

## TENTATIVE LIST

**STATE PARTY:** Russian Federation

**DATE OF SUBMISSION:** 11/07/2006

**Submission prepared by:**

**Name:**

**E-mail:**

**Address:**

**Fax:**

**Institution:**

**Telephone:**

<b>Name of Property</b>	Nature Park "Lena Pillars"
<b>State, Province or Region</b>	The Nature Park is located in Khangalassky ulus (region) of Yakutia.
<b>Latitude and Longitude or UTM coordinates</b>	<p>The NP is located on the right bank of the river Lena middle stream.</p> <p>Geographical coordinates of the nominated site:</p> <ul style="list-style-type: none"> <li>• The utmost north point: 124°55'52" east longitude; 60°43'28" north latitude;</li> <li>• The utmost south point: 127°16'30" east longitude; 60°49'00" north latitude;</li> <li>• The utmost west point: 125°00'04" east longitude; 60 °44' 49" north latitude;</li> <li>• The utmost east point: 128°47'55" east longitude; 61 °15 '57" north latitude</li> </ul> <p>Area of the site: 485 000 ha. Area of its buffer zone: 868 100 ha.</p>

### **DESCRIPTION:**

In the NP "Lena Pillars" area the main landscape-environmental factors: the geological texture and relief, the geocryological condition and climate - are characterized with the considerable heterogeneity.

### **Geology and relief**

The territory of the NP "Lena Pillars" is situated at the northern periclinale of the Aldan anteklises, complicated by the small- amplitude arched uplift and protrusions occupying the large areas. In the park area the sedimentary mantle is represented by unexposed upper Precambrian, exposed Cambrian and Quaternary deposits which lie flat or with hade of layers measured by minutes or rarely by the first degrees. Along the Sinyaya River the lower Cambrian deposits are exposed, and along the Lena and the Buotoma rivers the lower and middle Cambrian deposits are denuded. In the site between the Mukhata brook and the Sinaya River in the outcrops there are discontinuous dislocations without considerable shifts. The thickness of Lower Cambrian strata is 580-920 m, and the thickness of Middle-Cambrian ones - 400-450 m.

The lithogenic base of landscapes consists of the alternate horizons of rocks (limestone, marlstones, dolomites, slates) of Middle Cambrian in the eastern part of the park and of Lower Cambrian in the

western part, which differs from each other by the resistance of the process of weathering. Besides in the Buotamsky part of the park there are landscapes where non-calcareous, neogenic and Jurassic rocks form the lithogenic base. The Quaternary deposits were represented by the complex of alluvial, undivided polygenetic strata as well as by slope, eluvial and eolian deposits.

The major part of the park area is located within the stratum-denudated low plateau with absolute marks of watersheds of 200-400 m. The fluent relief of plateau discontinues in the sites of exposure of bedrock, on the valley edges. The territory of the park is located in the south-west outlying districts of the vast Central-Yakutian lowland that gradually goes from the Erge-Echite brook to divided Prilenskoe plateau. The boundary between these geomorphological structures passes through the watersheds with absolute altitudes of about 300 m.

The permafrost is widespread, and its thickness varies from 100-200 m in the rivers valleys up to 400-500 in the pre-watershed surfaces of plateau. In the pre-watershed plateau the frozen karst was developed, and in the area of deposits of ice complex -thermokarst, and on sandy terraces -internal erosion and eolian processes took place. Only in the middle Lena including the territory of the park one can observe the landscape of wind-drift sands-tukulans- with the elements of the cold northern desert.

## **Climate**

The climate is sharply continental. When changing from a plateau to a lowland plain some differences in climate characteristic are evident. In the weather stations located in the plain the average annual air temperature ( $-10^{\circ}\text{C}$ ) is rather lower than in the weather stations located within a plateau ( $-8,2^{\circ}$  and  $-8,8^{\circ}\text{C}$ ). In the rivers valleys the total positive air temperatures are  $1725-1775^{\circ}$  degree-days for a summer, and in the pre watershed surface of the plateau -  $1560^{\circ}$ .

In the north-east the total rainfall is less than 300 mm, and in the south-west-over 300 mm per year. In the south-west part of the park the average perennial height of snow cover is 41-46 cm, and in the north-east part - 32 cm.).

## **Soils**

Soil cover of the Nature Park "Lena Pillars" is rather diverse. In the comparatively small area the main types of soils from yellow-pale and sod-calcareous soils up to chernozem have been revealed in Central and South Yakutia. The dependence of spatial soil distribution on the conditions of the relief and soil-forming rocks is well defined.

## **Flora**

In the Nature Park "Lena Pillars" 241 species and 23 varieties of alga, belonging to 100 genera, 57 families, 23 orders, 11 classes and 7 divisions have been determined. The major part of phytoplankton consists of diatom, green and blue-green algae.

