

# Legend for Vegetation Map of the Altai-Sayanian mountain system (1:7500000) (19 units)

L0 Biom	Boreal	
L1 Formation type	Combination (Complex) of herbaceous, shrublands and sparsely vegetated	
L2 Formation group	Alpine and subnival vegetation within the boreal zone	
L4 Geographic variants and bioclimatic variants of dominant species	Southern Siberian high mountains	
L5 Plant community	<p><b>Combination of high mountain plant communities (ultra-humide bioclimatic sector): Fruticose lichen tundra</b> (<i>Cladonia stellaris</i>, <i>C. arbuscula</i>, <i>C. rangiferina</i> и т.д.). <b>Tussock tundra</b> (<i>Festuca sphagnicola</i>, <i>Hierochloe alpina</i>, <i>Juncus triglumis</i>). <b>Dwarf-shrub-grass tundra</b> (<i>Dryas oxyodonta</i>, <i>Festuca kryloviana</i>, <i>Lloydia serotina</i>, <i>Hierochloe alpina</i>, <i>Gentiana algida</i>, <i>Minuartia arctica</i>). <b>Alpine meadows:</b> (<i>Aquilegia glandulosa</i>, <i>Schultsia crinite</i>, <i>Viola altaica</i>, <i>Gentiana grandiflora</i>, <i>Dracocephalum grandiflorum</i>). <b>Tall forb subalpine meadows</b> (<i>Stemmacantha carthamoides</i>, <i>Saussurea latifolia</i>, <i>Athyrium distentifolium</i>, <i>Veratrum lobelianum</i>, <i>Aconitum septentrionale</i>). <b>Tall-forb-shrub subalpine communities</b> (<i>Betula rotundifolia</i>, <i>Salix glauca</i>, <i>Dushecia fruticosa</i>). <b>Open woodlands</b> (<i>Pinus sibirica</i>, <i>Abies sibirica</i>, <i>Betula tortuosa</i>, <i>Betula rotundifolia</i>, <i>Salix glauca</i>, <i>Saussurea latifolia</i>, <i>Aconitum sajanense</i>, <i>Heracleum dissectum</i>, <i>Veratrum lobelianum</i>, <i>Stemmacantha carthamoides</i>).</p>	1.1.1.
	<p><b>Combination of high mountain plant communities (humid bioclimatic sector): Prostrate dwarf-shrub - grass tundra</b> разнотравно-дриадовые (<i>Dryas oxyodonta</i>, <i>Carex ledebouriana</i>, <i>Hierochloe alpina</i>, <i>Festuca sphagnicola</i>, <i>Lloydia serotina</i>, <i>Minuartia arctica</i>, <i>Theermopsis alpina</i>), <b>Prostrate dwarf-shrub - lichen tundra</b> (<i>Dryas oxyodonta</i>, <i>Cladonia stellaris</i>, <i>C. arbuscula</i>, <i>C. rangiferina</i> ) and <b>Moss-lichen tundra</b> (<i>Aulacomnium palustre</i>, <i>Pleurosium schreberi</i>, <i>Cetraria islandica</i>, <i>Flavacetraria cuculata</i>, <i>Cladonia rangiferina</i>, <i>C. arbuscula</i>, <i>C. stellaris</i>). <b>Rhododendron communities</b> (<i>Rhododendron aureum</i>, <i>Rhododendron adamsii</i>, <i>Vaccinium myrtillus</i>, <i>V. vitis-idea</i>, <i>V. uliginosum</i>, <i>Phyllodoce coerulea</i>, <i>Carex iljini</i>, <i>Cladonia stellaris</i>, <i>C. rangiferina</i>, <i>Cetraria islandica</i>). <b>Shrub-moss-lichen tundra</b> (<i>Betula rotundifolia</i>, <i>Aulacomnium palustre</i>, <i>Pleurosium schreberi</i>, <i>Arctous alpine</i>, <i>Vaccinium myrtillus</i>, <i>Carex iljini</i>, <i>Cladonia stellaris</i>, <i>C. rangiferina</i>, <i>Cetraria islandica</i>). <b>Tussock tundra</b> (<i>Festuca kryloviana</i>, <i>F. altaica</i>, <i>Trisetum altaicum</i>, <i>Phleum alpinum</i>, <i>Schultsia crinite</i>, <i>Sajanella monstrosa</i>). <b>Alpine meadows</b> (<i>Ranunculus altaicus</i>, <i>Viola altaica</i>, <i>Gentiana grandiflora</i>, <i>Carex altaica</i>, <i>Lagotis integrifolia</i>, <i>Sibbaldia procumbens</i>). <b>Subalpine meadows</b> (<i>Geranium albiflorum</i>, <i>Carex aterrima</i>, <i>Doronicum</i></p>	1.2.1.

