

International Rock Gardener

ISSN 2053-7557



Number 183 The Scottish Rock Garden Club April 2025



Alan Ayton joins us again with an article on *Psychrophila introloba*, another Australian plant which he calls the “Queen of the Victorian Alps” – we hear little of these plants so we hope you will enjoy these notes.

Konstantin Cherezov who lives in Kirov, northwest of Moscow, is involved with the [Russian Rhododendron Society website](#), and with uncommercial mountain hikes and expeditions in Russia. A digital creator, and nature enthusiast and mountaineer, Konstantin wrote about “Cypripediums of the Far East” in issue 154 of the print Journal of the Scottish Rock Garden Club – The Rock Garden. For the IRG he writes about a Botanical introduction to Olkhon Island on Lake Baikal. This issue of IRG ends with some book suggestions.



Konstantin Cherezov

Cover image: *Scabiosa comosa* – photo Konstantin Cherezov.

---International Rock Gardener---

--- Australia ---

The Queen of the Victorian Alps: *Psychrophila introloba* (Alpine Marsh Marigold)

The heading may be a bit misleading at present as I haven't seen every plant that can be seen flowering in the Victorian High Country nor the Snowy Mountains in New South Wales but at present this is definitely the 'Queen of the Mountains'. A very cryptic species due to its flowers being sessile and flowering only as the snow is melting or where late lying snow has only just gone. Also timing of this flowering is very variable so if you are out by a week or two, you will more than likely miss the flowering highlights of this little beauty.



P. introloba in full flower between 'The Orchard Chairlift and Derrick Hut' just south of Mount Loch at an altitude of 1798 metres on the 25th of September 2023. On the lower photo you can still see the old decayed leaves beneath the fresh new green ones which have decayed from the snow cover over winter.

---International Rock Gardener---

People may know this as *Caltha introloba*, some references will still have it as this, but in Australia and some other Southern Hemisphere provinces it has been moved to the genus *Psychrophila* as have most of the southern hemisphere species of *Caltha* due to them being divided into two sections: section *Psychrophila* in the Southern Hemisphere with diplophyllous leaves and section *Caltha* in the Northern Hemisphere with leaves lacking inflexed appendages. As I said some confusion still exists today with where they are placed but due to the Australian authorities sticking with *Psychrophila*, so will I, whether it's right or wrong!

Description: *P. introloba* is a Rhizomatous perennial with Leaves that are rosetted. It has blades ovate to lanceolate, 10–40 mm long, 5–18 mm wide which are acute or obtuse in shape at the apex, hastate or sagittate at the base with 2 linear lobes 5–25 mm long inflexed and lying almost against the upper surface of the blade. The petioles are fleshy, 2–10 cm long and quite variable..



Above: The rosette formation of the leaves with the linear lobes clearly visible in the right hand image and petioles can be seen in the left hand image.



Left: A nice large patch of rosetted leaves. All three photos were taken on the 26th of November 2024 near Mt Jim on the Bogong High Plains, elevation 1794 metres.

---International Rock Gardener---



Description continued: The flowers- are solitary, sweetly scented and virtually sessile within the leaves, they are very variable being 2–6.5 cm diam with tepals usually 5-8, petal shape is oblong to ovate, white or pink and usually veined darker with stamens that count to 15–25 per



flower. The next four photos give you some idea of the variability of the flower size, shape and colour. It can be seen flowering between August and November.

Left and below: Flower shape, colour and markings in the same population at 'The Orchard' Mount Hotham, 25 September 2023, altitude 1798 metres.



Above: Whitish narrow flowers at 'The Orchard' Mount Hotham in 27th September 2024.

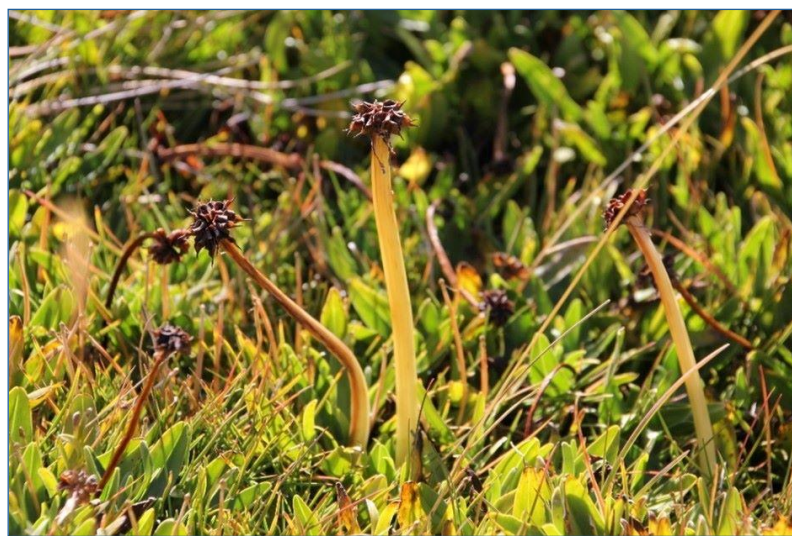
---International Rock Gardener---



Above: More typical flowers at Mt Loch on the 27th of September 2024

Fruiting:

The fruiting follicles are shortly beaked, radiating in a head 15–20 mm diam. Interestingly, the fruiting peduncle which is thick and fleshy, elongates to 10-20 cm in height. Presumably this is to raise the seed above the foliage for dispersal via the wind?? The follicles are 1–5 seeded and open dorsally; The seeds are ovoid in shape, 1–1.5 mm long, smooth and pale brown. Fruiting generally occurs late December through late January. This plant is only found in National Parks where you are banned from collecting specimens or seed which indeed makes it extremely rare in cultivation. They are best observed in their natural habitat.



P. introloba
populations
at 'The
Orchard'
Mt.
Hotham
just after
fruiting,
notice the

fruiting peduncle which has elevated the seed heads above the plants, March 2024.

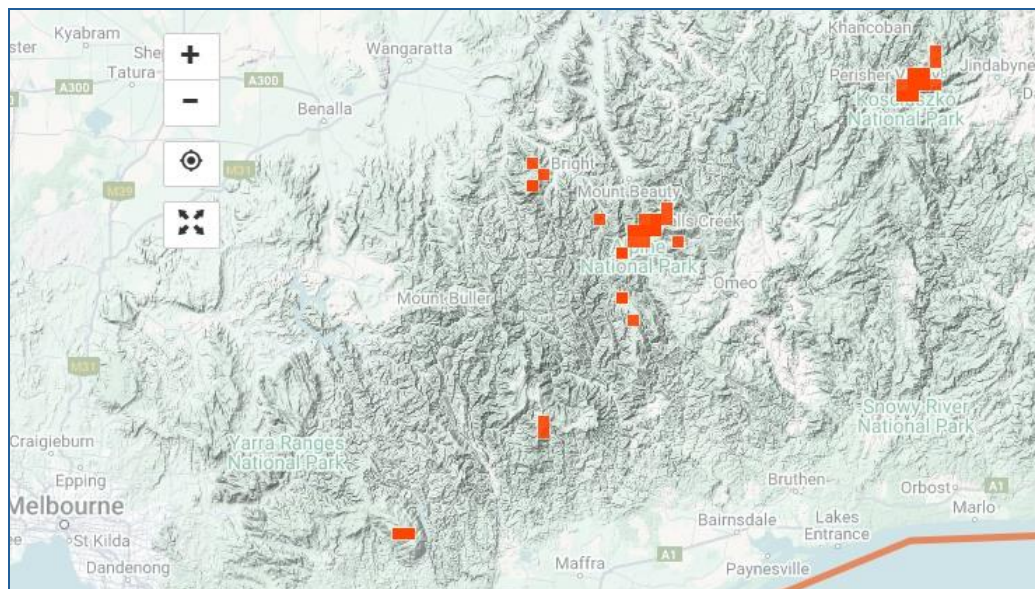
---International Rock Gardener---

Below: Large rosette patches near 'The Orchard' Mt. Hotham in March 2024



Distribution and Habitat:

Even though this is an endangered species because of varying factors, primarily Climate Change, it is locally common in areas of late-lying snow and in moss-beds on the higher ranges, particularly the Bogong high plains and higher peaks in the state, it can also be seen in the Snowy mountains around Mt. Kosciuszko in New South Wales. It usually flowers at edges of receding snow-drifts which are normally wet areas.



