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BUREAU OF THE COMMITTEE
FOR THE ACTIVITIES OF THE COUNCIL OF EUROPE
IN THE FIELD OF BIOLOGICAL AND LANDSCAPE DIVERSITY

BU-DBP

Group of specialists - European Diploma

The Kostomuksha Strict Nature Reserve

(Russian Federation)

APPLICATION

State Committee for Environment Conservation
of the Russian Federation

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European Diploma Application

Country: **Russian Federation**
Name of the area: **The Kostomuksha Strict Nature Reserve**
Body responsible for its management:
State Committee of Environment Conservation of the Russian Federation
Director: Tarkhov Sergei

1. Type of the area:

Kostomuksha State Strict Nature Reserve (Zapovednik) is a Karelian part of the Russian-Finnish Friendship Nature Reserve and is located not far from Kostomuksha town, between 64 and 65° northern altitude. It was established by a decree (N 557) on 14. 12. 1983 of the Ministry Council of the Russian Federation and was included in the Russian-Finnish Friendship Nature Reserve, in accordance with an intergovernmental Finnish-Russian agreement and based on a decree (N 1036-p) of 18. 9. 1990 of the Ministry Council of the Russian Federation.

Untouched nature is preserved here on this area of 47,569 sq. km. It is surrounded by a two km wide belt in the North, East and South - a buffer zone of the Zapovednik - where logging and land reclamation are forbidden.

2. Climate and its characteristics:

The climate of the area is conditioned by its geographical position, a majority of western winds and local peculiarities. The influence of its geographical position is seen in a fluctuating degree of solar radiation, which plays a leading part in climate formation. The main climate features are: mild winters, rather warm summers with small temperature variations and high moisture. The snow melts at the beginning of May. From time to time, there are years where there is frost through the whole of the summer and others where there is no frost between May and September.

The total amount of annual precipitation is 566 mm. It is spread out irregularly through the year. Around 65% come down as rain in the warm period and 35% as snow. The first snow falls in October but the proper snow cover appears usually at the beginning of November. The weather during this period is unsteady, cold days being replaced by thaws. This is also a time of strong winds (up to 25m/sec). It takes about 2 to 3 weeks for the winterly weather to set in. In less rigorous, but very long winters (185 days, with negative average temperatures) there are usually thaws. However, every winter there are frosts of about minus 40 degrees or more. At the end of the winter, the snow cover is 70-80 cm thick and sometimes over 1 m. On days where there is no wind and due to a high degree of humidity, the branches of trees and bushes are covered in hoar-frost.

At the end of May, the "white" nights begin, where the sun does not go away. They last for about two months and in June, the sun, having no time to hide in the top of the trees, rises again. In the winter, on the contrary, the sun only shines on bright and frosty days.

3. Characteristics justifying conservation:

Lakes constitute one fifth of the territory. All water reservoirs of the Zapovednik belong to the basin of the Kamennaya river. Its waters flow to the White Sea via the Chirka-Kem and Kem rivers. Only in the southern part of the Zapovednik, there is a small lake which waters flow into Botnia Bay, in the Baltic Sea. Like beads on a thread, lakes are strung on the Kamennaya river: lake Kamennoye, where it begins, and others like lake Luvozero, Kimasozero and Nyuk, that are not on the territory of the Zapovednik. Lake Kamennoye, which is mainly in the Zapovednik, is the largest of the protected lakes. It covers over 100 sq. km. The lake has a winding shore and a countless number of large and small islands. The eastern shore, with several gulfs of about 10 km long, is more sinuous. The lake is divided into three parts by capes and islands. In the North, high, stony shores prevail and in the central part, shores are lower, sandy-bouldered. All shores in the southern part are low, swampy and underlined only by a few hills. The larger islands can be found in the central part. The average depth of the lake is 8,6 m. but in the northern part, where the bottom is more irregular, it is 26 m. deep. It is mainly surrounded by dense, century old, spruce and pine forests and some meadows appeared in the place of abandoned Karelian hamlets.

The Kamennaya river divides the Zapovednik into almost equal northern and southern parts. The river is not very long, but beautiful. With an expenditure of 8,5 cub. m/sec., it is really stony in the upper reaches ("kamennaya" means "stony"), with box-like valleys with steep banks and flat bottoms covered by boulders. Rapids, separated from one another by pools grown with water-lilies (*Nymphaea & Nuphar*) follow one another. The largest one is Zar rapid, after which the river changes its aspect and direction: the stream becomes calm, the banks sandy and the river is slowly winding between sandy hills covered in lichen pine forests. It meanders through narrow belts of native meadows.

