

## BIOLOGY AND ECOLOGY

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### BRIEF ECOLOGICAL CHARACTERISTICS OF THREE UDMURT NATURAL AND CULT OBJECTS IN THE NEIGHBOURHOOD OF KUZEBAEVO VILLAGE (THE UDMURT REPUBLIC)

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#### Abstract

The purpose of the studying is a modern description of the ecological state of three Southern Udmurt natural and cult objects in the neighbourhood of *Kuzebaevo* in Alnashsky District of the Udmurt Republic (the Russian Federation). We briefly stated ecosystemic characteristics of sanctuaries that used for public pagan prayers hitherto. As a result of the scientific investigation the present-day successional condition of vegetation in the studied territories was revealed. It was concluded that the sanctification of territory does not guarantee the full preservation of natural qualities of ecosystems and also the impossibility to include (at this stage) exploitable cult sites in the category of protected areas of Russia.

**Keywords:** Udmurt ethnic religion, Udmurts, Lud, Bulda, Bydd'z'ym kuala, Great kuala, sacral territory, natural and cult

objects, flora, vegetation, anthropogenisation, ecological monitoring, conservancy, ethno-ecology, social ecology, Vyatka-Kama Cis-Urals, Udmurt Republic, Alnashsky District, Kuzebaevo.

One of the possible ways to preserve natural ecosystems may be territories in which there are so-called sacred sites, which are protected by the local population. In the Udmurt Republic there are quite a lot such areas, especially in the southern half of it. However due to the weakening of interest in the Udmurt ethnic religion (paganism), such natural and cult objects as "sacred groves" practically not protected from human impacts, but, nevertheless, by virtue of the surviving traditions of the relative regime of "reserveness" is observed in them. The following is a picture of demutation of vegetation in territories that used for public pagan prayers, and it given characteristics of the ecological condition of cult sites around the village of *Kuzebaevo* (Udmurt *Kuz'obaj* < *Kuz'o* 'master, owner, proprietor' + *baj* 'rich man, kulak') of Alnashsky District of the Udmurt Republic (the Russian Federation), where to present day carry out collective prayings three ethno-confessional groups of southern Udmurts: *Lud-vyzhy* (Udmurt *Lud* 'sanctuary of the group, sacral place for prayers of the group, pagan deity of Udmurts, brother and antipode of the supreme divinity *Inmar*', Udmurt *vyzhy* 'root, clan, kind (clan), tribe'), *Bydd'z'ym kua(la)-vyzhy* (the kind of Great *kua*; Udmurt *budd'z'ym*, *bydd'z'ym*, *badd'z'ym* 'big, large, great', Udmurt *kua(la)* 'pagan familial-tribal sacred wooden construction of Udmurts') and *Bulda-vyzhy* (*Bulda* is an Udmurt tribal deity). For this purpose we have analyzed the published studies on this theme [1], [2], [3], [6], [7], [8], [9], [15] and our field data in the investigated territories, that were collected in 2013-2015, according to the proven geobotanical methods [4], [10], [11], [13].

It should also be pointed out that the study area is located in the subzone of coniferous-deciduous (coniferous-broad-leaved) forests of the taiga zone between the rivers Kama and Vyatka, about 9 km north-northwest of the mouth of Izha (right tributary of the Kama River).

The sacred place *Lud* (etymology of the word is not clear) is located 1 km to South-Southeast of *Kuzebaevo* on headland (promontory) of the left side (is the height about 42 m [12], [14], [15] and the angle of inclination is 18-20° [15]) of southern exposure of the Varzi River's valley on the territory of archeological side of Mazunino, Kushnarenkovo, Karayakupovo and Imen'kovo cultures in the locality of hill fort "Kuzebaevskoe I" – IV-V (on data of V.F.

Gening [5]: IV-VI), VII centuries AD [12], [15], as well as XVIII-XIX centuries AD [15]. The territory of the sanctuary *Lud* in the area of the hill fort dates back to archaeologists to the late medieval period [15], and most likely date of the prayer meeting place's origination is XVII century AD [15].

The vegetation of object *Lud* is strongly sparse forest stand represented where *Abies sibirica* Ledeb. was dominated, *Picea × fennica* (Regl.) Kom. is rarely observed. Broad-leaved species are presented *Acer platanoides* L. and single pieces of *Tilia cordata* Mill., *Ulmus laevis* Pall., *Quercus robur* L. The shrub layer is presented *Euonymus verrucosus* Scop., *Sorbus aucuparia* L., *Corylus avellana* L. In the herbage there is a large number of forest-steppe species (*Phlomis tuberosa* L., *Nepeta pannonica* L., *Asparagus officinalis* L., *Ajuga genevensis* L., *Lavatera thuringiaca* L., *Eryngium planum* L., *Salvia glutinosa* L., *Astragalus glycyphyllos* L., *Libanotis intermedia* Rupr., *Fillipendula vulgaris* Moench. and other), and also pratal and forest-marginal plants (*Origanum vulgare* L., *Plantago stepposa* Opiz., *Turritis glabra* L., *Verbascum nigrum* L. and other) that is connected with geographical location of Alnashsky District in the south of Udmurtia where is the steppe formation of the territory.