Distribution of *Pschrophilla introloba* across Victoria and New South Wales.

---International Rock Gardener---

The above screen shot from [iNaturalist](#) illustrates the distribution of *P. introloba* across Victoria and NSW. Most sightings can be seen around Mt. Kosciuszko in NSW (upper right hand corner) and then around Falls Creek and Mt. Hotham in Victoria. Outlying populations can be seen at Mt. Buffalo near Bright and Mt Stirling and Mt. Baw Baw (lower middle red dots).



Above: *P. introloba* locations in Australia, bottom right hand side, indicated via the red/orange squares which are mostly in Victoria and New South Wales.

The *P. introloba* Herbland Community is one of the rarest and most specialised vegetation units in Australia. For a long time, no one has been sure how to classify their environment as they appear near or amongst Sphagnum bogs, Snow patch communities and Wetlands. As already mentioned, they are classified as endangered and in Victoria are contained mostly to the Bogong High Plains. In this area nearly 100 sites have been identified which only fill about 2 Hectares or less within the total area of Australia.

---International Rock Gardener---



A pretty common habitat for *P. introloba*-a rocky substrate with water flowing through it, which is now called a Caltha Herbland.

Key species in these habitats can include *Psychrophila introloba* (Caltha herbland- the namesake of this habitat), *Oreobolus pumilio*, *Drosera arcturi*, *Juncus antarcticus* and *Celmisia sericophylla* are the most common of the rare species across Caltha Herblands. Some sites



contain the following species as well; *Oreomyrrhis pulvinifica*, *Plantago glacialis* and *Parantennaria uniceps* which are all endangered species in Victoria and only found in Caltha Herblands. You may also see *Dracophyllum continentis* and *Sphagnum* species as well.

In this picture you can see the silvery leaves of *Celmisia sericophylla*, *Sphagnum* moss, the darkish stems to the left of *Dracophyllum continentis* and amongst the *C. sericophylla* some small green rosettes of *P. introloba*.

---International Rock Gardener---



Above and below: More typical *Caltha* Herbland habitat- rocky substrate with water flowing through it. Below we can clearly see *Sphagnum* Moss and *Juncus* species plus the ubiquitous water flowing amongst it.

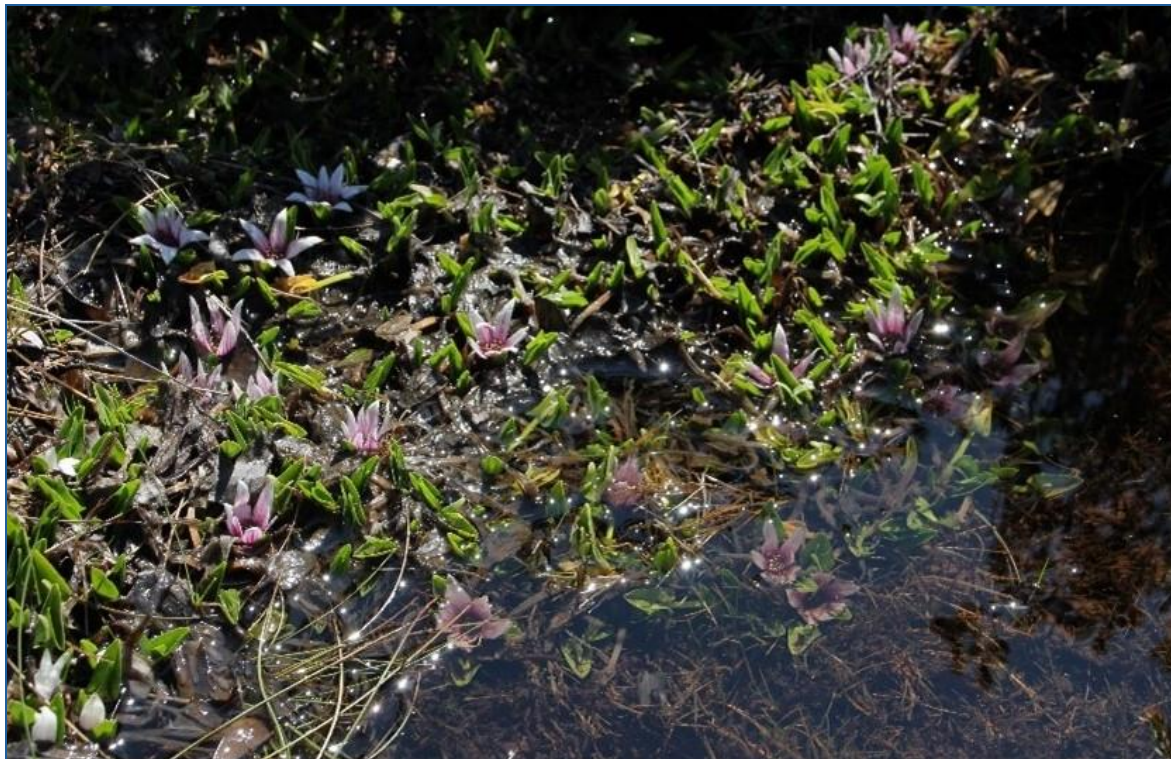


---International Rock Gardener---

They are semi-aquatic, sparsely vegetated, short alpine herb fields that generally occur on a pavement which is a gravelly/rocky area. They need a constant water source, which can be a ground water source, such as a spring or ground seepage, or a creek,(see above photos). They can be seen on steep slopes under snowpatch vegetation down to reasonably flat slopes beside creeks.



Above and below: Photos above clearly showing *P. introloba* underneath snow melt water



---International Rock Gardener---



Above and below: *P. introloba* flowering as the snow melts away. We also have *Aciphylla glacialis* just recovering from its blanket of snow-lower left and the purplish/red stems in the upper right are a nice clump of *Dracophyllum continentis*.



---International Rock Gardener---



More evidence of *P. introloba* flowering amongst snowmelt water and the edges of snowbanks as they slowly melt away.

In September 2023, I had the pleasure of taking the Alpine Supervisor John Mitchell from the



RBGE to see this beautiful species in full flower at Mt Hotham. We were accompanied by Bev Lawrence who has worked as the Mt. Hotham Environment Officer for more than 25 years. A storm was rolling in on our way out but in the meantime we had great overcast conditions and were able to visit two locations where *P. introloba* was in full flower, such a special sight.

John is pretty happy with our first find!

---International Rock Gardener---



A very nice clump of *Psychrophila introloba* in flower



Bev Lawrence (Mt. Hotham) and John Mitchell (RBGE) admiring a nice colony of *P. introloba*.

---International Rock Gardener---



Another fine example in which you will notice the wet and boggy environment.



John Mitchell admiring our second find for the day at the base of Mt. Loch. Elevation 1851m.

---International Rock Gardener---



My youngest son Tully, who accompanied us on this trip, is also admiring this wonderful colony.



P. introloba below Mt. Loch looking across to Mt. Feathertop, in the last three photos you will have noticed the surrounding habitat which is very low and that this population is in a depression where there is water running through it and constantly wet.

---International Rock Gardener---



I have looked for this beguiling plant in flower for 6 years to no avail, I only ever managed to see it once it had flowered or later in the summer months, still special to see but obviously the target was to see it in flower. So, I started to search earnestly for it in flower from 2020, it wasn't until 2022 that I finally caught a glimpse of it in flower. With this species, timing is everything, as it is fleeting and if you work full time, the chances of catching it on the weekends is limited due to the timing of snowmelt, weather conditions and other factors on those two days.



---International Rock Gardener---

Since 2022 I have maintained a yearly vigil to check up on these populations, a rewarding exercise if you are lucky enough to catch them! I leave you with a couple of lasting photos and of Tully enjoying a lovely Hot Chocolate with extra marshmallows after a rewarding day back in September 2023. Cheers for now!