The water reservoirs of the Zapovednik abound in 16 species of fish: pikes (*Esox lucius*), white fish (*Coregonus lavaretus*), perch (*Perca fluviatilis*), roach (*Rutilus rutilus*) and the Kamennaya river is a spawning ground for salmon (*Salmo salar m. sebago*). Bullheads (*Cottus gobio*), registered in the Russian Red Book, can also be found in the Zapovednik.

The territory where the Kostomuksha Zapovednik is situated **is included in a belt of forests of the northern taiga subzone, characterised by species like forest marsh-tea** (*Ledum palustre*) **and bog bilberry** (*Vaccinium uliginosum*), which in the South can only be found in mires. On the whole, forests in the Zapovednik are rather low, the crowns of the trees narrow and thin, the underwood poorly developed. It is possible to find young stands as well as stands nearly 300-320 years old. Even some much older trees have been preserved. Pine forests predominate, covering about 84% of the total forest area. Spruce forests are not so widely spread (16%) and there are only few birch and aspen stands. From above, the Zapovednik and the adjacent territories look like a patchwork quilt with dark green spruce forests, light green pine forests and yellow-green peatlands. It is one of the last undisturbed oasis of nature which has remained untouched until today and is surrounded by wasteland areas of forest cuttings.

The most widespread type of forests are bilberry (*Vaccinium myrtillus*) **and lingberry** (*V. vitis-edae*) pine forests. There, one can find birches and spruces and in the underwood mostly rowan trees (*Sorbus aucuparia*), willows (*Salix caprea*), alders (*Alnus incana*) and junipers (*Juniperus communis*). The areas covered in dry lichen and heather pine forests are much smaller. These forests are spread mostly in the lower parts of the Kamennaya. Carpets of lichen from *Cladina gerus*, with xerophilous shrubs such as heather (*Calluna vulgaris*),

lingberry and crowberry (*Empetrum nigrum*) are typical of them. Spruce forest grow on rich, drained soils along streams and at the foot of hills. There, the bilberry type is the most ordinary, a grassy kind that grows along streams. Vegetation in the spruce forest is very developed and its flora is varied. About 12% of the territory are mires of various types. They have very complicated forms and differ in size also. The most marsh-ridden areas of the Zapovednik are the north-west and the south, where some mires cover up to 1 sq. km. So the landscape is very tessellated.

There are over 300 species of **vascular plants** in the Zapovednik. In the pools, species threatened in Russia such as *Lobelia dortmanna, Isoetes lacustris* and *I. echinospora* have been found. Two threatened species of fungi have also been registered: the white cap boletus (*Leccium percandidum*) and *Hericium coralloides*. The latter grows on rotten trunks of deciduous trees and looks like coral. Several plant species rare to Karelia were found in the Zapovednik during investigations. There is a rich variety of mosses, about 50 species have been found already. An inventory of lichen was started several years ago and it included over 150 species, some of them from the Red Book of Russia: *Lobaria pulmonaria* and *Bryoria fremonti.* These epiphytic lichen are rather numerous in the reserve. Like other lichen from the *Usnea* and *Allectoria* genera, trailing from branches like long beards, they are a sign of clear air.

Almost every year, there are large crops of all types of northern berries: bilberry, lingberry, cranberry (*Oxycoccus palustris*), strawberry (*Rubus idaeus*) and clowdberry (*R. arcticus*).

A terrestrial fauna is typical of the taiga forests. About 40 species of mammals dwell here, wild reindeer of a special "forest" type being one of them. The largest mammals of the Zapovednik are the brown bear (*Ursus arctos*) and the elk (*Alces alces*), the smallest ones are pygmy (*Sorex minutus*) and minute (*S. minutissimus*) shrews weighing 2-3 grams. Along the shores of pools, beavers (*Castor canadensis*) and minks (*Mustella vison*) are numerous, sometimes otters (*Lutra lutra*) are registered. Flying squirrels (*Pteromys volans*), which has become rare due to the cutting of virgin forests, has been noticed in the forests of the Zapovednik.

