

Artículo de investigación

**TOWARD THE SCIENTIFIC RESEARCH OF A.E. KULAKOVSKY:
FLORISTIC ANALYSIS OF THE NORTHERN REGION OF RUSSIA**О НАУЧНОМ ИССЛЕДОВАНИИ А.Е. КУЛАКОВСКОГО: ФЛОРИСТИЧЕСКИЙ
АНАЛИЗ СЕВЕРНОГО РЕГИОНА РОССИИHACIA LA INVESTIGACIÓN CIENTÍFICA DE A.E. KULAKOVSKY: ANÁLISIS
FLORÍSTICO DE LA REGIÓN NORTE DE RUSIA

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Sakhayana Stepanovna Sivtseva¹⁰⁷**Abstract**

The article presents the work by A. E. Kulakovsky *Species of Flora and Fauna Known to the Yakuts*. The relevance of the research is caused by the demand for this work in our time, when the materials on the fauna and flora of Yakutia were systematized for the first time. The purpose of the research is to identify the author's contribution to the historical and cultural aspects of studying the nature of the Northern territories of Russia as exemplified by the analysis of the above work. The study was conducted within the methodological framework of historical-comparative and textual analysis. The source facts are presented on the contents of works on the flora of Yakutia, published from the middle of the 19th to the beginning of the 20th centuries. The results of the study confirm the value of Kulakovsky's research – the native Yakut names of plants reflect the features of the Northern nature and the perception of the environment by the Yakuts. The authors came to the conclusion that the study of folk terminology testifies the development of the Northern region by the Sakha people, revealing its peculiarity as a linguistic source.

Keywords: Edible herbs, Sakha (Yakut) names of plants, northern expeditions, species distribution area.

Аннотация

В статье представляется работа А.Е. Кулаковского «Виды животного и растительного царств, известные якутам». Актуальность исследования обуславливается востребованностью в наше время данной работы, где впервые систематизированы материалы по фауне и флоре Якутии. Цель исследования – выявить вклад автора в историко-культурных аспектах изучения природы северных территорий России на примерах анализа материалов двух частей названной работы. Исследование проведено в рамках историко-сравнительного и текстологического методов. Источниковедческие факты представляются по содержаниям работ по флоре Якутии, изданных с середины XIX до начала XX веков. Результаты исследования подтверждают ценность работы Кулаковского – в исконно якутских названиях растений отражаются особенности северной природы и восприятие окружающей среды якутами. Авторы приходят к выводу, что работа по изучению народной терминологии свидетельствует освоение северного края народом саха, в чем раскрывается ее особенность и как лингвистического источника. В этом ракурсе выводы связываются с современными вопросами сохранения национального языка:

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обращают внимание на архаические слова и выражения, раскрывают связи языка с уникальными природными явлениями края. Итоги изучения данной проблемы расширяют возможности осмысления научных трудов Кулаковского, неравнодушного к судьбе своего народа мыслителя.

Ключевые слова: Природа Якутии, низшие растения, съедобные травы, названия растений на языке саха, северные экспедиции, ареал растений.

Resumen

El artículo presenta el trabajo de A. E. Kulakovsky *Especies de flora y fauna conocidas de los Yakuts*. La relevancia de la investigación se debe a la demanda de este trabajo en nuestro tiempo, cuando los materiales sobre la fauna y la flora de Yakutia se sistematizaron por primera vez. El propósito de la investigación es identificar la contribución del autor a los aspectos históricos y culturales del estudio de la naturaleza de los territorios del norte de Rusia, como lo demuestra el análisis del trabajo anterior. El estudio se realizó dentro del marco metodológico del análisis histórico-comparativo y textual. Los datos de origen se presentan en el contenido de las obras sobre la flora de Yakutia, publicadas desde mediados del siglo XIX hasta principios del XX. Los resultados del estudio confirman el valor de la investigación de Kulakovsky: los nombres nativos de plantas Yakut reflejan las características de la naturaleza del Norte y la percepción del medio ambiente por parte de los Yakuts. Los autores llegaron a la conclusión de que el estudio de la terminología popular atestigua el desarrollo de la región norte por parte del pueblo Sakha, revelando su peculiaridad como fuente lingüística.

Palabras clave: Hierbas comestibles, nombres de las plantas de Sakha (Yakut), expediciones al norte, área de distribución de especies.