Alan Ayton



---International Rock Gardener---

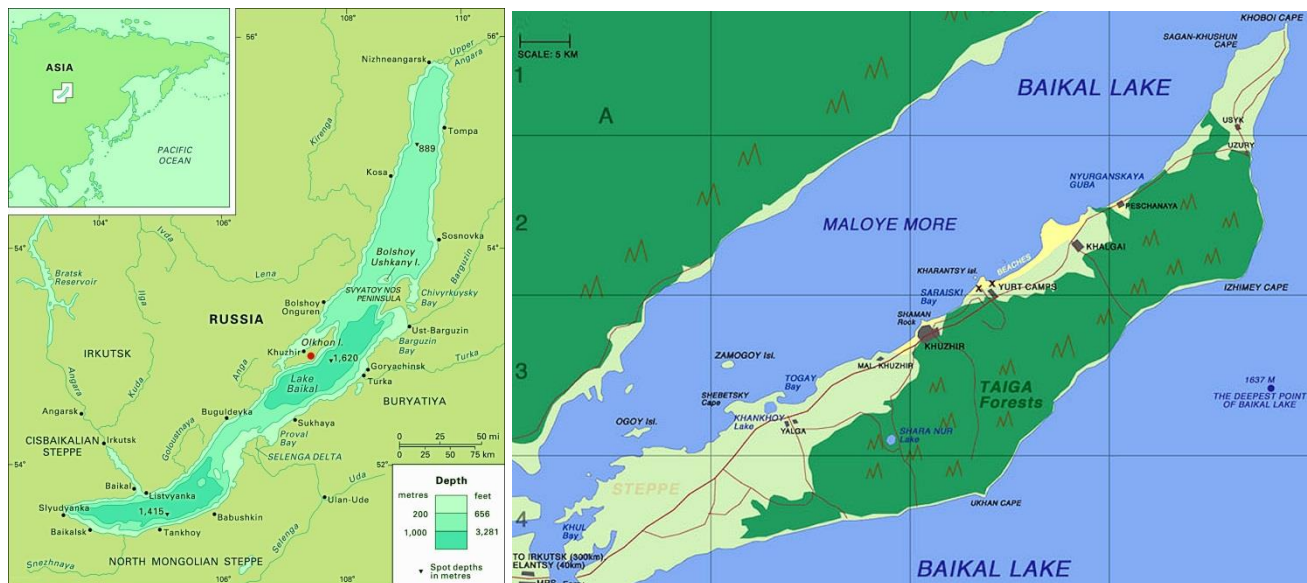
--- To Siberia ---

Botanical introduction to Olkhon Island on Lake Baikal – Konstantin Cherezov

In recent years, the abnormal summer heat in most of the European part of the country and Siberia has increasingly brought to mind the inexorably changing climate. It occurred to me that we gardeners, like plants in their natural environment, are forced to adapt to changing conditions and challenges. In this regard, I recalled one of the early hikes in the Baikal region, where the amount of precipitation is traditionally low, and the number of sunny days per year is more than 300.

So, in 2015, as part of a large tourist route that covered part of the Eastern Sayan mountain system, the Khamar-Daban ridge and the Primorsky ridge, we were lucky enough to visit Olkhon Island.

Olkhon is the largest island of Baikal, located near the western shore of the legendary lake, the deepest on our planet. The length of the island is 74 km, the average width is 10 km, the area is more than 700 km². Olkhon is one of the most beautiful corners of the Baikal region, very interesting not only for its nature, but also for its history and ethnography.



Lake Baikal and Olkhon Island on the map

Here, in a relatively small area, you can find pine and larch forests, vast relict steppes, majestic rocky coastal cliffs, deep ravines, climb Mount Zhima (1274 m), see lakes Nur, Khankhoy, Shara-Nur. What is lacking here is watercourses - there are only a few of them. In addition, the island is extremely rich in archaeological sites (more than 150 are known), it is home to many sacred natural areas and objects revered by the indigenous population.

---International Rock Gardener---

A whole "layer" of legends, rituals and traditions is associated with Olkhon, because since ancient times it has been and remains the most important centre of the ancient religion - shamanism. These traditions are alive here to this day.

Until recently, the main occupations of the local population (the Buryat ethnic group predominates here) were cattle breeding and fishing. Due to the difficulties with the lake crossing and the remoteness from large cities, there were relatively few tourists here until the 1990s. Then the situation began to change rapidly. Quite soon, Olkhon became one of the most visited areas of Lake Baikal. Agriculture and the local fish factory (the main enterprise of the island's capital, the village of Khuzhir) fell into decline. The number of tourists was constantly increasing, and they became an important occupation for the islanders. The construction of a power transmission line (2005) caused a real construction boom - tourist centers and new houses in Khuzhir began to appear like mushrooms. A particularly sharp (approximately threefold) increase in tourist flow occurred in the summer of 2009, when two large ferries began to service the ferry crossing.



Cape Khoboy, the northern tip of Olkhon Island. Translated from Buryat, "khoboy" means "fang".

On one of these ferries in the summer of 2015, my family, several friends and I set out to explore Olkhon Island for the first time. In addition, what is especially important for us naturalists and nature researchers, many rare and beautifully flowering plants were described here, and such a diversity of lichens and mosses as on Olkhon and in Priolkhonye is not found anywhere else in Siberia.

---International Rock Gardener---

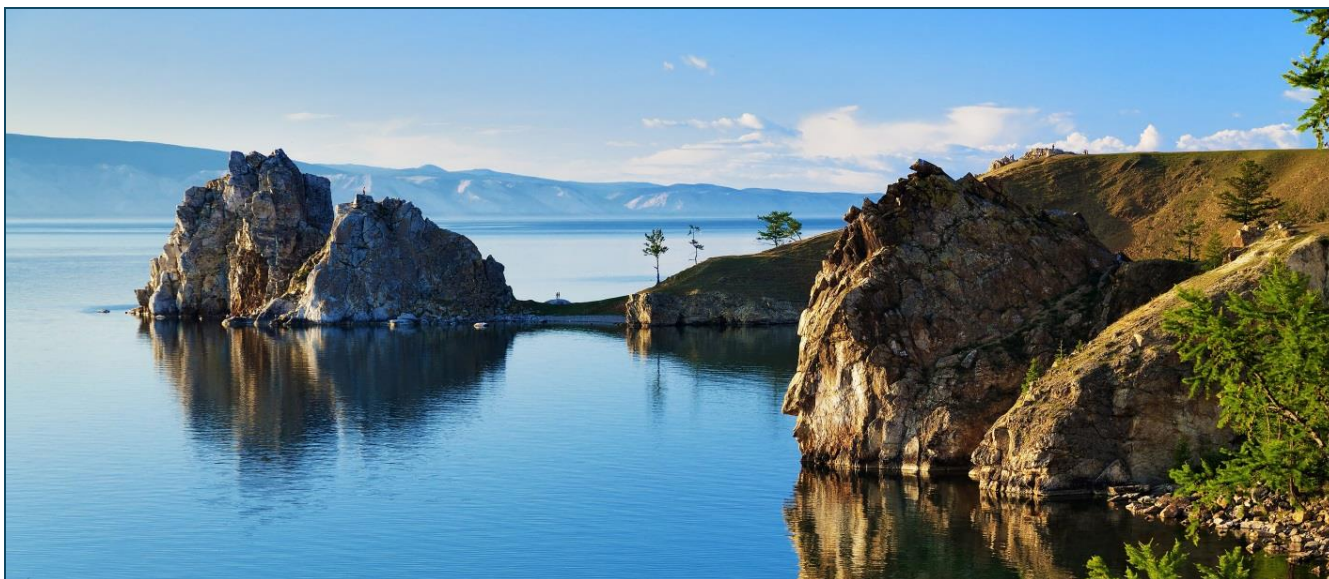
It was sunny and windy. The ferry collected several cars, including ours, and we sailed from the village of Sakhyurta on the shore of Lake Baikal. Having disembarked and waited for the car in Perevoznaya Bay, we could see that the island is justly famous for its semi-desert land. The steppe stretched out all around, and I happily ran up the nearest hill to take a few photos of the surroundings. Later, we reached the main settlement of the island - the village of Khuzhir and checked into one of the guest houses. From here we could make daily trips to different areas of Olkhon. Since the steppe areas of the island were the first on our way, we will begin our review with this...