Out of over 130 bird species registered in the Zapovednik, those from the Red Book of Russia are to be mentioned first: the golden eagle (*Aquila chrysoetus*), the white-tailed sea eagle (*Haliaeetus albicilla*), the osprey (*Pandion haliaetus*) and the peregrine falcon (*Falco peregrinus*). Berwick's swan (*Cygnus bewikii*), also on the Red list, was registered during seasonal migrations and its larger brother, the whooping swan (*C. cygnus*), as well as other waterfowl species, are abundant. Capercailye (*Tetrao urogallus*) is numerous and mating places with 15-20 cocks are not rare. The largest night predator is the grey owl (*Strix nebulosa*).

It is impossible to imagine the summer taiga forest without the song of passerines: finches (*Fringila coelebs & F. montifringila*), rustic buntings (*Emberiza rustica*), chiffchuffs (*Phylloscopus*), redstarts (*Phoenicurus phoenicurus*) etc. In June, the noise from the birds stops only for one or two hours and it is only from the sudden silence that it is possible to understand that night has fallen.

In winter, the bird population diminishes, only some hibernating species stay in the forests, among which crossbills (*Loxia*) and kinglets (*Regulus regulus*), the smallest taiga bird, are particularly typical. And how nice it is to hear, near the thawing rapids of the Kamennaya river, the song of the dipper (*Cinclus cinclus*) !

One species of reptile and 3 amphibian were registered on the territory of the Zapovednik. A study of insects has also been started, mainly beetles and butterflies, among which several threatened species were registered.

4. Planning and management plan:

The Kostomuksha Zapovednik is **a state organisation of federal subjection,** its main tasks and goals, according to the Federal Law of the Russian Federation ("About specially preserved natural territories" 15.02.1995), are the following:

1. Conservation and investigation of taiga ecosystems and their components, conservation of biodiversity;

2. Conducting long-term ecological monitoring;

3. Assistance in co-operation between Russia and Finland in the field of nature conservation and a rational use of nature;

4. Popularization of knowledge on nature conservation and ecological outlook, promoting activities strengthening the nature reserve's various organisations;

5. Organising regular "ecological" excursions;

6. Participation in state ecological considerations of construction and reconstruction projects in the area.

There are three main departments in the Kostomuksha Zapovednik: the Department for the Protection of the Zapovednik, the Department of Scientific Researches and the Department of Ecological Education, Tourism and International Cooperation. The staff of the Zapovednik consists in 20-25 employees.

On the territory of the Kostomuksha Zapovednik, **all human activities, including scientific researches and controlled ecological tourism are forbidden.** Research activities are conducted along specific routes and sites set all over the Zapovednik. There are also several ecological trails for visitors accompanied by the guides of the Zapovednik, and it is possible to hike or ski, or to use canoes or dinghies during a trip. There are 9 cabins and lodges on the Zapovednik territory, as well as a hostel near the Zapovednik office in Kostomuksha that can be used.

If you visit the Zapovednik, you shall have the opportunity to see untouched nature as glorified in the famous runes of the Karelian-Finnish epos "Kalevala", collected and written by Elias Lennrot. Visits to the Kostomuksha Zapovednik can be combined with trips to parts of the Friendship Nature Reserve in Finland.