	<i>altaicum, Bistorta major, Trollius altaicus, Aquilegia glandulosa</i> ). <b>Open woodlands</b> ( <i>Pinus sibirica, Larix sibirica, Betula rotundifolia, Salix glauca</i> ).	
	<b>Combination of high mountain plant communities in semi-humid (semi-arid) bioclimatic sector.</b> <b>Lichen tundra</b> ( <i>Alectoria ochroleuca, Cladonia stellaria, C. rangiferina, C. arbuscula, Cetraria islandica</i> ). <b>Shrub-lichen-moss tundra</b> ( <i>Betula rotundifolia, Cetraria islandica, Flavacetraria cuculata, Polytrichum commune, P. piliferum, Dicranum congestum, Aulocomium turgidum</i> ), <b>Prostrate dwarf-shrub tundra</b> ( <i>Dryas oxydonta, Carex ledebouriana, C. Stenocarpa</i> ), <b>Communities Rhododendron dauricum</b> ( <i>Rhododendron aureum</i> ), <b>Cryophytic dry meadows</b> ( <i>Kobresia myosuroides, K. simpliciuscula, Carex rupestris, C. stenocarpa, Oxytropis alpina</i> ). <b>Communities Caragana jubata</b> . <b>Cryophytic meadow-steppes</b> ( <i>Ptilagrostis mongholica, Helictotrichon hookerii, H. Mongolicum, Festuca komarovii, F. Lenensis, F. ovina, Caragana jubata</i> ), <b>Rhododendron adamsii communities</b> .	<b>1.3.1.</b>
<b>L0 Biom</b>	<b>Boreal</b>	
L1 Formation type	Forests (closed forests)	
L2 Formation group	Boreal coniferous forests	
L3 Formations	<b>Dark evergreen needle leaf forests</b> ( <i>Picea, Abies</i> )	
L4 Geographic variants and bioclimatic variants of dominant species	<b>Southern Siberian mountain forests</b>	
L5 Plant community	Altai-Sayanian pine-fir forests ( <i>Abies sibirica, Pinus sibirica</i> ) with <i>Betula pendula</i> , with tall-forbs, ferns, herbs and mosses ( <i>Aconitum septentrionale, Dryopteris expansa, Diplazium sibiricum, Oxalis acetosella, Lycopodium annotinum, Vaccinium myrtillus, Carex iljinii, Bergeia crassifolia, Hylocomium splendens, Rhytidiadelphus triquetrus</i> ), partly with subalpine shrubs ( <i>Betula rotundifolia, Rhododendron aureum</i> )	<b>2.1.1.1.</b>
	Altai-Sayanian mixed birch-aspen-pine-fir forests ( <i>Abies sibirica, Pinus sibirica, Betula pendula, Populus tremula</i> ) with tall-forbs, nemoral herbs and mosses ( <i>Aconitum septentrionale, Milium effusum, Galium odoratum, Dryopteris expansa, Rhytidiadelphus triquetrus, Plagiomnium cuspidatum</i> )	<b>2.1.2.2.</b>
	Altai-Sayanian montain pine forests ( <i>Pinus sibirica</i> ), partly with <i>Larix sibirica, Picea obovata</i> , with dwarf shrubs, herbs and mosses ( <i>Vaccinium vitis-idaea, V. myrtillus, Ledum palustre, Pleurozium schreberi, Hylocomium splendens</i> ), locally with <i>Rhododendron aureum, Betula rotundifolia</i>	<b>2.2.1.1.</b>
L3 Formations	<b>Mixed coniferous forests</b> ( <i>Pinus, Larix, Picea</i> )	