The ferry connecting the island with the mainland and a view of the Olkhon pier in Perevoznaya Bay.

Steppe vegetation here on Olkhon is located in the northwestern, central and southwestern parts of the island, along the coast of the Maloye More Strait (the toponym «Maloe More» is translated as "Small Sea": from here on we will use the translation of the toponym) at low hypsometric elevations (460–675 m above sea level). Forest vegetation is localized in the eastern and highest part of the island (from 600 to 1274 m above sea level), facing Baikal. The steppe on the island is vegetation consisting of phytocenoses of different composition and structure, which are predetermined by the ecological heterogeneity of the relief elements. Due to this heterogeneity, the entire steppe territory of the island is divided into clearly defined areas at the level of geomorphological structures. First of all, this is a section of leveled spaces located in the central part of the island, in which hills, hollows and basins are smoothly combined. Two other steppe areas are located in the north and south of the island. Their surface is characterized by low ridges consisting of rocks of different composition and genesis, interspersed with dryland depressions. The fourth section is modern dune sands, developing in separate massifs along the coast of the Small Sea.

---International Rock Gardener---



Shamanka Rock is the tip of Cape Burhan in the central part of the western coast.

The territory of leveled spaces on Olkhon Island is a hilly relief in appearance, in which elevations (hills) with relative heights of up to 200 m and depressions (basins) alternate evenly. The hills have different shapes and smoothed tops. They are located in isolation or form ridges. Their gentle slopes with weakly expressed sole lines smoothly pass into basins. In some places, the hills are surrounded by bands of ridges of rocks consisting of marbles, gneisses and amphibolites.

Hilly relief, despite the uniformity of its surface, is a complex natural formation. Different heights of hills, uneven slope exposure and steepness, different outlines of basins, low ridges of rocks – all these elements of the relief initially determine the spatial heterogeneity of the meso- and microclimatic conditions of ecotopes and the hydrothermal regime of soils.

Significant ecotopic differences arise due to uneven heating of slopes and horizontal surfaces, features of runoff or stagnation of cold air, and different conditions of accumulation and expenditure of moisture in the soil.

It is well known that the climate of Olkhon is generally characterized as insufficiently humid, moderately warm, with severe winds and little snow in winter. The dryness index value here indicates that the climatic conditions on the island coincide with the arid conditions of the zonal steppes. According to the Khuzhir station, less than 200 mm of precipitation falls in the steppe part of the island per year. The main amount of precipitation (64–72%), in the form of rain, falls in the summer months. The share of solid precipitation in the form of snow is quite insignificant. In winter, due to strong winds, snow is constantly blown away. For this reason, a continuous snow cover does not form.

---International Rock Gardener---



Walking along the coast in the first days of our journey

The steppes on the western coast of Lake Baikal, including Olkhon Island, are zonal inclusions in the forest zone. Their formation in the territory of Baikal Siberia is historically associated with the transformation of the relief that occurred in the Neogene-Pleistocene era and the change in climate towards cooling and, therefore, the impact of these natural processes on vegetation –

---International Rock Gardener---

is the disintegration and reconstruction of the vegetation cover of ancient zonal xerophytic steppes into separate "islands". In the subsequent stages of the Quaternary period, the unique natural conditions of the mountainous relief of the Baikal region and the dry climate of its individual territories contributed to the preservation of the "islands" of steppe vegetation to the present day.

As we have already mentioned, Olkhon Island can be divided into two large, almost equal parts: forest and steppe.

The entire eastern part of the island facing Baikal is under forest. The border between the forest and steppe parts, starting from the Khylyzn valley on Baikal, goes to Cape Burkhan on the Small Sea, then retreats from the shore at Buluk Bay 3-4 km to the south and again reaches the shore behind the village of Nyurgon. From Cape Ulan-Baysan it again crosses the island to the mouth of the Sennaya valley, and in the northeastern end we have only a few coastal groves.

The treeless spaces of the western part of the island are a series of waterless valleys, sometimes closed by low rocky ridges, sometimes descending to the bays of the Small Sea. The tops of rocky ridges, which are continuous outcrops of rocks, are often crowned with a crest of vertically standing granite-gneiss layers. An example of such a rocky top is the sharp ridges of the ridge near the village of Khadai, which we passed among the first on the road from the ferry. These stones are bare, in places overgrown with lichens and rise 6-8 m above the tops of the ridge.



Orostachys spinosa

---International Rock Gardener---



Leontopodium leontopodioides



Thymus baicalensis



Astragalus lupulinus

In the cracks of these layers, almost completely covered with lichens, we were able to find single specimens of such plant species as: *Agropyron cristatum*, *Koeleria macrantha*, *Stellaria dichotoma*, here and there on the layers we could see tufts of *Selaginella rupestris*. In the gullies formed by two rocky peaks, *Aster alpinus*, *Heteropappus altaicus*, *Eremogone capillaris*, *Bupleurum scorzonerifolium*, *Youngia tenuifolia*, *Iris humilis*, *Schizonepeta multifida*, *Aconogonon divaricatum*, *Bistorta vivipara*, *Sanguisorba officinalis*, *Thalictrum foetidum* and *Thymus baicalensis* grew on weathered stones. A little lower, on the northern slope, they were joined by single specimens of *Cotoneaster integerrimus* and *Galium verum*.

The southern slope near the summit turned out to be very rocky. It was a continuous field of stone slabs, among which grew *Chamaerhodos grandiflora*, *Chrysanthemum zawadzkii*, *Kochia prostrata*, *Koeleria macrantha*, *Scabiosa comosa* and *Orostachys spinosa*.

We encountered such vegetation on the rocky ridge in August. On later trips in similar layers and piles of stones near the old lighthouse, in addition to the plants mentioned, the following could also be found: *Eremogone capillaris*, *Allium tenuissimum*, *Gypsophila patrinii*, *Oxytropis coerulea*, *Ptilotrichum tenuifolium*, *Pulsatilla turczaninovii*, *Aizopsis aizoon*, *Selaginella sanguinolenta* and *Silene turczaninovii*.

---International Rock Gardener---

The slopes of the aforementioned rocky ridges are occupied by steppe vegetation. And indeed, in terms of their relief, character and composition of vegetation, the Olkhon steppe slopes reminded us very much of the Transbaikal steppes.

Everywhere we encountered numerous ridges and hills, cut in all directions and separated from each other by large and small, wide and narrow valleys. The steep slopes of these ridges were almost always strewn with stones. This is an accurate description of the Olkhon steppe slopes; and if we also mention their "tiring" yellow colour, then we can form a complete idea of the treeless part of Olkhon.

A characteristic feature of the Olkhon steppe slopes, among other things, we noted the abundance of anthills and a significant number of gopher holes. Long-tailed ground squirrels (*Uroditellus undulatus*) dig their holes at a considerable depth and bring to the surface yellow-red sandy loam in fairly large quantities. On such hills we encountered such species as *Artemisia palustris*, *Heteropappus altaicus*, *Polygonum aviculare*. One of the mounds, rising among the varied steppe vegetation, was covered with a dense tuft of *Agropyron cristatum* and *Leymus chinensis* with *Potentilla bifurca* below.

Our group included lovers of wormwood and its fragrant smells. Here on Olkhon they really had something to look at. *Artemisia commutata*, *A. dracunculiformis*, *A. frigida*, *A. gmelinii*, *A. laciniata*, *A. mongolica*, *A. monostachya*, *A. palustris*, *A. pubescens*, *A. scoparia*, *A. sericea*, *A. tanacetifolia* and perhaps some other species could be found here.



---International Rock Gardener---



The youngest son, who at that time had no time for botany, quickly found some entertainment for himself.