Boris Kashevarov

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BIBLIOGRAPHY

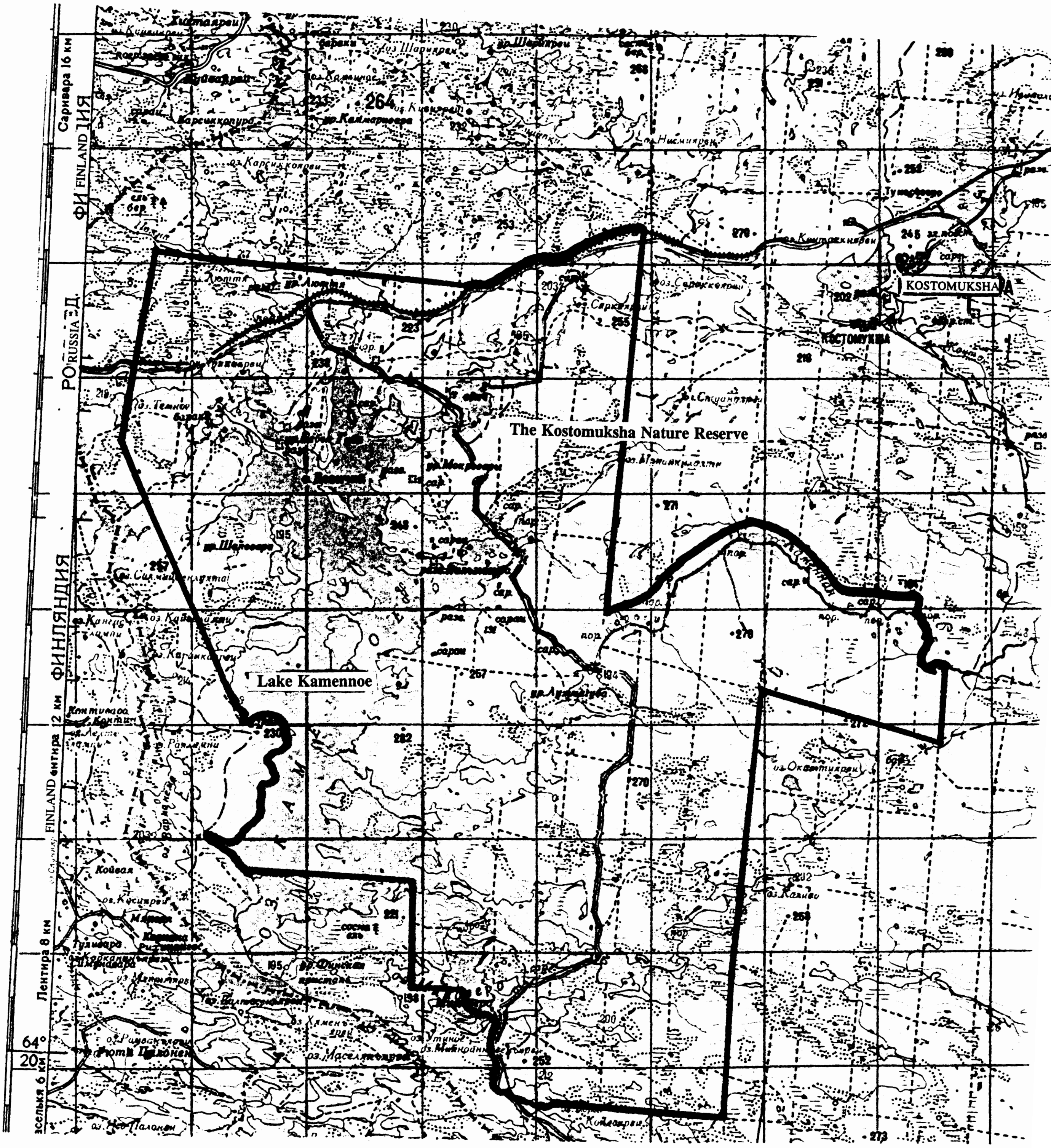
Andrianova, O.V. & Kashevarov, B.N. 1994. [Rare species of vascular plants, lichens and fungi in the Kostomuksha Nature Reserve](In Russian).- In: [Plants of the Red Data books in the nature reserves of Russia]. Moscow. 45-49. (Редкие виды сосудистых растений, лишайников и грибов заповедника "Костомукшский". - В сб.: Растения Красных книг в заповедниках России).