Introduction

Aleksey Yelisejevitch Kulakovsky (1877 – 1926) is one of the most known personalities in the history of Yakut literature. It may be news to many that he was also the author of equally important valuable researches in economics, natural sciences and practical studies on effective management in agriculture and farming. Unique information is presented in his classified work titled *Species of Flora and Fauna Known to the Yakuts* that was first published in 1929 (Kulakovsky, 1929). The collected material was based on the list of the Yakut names of species of animals and plants, with an additional annex containing information on domestic and commercial animals. It should be noted that the Yakut names of plants and animals given in this work were widely used by the population of Yakutia in the pre-revolutionary period. The Yakut names for plants mentioned by A.Y. Kulakovsky acquire special value due to the fact that as the biological science developed, the Yakut names of many species of local flora, and especially of fauna, represented direct translation

from the existing Latin and Russian names. Knowing that, originally Yakut, old fashioned words, characterizing the species in accordance with the long-term observations of the nature gradually began to disappear from common parlance. It must be admitted that such a replacement, on the one hand, creates some convenience for perception. However, in the current situation, when there is a real problem concerning the preservation of the national language and the distinctive culture of the people, there is a need for such studies. It should be noted that this problem had existed before, as evidenced by A.Y. Kulakovsky in the preface of his work, reflecting the following insight: “The Yakut young people do not know both the Yakut and Russian names of species of animal and plants that occur in Yakutia ...”. According to the author, this was, in fact, the main reason for writing his work. In addition, A.Y. Kulakovsky noted the second point which served as an incentive for doing the research: “... those who wish to know the names mentioned are greatly

hampered in this, without the appropriate tools” (Kulakovsky, 1929: 415). Indeed, at that time there was no available literature that could be used to obtain relevant knowledge, although the first fundamental work in this area was undertaken by Russian researchers. The two facts mentioned above later became the reasons for writing the scientific works, which are to be analyzed in this paper. A number of Russian scholars investigated flora of the Yakut region during expeditions aimed at a comprehensive study of the northern region, in which at that time there was practically no reliable information of fundamental scientific nature. In most cases, these expeditions were carried out at the request of the Imperial Academy of Sciences and included the study of the climate, geographic features of the locality with a set goal to survey earth resources. Natural science research of flora and fauna in the region and studies on the features of culture and customs of the people inhabiting extensive territories of northern part of Russia were conducted.

Goals and Hypothesis

The main focus of the study is to identify the contribution of A.Y. Kulakovsky in solving the problem of preserving the Yakut language, identifying cultural and historical aspects of the development of botanical science on the basis of data from the northern regions of Russia. The presented research provides the evidence that Kulakovsky foresaw the emergence of the problem of the ethnic language survival, and that he deeply understood the scientific value of the native Yakut plant names, which reflected the unique features of the northern nature and the attitude of the Yakut people to their environment.

Methodological Framework

The paper is written within the methodological framework of textual analysis of the research work of A.Y. Kulakovsky. Special attention is given to the systematization of native Yakut names for plants that describe their meaning, enabling to put them into specific categories on this basis. This approach is distinguished by the desire to reveal the classical phenomena by analyzing Kulakovsky’s work with minimal distortions in the interpretation of his main conclusions, and to present the scholar as a person who had a special gift to integrate national traditions in the transnational parameters of culture as the basis for the spiritual self-identification of the given people.

Results and Discussion

For the first time A.Y. Kulakovsky revealed his socio-philosophical thoughts about the situation with Siberian small-numbered ethnic groups in his publication *To the Yakut Intelligentsia*. Disclosing the main theses in his appeal letter the author begins to consistently raise the reader’s interest in this topic:

You, gentlemen, may think that I am obsessed by a mater or hypochondria when expressing the idea of the possibility, and even inevitability, of the extinction of the Yakut people. You may think so, but I am deeply convinced of the critical position of the Yakuts at present. How can those fatal clouds collected ominously in our turbid sky stay imperceptible? (Kulakovsky, 2012:163) Social issues that became common at the beginning of the 20th century were presented in this work in the form of consistently systematized standpoints and conclusions of the author, considering receptive contexts with their replenishing function in relation to the ideas put forward. With this in view, it is interesting that the ideas of A.Y. Kulakovsky received development in his works on the beliefs, language, and culture of the native people. His unique classification *Species of Flora and Fauna Known to the Yakuts* takes pride of place among this series of works.