---International Rock Gardener---

Plant life awakens on Olkhon late - at the end of May. And around mid-June you can catch the full bloom of the Olkhon steppe flora. The steppe slopes are covered with a wide variety of plants, such as: *Allium tenussum*, *Eremogone capillaris*, *Androsace villosa*, *Aster alpinus*, *Astragalus chorinensis*, *Astragalus lupulinus*, *Cymbaria daurica*, *Delphinium grandiflorum*, *Dracocephalum pinnatum*, *Dontostemon integrifolius*, *Iris humilis*, *Schizonepeta multifida*, *Agropyron cristatum*, *Koeleria macrantha*, *Festuca ovina*, *Lilium pumilum*, *Linaria buriatica*, *Pedicularis rubens*, *Pulsatilla turczaninovii*, *Orobancha coerulescens*, *Tephrosieris integrifolia*, *Smelowskia alba*, *Filifolium sibiricum*, *Thermopsis lanceolata*, *Aizopsis aizoon*, *Thymus baicalensis*, *Orostachys spinosa*, *Veronica incana*.



Aster alpinus



Goniolimon speciosum

---International Rock Gardener---



Saxifraga bronchialis



Selaginella rupestris

---International Rock Gardener---

All these plants do not form a carpet that completely covers the soil; they sit as separate bushes, everywhere exposing the earth, abundantly sprinkled with granite chips, and all of them are more or less xerophytic. A typical representative of xeromorphic plants of the Olkhon steppe is *Eremogone capillaris*, small bristly turfs of which have a root a metre or more long, exceeding (by weight) the above-ground part many times.

Now, during our first visit to Olkhon in the second half of summer, the mentioned plants had already finished flowering, and the Olkhon slopes were becoming more desolate. At this time, cereals begin to dominate, mainly *Agropyron cristatum*, *Festuca ovina* and *Koeleria macrantha*. The first plant is abundant on the southern slopes, forming entire associations, while the other two predominate in the vegetation of the northern slopes.

The vegetation here is not dense. A few specimens of *Agropyron cristatum*, *Stipa krylovii* and *Leymus chinensis* rise against the background of *Festuca ovina* and *Koeleria macrantha*.

Nearby grew *Thymus baicalensis*, *Heteropappus altaicus*, *Potentilla acaulis*, *Chamaerhodos grandiflora*, *Amblynotus rupestris*, *Potentilla bifurca*, *Androsace villosa*, *Eremogone capillaris*, *Bupleurum scorzonerifolium*, *Cymbaria daurica*, *Artemisia frigida* and *Iris humilis*.



Saussurea salicifolia

---International Rock Gardener---



Dracocephalum pinnatum

It was the lack of continuity and the pitiful appearance of the vegetation that attracted attention. Everywhere, between individual plant specimens, dry, cracked soil was visible, abundantly sprinkled with small stones. The condition of the grass cover is adversely affected by livestock, the number of which is currently very large. As a result, many of the Olkhon steppe slopes are a continuous grazing zone. Botanists of the 20th century wrote about this in their notes, directly dividing the entire island into "forests" and "pastures".

Some slopes of the steppe part of Olkhon with their wavy microrelief reminded us of corrugated iron. Such microrelief apparently depends on the heterogeneity of the vertically standing granite-gneiss layers and the resulting unevenness in their weathering. This waviness is in cross-section a series of hillocks, forming miniature northern and southern slopes, on which the same tendency in the distribution of vegetation as we have on the steppe slopes of Olkhon is clearly visible.

Being in the village of Khuzhir, the next day we had the opportunity to explore the middle part of the island in more detail. The treeless areas of the middle part of Olkhon Island differ sharply from the steppe slopes of the southwestern half both in the nature of the soils and in the composition of the vegetation. These treeless areas stretch in a three-kilometre strip along

---International Rock Gardener---

the shore of the Small Sea, from Buluk Bay to Nyurgonskaya Bay, and are bordered on both sides by wide tongues of forest on the sands. The relief of this "steppe" strip is flat, only occasionally cut by ravines, and the soils developed here differ from the soils of the southwestern part of the island. While there we see sandy loam soils that have developed directly on granite gneisses, here the soils are of a clayey nature and their basis is red, yellow and white clay, which covers the granite gneisses with a thick layer. As for the vegetation of this part of the island, it is characterized by a significant amount of *Stipa krylovii* and *Leymus chinensis*.



Pulsatilla patens subsp. *flavescens*



Iris humilis

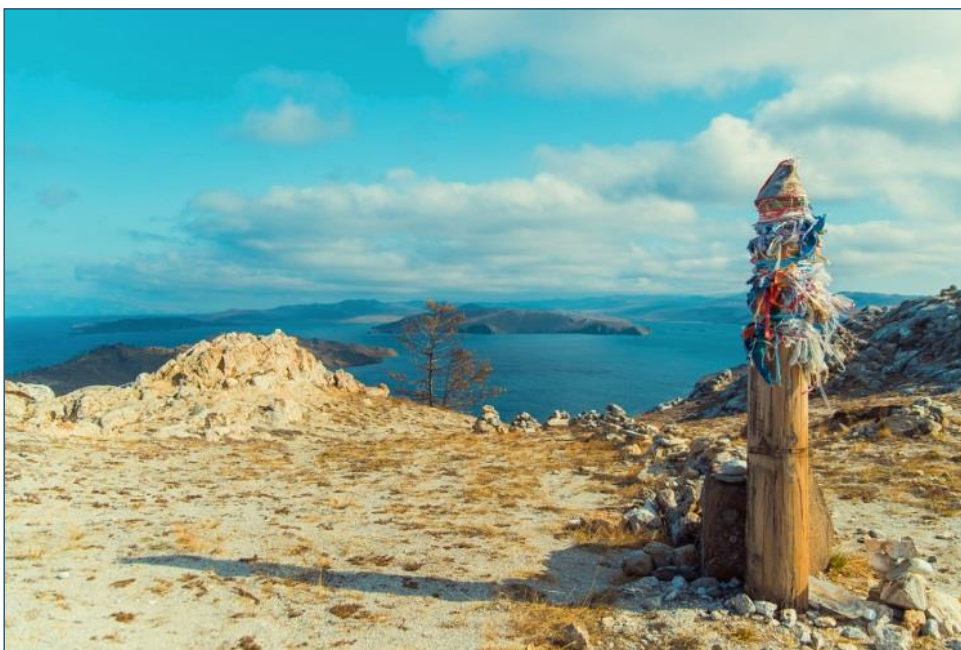
---International Rock Gardener---



Patrinia sibirica

Some locations along the dried-up stream differed from the vegetation of the rest of the steppe. They were a whole field of cracked hummocks, on which grew: *Hordeum brevisubulatum*, *Koeleria macrantha*, *Poa botryoides*, *Artemisia palustris*. Between the hummocks, where the soil boils violently on the surface, specimens of *Parnassia palustris*, *Heteropappus altaicus*, *Gentiana barbata*, *Potentilla anserina* were found.

In the western part of the island, where the depressions located near the shore of the Small Sea gently descend to the bays, significant thickets of *Neotrinia splendens* develop near the water. Here this species does not form a continuous background and is in a noticeably depressed state, but still the bristly sods of this grass give a special look to the entire area. An example of such thickets is a whole field of sods in a hollow descending to Khargoy Bay. The vegetation here is trampled by cattle, and between the bristly hummocks grow single specimens of *Agropyron cristatum*, *Dontostemon integrifolius*, *Heteropappus altaicus*.



View of the Olkhon coast and the Small Sea.

---International Rock Gardener---



Views of the Olkhon coast and the Small Sea in the middle part of the island

The lines of streams are usually marked by a strip of bushy willow trees. Such lush vegetation is typical of the bottom of the valley. Its right slope is stony and dry, and on the left rises the high Baikal ridge, covered entirely with forest and already completely unlike the treeless Olkhon ridges. Steppe vegetation covers those small islands that are scattered across the Small Sea.

---International Rock Gardener---

This is how the Olkhon steppes appeared before us. We wandered through the bays along the coast, cooked fish soup from a local delicacy (*Coregonus migratorius*). We also tried to swim, but the water seemed unusually cold for this time of year. The lake was restless and overall it was not at all hot. As a result, we hurried to hide from the annoying, incessantly blowing wind. The further path led us to the forest zone. And here it was much more comfortable.