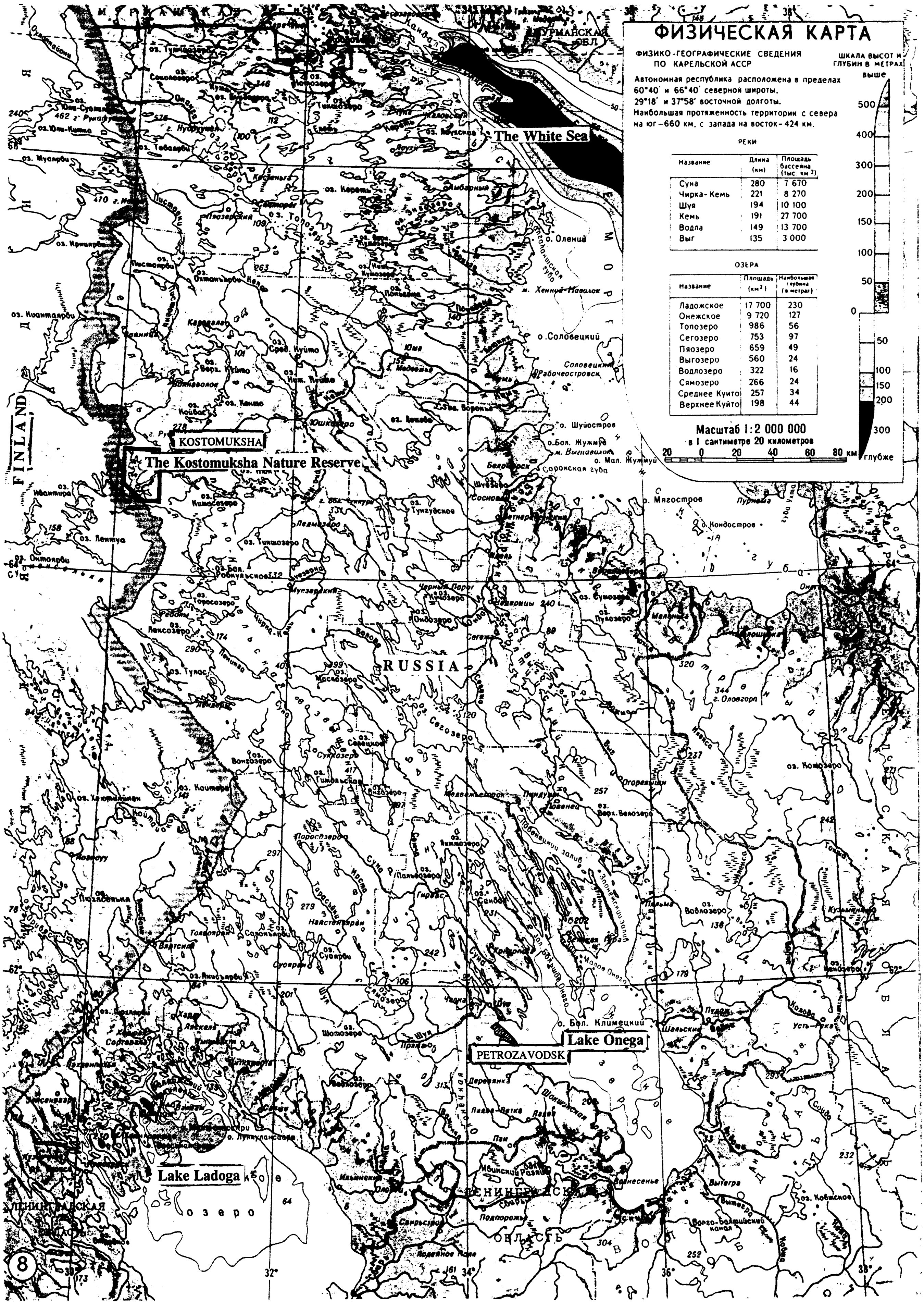
Andrianova, O.V., Malenkov, V.L., Malenkova, A.Yu. & Pozdnyakov, S.A. 1990.[Land vertebratesof the Kostomuksha Nature Reserve](In Russian) - In:[Land vertebrate animals in the nature reserves of the Northern European part of Russian Federation]. Moscow. P.10-28. (Наземные позвоночные в заповеднике "Костомукшский". - В сб.: Наземные позвоночные животные в заповедниках Севера европейской части РСФСР).

Belousova, N.A., Danilov, P.I., Zimin, V.B., Korshunov, G.T. & Kuznetsov, O.L. 1988. [Kostomuksha Strict Nature Reserve](In Russian) - In: [Nature Reserves of the USSR/ Nature Reserves of the European part of the RSFSR, part1]. Moscow, Mysl. P.90-100. (Костомукшский заповедник. - В кн.: Заповедники СССР/Заповедники европейской части РСФСР, часть 1).

Delvin, N.N., Kutenkov, A.P. & Kashevarov, B.N. 1989. [Srict Nature Reserves of Karelia](In Russian). Moscow, Sovetskaja Rossia. 170 p. (Заповедники Карелии).

Kravchenko, A.V. & Belousova N.A. 1990. [Flora of Kostomuksha Nature Reserve and possibilities of use of some decorative species in greenery planting in northern towns and settlements of Karelia](In Russian) - In:[Planting of greenery and gardening in Karelia). Petrozavodsk. P.32-56. (Флора заповедника "Костомукшский" и возможности использования некоторых декоративных видов при озеленении северных городов и поселков Карельской АССР. - В сб.: Озеленение и садоводство в Карелии).


