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COMMUNICATIONS

FLORA OF ERKEENI VALLEY (MIDDLE REACHES OF THE LENA RIVER, CENTRAL YAKUTIA)

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Erkeeni, the left-bank valley of the middle reaches of the Lena River, is located between the city of Pokrovsk (Khangalassky ulus of the Republic of Sakha (Yakutia)) and Tabaginsky Cape (urban area of Yakutsk). Together with adjacent islands, it covers an area of about 200 km^2. This is one of the most densely populated territories of Yakutia, with the total population about 7 thousand people. The most of the land is agricultural. The area has been extensively studied by botanists for a long time, but a cumulative list of its plants was not available to date and is given for the first time. The territory under study belongs to the Central Yakut floristic district of the Tunguska-Lena boreal province. The flora of the Erkeeni Valley comprises 566 species, 7 subspecies, 1 variety and 2 forms, united into 297 genera and 82 families. 13 species are alien. As a result of an increased anthropogenic impact on natural sites, a significant share of weeds was revealed in the flora (132 species – 23%). This includes 62 species (11%) of aggressive weed elements of the Yakutian flora, with 9 species being listed in the Black Data Book of Siberia, and 26 species in the Black Data Book of the Far Eastern Federal District. The potential of useful plants in Erkeeni Valley is quite high (225 species – 40% of the flora), which can contribute to maintaining the economy of the rural population. The distribution of 22 species listed in the regional Red Data Book of Yakutia has been revealed. In order to preserve natural diversity of the plants and the possibilities of their economic use, it is recommended to optimize an anthropogenic load on natural landscapes of the territory.

Keywords: Yakutia, the Lena River, Erkeeni Valley, biodiversity, vascular plants, useful, weedy, invasive, poisonous plants, Red Data Book, Black Book

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REFERENCES

Brezhnev D.D., Korovina O.N. 1980. Dikie rodichi kul’turnykh rasteniy flory SSSR [Wild relatives of cultivated plants of the flora of the USSR]. Leningrad. 376 p. (In Russ.).

Cherepnin V.A. 2016. Pishchevye rasteniya Sibiri [Food plants of Siberia]. Novosibirsk. 188 p. (In Russ.).

Chernaya kniga flory Sibiri. 2016. [The Black Data Book of Siberian Flora]. Novosibirsk. 440 p. (In Russ.).

Cherosov M.M., Sleptsova N.P., Mironova S.I., Gogoleva P.A., Pestryakov B.N., Gavril'yeva L.D. 2005. Sintaksonomiya sinantropnoy rastitel'nosti Yakutii [Syntaxonomy of synanthropic vegetation of Yakutia]. Yakutsk. 575 p. (In Russ.).

Timofeev P.A. 1980. Lesa Yakutii [Forests of Yakutia]. Yakutsk. 152 p. (In Russ.).

Cherosov M.M. 2005. Sinantropnaya rastitel'nost' Yakutii [Synanthropic vegetation of Yakutia]. Yakutsk. 160 p. (In Russ.).

Dikie rodichi kul'turnykh rasteniy Rossii. 2005. [Wild relatives of cultivated plants in Russia]. – In: Katalog mirovoy kollektsii VIR. Vyp. 766. St. Petersburg. 54 p. (In Russ.).

Dikie rodichi kul'turnykh rasteniy Yakutii i ikh okhrana. 2014. [Wild relatives of cultivated plants of Yakutia and their protection]. Novosibirsk. 248 p. (In Russ.).

Dikorastushchie poleznye rasteniya Rossii. 2001. [Wild useful plants of Russia]. St. Petersburg. 663 p. (In Russ.).

Efimova A.P. 2011. Lesa doliny Sredney Leny (Tsentral'naya Yakutiya): Sintaksonomicheskiy i dinamicheskiy analiz [Forests of the Middle Lena Valley (Central Yakutia): Syntaxonomic and dynamic analysis]. Novosibirsk. 160 p. (In Russ.).

Flora Sibiriae. 1987–2003. Novosibirsk. Vol. 1–14.

Gogoleva P.A. 2003. Konspekt flory vysshikh sosudistykh rasteniy Central'noy Yakutii: Spravochnoe posobie [Synopsis of the flora of higher vascular plants of Central Yakutia: A reference guide]. Yakutsk. 64 p. (In Russ.).

Ivanova V.P. 1986. Vysshie rasteniya okrestnostey g. Yakutska (opredelitel'). Uchebnoe posobie [Vascular plants of the environs of the city of Yakutsk (manual for plant identification). Study guide]. Yakutsk. 76 p. (In Russ.).

Ivanova V.P. 1990. Dvudol'nye rasteniya okrestnostey g. Yakutska (opredelitel'). Uchebnoe posobie [The dicotyledons of the environs of the city of Yakutsk (manual for plant identification). Study guide]. Yakutsk. 160 p. (In Russ.).

Karavaev M.N. 1958. Konspekt flory Yakutii [Synopsis of the flora of Yakutia]. Moscow. Leningrad. 192 p. (In Russ.).

Karavaev M.N., Skryabin S.Z. 1971. Rastitel'nyy mir Yakutii [Vegetation of Yakutia]. Yakutsk. 125 p. (In Russ.).