Mycobiota includes 76 species of aphyllororous fungi from 43 genera and 11 families. The two species – *Hericium coralloides* and *Grifola umbellata* have been listed in the Red Data Book of RSFSR and in the new edition of the Red Data Book of RS (Ya.) (2000).

Lichenflora of the territory of the park consists of 83 species of lichens belonging to 33 genera and 13 families from 4 orders. The families Parmeliaceae (26 species) and Cladoniaceae (17 species), and genera *Cladonia* (14), *Lecanora* (5), *Melanelia* (5), *Peltigera* (5), *Caloplaca* (4), are predominant. The revealed lichenflora is defined as boreal.

Bryoflora of the Nature Park “Lena Pillars” includes 202 leaf mosses from 91 genera and 37 families, and there are also 34 species of liverworts from 25 genera and 17 families. It makes up about 40% of the revealed moss flora from all Yakutia area. There are two rare species in Yakutia, they are: *Indusiella thianschanica* listed in the Red Data Book of the RSFSR (1988), and *Hygroamblystegium tenax* - in the Red Data Book of RS (Ya) (2000).

On geobotanical zoning of Yakutia the territory of “Lena Pillars” is a part of Aldan-Lensky district of Central-Yakutian middle-taiga sub province of sub zone of middle-taiga forests. In this territory larch forests with small share of pine forests predominate. On the watersheds there are many grass and sedge meadows. In the above flood-plains and in the slopes of parent banks one can find the relict steppe sites that widely spread in the middle Lena valley. Some small areas are covered with mountainous dwarf-shrub-green-moss larch forests with a share of a spruce, a birch and epithitic plants. Here and there wind-drift sands – tukulany (non-fixed and half-fixed sands) with rare psammophytic plants occur. The largest tukulany-Samys Kumahga is within the park area. On its dunes the plant cover is 30-40%, and on the tukulany adjacent to the Buotoma mouth it is only 5%. In the lower of Buotoma the abandoned arable lands overgrown with apophytes occupy the large areas. In some fallow lands there are mixed herbaceous meadows and in the other ones – only one species grows e.g. *Artemisia jacutica*, or *Elytrigia repens*. Generally these apophytes are medicinal plants. There are all necessary and favorable conditions for collection of ecologically- pure raw materials.

At present in the territory of the Nature Park “Lena Pillars” (including the Sinaya river basin) 464 species, 276 genera and 81 families of vascular plants have been revealed, 21 among them rare and endangered species, listed in the Red Books of the USSR, RSFSR and Yakutia.

## **Fauna**

In the park area insects are the most diverse and widespread group of animals inhabiting forests, open meadow and steppe biocenoses, and ditch and flowing water reservoirs. It is supposed that species composition of insects is not less than 2000 species.

Ichthyofauna of the park consists of 21 forms of fish, and it includes all fish species inhabiting Central-Yakutian region.

Amphibia and reptiles are represented by: Siberian salamander (*Hynobius keyserlingii* Dybowski) and Siberian Wood Frog (*Rana amurensis* Boulenger), Common Lizard (*Lacerta vivipara* Jacquin) and Common Adder (*Vipera berus* L.).

The fauna of nesting birds is represented by 99 species (that amounts approximately 80% of the fauna of nesting birds in Central Yakutia) from 12 orders: Gaviiformes-1, Ciconiiformes-2, Anseriformes-12, Falconiformes-9, Galliformes-4, Charadriiformes-15, Columbiformes-1, Cuculiformes-2, Strigiformes-5, Apodiformes-1, Piciformes-5, and Passeriformes-42. More than a half (54%) of the protected bird species of Yakutia inhabit or stop while migrating the park area. Bewick’s Swan (*Cygnus bewickii* Yarr.), Peregrine Falcon (*Falco rusticolus* L.), Gyrfalcon (*Falco rusticolus* L.), White-tailed Eagle (*Haliaeetus albicilla* L.), Golden Eagle (*Aquila chrysaetos* L.), Osprey (*Pandion haliaetus* L.), and Siberian Crane (*Grus leucogeranus* Pall.) are protected species of the World ornithofauna and have been listed in Supplements to the Convention of CITES.