FINLAND
RUSSIA
The Kostomuksha Nature Reserve
Lake Kamennoe
KOSTOMUKSHA
FINLAND
ФИНЛЯНДИЯ
КОСТОМУКША



РЕКИ

Название	Длина (км)	Площадь бассейна (тыс. км²)
Суна	280	7 670
Чирка-Кемь	221	8 270
Шуя	194	10 100
Кемь	191	27 700
Водла	149	13 700
Выг	135	3 000

ОЗЁРА

Название	Площадь (км²)	Наибольшая глубина (в метрах)
Ладожское	17 700	230
Онежское	9 720	127
Топозеро	986	56
Сегозеро	753	97
Пяозеро	659	49
Выгозеро	560	24
Водлозеро	322	16
Сямозеро	266	24
Среднее Куйто	257	34
Верхнее Куйто	198	44

APPENDIX

List of species

of the Kostomuksha Zapovednik

VASCULAR PLANTS

Woodsia ilwensis
Woodsia alpina
Cystopteris fragilis
Athyrium filix-femina
Matteuccia struthiopteris
Dryopteris carthusiana
Dryopteris expansa
Dryopteris lanceolatocristata
Gymnocarpium dryopteris
Phegopteris connectilis
Polypodium vulgare
Equisetum hyemale
Equisetum sylvaticum
Equisetum fluviatile
Equisetum pratense
Equisetum palustre
Equisetum arvense
Lycopodiella inundata
Lycopodium clavatum
Lycopodium annotinum
Lycopodium pungens
Diphasiastrum complanatum
Selaginella selaginoides
Isoetes lacustris
Isoetes echinospora
Picea abies
Pinus sylvestris
Juniperus communis
Sparganium glomeratum
Sparganium emersum
Sparganium minimum
Sparganium gramineum
Sparganium angustifolium
Potamogeton natans
Potamogeton alpinus
Potamogeton gramineus
Potamogeton perfoliatus
Potamogeton berchtoldii
Scheuchzeria palustris
Alisma plantago-aquatica
Echinochloa cruss-galli
Phalaroides arundinacea
Anthoxanthum odoratum
Anthoxanthum alpinum
Hierochloe odorata
Nymphaea candida
Nymphaea tetradona
Nuphar lutea
Nuphar pumila
Nuphar x intermedia
Caltha palustris
Trollius europaus
Actaea erythrocarpa
Batrachium peltatum
Batrachium trichophyllum
Ranunculus reptans
Ranunculus auricomus
Ranunculus lapponicus
Ranunculus repens
Ranunculus acris
Thalictrum flavum
Barbarea vulgaris
Cardamine pratensis
Raphanus raphanistrum
Brassica campestris
Capsella bursa-pastoris
Subularia aquatica
Drosera rotundifolia
Drosera anglica
Parnassia palustris
Sorbus aucuparia
Rubus idaeus
Rubus chamaemorus
Rubus arcticus
Rubus saxatilis
Fragaria vesca
Comarum palustre
Potentilla anserina
Potentilla erecta
Potentilla norvegica
Potentilla intermedia
Geum rivale L.
Filipendula ulmaria
Alchemilla monticola
Alchemilla subcrenata
Alchemilla sarmatica
Alchemilla gracilis
Alchemilla glabricaulis
Rosa majalis
Padus avium

Milium effusum
Phleum alpinum
Phleum pratense
Alopecurus pratensis
Alopecurus arundinaceus
Alopecurus aequalis
Alopecurus geniculatus
Agrostis canina
Agrostis tenuis
Agrostit gigantea
Calamagrostis epigeios
Calamagrostis arundinacea
Calamagrostis neglecta
Calamagrostis phragmitoides
Calamagrostis canescens
Lerchenfeldia flexuosa
Deschampsia cespitosa
Phragmites australis
Molinia caerulea
Melica nutans
Briza media
Dactylis glomerata
Poa annua
Poa trivialis
Poa pratensis
Poa subcaerulea
Poa palustris
Poa compressa
Poa nemoralis
Festuca pratensis
Festuca rubra
Festuca richardsonii
Festuca ovina
Festuca trachyphylla
Bromus arvensis
Nardus stricta
Elymus caninus
Elytrigia repens
Hordeum vulgare
Eriophorum vaginatum
Eriophorum polystachyon
Eriophorum gracile
Baeothryon alpinum
Baeothryon cespitosum
Scirpus lacustris
Eleocharis acicularis
Eleocharis palustris
Rhynchospora alba