In the 19th century the natural environment of Yakutia was studied during scientific expeditions by Middendorf (1869) and Maak (1886). The first publications about the expedition of A.F. Middendorf (1842-1845) stressed the special importance in a comprehensive study on the nature of Siberia (Middendorff, 1845). The beginning of serious scientific interest for the permafrost environment is directly connected with the results of this expedition, as noticed by J. Stefan (1994).

Flora of Yakutia was also studied by S. Epishev, I.G. Gmelin, S.P. Krashennikov, and A.P. Pallas (Ivanov, 2007). Prain (1892), Yurinsky (1915), Gubelman (1915) and others were working in this particular area. However, most researchers did not pay enough attention to taking into account the Yakut names for plants. Moreover, the available disaggregated data often did not correspond to the actual names used in the Yakut language to denote animals and plants. For example, the *Concise Yakut Dictionary of Botany*, mentioned in the works on the study of the Vilyui Region by Maak (1886) cited the Yakut definition of *njurguhun* in relation to water lilies of the genus *Nymphaea L.* Whereas

it is generally accepted to understand the pasque flower of the genus *Pulsatilla* Mill. under this name. In the same way, a representative of the genus *Beckmannia* Host., known generally as slough-grass, is given in this dictionary under the Yakut name *manchaari*, while it serves to determine sweet flag of the genus *Acoru scalamus* L. Likewise *kuluhun* is attributed to three species representing different kinds of plants – club-rush or bulrush (*Scirpus* L.), slough-grass (*Beckmannia* Host.) and reed grass (*Calamagrostis* Adans.). Currently, the Yakut name *kharya ot* is commonly used to denote yarrow (*Achillea millefolium* L.), but according to the previously presented data, this name was also given to fowl blue grass or *Pedicularis* Karoi Freyn (*P. Palustris* L.), now known as *bidjiriit*. In addition, it should be noticed that according to the data of different researchers completely different species of plants can often be found under the same name. For example Tarabukin (1932) uses *kehe kulgaaha* to represent the pasque flower (*Pulsatilla* Mill.), but according to Maak (1886) and Samarin (1966), it is understood to denote false hellebores and corn lilies of the genus *Veratrum* L.

The given examples illustrate that some Yakut names for plants may have inaccuracies and do not coincide with those actually applied at present for some of the species. It should be noted that such discrepancies do not always indicate false information; it is entirely permissible that in some cases representatives of different plant species have really been described under one name. It is possible that this circumstance arose for many reasons, for example, because of strong external similarity and similar properties of plants or depending on the terrain where the particular name was used. Therefore, now the question of the correct use of the Yakut names for plants is of great relevance.

On this basis, the work of A.Y. Kulakovsky presents valuable information as it reflects comparatively accurate data on the species of plants originally named by the Yakuts in their own language. In addition, it should be noted that the names of the plants listed in this work have not been published before. In some cases options of the names of one species used in different regions are given in this work with the following clarification by the author: “Well-known names are put by me at first, followed by the names which are given according to the descending degree of their use. If the name is poorly known, the location, where it was used, is specified in brackets” (Kulakovsky 1979: 416). Thus, one work summarizes valuable information

concerning the existing variations of the Yakut names for all species of plants.

Many studies of that time regarding the flora of the Yakutia region often referred to only a certain area. For example, Maak (1886) studied in detail the territory of the Vilyui River basin and part of the Middle Lena basin (from the city of Yakutsk to the mouth of the Vilyui River), whereas the expedition of Middendorf (1869) focused on the region of southern Yakutia and the vicinity of Yakutsk. A.Y. Kulakovsky collected information on plant species in Yakutia throughout his life, during which he traveled practically around the entire Yakut region. As he noted in the preface to his work, “the Yakut names had been personally collected by me throughout all my vagabond life in Yakutia” (Kulakovsky 1979: 416). Consequently, Kulakovsky’s work presents the unique data from that time covering almost the whole large terrain of the Yakut region.