42 mammal species inhabit the park area. As a whole the complex of mammal species represents itself as a typical fauna of the middle taiga sub zone of Paleoarctic where Sable (*Martes zibellina* L.), Brown Bear (*Ursus arctos* L.), Red Squirrel (*Sciurus vulgaris* L.), Elk (*Alces alces* L.), Chipmunk (*Tamias sibiricus* Laxmann) and others are mass species. Siberian Musk Deer (*Moschus moschiferus* L.), Northern Pika (*Ochotona hyperborea* Pall.), mountain-forest form of Reindeer (*Rangifer tarandus* L.) usually inhabit the mountain-taiga complex. Some species – Red Deer (*Cervus elaphus* L.), Short-tailed

field Vole (*Microtus agrestis* L.) and some species of Chiroptera and Insectivora are common to the south-taiga fauna and here there is a northern boarder of their natural habitat. In the steppe sites close to the mouth area of the Buotama one can find a Roe Deer (*Capreolus pygargus* L.) and in the left bank area of the park – Long-tailed Souslik (*Citellus undulatus* Pall.). In the lakes and in the flooded sites the water-meadow species – Muskrat (*Ondatra zibethica* L.), Water Vole (*Arvicola terrestris* L.), Root Vole (*Microtus oeconomus* Pall.) occur. Norway Rat (*Rattus norvegicus* Berkenhout) and House Mice (*Mus musculus* L.) are synanthropic forms.

By the area of distribution and population Large-toothed Shrew (*Sorex daphaenodon* Thomas), Tundra Shrew (*Sorex tundrensis* Merr.), Laxmann’s Shrew (*Sorex caecutiens* Laxmann), Narrow-skulled Vole (*Microtus gregalis* Pall.), Ruddy Vole (*Clethrionomus rutilus* Pall.), Siberian Chipmunk (*Tamias sibiricus* Laxmann), are the most numerous species among Insectivora and small Rodentia; Daubenton’s Bat (*Myotis daubentoni* Kuhl.), Mountain Hare (*Lepus timidus* L.), Red Squirrel (*Sciurus vulgaris* L.), Muskrat (*Ondatra zibethica* L.), Large-toothed red-backed Vole (*Clethrionomus rufocanus* Sundervall), Root Vole (*Microtus oeconomus* Pall.), Water Vole (*Arvicola terrestris* L.), are typical species. Among Carnivores Ermine Stoat (*Mustela erminea* L.), Sable (*Martes Zibellina* L.) and Brown Bear (*Ursus arctos* L.) are dominant species. By the population density among Artiodactyla Roe Deer (*Capreolus pygargus* L.), Siberian Musk Deer (*Moschus moschiferus* L.) and Red Deer (*Cervus elaphus* L.) are predominant in the NP “Lena Pillars”. After adoption of some regulations on protection the populations of Roe Deer (*Capreolus pygargus* L.), Siberian Musk Deer (*Moschus moschiferus* L.) and Red Deer (*Cervus elaphus* L.) has increased in the park area.

---

## JUSTIFICATION FOR OUTSTANDING UNIVERSAL VALUE

**Criteria met** (see Paragraph 77 of the *Operational Guidelines*):

i	ii	iii	iv	v	vi	<b>vii</b>	<b>viii</b>	ix	x
---	----	-----	----	---	----	------------	-------------	----	---

The Nature Park “Lena Pillars” is nominated into the World Heritage List on the basis of the following criteria:

### Criterion viii

- Geological texture of Lena Pillars contains outstanding evidences of the Earth and its living population development history. In many places here one can see Cambrian, mostly early Cambrian, sediments on the day surface. Numerous fossils of ancient skeleton organisms – trilobites and archaeocyathes – and of Epiphyton genus alga were found in Lena (Buotama) limestone. 530-520 millions years ago they inhabited a Cambrian sea shallow warm area, separated from a chloride lagoon pool by the Oimuran reef massif. This massif occupied southwestern regions of contemporary Yakutia, northern regions of Irkutskaya oblast and eastern part of Krasnoyarskiy krai. In 1955 the International Union of Geological Sciences included Lena Pillars into the World list of geological locations. The fossils of ancient organisms found here are unique preserved evidences of a very important stage in the history of the organic world and a biodiversity “boom”, that occurred in lower Cambrian epoch;

- In Lena Pillars area along the rivers Kuranakh, Labiya and Buotama the fossils of mammoth fauna representatives were found: mammoth (*Mammulhus primigenius* Blum), bison (*Bison priscus* Boj), fleecy rhinoceros (*Coelodonta antiquibatis* Blum), Lena horse (*Eggus lenensis* Russ), Reindeer (*Rangifer tarandus* L). Analysis of samples from Kuranakh and Buotama bone-containing layers showed that they refer to the sediments of Karginnskoye interglacial period of later Pleistocene (approximately 65-24

thousands years ago). The remains of these animals' bones, which were found almost at one and the same place, are a very important evidence of the mammals' fauna evolution at quaternary period.

- On the right bank of Lena, near the mouth of Buotama (lower and upper the mouth of Diring-Yuriakh river) one can see small areas of fluttering sands – “tukulans”; it's a unique landscape with some elements of a cold northern sandy desert, which is typical only for middle Lena within Central Yakutia limits.