Trifolium pratense
Trifolium repens
Trifolium hybridum
Trifolium spadiceum
Vicia cracca
Vicia sepium
Lathyrus pratensis
Geranium sylvaticum
Geranium pratense
Callitriche verna
Empetrum nigrum
Empetrum hermaphroditum
Frangula alnus
Viola tricolor
Viola arvensis
Viola selkirkii
Viola palustris
Viola epipsila
Viola montana
Daphne mezereum
Epilobium montanum
Epilobium alsinifolium
Epilobium palustre
Chamerion angustifolium
Circaea alpina
Myriophyllum alterniflorum
Hippuris vulgaris
Chaerophyllum prescottii
Anthriscus sylvestris
Cicuta virosa
Carum carvi
Pimpinella saxifraga
Angelica sylvestris
Calestania palustris
Heracleum sibiricum
Daucus carota
Chamaepericlymenum suecicum
Pyrola chlorantha
Pyrola rotundifolia
Pyrola minor
Moneses uniflora
Orthilia secunda
Ledum palustre
Andromeda polifolia
Chamaedaphne calyculata
Arctostaphylos uva-ursi
Calluna vulgaris
Vaccinium vitis-idaea

Carex dioica
Carex pauciflora
Carex chordorrhiza
Carex disperma
Carex loliacea
Carex leporina
Carex echinata
Carex cinerea
Carex brunnescens
Carex omskiana
Carex cespitosa
Carex juncella
Carex aquatilis
Carex nigra
Carex acuta
Carex buxbaumii
Juncus articulatus
Juncus nodulosus
Juncus bufonius
Luzula pilosa
Luzula multiflora
Luzula pallescens
Luzula sudetica
Tofieldia pusilla
Maianthemum bifolium
Convallaria majalis
Paris quadrifolia
Corallorhiza trifida
Listera cordata
Goodyera repens
Platanthera bifolia
Dactylorhiza traunsteineri
Dactylorhiza maculata
Dactylorhiza fuchsii
Salix phylicifolia
Salix starkeana
Salix myrtilloides
Salix lapponum
Salix aurita
Salix caprea
Salix pentandra
Salix cinerea
Populus tremula
Betula nana
Betula pendula
Betula pubescens
Alnus incana
Alnus kolaensis

Vaccinium myrtillus
Vaccinium uliginosum
Oxicoccus palustris
Oxicoccus microcarpus
Lysimachia vulgaris
Naumburgia thyrsiflora
Trientalis europaea
Menyanthes trifoliata
Polemonium caeruleum
Echium vulgare
Myosotis arvensis
Myosotis palustris
Scutellaria galericulata
Prunella vulgaris
Galeopsis speciosa
Galeopsis bifida
Stachys palustris
Mentha arvensis
Linaria vulgaris
Scrophularia nodosa
Veronica chamaedris
Veronica scutellata
Veronica longifolia
Veronica serpyllifolia
Melampyrum pratense
Melampyrum sylvaticum
Euphrasia parviflora
Euphrasia brevipila
Pedicularis sceptrum-carolinum
Pedicularis palustris
Pinguicula vulgaris
Pinguicula villosa
Utricularia intermedia
Utricularia vulgaris
Utricularia minor
Plantago major
Littorella uniflora
Galium boreale
Galium palustre
Galium uliginosum
Galium mollugo
Galium aparine
Viburnum opulus
Linnaea borealis
Knautia arvensis
Campanula rotundifolia
Campanula patula
Lobelia dortmanna

Alnus glutinosa
Urtica dioica
Rumex acetosella
Rumex acetosa
Rumex lapponicus
Rumex thyrsiflorus
Rumex crispus
Rumex aquaticus
Rumex longifolius
Polygonum viviparum
Polygonum bistorta
Polygonum aviculare
Polygonum scabrum
Fallopia convolvulus
Chenopodium album
Montia fontana
Stellaria media
Stellaria longifolia
Stellaria graminea
Cerastium holosteoides
Sagina procumbens
Scleranthus annuus
Spergula arvensis
Spergularia rubra
Herniaria glabra
Oberna behen
Melandrium dioicum
Coronaria flos-cuculi
Psammophiliella muralis
Gypsophila elegans

Solidago virgaurea
Erigeron canadensis
Antennaria dioica
Omalotheca sylvatica
Achillea millefolium
Achillea ptarmica
Leucanthemum vulgare
Chamomilla suaveolens
Tripleurospermum inodorum
Tanacetum vulgare
Artemisia vulgaris
Tussilago farfara
Senecio vulgaris
Arctium tomentosum
Cirsium heterophyllum
Cirsium arvense
Cirsium palustre
Centaurea scabiosa
Centaurea phrygia
Centaurea jacea
Leontodon autumnalis
Leontodon hispidus
Taraxacum officinale
Sonchus arvensis
Lactuca sibirica
Hieracium pilosella
Hieracium cespitosum
Hieracium umbellatum
Hieracium laevigatum
Hieracium sylvaticum
Hieracium vulgatum