In the botanical part of the work, the taxonomic distinction between the order, family and genus of plants was not applied, whereas in its zoological part A.Y. Kulakovsky represented species according to the existing taxonomic variations. This fact also concerns the Latin and Russian names of plant species, which were selected, compiled and listed by the author along with equivalent in the Yakut language. Indeed, at that time it was rather difficult to find suitable Latin names for some of the plants, since it is known that some species represented in the work of A.Y. Kulakovsky were described and labeled in later botanical studies. This case first of all concerns endemic species. Later, at the request of the author, the Latin names were supplemented by specialists who commented on the presented research and included them in the subsequent editions of his works. Thus, the Latin names of plants were supplemented by Tarabukin (1932) in the first publication and later they were added by M.N. Karavaev (1958) to the subsequent editions.

In his work, A.Y. Kulakovsky presented the plants in the following groups: trees (listing the Yakut names of 29 species), shrubs (14 species), berries (17 species), edible herbs (19 species) and other plants of lower order (142 species). A list of plants used by the local population as their main food and as additives to it was given in the section *Edible Herbs*. For example, the species represented under the name *kyauga-chernobylnik*, now known as Mongolian sagebrush (*Artemisia mongolica* Fisch. ex Nakai), was often eaten by the Yakut people. During pre-revolutionary times, young leaves of

this plant served as a significant source of food among poor people: the leaves were boiled in water, squeezed out well and cut into small pieces, then put in buttermilk and boiled again (Makarov, 1979). Furthermore, one of the common names *yore oto*, translated as a “herb for broth”, was indicative of the value of this plant for the Yakut diet. A plant species, defined by the Yakuts as *unnjuula*, *kyol aha*, *anahahin*, *aadil* and denoting flowering rush or grassy rush (*Butomus umbellatus* L.), had invaluable nutritional value. Its rhizomes were widely used for obtaining flour: they were dried and ground into a powder, giving 250 g of flour from 1 kg of raw material. The flour was used to make bread, flat cakes, and as an additive to the fermented milk product – *suorat*. The name “breadbasket”, quoted by Kulakovsky, probably was conditioned by the widespread consumption of this plant by the population in making flour from the rootstocks of this plant for baking bread. A study of Makarov (1979) on the chemical composition of such flour showed that it had all the necessary nutrients. The great burnet (*Sanguisorba officinalis* L.) is presented in this section under the title *ildiiki*, meaning “frozen roots of the salad burnet”. This species was used for food, being prepared in a special way: frozen roots of the plant were boiled in milk. Additionally, the same plant was presented by A.Y. Kulakovsky under another Yakut name of “*bita*” with the note “roots are edible”.

Nowadays, this plant is no longer used as food. In the section *Herbs and Other Plants of the Lowest Order*, which is the most voluminous, Yakut names and descriptions of several kinds of plants are mentioned for which it is very difficult to choose appropriate Latin and Russian names. Obviously, the reason for this is the fact that these plant names are no longer used now. These include *suor bytyga*, meaning in translation from the Yakut language “crow’s flagellum”, *chibuku ahylyga* – “bighorn’s food”, *hakhah borbuya* – “eagle-owl’s shank”, *tirekh oto* – “grass growing under a poplar”. In these cases, the analysis gives approximate definitions that require further detailed study, aimed at revealing the etymology of the used Yakut words.

In this way, the linguistic significance of A.Y. Kulakovsky’s work is revealed, which provides an opportunity to trace the chronology of changes in the names of plants used for a particular species. As it turned out, some of the words presented in the analyzed work, which were originally used by the Yakut population and considered in many cases as the Yakut ones, might belong in their origin to the language of the

indigenous minorities inhabiting the northern territories. For example, the word *siibikte*, quoted by A.Y. Kulakovsky with the following description: “*siibikte* is dwarf horsetail of the genus *Equisetum* (*Equisetum Scirpoides* Mich.). It grows on the forested banks of stony rivers; remaining green during the winter; horses, feeding on it in the winter, quickly gain fat from it” (Kulakovsky 1979: 442). At present, this word is still represented as a Yakut name, but in fact it is of Evenk origin and comes from the word *sibekte* (Vinokurov, 2004). According to modern data, this name is used to describe the variegated horsetail (*Equisetum variegatum* Scheich.) in both the Yakut (Andreev, Galaktionova, & Gorovoy, 1974) and Evenk languages (Vinokurov, 2004).