Most of the island is covered with forest. It mainly consists of pine. Larch joins it in small quantities, here and there standing out in pure plantations. It should be said that Olkhon Island lies in the contact zone of the ranges of *Larix sibirica* and *Larix gmelinii*, and in the southwestern part the former predominates, while in the eastern half of the island the latter begins to dominate. When encountered, both species of larch produce a whole range of hybrids, which has a particularly dramatic effect on the shape of the cones, which changes from the typical "Siberian" to the typical "Daurian".



Olkhon forests

Spruce (*Picea obovata*) was encountered by us only as single specimens in remote valleys. Aspen is sometimes found along the edges of the forest, but it does not form significant stands. Solitary trees are found on the shores of Lake Baikal in rocky places.

---International Rock Gardener---

The forest on Olkhon also includes birches (*Betula pendula*, *Betula pubescens*) and willows, *Lonicera caerulea*, *Rhododendron dauricum* and *Cotoneaster integerrimus*.

The Olkhon forest massif, consisting mainly of pine, occupies the entire southeastern part of the island. The most common association is a pine forest type with an undergrowth of *Rhododendron dauricum*. The grass cover is formed by such species as *Poa botryoides*, *Atragene sibirica*, *Vicia megalotropis*, *Chamaenerion angustifolium*, *Lathyrus humilis*, *Trifolium lupinaster*, *Chrysanthemum zawadzkii*, *Scorzonera radiata*, *Arctostaphylos uva-ursi*.

Some types of pine forest (on the plateau) are distinguished by better growth of pine, excellent type of trees. The undergrowth consists of *Salix* sp., *Betula pendula*, *Rosa cinnamomea*.

Rhododendron is sometimes found relatively abundantly, sometimes disappears completely, giving way to the mentioned species. Characteristic of this association is the presence of *Arctostaphylos uva-ursi* - a plant that sometimes covers the soil with a solid carpet.



Atragene sibirica



Lilium pumilum



Scabiosa comosa

Approaching Baikal, such plateaus are freed from forest and descend to the shore, forming a steep high (up to 300 m) southern slope, on which individual trees are scattered.

The grass cover, coming out from under the forest onto the slope, changes sharply in its composition. Such a change was traced near Cape Ukhan. The slope here has a significant steepness. It is covered with rubble and stones mixed with clay. In the upper part (170-200 m) we could see individual specimens of *Pulsatilla patens* subsp. *flavescens*, *Phlojodicarpus villosus*, *Alyssum lenense*, *Trifolium lupinaster*, *Potentilla longifolia*. At an

altitude of 100 m they are joined by: *Patrinia sibirica*, *Astragalus melilotoides*, *Silene turczaninovii*, *Orostachys spinosa*, *Thymus baicalensis*. Even lower, *Astragalus lupulinus*, *Festuca ovina*, *Oxytropis* sp. were observed. At the very foot of the slope grow *Heteropappus altaicus*, *Chrysanthemum zawadzkii*, *Cotoneaster integerrimus* and a mass of *Astragalus melilotoides*. A continuous band of *Chamaenerion latifolium* stretches from top to bottom along a small rut.

Cutting through the terraces, a few forest gorges descend to the shore of Lake Baikal, steep and so narrow that the sun's rays rarely penetrate their bottom. A stream almost always flows along their bottom, and tall herbaceous vegetation develops along its bed: *Valeriana officinalis*, *Chamaenerion angustifolium*, *Galium verum*, *Sanguisorba officinalis*, *Aizopsis aizoon*, *Trollius asiaticus*, *Trisetum flavescens*, *Cacalia hastata*, *Poa botryoides*, *Calamagrostis epigeios*, *Calamagrostis langsdorffii*, *Rubus saxatilis*, *Ribes nigrum*. Sometimes, among the pine forest, there are rocky ridges on which there is no forest and which bear vegetation that differs from the forest one. On one such ridge, near Lake Shara-Nur, in its vicinity grow *Koeleria macrantha*, *Chamaenerion angustifolium*, *Schizonepeta multifida*, *Cotoneaster integerrimus*, *Sanguisorba officinalis*, *Pulsatilla patens* subsp. *flavescens*.

---International Rock Gardener---

Higher up the ridge you can find *Aizopsis aizoon*, *Saxifraga bronchialis*, *Thymus baicalensis*, *Linaria vulgaris*, *Galium verum*, *Bupleurum scorzonerifolium*, *Dianthus chinensis*, *Spiraea media*, *Artemisia frigida*, *Patrinia sibirica*. On the rocky top of the ridge grow whole yellow seas of *Patrinia sibirica*, as well as *Selaginella rupestris* (on rocks), *Orostachys spinosa*, *Allium ramosum*, *Delphinium grandiflorum*, *Phlomis tuberosa*.

In some places you can find quite a lot of cushions of *Cladonia rangiferina* (reindeer lichen), fragile during drought. These plants are confined to the hillocks, while in the hollows you can find *Rhododendron dauricum*. Undergrowth (pine) is found here and there and has a depressed appearance.

We encountered pure larch stands on Olkhon in two associations. In the first, larch stood out in pure forests among the pine forests and was confined to low valleys and damp lower parts of the northern slopes.



Pulsatilla tenuiloba

Pulsatilla turczaninovii



---International Rock Gardener---

The undergrowth sometimes appears in the form of single birches (*Betula pendula*) and willows, sometimes rhododendron, and sometimes disappears completely. The grass cover here compares favorably with that in pine associations by its diversity of species and lush development. It is always close growing and forms a thin turf layer.

Its most typical representatives are *Sanguisorba officinalis*, *Lilium* sp., *Ranunculus propinquus*, *Chrysanthemum zawadzkii*, *Lathyrus humilis*, *Poa botryoides*, *Vaccinium vitis-idaea*, *Geranium pratense*, *Pedicularis rubens*, *Pedicularis resupinata*, *Vicia megalotropis*, *Aconitum barbatum*. Less common are *Viola rupestris*, *Orthilia secunda*, *Pyrola rotundifolia*, *Moehringia lateriflora*, *Aquilegia sibirica*, *Campanula glomerata*, *Helictotrichon hookeri*. Quite often you can see the presence of a moss cover, consisting of *Hypnum*, *Hylocomium* and *Bryum* species.

Another association of the larch forest is the edge, which borders the entire Olkhon massif from the northern side, separating it from the steppe part of the island like a gasket reaching up to 1 km in width. The larch border stretches almost continuously and completely masks the pine massif, so that, moving along the coast of the Small Sea, we observed only a continuous larch forest, coming out onto the steppe.



Gypsophila patrinii

---International Rock Gardener---



Trollius asiaticus



Chamaerhodos grandiflora

---International Rock Gardener---

*Androsace
incana*



Larch stands out in pure stands only on damp lowlands and on the border of the forest with the steppe - on dry rocky or steppe

slopes. Being a light- and moisture-loving tree, it finds enough light precisely on the edges, and in damp valleys, where the soil is relatively damp, a sufficient amount of moisture, which compensates for the lack of light. Giving way to larch on the edge, pine derives great benefit from this. Having a superficial root system, it is not able to withstand the stubborn force of Olkhon's constant winds. Larch, on the contrary, has a fairly solid root system on Olkhon and fights the wind well, protecting the wind-blown pine with itself, and at the same time becoming squat and gnarled.

Looking at the steppe and forest landscapes of Olkhon, we couldn't help but wonder how forest and steppe vegetation coexist side by side, and how to explain the presence of the latter in the taiga belt, especially in the midst of such a significant water basin as Lake Baikal. There are opinions that the steppe part of Olkhon has long been treeless, and that the steppe here represents a relic of the flora that was previously characteristic of the entire Baikal region. Over the centuries, the forest has occupied all the places where it could take root, but in the western part of Olkhon it was completely unable to do so, due to the harsh climate and terrible winds. Soil samples that some scientists took in the steppe part of the island did not show the slightest signs of the influence of the forest on the soil.

This confirms the opinion about the long-standing treelessness of the steppe part of Olkhon. Also, the reason that determines the treelessness of the western part of the island and the forested eastern part should be sought in the difference in the orographic structure of both.

