruces, but sadly nowadays this area is neglected and sometimes further destroyed by fire.
Our camp was at 340m, and the summit of Vaida Mountain at 866m. There were remains of forest in the foothills, and previously felled areas now overgrown by a thicket of young *Alnus* (syn. *Duschekia) maximowiczii, Betula ermanii*, and other willows and shrubs. We were delighted to find two lovely trees of the false poplar, *Toisusu cardiophylla*, by the river bank. Each was almost 13-14m high with trunks about 50cm in diameter covered with deeply furrowed bark with thick cork. The widely oval irregular crowns had large stipules, red bare shoots, oblong buds and leaves glaucous below. Self-sown seedlings could be found along the track. *Toisusu* is representative of the fourth and the last (after *Populus, Salix* and *Chosenia*) genus of Salicaceae, which is recognized now by more and more botanists. This monotypic genus consists of only one species with two subspecies. Like *Chosenia, Toisusu* makes a large single-stem tree, and is not propagated vegetatively in the wild. We also saw a thicket of *Alnus hirsuta*, as well as the unusual herbaceous plant *Boschniakia rossica*, which always grow near alder, being a parasite on its roots. *Boschniakia* has a brownish-red stem, swollen at the base.
Whilst at Vaida Mountain we saw three of the six Sakhalin honeysuckles. *Lonicera glehnii* is named after P.P. Glehn, one of the first researchers of Sakhalin's flora, and a participant in the Siberian expedition of the Russian Geographical Society in 1855-1862. This honeysuckle has rather wrinkled leaves, yellow flowers and bright red fruits with large seeds. In contrast, the flowers of *Lonicera sachalinensis* are dark-purple. *Lonicera chamissoi* differs in having very short petioles of leaf blades, which are bare and roundish, not acute.
Weigela middendorffiana is one of the best flowering shrubs from Sakhalin, and is valued by gardeners for its large sulphur-yellow campanulate flowers.; luckily the seeds were just ready to harvest when we were there. Another attractive plant is *Sambucus miquelii,* which replaces the European *Sambucus racemosa* in Sakhalin and the Kuril Isles. Further up the slope, from 450-500m we spotted a reddish carpet of *Thymus japonicus*, and a little further up, we reached a really rocky area with many good things, including *Allium maximowiczii*, *Gymnadenia conopsea, Hemerocallis esculenta*, *Lilium pensylvanicum, L. debile* and *Paeonia obovata*.
The most exciting discovery, however, was on the north-facing slope, where a

peculiar multicoloured carpet was formed by two new species of *Rhododendron* - *R. redowskianum* and *R. adamsii*, the first of them deciduous, the second evergreen (see illustration on page 50). *R. redowskianum* is the dwarfest *Rhododendron* in the flora of Russia and the former USSR, and has beautiful, bright reddish leaves. It differs from the better-known *R. camtschaticum* in its size and in the shape of the flowers and leaves. *Rhododendron adamsii* is also a rare plant of Sakhalin and the Russian Far East; its small, elliptic, rigid leaves have a strong specific aroma. Both species are extremely rare in cultivation, *R. redowskianum* being completely unknown to gardeners.

We returned to our camp, and continued on our way north, searching one of the rarest honeysuckles in the world - *Lonicera tolmatchevii*, which grows only on an island in the middle of the Tym River. We arrived in the town of Tymovsk, where we were interested to see the exotic shrub *Caragana arborescens* in a small garden; generally speaking, though, native trees and shrubs such as *Betula ermanii, B. platyphylla, Cornus alba, Crataegus chlorosarca, Populus davidiana, P.maximowiczii, Rosa acicularis, Salix sachalinensis* and *Sorbus commixta* dominated the planting here.

The Tym River valley is a warm place. In the distant past, when the island was joined to the continent, the mouth of the Amur River was here, and good valley forests have survived. Near the village of Berezovaya Poljana we explored the wet, low-lying forest by the river, looking for our honeysuckle. *Cornus alba* and *Salix schwerinii* grew under a dense canopy of trees including *Alnus hirsuta, Fraxinus mandshurica, Populus davidiana, Salix rorida, Ulmus japonica* and single specimens of *Populus maximowiczii* to 30-35 m high, protruded from the canopy. We found only a single, medium-sized shrub of *Lonicera tolmatchevii*, its leaves covered by a film of yellowish silt, a legacy of flooding after heavy rain in the summer; on occasions the water level here can rise up to 6m, flooding the whole surrounding forest. This honeysuckle is easily propagated by cuttings, as the lower branches root freely. This due to the fact that broken twigs are dispersed by flood water and come to rest in wet silt further down the river. We were too late to collect seed, which ripens in July. *L. tolmatchevii* has been propagated in Sakhalin Botanic Garden, but is still not in general cultivation.