MAMMALS

Sorex araneus
S. isodon
S. caecutiens
S. minutus
S. minutissimus
Neomys fodiens
Erinaceus europaeus
Eptesicus nilssoni
Lepus timidus
Petromys volans
Microtus agrestis
M. oeconomus
Clethrionomys glareolus
Cl. rutilus
Cl. rufocanus

Sciurus vulgaris
Castor canadensis
Lutra lutra
Meles meles
Gulo gulo
Martes martes
Mustela nivalis
M. erminea
M. vison
M. putorius
Ursus arctos
Canis lupus
Vulpes vulpes
Nyctreutes procynoides
Felis lynx

Myopus schisticolor
Mus musculus
Rattus norvegicus
Ondatra zibethica
Arvicola terrestris

Rangifer tarandus
Alces alces
Sus scrofa
Capreolus capreolus

BIRDS

Gavia stellata
G.arctica
Branta bernicla
Anser anser
A.fabalis
Cygnus cygnus
C.bewikii
Anas platyrynchos
A.crecca
A.strepera
A.penelope
A.acuta
A.querquedula
Clangula hyemalis
Aythya fuligula
Bucephala clangula
Mergus merganser
M.serrator
Pandion haliaetus
Milvus nigrans
Accipiter gentilis
A.nisus
Buteo lagopus
B.buteo
Circus cyaneus
Aquila chrysaetos
Haliaetus albicilla
Falco peregrinus
F.subbuteo
F.columbarius
F.tinnunculus
Lagopus lagopus
Lyrurus tetrix
Tetrao urogallus
Tetrastes bonasia
Grus grus
Pluvialis apricaria
Charadrius dubius
Vanellus vanellus
Tringa totanus
T.ochropus

Picus canus
Driocopus martius
Dendrocopus major
D.leucotos
D.minor
Picoides tridactylus
Hirundo rustica
Riparia riparia
Anthus trivialis
A.pratensis
Motacilla flava
M.alba
Lanius collurio
L.excubitor
Perisoreus infaustus
Pica pica
Corvus cornix
C.corax
Bombicilla garrulus
Cinclus cinclus
Troglodytes troglodytes
Prunella modularis
Sylvia borin
S.curruca
S.atricapilla
S.communis
Phylloscopus trochilus
Ph.collybita
Ph.Sibilatrix
Ph.trochiloides
Regulus regulus
Ficedula hypoleuca
F.parva
Muscicapa striata
Saxicola ruberta
Oenanthe oenanthe
Luscinia swecica
Tarsiger cyanurus
Phoenicurus phoenicurus
Erithacus rubecula
Turdus pilaris

T.glareola
T.nebularia
T.erythropus
Actitis hipoleucos
Gallinago gallinago
Xenus cinereus
Scolopax rusticola
Numenius arquata
N.phaeopus
Larus ridibundus
L.fuscus
L. argentatus
L.canus
Sterna hirundo
Columba palumbus
Cuculus canorus
Asio flammeus
Glaucidium passerinum
Aegolius funereus
Surnia ulula
Strix nebulosa
S.uralensis
Apus apus

T.merula
T.iliacus
T.philomelos
T.viscivorus
Aegithalos caudatus
Parus montanus
P.cinctus
P.cristatus
P.major
Certhia familiaris
Passer domesticus
Fringilla coelebs
F.montifringilla
Spinus spinus
Acanthis flammea
A.cannabina
Carpodacus erythrinus
Pinicola enucleator
Loxia leucoptera
L. pytyopsittacus
L.curvirostra
Pyrrhula pyrrhula
Embetiza citrinella
E.schoeniclus
E.rustica
Plectrophenax nivalis

REPTILES

Lacerta vivipara

AMPHIBIANS

Rana temporaria
R.arvalis
Bufo bufo

FISHES

Salmo salar m.sebago
Coregonus lavaretus
C.albula
Thymallus thymallus
Essox lucius
Perca fluviatilis
Acerina cernua
Gottus gobio
Rutilus rutilus
Leuciscus idus
L.leuciscus
Abramis brama
Alburnus alburnus
Proximus proximus
Pungitius pungitius
Lota lota