---International Rock Gardener---



Papaver ammophilum



Echinops davuricus



Oxytropis lanata

While in the eastern part, covered with beautiful forest, we have the main Olkhon Ridge, accompanied by a number of parallel ridges and depressions between them, long enough to accumulate relatively significant amounts of moisture necessary for the existence of the forest, the relief of the western part is a series of rocky hills, closing insignificant basins, incapable of accumulating any significant amount of moisture. Thus, the relief, which regulates the degree of humidity of various parts of the island, is the reason why patches of relict steppe have survived in the middle of Baikal.

---International Rock Gardener---

That the relief plays the main role in the matter of delimitation of forest and steppe is especially clear if we take into account the invasion of man into the part of the forest adjacent to the steppe. By cutting down the forest, man pushes it deep into the island and thus exposes quite significant spaces, which, according to the relief structure, belong to the system of the main Olkhon Ridge and which now represent, as it were, temporary areas of steppe that have developed on the site of the former forest. Now that the number of residents on Olkhon has decreased many times over (we don't count tourists like us in this case), the forest is again beginning to encroach on the steppe and restore its former borders.

The steppe areas adjacent to the forest have vegetation different from the steppe slopes of Olkhon, which can be attributed to the significant accumulation of snow near the edge. The vegetation here is of a mixed-herb nature; the plants form a closed canopy, and the soil beneath them is darker in colour. Here grow *Koeleria macrantha*, *Festuca ovina*, *Agropyron cristatum*, *Leontopodium fedtschenkoanum*, *Phlomis tuberosa*, *Galium verum*, *Heteropappus altaicus*, *Schizonepeta multifida*, *Bupleurum scorzonerifolium*, *Veronica incana*. Thus, the forest returns to the positions taken from it by man; but it will most likely not go beyond the limit set for it by the relief, which changes the water regime of the soil, and the western part of the island, as it was, will remain treeless. With these thoughts we finished our travels through the forests of Olkhon...



Phlojodicarpus sibiricus

In the last days of our stay on the island the wind died down a bit, it became warmer and we decided to devote more time to the Olkhon coast of Lake Baikal.

---International Rock Gardener---

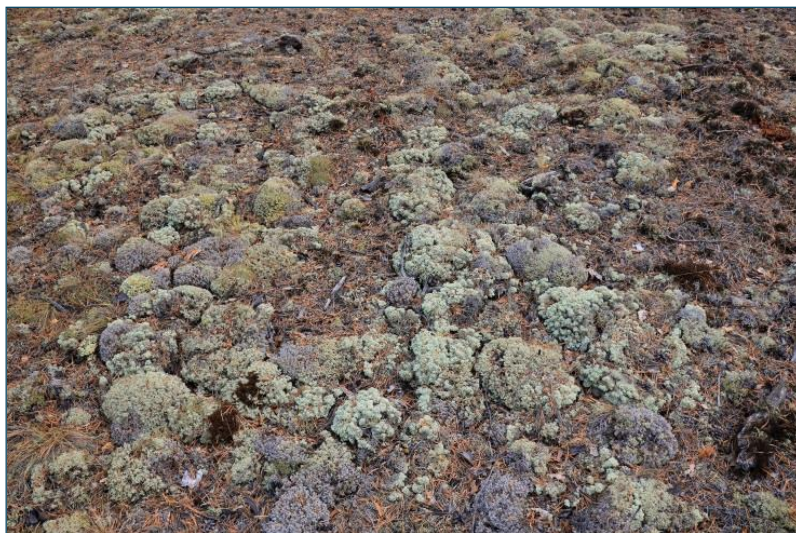
The sands of Olkhon are another calling card of the island and anyone who has been here at least once could not avoid "getting acquainted" with them.

The vegetation developing on the dune sands of Olkhon is an azonal natural phenomenon. The basis for its formation on the island were powerful ancient and modern sand formations. At the same time, initially, strong wind and a small amount of precipitation were the limiting climatic factors that contributed to the development of mobile (!) sands on the island and the creation of a specific sandy environment.

The forest vegetation on the dune sands consists of two categories of structures. These are pine communities of *Pinus sylvestris* with the participation of *Larix sibirica*. The undergrowth and herbaceous layer are not developed in them.



Artemisia commutata



Lichen communities of Olkhon

---International Rock Gardener---

Another category of forest structures are trees with an appearance that is not typical for pine and larch. They have an exotic external form, which was formed in the specific external environment of dune sands. These amazing trees are especially valuable natural objects of the sandy landscape. Their unusual life forms are ecological modifications. There are centuries-old pines here, which are a monument to living nature. Their age is 400-500 years.

In total, there are 9 sand massifs on Olkhon. Special communities develop on the dunes, consisting of *Thymus baicalensis*, *Chamaerhodos grandiflora*, *Phlojodicarpus sibiricus*, *Oxytropis lanata* and various types of sedge (*Carex duriuscula*, *Carex korshinskyi*, *Carex pediformis*). The central and north-eastern parts of some sand massifs (for example, the Sarai massif) are characterized by ridge relief and extensive deflation planes, which are covered with psammophytic vegetation and unusual tree shapes.

The sand ridges are arranged in a fan shape. They have a direction from the shore of the bay deep into the massif. Their slopes are usually steep and crumbling. The ridges are separated from each other by deep hollows of varying width. On the crests of the ridges grow mighty specimens of pine and larch, which are located singly or in groups.

The surface of the dune sands warms up to +43 ° C and more in the summer. As we could see, all of them are usually confined to the slopes of the wide bays of the Small Sea.

Turning to the vegetation, we noted that the picture here was complemented by specimens of *Leymus chinensis*, *Phlojodicarpus villosus*, *Oxytropis lanata*, *Carex supina*, *Stellaria dichotoma*, *Aconogonon ocreatum*, *Scrophularia incisa*, *Linaria buriatica*, *Linum perenne*. On the hillocks grow flattened bushes of *Thymus baicalensis*, which perfectly strengthen the sand. Near the shore of the Small Sea, on the damp sand grow *Sanguisorba officinalis*, *Leymus chinensis*, *Scrophularia incisa*, *Geranium pratense*.

The tops of the dune hills, reaching several metres in height, are covered here and there with small bushes of bird cherry, on which in August we could already see ripe fruits. Rarely, bushes of mountain ash (*Sorbus aucuparia*) and specimens of *Rhododendron dauricum*, which perfectly supports the sand, join the bird cherry. Its bushes are covered with sand, and it puts its gnarled branches above the surface and all the time follows the growth of the dune.

The slopes of such hills are almost devoid of vegetation. They are bright white-fawn in colour and resemble mounds of sparkling snow. The sand is dotted with a mass of traces of various animals and birds, intersecting in all possible directions. Between these traces, the untouched surface of the sand has a fine waviness, reminiscent of sea ripples. Among the plants characteristic of these dune hills, it is worth noting *Alyssum lenense*, *Astragalus inopinatus* subsp. *oreogenus*, *Artemisia commutata*, *Artemisia gmelinii*, *Carex melanantha* var. *sabulosa*.

---International Rock Gardener---

As a great enthusiast of rhododendrons, it was especially surprising to me to see how they survive in such harsh conditions. Minimum moisture and sand... Approaching the forest, sand dunes move towards it, having a height of up to 10 metres. And here rhododendrons again successfully fight the sand. However, the sandy spaces continue to grow and grow.



Rhododendron dauricum in the sand.

---International Rock Gardener---



Rhododendron dauricum seems to be doing well even when completely buried in sand and continues to bloom.

---International Rock Gardener---

Turning to the coastal vegetation of Olkhon Island, it should be said that the coastal cliffs provide shelter for a wide variety of plants, such as *Agropyron cristatum*, *Festuca ovina*, *Orostachys spinosa*, *Amblynotus rupestris*, *Dracocephalum pinnatum*, *Scutellaria scordiifolia*, *Androsace villosa*, *Allium ramosum*, *Aster alpinus*, *Astragalus lupulinus*, *Dasiphora fruticosa*, *Spiraea flexuosa*, *Cotoneaster integerrimus*.

But we also noted plants that are typical exclusively for coastal cliffs, such as: *Poa botryoides*, *Stipa orientalis*, *Patrinia sibirica*, *Hedysarum setigerum*, *Bupleurum bicaule*. On the sandy beaches of the Small Sea, there are single specimens of: *Sanguisorba officinalis*, *Geranium pratense* and *Aconogonon sericeum*.