In certain cases the Yakut language is a complex system for perception, for example, the slightest changes, including even in pronunciation, can radically change the meaning of words. The word *lokhuora*, quoted by A.Y. Kulakovsky, refers to the mannagrass (*Glyceria triflora* Kom.). There are words close to it in terms of sound, serving as the names of other kinds of plants. Thus, by replacing the letter “kh” with “k” in this plant name, we obtain *lokuora*, which means white hellebore (*Veratrum Lobelianum* Bernh.); the replacement of “kh” by “h” results in *lohuora*, meaning already woolly speedwell (*Veronica incana* L.). In this context, all three species belong to different genera. In such cases, it is likely that some inaccuracies in the Yakut plant names may have occurred and need to be admitted. For example, presently the Yakut name *tamyldan*, mentioned in the works of A.Y. Kulakovsky, is used for the meadowsweet or Spirea plants (*Spiraea* L.). According to some information, this name may change somewhat, forming *tamaldan* (Borisov, Borisova & Vinokurov, 2007) and represent both the above mentioned Spirea and simple meadow rue (*Thalictrum simplex* L. (*T. Strictum* Ledeb.)), according to Samarin (1966). At the same time both names appear in the work of Maak (1886), *tamyldan* being used to describe Spirea, and *tamaldan* referring to simple meadow rue.

In addition, A.Y. Kulakovsky used both definitions *sardaa* and *sardaana* as synonyms, whereas these names are used to refer to different plants. Thus, *sardaa* serves to name sweet vetch of the genus *Hedysarum* L. *Sardaana* is generally accepted to denote the Syberian lily (*Lilium pensylvanicum* Ker.Gawl.). Next, the Yakut name *yt tyla*, quoted by A.Y. Kulakovsky with reference to Maak, and translated as “dog’s tongue”, currently refers to sow thistle of the

genus *Sonchus* L. According to some data, this word is also used to denote saw-wort (*Saussurea DC*) (Borisov et al., 2007) and in the works of R.K. Maak it is mentioned as follows: "... wine infusion of the plant, called *yt tyla* (dog's tongue) is used against stomach pains. This infusion is also used against diarrhea and nausea" (Maak, 1886: 81, Part III), while the Latin name of the plant is not included. According to Karavaev (1958) and Tarabukin (1932), this plant is supposed to be dandelion of the genus *Taraxacum* Wigg. Samarín (1966) quotes *kyokh yt tyla*, referring to thistle of the genus *Cirsium setosum* M.Bieb.

Thus, different authors can use one existing name to refer it to different plant species. A.Y. Kulakovskiy meant cowbane or northern water hemlock (*Cicuta virosa* L.) by the name *aba*, but according to Yurinsky (1915), it was used to denote two species – red goosefoot (*Blitum polymorphum* C.A. Mey. or *Chenopodium rubrum* L.) and marsh cress (*Nasturtium palustre* L. DC. or *Rorippa palustris* L. Bess.). Petrov (2002) used this name to refer to winter cress or yellow rocket of the genus *Barbarea* Beck. Perhaps, in many such cases, the discrepancies in the plant names depend on the region where they are used.

It should be noted that the information related to the certain species distribution areas is of particular interest. The area of some species can vary depending on the abiotic and biotic factors towards expansion, extinction or contraction. For example, cloudberry (*Rubus chamaemorus* L.), referred in the work by A.Y. Kulakovskiy marked as "Western Kangalass", is now found rarely in that locality, but widely grows in northern Yakutia (Karavayev, 1958). Therefore, the results of A.Y. Kulakovskiy (1979: 439-444) specifying the data acquisition localities can indicate the changes in species distribution areas under the influence of various factors.

A.Y. Kulakovskiy, the founder of Yakut fiction (Burtsev & Burtseva, 2004) was one of the first to compile a considerable systematic material on the names of plants in Sakha (the Yakut language) which include comparatively accurate Latin and Russian names for individual species. The significance and value of his work is related to its results, where Yakut, Russian and Latin names of plants were collected and processed by A.Y. Kulakovskiy, covering most of Yakutia inside its borders as of 1912.

However, the value of A.Y. Kulakovskiy's research is not limited by citing the used original Yakut names of plants, but its significance is in preservation of the vibrant and unique Yakut

language, which enables to transfer the information received by him to the future generations. It is noted in modern studies that the principles of the scientific-botanical nomenclature are naturally based on national linguistic parameters, where figurativeness is preserved in metaphorical ways of nomination (Bullen, 2004).