Next day we turned south towards the western coast of Sakhalin, stopping on the way in a larch swamp, edged with stunted trees of *Larix cajanderi* (syn. *L.gmelinii* var. *gmelinii*) and *Betula platyphylla,* to see *Rhododendron parvifolium*; towards the middle of the swamp was a thicket of shrubby *Betula middendorffii*, covered with catkins. At the next stop we collected seeds of *Spiraea humilis*, similar to *Spiraea salicifolia*, but the inflorescences were corymbs, not narrow panicles, and all plants were prominently pubescent. (This species is apparently unknown in cultivation). Close to it, at the edge of the birch forest, the flexible branches with prickly needles of *Juniperus sibirica* protruded from the grass, its berries/cones just starting to ripen.

After a difficult journey over the Boschnjakovsky Pass, we reached Izylmentjev Cape, 23 km south of Uglegorsk, and the next day we set out to

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Above:*Rhododendron redowskianum* and *R. adamsii* on Vaida mountain, Sakhalin (see p.170). Left: A heavily guarded *Wollemia nobilis* at RBG Kew (see p.77). Right: *Euonymus macropterus* (see p.168)

look at the virgin forest, rich with different species, which has survived nearby. On the way we saw low shrubs of *Rosa rugosa* growing on the edge of the shore; local people make good jam from its fleshy fruits splashed with sea water. The forest we had come to see ran almost parallel to the seashore, about 100m from it, and on the edge of the forest we saw *Rosa amblyotis* and also its hybrid with *R.rugosa*, *Rosa* x *marretii*. Close by one could see *Lonicera chrysantha* with shiny red berries and magnificent trees of *Acer mayrii* and *Quercus crispula*, the latter a substitute for the continental *Quercus mongolica*.
We also collected some fir cones, with protruding and downward - curving bracts; it wasn't immediately clear whether this was *Abies sachalinensis* or *A. mayriana*, and there are differences of opinion concerning the naming of Mayr's fir (which at one time was included in the Red Data Book of the former USSR), some experts considering that it should be called *Abies sachalinensis* var. *mayriana,* or even a synonym of *A. sachalinensis.*
Another tree seen here was *Padus ssiori,* 6m high, and at the northern point of its natural distribution; we were able to collect its seeds. This cherry has narrow long racemes of flowers to 20cm, and unlike *Padus asiatica*, it has a single stem,rather than forming shrubby thicket. As we picked our way over the great rotten trunks of ancient fir trees, we really felt as though we were in primary forest, luckily untouched by human activity. The rays of sun which managed to penetrate the dense canopy illuminated the red berries of *Ilex rugosa*, a dwarf creeping shrub with evergreen rigid leaves and sharply angled young stems, common in the conifer forests of Southern and Central Sakhalin.
Next day we went to see a unique grove of Siebold's Walnut, *Juglans ailantifolia*. Some researchers do not think that this species grows wild in Russian territory, and in Sakhalin it was planted by the Japanese, but the grove near Krasnopolje village is undoubtedly of wild origin and represents in fact the extreme northern point of its natural distribution. A narrow belt of walnuts occupy the foothill and lower part of the south-facing slope of the mountain, whilst single specimens occur further up, nearly reaching the top. Conifer forest occupies the upper part of the slope. The walnuts here reach about 10 m high and 15-20 cm in trunk diameter, and we estimated them at 50-70 years old; they formed an unusual forest, with their bright yellow crowns showing up clearly against the dark green of fir and spruce, and we fortunately arrived just as the nuts were falling to the ground. The local people here realise that these walnuts are rare, and do their best to protect them. A few *Populus davidiana* could also be seen, along with *Acer mayri* and *Ulmus japonica*.
We spent our last night at a much lower altitude, on the edge of a conifer forest near Pioneri. Here we saw *Aralia elata, Phellodendron sachalinense* and the Japanese yew, *Taxus cuspidata,* around which twined *Actinidia kolomikta,* with ripe green fruits. *Viburnum furcatum* attracted us with its black edible berries. We stopped to look at ancient sand dunes, several km south of Pioneri, and here we saw two prostate junipers - *Juniperus conferta* and *Juniperus sargentii*. The first is seldom cultivated; it crept along the sand, identifiable from its large light-green cone-berries and long sharp needles.

We returned to Yuzhno-Sakhalinsk having driven more than 1,500 km and collected about 100 samples of seeds, but before our departure we organized one last trip, this time to the environs of Korsakov to search for *Picea glehnii*. This spruce grows only in the south of island, where it forms forests with *Picea ajanensis*, *Abies sachalinensis* and at times with larch, preferring low and wet, often swampy, places. The dwarf *Vaccinium praestans* was conspicuous with its large autumnal leaves on rotten old moss-covered stumps, and at the farewell dinner given by our hosts, we ate ice-cream with delicious juicy berries from this plant. Seeds of *Ribes latifolium*, an endemic of Sakhalin-Hokkaido province, were among our last collections in the wild.

In addition to our wild collections, we were also able to harvest some seeds from the Sakhalin Botanic Garden. This was founded in 1991 and is situated at the edge of Yuzhno-Sakhalinsk, in the foothills of the surrounding mountains. the small number of staff have carried out some excellent work both in studying the flora of Sakhalin and in introducing plants from the island into cultivation.

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