During the trip, of course, we paid attention to the endemics of Baikal, as well as other rare species. Among them were: *Echinops davuricus*, *Astragalus olchonensis*, *Craniospermum subvillosum*, *Dryas sumneviczii*.

During the second part of our stay on the island, the lake was quite calm, and we even felt hot. The air around the island began to be covered with smoke from fires from the burning taiga. Unfortunately, fires on Baikal are an annual occurrence due to the climate, despite the fact that significant forces and resources are sent to fight them.

And finally, on the last day of our stay on the island, a north wind blew. It became completely uncomfortable. We left the guest house and thought that Olkhon had given us a wonderful week of good weather.



Craniospermum subvillosum

---International Rock Gardener---



Astragalus olchonensis



Dryas sumnevicii

---International Rock Gardener---



Artemisia frigida



At Cape Khoboy

---International Rock Gardener---

All the goals of this part of our trip were achieved. We slept well after a mountain hike in the Eastern Sayan Mountains, enjoyed the local cuisine, wet our feet in Baikal and explored most of the remarkable corners of the island. September was approaching and with it, autumn - the time of the strongest winds in this part of Baikal. With a north-westerly direction, the winds on Olkhon are distinguished by their consistency and terrible force. One such phenomena is "sarma".

"Sarma" is a strong squally, directed wind, bursting out of the valley of the Sarma River, flowing into the Small Sea. It appears when cold arctic air from the Prilenskoye Plateau, crossing the Primorsky Ridge, enters the Sarma River valley, narrowing towards the shore of Lake Baikal. This valley is a kind of natural wind tunnel, at the exit of which the wind reaches hurricane speed.



At Cape Khoboy

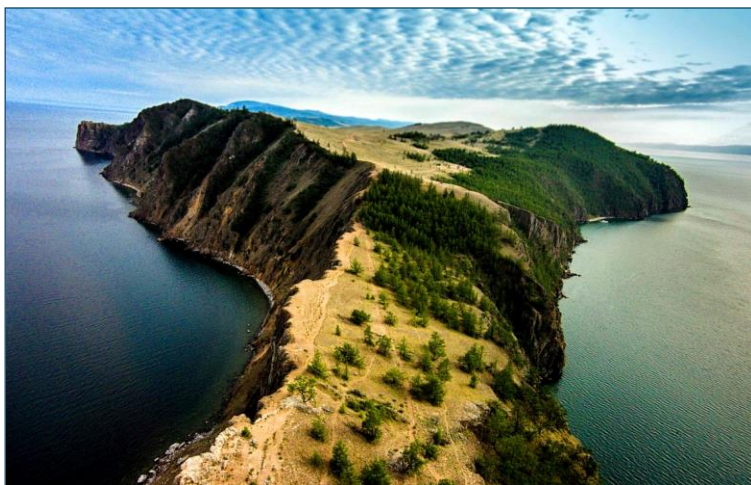
The speed of the sarma usually reaches 40 m/s, but can reach 60 m/s. The wind can blow continuously for several days, and is so strong that it uproots trees, capsizes ships, tears roofs off houses and throws livestock from the shore into the sea. North-westerly winds further reduce the already meager precipitation. The clouds, which almost always come from the northwest, descend from the high Primorsky ridge, move away from the state of saturation and quickly rush over Olkhon, without dropping a drop of rain.

---International Rock Gardener---



Cape Sagan-Khushun

So, the low rainfall, aggravated by the winds, and the terrible north-west winds themselves are the most striking examples of Olkhon's climatic features; they created a semi-desert ecosystem in the midst of a mass of water, where we spent a week. With these thoughts, driven by gusts of cold wind, we turned our gaze to the Khamar-Daban ridge, located on the southern side of Baikal. The amount of precipitation in these mountains on the shores of Baikal is more than 2000 mm and contrasts sharply with the conditions we had just experienced. But this is already a reason for a separate story!



"Whale's Tail": View from Cape Khoboy into the depths of Olkhon Island.

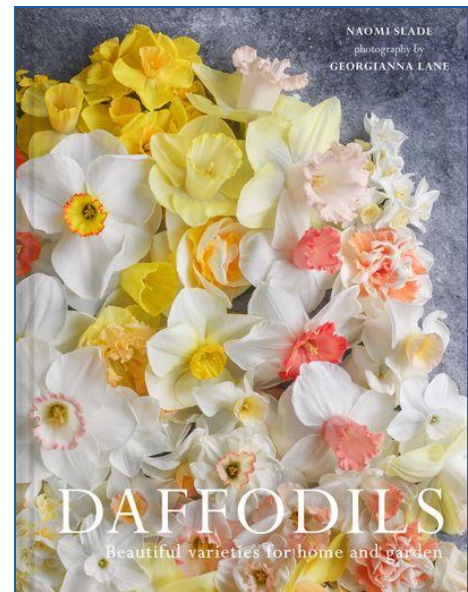
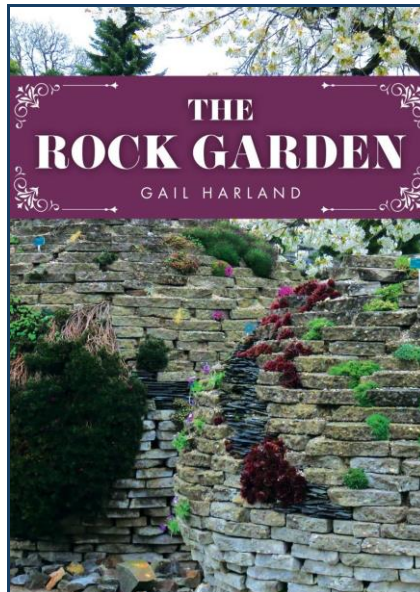
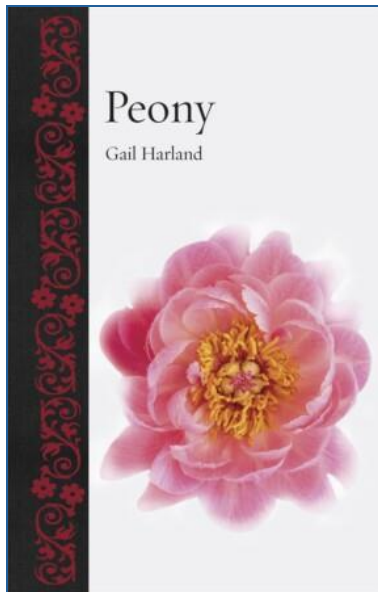
---International Rock Gardener---

--- Book Suggestions ---

We highlight here two authors who have, between them, a considerable library of horticultural and botanical subjects. They also have a history of giving talks, podcasts, blogs and articles on a number of plant families. We refer to Gail Harland and Naomi Slade.

Gail Harland's "[Peony](#)" book, in Reaktion's Botanical series, is just out. Peonies are one of the most beloved of garden flowers, with many fine species and a widening number of exciting cultivars. The often old-fashioned look of the flowers, whether single or double, scented or not, with their silken petals and smart foliage have ensured their continuing popularity over the centuries. Gail's excellent book, "The Rock Garden" from [Amberley Books](#) is another title just published. This book, generously illustrated, wanders through the history of the creation of rock gardens, as well as their design and place in society.

It has long been said that the rocks are as important as the plants in a rock garden - and Gail investigates this in several of the most famous public rock gardens of the world as well as realising the continuing appeal of this type of gardening in the present day.



Naomi Slade's new title is "[Daffodils – Beautiful Varieties for Home and Garden](#)" from Pavilion Books and is accompanied by delightful photographic illustrations by Georgianna Lane. Another iconic flower, fashionable for garden use, as a cut flower and for exhibition, the daffodil (*Narcissus*) family finds its number increasing each year as species are described from the wild but mostly from the large number of cultivars being named and released into the trade. The best is made of the selection of cultivars selected for the book by concentrating on the range of colours that is available to home gardeners in these varieties. No Spring garden is complete without daffodils! Both authors have other plant-based books already printed and are worth following.