L5 Plant community	Altai-Sayanian larch and pine-larch forests ( <i>Larix sibirica, Pinus sibirica</i> ) with dwarf shrubs and mosses ( <i>Ledum palustre, Vaccinium uliginosum, Linnaea borealis, Hylocomium splendens, Sphagnum girgensohnii</i> ), partly with subalpine shrubs ( <i>Betula rotundifolia, Rhododendron aureum</i> )	<b>2.3.1.1.</b>
L5 Plant community	Altai-Sayanian mixed pine-spruce-larch forests ( <i>Pinus sibirica, Picea obovata, Larix sibirica</i> ) with <i>Betula</i>	<b>2.2.2.2.</b>

	pendula, and <i>Abies sibirica</i> , with dwarf shrubs, herbs and mosses ( <i>Vaccinium vitis-idaea</i> , <i>Carex macroura</i> , <i>Gymnocarpium dryopteris</i> , <i>Oxalis acetosella</i> , <i>Hylocomium splendens</i> )	
L3 Formations	<b>Light evergreen needle leaf forests (<i>Pinus sylvestris</i>)</b>	
L5 Plant community	Altai-Sayanian pine forests ( <i>Pinus sylvestris</i> ) with shrubs ( <i>Caragana arborescens</i> , <i>Spiraea chamaedryfolia</i> , <i>Rosa acicularis</i> ) and herbs ( <i>Calamagrostis arundinacea</i> , <i>Brachypodium pinnatum</i> , <i>Carex macroura</i> , <i>Pulmonaria mollis</i> ) alternating with steppes in southern slopes ( <i>Stipa capillata</i> , <i>S. pennata</i> , <i>Festuca valesiaca</i> , <i>Carex pediformis</i> )	<b>2.2.3.3.</b>
	Altai-Sayanian psammophilous pine forests ( <i>Pinus sylvestris</i> )	<b>3.1.8.</b>
L3 Formations	<b>Deciduous needle leaf forests (<i>Larch</i>)</b>	
L5 Plant community	Altai-Sayanian montain larch-birch forests ( <i>Larix sibirica</i> , <i>Betula pendula</i> ) with shrubs ( <i>Spiraea chamaedryfolia</i> , <i>S. media</i> ) and herbs ( <i>Carex macroura</i> , <i>C. pediformis</i> , <i>Artemisia tanacetifolia</i> , <i>Lathyrus humilis</i> ) alternating with meadow steppes in southern slopes ( <i>Stipa pennata</i> , <i>S. capillata</i> , <i>Carex pediformis</i> , <i>Poa angustifolia</i> , <i>Campanula glomerata</i> )	<b>2.2.3.</b>
	Altai-Sayanian mixed pine-spruce-larch forests ( <i>Larix sibirica</i> , <i>Picea obovata</i> , <i>Pinus sibirica</i> ) with dwarf shrubs, herbs and mosses ( <i>Vaccinium vitis-idaea</i> , <i>Linnaea borealis</i> , <i>Carex macroura</i> , <i>Poa sibirica</i> , <i>Lupinaster pentaphyllos</i> , <i>Hylocomium splendens</i> , <i>Rhytidium rugosum</i> ), alternating with herb-rich larch forests ( <i>Calamagrostis pavlovii</i> , <i>Carex pediformis</i> , <i>Iris ruthenica</i> , <i>Pleurospermum uralense</i> ), alternating with meadow steppes in southern slopes ( <i>Helictotrichon schellianum</i> , <i>H. altaicum</i> , <i>Artemisia frigida</i> , <i>Achnatherum sibiricum</i> )	<b>2.3.2.</b>
L3 Formations	<b>Small leaf deciduous forests (<i>Betula</i>, <i>Populus</i>)</b>	