- The NP is situated in the area of a solid spread of perennial frozen rock; the massive of permafrost reaches 100-500 meters. On the territory of the Park there is a wide diversity of frozen ground relief (frozen ground karsts, silt pinnacles, bulgunnyakhs, up-warping knobs, polygonal-veined ices).

- In the middle of Lena and Buotama inter stream area the surface of Eupleistocene terrace is composed of the series of loess-like carbon-bearing argil sand ground, on which the unique frozen pale solodized soils formed; these soils are typical for Tsentral'no-Yakutskaya (Central Yakut) plain and have no analogues in the world.

### **Criterion x**

- Rare and vanishing plants species inhabit the area of Lena Pillars. It's the only area in the world where the endemic inhabitant from crucifers' family *Redowskia sophiifolia* can be met. It was included in the USSR Red Books (1975, 1984), the RSFSR Red Book (1987) and Yakut ASSR Red Book (1987). Besides, in the area of Lena Pillars one can meet 12 more Red Book species: *Parietaria micrantha*, *Cypripedium guttatum*, *Cypripedium macranthon*, *Lilium pensylvanicum*, *Iris laevigata*, *Ephedra monosperma*, *Padus avium*, *Filipendula palmate*, *Adonis sibirica*, *Papaver nudicaule*, *Mentha dahurica*, and *Ribes procumbens*. On the left bank of Lena, between the villages Bulguniakhtakh and Elanka, one can meet desert-influenced steppe associations with another endemic inhabitant *Ceratoides lenensis*, also included in the Red Books of the USSR, the RSFSR and Yakut ASSR. In general, there are 464 species, 276 genera and 81 families of vascular plants.

- Lena Pillars area is situated in the border part of Prilenskoye plateau and Tsentral'no-Yakutskaya (Central Yakut) plain; it is characterized by a specific combination of fauna complexes. Together with dominating forest elements, the representatives of mountain-taiga (Siberian musk deer, red deer) and mountain-steppe (brown creeper) complexes are met here. In general, there are 42 species of mammals in the Park.

- The fauna of breeding birds is represented by 99 species, which is about 80% of Central Yakutia breeding bird's fauna. 27 species of birds are included in the Red Books of different levels; bewick's swan, peregrine falcon, gyrfalcon, white-tailed eagle, golden eagle, osprey and sterkh are included in the Supplement to the CITES Convention, they also are protected species of the world avifauna.

### **Criterion vii**

- Lena Pillars, and especially nearby Buotama and Sinskiye Pillars, stretching along the valleys of the rivers of the same name and situated within the NP limits, are extremely beautiful; their aesthetic influence on people has no comparison throughout a huge territory of Eurasian North-East. Fantastic stone statues, resembling strange-shaped pillars, spires, bayed towers, crossings and caves, stretch along the rivers' banks for tens of kilometers.

So, the territory of the Nature Park “Lena Pillars” and a part of the ancient Oimuran ruff massif form a net of the outstanding monuments of the Earth history, of organic world evolution and of humankind history.

**Statements of authenticity and/or integrity** (see Paragraphs 78-95 of the *Operational Guidelines*):

The nominated territory of the Nature Park “Lena Pillars” is an integral system where natural ecosystems, numerous nature memorials and evidences of human activity since ancient times have been preserved in a good condition for quite a long time. Almost the whole territory proposed for the List is located within limits of the NP and its protected zone and that is why, on the basis of Russia and Sakha Governments’ laws, it is provided with a professional protection on the part of the Park’s administration and employees.

There are major conditions, on which natural memorials and ecosystems’ biodiversity of the nominated territory can be preserved. They are: traditional nature exploitation and licensed exploitation of biological resources by the members of six communities of indigenous people of the North that live on the territory of the Park, although there are almost no constant settlements there.

The UNESCO world heritage status will help to strengthen the guarantees of Lena Pillars preservation and to protect from possible threats to the entity on the part of humans’ economical and recreational activity.

**Comparison with other similar properties:**

Among the analogous regions of the world, the territory of the Nature Park “Lena Pillars” is notable for the following:

- unique combination of Cambrian natural memorials with sediments of later geological epochs;
- unique frozen pale forest soils;
- unique landscape of fluttering sands – “tukulans”, with some elements of a cold northern desert;
- presence of endemic, typical only for this area, plant species *Redowskia Sophiifolia* and a wide range of rare and vanishing plants and animals;
- rich bone fossils of mammoth fauna.

Humans developed the area of «Lena Pillars» Park in ancient times. Primitive men hunted big herding mammals, and therefore they survived in the cold climate. Numerous evidences of their stay were found here on the ancient human sites and the peculiarities of their life and activity are reflected in rock manuscripts and paintings. \_