We would like to note this fact that around the sacred place anthropogenic ecosystems are located: some agroecosystems such as: cultivated fields, grasslands and greenlands, as well as some damaged natural ecosystems such as: ruderal roadside communities, waste grounds, the Varzi River's damaged floodplain. We guess that as a result their influences the adventive species of plants penetrate on the sacral territory. We recorded 25 species: *Consolida regalis* L., *Urtica urens* L., *Chenopodium hybridum* L., *Fallopia convolvulus* (L.) A. Löve, *Berteroa incana* (L.) DC., *Camelina microcarpa* Andrz., *Capsella bursa-pastoris* (L.) Medik., *Sisymbrium Loeselii* L., *Melilotus albus* Medik., *Melilotus officinalis* (L.) Pall., *Pastinaca sylvestris* Mill., *Collomia linearis* Nutt., *Cynoglossum officinale* L., *Leonurus quinquelobatus* Gilib., *Carduus thoermeri* Weinm., *Cichorium intybus* L., *Vicia sativa* L., *Vicia cracca* L., *Vicia faba* L., *Chenopodium glaucum* L., *Chenopodium album* L., *Potentilla anserine* L., *Artemisia vulgaris* L., *Artemisia absinthium* L., *Bromus inermis* Leyss.

Notability that only the first 16 listed alien species have been recorded in the early 2000s [15] that only confirms the assumption of increasing anthropogenic pressure on the ecosystem of the sacral area.

On the territory of object *Lud* it was revealed 103 vascular plant species; in the early 2000s, there were 95 species [15] that is probably connected with increase in the number of adventive species.

We also found two rare species of plants in relation which must be realized monitoring on the territory of Udmurtia [16] – *Campanula rapunculoides* L. and *Pyrethrum corymbosum* (L.) Scop.

Interestingly that we have not found a vegetation of *Dianthus versicolor* Fisch. ex Link, although this species was recorded in the early 2000s in the composition of flora of the territory of natural and cult object *Lud* [15].

So, the development of the sacral place's ecosystem continues to follow on regressive type: there is an increase of adventive plant species and a gradual replacement of native flora's species, a forest stand's shrinking and a shrub layer's degradation; successional processes occur in the direction of anthropogenisation of the territory.

The natural and cult object *Bydd'z'ym kuala* (Great kuala) is located 2 km to north-northeast of *Kuzebaevo* [14].

The ecotope of the sacral place is the lower part of right flattened slope of the Parsya River's valley (left tributary of the Varzi River). The slope of eastern exposure, the angle of inclination is 2-5° [15].

The vegetation of the sacred place's territory is represented by a spruce-fir-linden insular forest plot and an urticaceous-hygrophilous-herb alder forest. The natural and cult object is surrounded by arable lands and pastures, as well as pine plantations (*Pinus sylvestris* L.).

In the forest stand of insular wood plot there is dominated *Tilia cordata* Mill., a significant role in the tree layer also play *Picea × fennica* (Regel) Kom. and *Abies sibirica* Lebed. This plot has in its composition of large (well-grown) old trees above the species, some of which, because of their age features moved into the category of dead-wood. A similar pattern was observed by other researchers [7], [9], [15]. The undergrowth is well developed and consists of *Euonymus verrucosus* Scop., *Prunus padus* L., *Ulmus glabra* Huds., *Ulmus laevis* Pall. (in studies, which were conducted in the early 2000s, the species is not mentioned [15]), *Rubus idaeus* L. In the herbage there are found both boreal – *Oxalis acetosella* L., *Maianthemum bifolium* (L.) F.W.Schmidt, *Moehringia trinervia* (L.) Clairv., *Adoxa moschatellina* L., *Linnaea borealis* L., *Geranium sylvaticum* L. and others – and nemoral species of plants: *Aegopodium podagraria* L., *Polygonatum multiflorum* (L.) All.,

*Carex pilosa* Scop., *Chaerophyllum bulbosum* L., *Asarum europaeum* L., *Pulmonaria obscura* Dumort., *Equisetum pratense* L., *Lathyrus vernus* (L.) Bernh., *Veronica chamaedrys* L., *Veronica teucrium* L., *Stellaria nemorum* L., *Stellaria graminea* L., *Glechoma hederacea* L., *Campanula latifolia* L., *Campanula trachelium* L., *Allaria petiolata* (Bieb.) Cavara et Grande and others.

The bottomland alder forest is represented *Alnus incana* L. Alder trees are tightly entwined with hops (*Humulus lupulus* L.). In the herbage there are dominated *Urtica dioica* L., *Myosoton aquaticum* (L.) Moench, *Persicaria hydropiper* (L.) Delarbre, *Lysimachia nummularia* L., *Impatiens noli-tangere* L., *Galium rubioides* L., *Scirpus sylvaticus* L., *Festuca gigantea* (L.) Vill. A comparison with data of previous studies [15] indicates the absence of significant changes in the alder forest's ecosystem.