Conclusion

The value of Kulakovskiy's work *Species of Flora and Fauna Known to the Yakuts* lies in the unique presentation of scientific information about fauna and flora of Yakutia. In the descriptions of plants and their various characteristics, he used interesting facts and information about the special climatic conditions of the Northern permafrost region. As a result of a comparative study of the materials with the information of other researchers, differences and variations in definitions were revealed. They are most often associated with the original names of plants, which reflected the features of Northern nature and the perception of the environment by the Yakuts. The authors of this paper also came to the conclusion that the study of folk terminology testifies the development of the Northern region by the Sakha people, revealing its peculiarity as a linguistic source.

Nowadays, this becomes the most urgent need in terms of the growing problem of preserving indigenous languages, because there is a real tendency to deplete these languages, due to the loss of many words that have become obsolete. The presented work employs native Yakut vocabulary, the correct interpretation of which is of great interest, because of the loss of many words at present time. Already in his time Kulakovskiy foresaw the upcoming challenge for preserving national languages, which characterizes him as a sensitive thinker who was not indifferent to the destiny of his people. It should be noted that in this regard many unique Yakut names for plants, which reflect the attitude of the Yakut people to their environment, have been preserved owing to the work of A.Y. Kulakovskiy.

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References

- Andreev, V.N., Galaktionova, T.F., & Gorovoy, P.G. (1974). The determinant of higher plants of Yakutia. Novosibirsk: Nauka.
- Borisov, Z.Z., Borisova, N.I., & Vinokurov, V.N. (2007). Russian-Yakut dictionary of biological terms. Ugarov, G.S. (Ed.), 2nd ed. Yakutsk: Yakutsk Scientific Center of the Siberian Branch of the Russian Academy of Sciences Press.
- Bullen, A. (2004). *The Language of Flowers*. Jarrold Publishing. Retrieved from <https://books.google.ru/books?isbn=1841651419>
- Burtsev, A.A. & Burtseva, M.A. (2004). Yakut Literature in Portraits and Persons. Yakutsk: Sakhapoligraph izdat.
- Gubelman, M.I. (1915). Plants, collected in a forest expedition along the Chara River in the summer of 1914, with W.F. Boydush. *Izvestiya of the Yakut Dep. IRGO*, 1, pp. 81-82.
- Ivanov, W.N. (Ed.) (2007). Yakutia. Historic and cultural atlas. Moscow: Feoria
- Karavaev, M.N. (1958). Notes on flora of Yakutia. Moscow: Publishing House of the Academy of Sciences of the USSR.
- Kulakovsky, A.Y. (2012). To the Yakut Intelligentsia (Intellectuals). Yakutsk: Bitchik.
- Kulakovsky, A.Y. (1929). Species of Flora and Fauna Known to the Yakuts. *Izvestija by Yakut dep. GRGO*, 3, pp. 17-40.
- Kulakovsky, A.Y. (1979). Scientific works. Yakutsk, pp.484.
- Maak, R.K. (1886). The Viljui district in the Yakut region. In 3 parts, St. Petersburg.
- Makarov, A.A. (1979). Medical plants of Yakutia. Yakusk: Yakut book publisher.
- Middendorf, A. (1869). Exploration of the north of east Siberia. Part II. Northern and Eastern Siberia in a natural historical sense. St. P. Published by Imperial Science Academy.
- Middendorff, A. (1845). Expédition de Sibérie. Voyage de à Oudskoï; lettre à M. Fuss. *Bull. phys.-math*, 4(1, 2), 18–32.
- Petrov, A.M. (2002). Russian-Latin-Yakut dictionary of the plants in Yakutia. Yakutsk: Yakutsk Scientific Center of the Siberian Branch of the Russian Academy of Sciences Press.
- Prain, Y. (1892). List of plants, collected by G. Kirillov in 1891 in the Olyokminsko-Vitimsk land. Irkutsk: Publisher K.I. Vitkovsky.
- Samarin, W.P. (1966). Poisonous plants of Yakutia. Yakutsk: Book publisher.
- Tarabukin, A.Y. (1932). Field grass of Yakutia. The determinant of weeds. Yakutsk: Yakut federal printshop.
- Vinokurov, V.N. (2004). Саха сирин үүнээйитэ, кыыла-сүөлэ. Yakutsk: Bitchik,
- Yurinsky, T.O. (1915). Materials for flora of the Verkhoyansk district of the Yakutsk region. *Izvestiya of the Yakut Dep. IRGO*, 1, 26-28.