L5 Plant community	Altai-Sayanian montain aspen forests ( <i>Populus tremula</i> ), partly with <i>Abies sibirica</i> , <i>Pinus sibirica</i> , <i>Sorbus sibirica</i> , and tall-forbs and herbs ( <i>Aconitum septentrionale</i> , <i>Cirsium heterophyllum</i> , <i>Trollius asiaticus</i> , <i>Milium effusum</i> )	<b>2.1.2.1.</b>
<b>L0 Biom</b>	<b>Extrazonal temperate forest-steppe</b>	
L1 Formation type	<b>Forest-steppe</b>	
L2 Formation group	<b>Forest-steppe within the boreal zone</b>	
L4 Geographic variants and bioclimatic variants of dominant species	<b>Southern Siberian forest-steppe</b>	
L5 Plant community	Combination (complex) of larch-birch and birch ( <i>Larix sibirica</i> and <i>Betula pendula</i> ) grass forests ( <i>Calamagrostis arundinacea</i> , <i>Rubus saxatilis</i> , <i>Carex macroura</i> , <i>Bupleurum aureum</i> , <i>Cimicifuga foetida</i> ) and meadow steppes ( <i>Stipa pennata</i> , <i>S. capillata</i> , <i>Festuca valesiaca</i> , <i>Galium verum</i> , <i>Fragaria viridis</i> ).	<b>3.1.1.</b>
	Combination (complex) of larch ( <i>Larix sibirica</i> ) forests, partly with <i>Pinus sibirica</i> , with <i>Calamagrostis pavlovii</i> ,	<b>3.2.1.</b>

	<i>Carex pediformis</i> , <i>Scorzonera radiata</i> , <i>Galium boreale</i> and steppes ( <i>Stipa krylovii</i> , <i>Helictotrichon altaicum</i> , <i>Koeleria cristata</i> , <i>Cleistogenes squarrosa</i> , <i>Kitagawia baicalensis</i> )	
	Combination (complex) of larch ( <i>Larix sibirica</i> ) forests, partly with <i>Picea obovata</i> and <i>Pinus sibirica</i> , with steppes ( <i>Stipa krylovii</i> , <i>Agropyron cristatum</i> , <i>Artemisia frigida</i> , <i>Ephedra monosperma</i> ) and xerophilous shrubs ( <i>Rhododendron dauricum</i> , <i>Caragana pygmaea</i> , <i>Cotoneaster melanocarpus</i> ).	<b>3.2.4.</b>
<b>L0 Biom</b>	<b>Steppes</b>	
L1 Formation type	<b>Herbaceous</b>	
L2 Formation group	<b>Extrazonal steppes</b>	
L4 Geographic variants and bioclimatic variants of dominant species	<b>Southern Siberian steppes</b>	
L5 Plant community	Large bunchgrass steppes ( <i>Stipa capillata</i> ) alternating with small bunchgrass steppes ( <i>Poa botryoides</i> , <i>Arctogeron gramineum</i> ) and meadow steppes ( <i>Helictotrichon desertorum</i> , <i>Carex pediformis</i> )	<b>4.1.1.</b>
	Bunchgrass steppes ( <i>Stipa krylovii</i> ) and grasslands ( <i>Agropyron cristatum</i> , <i>Festuca valesiaca</i> , <i>Cleistogenes squarrosa</i> ) alternating with halophytic vegetation.	<b>4.3.1.1.</b>
	Bunchgrass steppes ( <i>Stipa krylovii</i> ) alternating with desert-steppes ( <i>Nanophyton grubovii</i> ) and petrophytic steppes ( <i>Stipa orientalis</i> , <i>Elytrigia geniculata</i> , <i>Atraphaxis pungens</i> , <i>Selaginella sanguinolenta</i> )	<b>4.3.2.</b>