In the most anthropogenically disturbed places it was recorded 14 synanthropic species such as: *Sisymbrium loeselii* L., *Melilotus albus* Desr., *Cynoglossum officinale* L., *Leonurus quinquelobatus* Gilib., *Cichorium intybus* L., *Thlaspi arvense* L., *Malus domestica* Borkh., *Medicago sativa* L., *Galeopsis speciosa* Mill., *Galeopsis bifida* Boenn., *Pastinaca sylvestris* Mill., *Lapsana communis* L., *Tripleurospermum inodorum* (L.) Sch.Bip., *Prunus avium* L. In early geobotanical descriptions researchers have fixed only 11 species of invasive plants [15].

Among the most frequently occurring of weed plants in the sacral territory it should be noted *Chenopodium hybridum* L., *Chenopodium polyspermum* L., *Chenopodium suecicum* J. Murr., *Chenopodium album* L., *Capsella bursa-pastoris* (L.) Medik., *Collomia linearis* Nutt., *Amaranthus retroflexus* L., *Centaurea cyanus* L., *Knautia arvensis* (L.) Coult., *Plantago major* L., *Achillea millefolium* L., *Artemisia vulgaris* L., *Artemisia absinthium* L., *Elytrigia repens* (L.) Desv. ex Nevski.

Among the rare plant species that were identified on the sacred place's territory it should be called *Cicerbita uralensis* (Rouy) Beauverd, which has been noted in earlier studies [15], as well as earlier unrecorded *Campanula rapunculoides* L. that included in the list of monitoring species on the territory of Udmurtia [16]. Besides, on the sacred territory there was discovered a rare (red-book) species of fungus – *Phallus impudicus* L. [8], [15], [16]; its fruition we have fixed only in 2014.

Altogether in the natural and cult object *Bydd'z'ym kual* 134 vascular plant species were revealed that 20 species more than it has been found in studies conducted in the early 2000s [15].

However, despite the gradually increasing anthropogenic pressure, the ecological state of the sacral area can be assessed as satisfactory.

The natural and cult object *Bulda* (Udmurt *Bulda vös'* 'Bulda praying/prayers') is located on slope of the hill *Bulda* (Udmurt *Buldagurez'* < *Bulda* + *gurez'* 'mountain, hill' or Udmurt *D'z'atchagurez'* < *D'z'atcha* is one of the tribal groups of Udmurts + *gurez'*).

The sacral place's ecotope is the central part of left slope (15°) of the Varzi River's valley; it is located 100 meters below the Parsya River's mouth. A little north of the hill, in a ravine along the road to the village of Varzi-Yatchi (Udmurt *D'z'atcha*, *D'z'achcha*), there is a brook with a picturesque waterfall in the human height (~1.7 meter), with flow rates of up to 5 liters per second [15].

The forest stand of the object is a sparse and represented *Picea × fennica* (Regel) Kom. with touch of *Betula pendula* Roth. and *Abies sibirica* Lebed. The undergrowth is poorly developed and consists of *Sorbus aucuparia* L., *Lonicera xylosteum* L. and *Padus avium* Mill. In the herbage there are dominated nemoral plant species such as: *Aegopodium podagraria* L.), *Asarum europaeum* L., *Pulmonaria obscura* Dumort., *Campanula trachelium* L., *Polemonium caeruleum* L., *Allaria petiolata* (Bieb.) Cavara et Grande. In the herbaceous cover there are active synanthropic species such as: *Lapsana communis* L., *Leonurus quinquelobatus* Gilib., *Antriscus sylvestris* (L.) Hoffm., *Cardamine impatiens* L., *Urtica dioica* L., *Chelidonium majus* L. and *Galeopsis ladanum* L.

It should also be noted that on the sacral territory we discovered *Knautia tatarica* (L.) Szabo, which is an endemic of Urals and Cis-Urals. In the 2000s, the species was also recorded [15]. In 2005, a very rare fungus for the mycobiota of Udmurtia was found on the sanctuary's territory – *Xerocomus badius* (Tr.) Kucher ex Jilb. [15].

Altogether on the natural and cult object's territory it was revealed 62 species of vascular plants, i.e. the same number of species, which has been observed in studies of the 2000s [15].

In general, the ecological state of the sacral territory in comparison with the beginning of the 2000s has not changed and is estimated as pre-crisis with high probability to transition of it into crisis. With the existing rate of anthropogenic pressure in the Varzi River's valley, in the future we can expect the degradation of forest stand and the succession in the direction of formation of more pronounced anthropogenic type.

So, the sanctification (sacralisation) of territory does not guarantee the full preservation of natural qualities of ecosystems that

should be considered in the environmental practice. Furthermore, the implementation of collective pagan oblations on these sanctuaries (at the present time) and the plant studies of considered ecosystems give reason to question the possibility to change the status of these sacred territories in the category of protected areas of Russia.

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