Komarov V.L. 1926. Vvedenie v izuchenie rastitel'nosti Yakutii [Introduction to the study of the vegetation of Yakutia]. – In: Trudy komissii po izucheniyu Yakutskoy ASSR. T. 1. Leningrad. 168 p. (In Russ.).

Kononov K.E. 1982. Luga poymy reki Leny: (Ekologo-fitotsenoticheskiy analiz) [Meadows of the floodplain of the Lena River: (Ecological and phytocenotic analysis]. Yakutsk. 216 p.

Konspekt flory Yakutii: Sosudistye rasteniya. 2012. [Summary of the flora of Yakutia: Vascular plants]. Novosibirsk. 272 p. (In Russ.).

Kormovaya kharakteristika rasteniy Kraynego Severa. 1964. [Feed characteristics of plants of the Far North]. Moscow. Leningrad. 483 p. (In Russ.).

Kormovye rasteniya senokosov i pastbishch SSSR. T. 2. Dvudol'nye (Khlorantovye – Bobovye). 1951. [Forage plants of hayfields and pastures of the USSR. Vol. 2. Dicotyledonous (Chloranthaceae – Leguminosae)]. Moscow. Leningrad. 947 p. (In Russ.).

Kormovye rasteniya senokosov i pastbishch SSSR. T. 3. Dvudol'nye (Geranievye – Slozhnotsvetnye). Obshchie vyvody i zaklyucheniya [Forage plants of hayfields and pastures of the USSR. Vol. 3. Dicotyledonous (Geraniaceae – Compositae). General findings and conclusions]. 1956. Moscow. Leningrad. 879 p. (In Russ.).

Krasnaya kniga Respubliki Sakha (Yakutiya). T. 1: Redkie i nakhodyashchiesya pod ugrozoy ischeznoveniya vidy rasteniy i gribov. 2017. [The Red Data Book of the Republic of Sakha (Yakutia). Vol. 1: Rare and endangered species of plants and fungi]. Moscow. 412 p. (In Russ.).

Luga Yakutii. 1975. [Meadows of Yakutia]. Moscow. 176 p. (In Russ.).

Malyshev L.I., Baikov K.S., Doron'kin V.M. 2000. Floristic division of Asian Russia based on quantitative characteristics. – Krylovia. 2 (1): 3–16 (In Russ.).

Minaeva V.G. 1970. Lekarstvennye rasteniya Sibiri [Medicinal plants of Siberia]. Novosibirsk. 272 p. (In Russ.).

Nikitin V.V. 1983. Sornye rasteniya flory SSSR [Weeds of the flora of the USSR]. Leningrad. 454 p.

Nikolin E.G. 2016. Weed plants of Yakutia. The most dangerous and aggressive elements of flora. Novosibirsk. 264 p. (In Russ.).

Opredelitel' vysshikh rasteniy Yakutii. 1974. [Key to higher plants of Yakutia]. Novosibirsk. 544 p. (In Russ.).

Opredelitel' vysshikh rasteniy Yakutii. 2020. [Key to higher plants of Yakutia]. 2nd edition. Moscow. Novosibirsk. 896 p. (In Russ.).

Osnovnye osobennosti rastitel'nogo pokrova Yakutskoy ASSR. 1987. [The main features of the vegetation cover of the Yakut ASSR]. Yakutsk. 156 p. (In Russ.).

Rastitel'nye resursy Rossii i sopredel'nykh gosudarstv: Tsetkovye rasteniya, ikh khimicheskiy sostav, ispol'zovanie. 1994–1996 [Plant resources of Russia and neighboring countries: Flowering plants, their chemical composition, use]. St. Petersburg (In Russ.).

Rastitel'nye resursy SSSR: Tsetkovye rasteniya, ikh khimicheskiy sostav, ispol'zovanie. 1984–1994. [Plant resources of the USSR: Flowering plants, their chemical composition, use]. Leningrad (In Russ.).

Respublika Sakha (Yakutiya). Kompleksnyy atlas. 2009. [The Republic of Sakha (Yakutia). Comprehensive atlas]. Yakutsk. 239 p. (In Russ.).

Sosina N.K., Zakharova V.I. 2009. Stepnye soobshchestva korennykh beregov v doline Erkeeni (Central'naya Yakutiya) [Steppe communities of the Erkeeni valley slopes (Central Yakutia)]. – Vestnik YaGU. 6(4): 18–23 (In Russ.).

Spravochnik po klimatu SSSR. Vyp. 24. Yakutskaya ASSR. Chast' 2. Temperatura vozdukha i pochvy. 1966. [Reference book on the climate of the USSR. Issue. 24. Yakut ASSR. Part 2. Air and soil temperature.]. Leningrad. 397 p. (In Russ.).

Spravochnik po klimatu SSSR. Vyp. 24. Yakutskaya ASSR. Chast' 4. Vlazhnost' vozdukha, atmosfernyye osadki, snezhnyy pokrov. 1986. [Reference book on the climate of the USSR. Issue. 24. Yakut ASSR. Part 4. Humidity, precipitation, snow cover]. Leningrad. 350 p. (In Russ.).

Tarabukin A.Ya. 1932. Polevyye travy Yakutii. Opredelitel' sornykh trav. [Field herbs of Yakutia. Manual for weed identification]. Yakutsk. 142 p.

Telyat'ev V.V. 1971. Poleznye rasteniya Vostochnoy Sibiri [Useful plants of Eastern Siberia]. Irkutsk. 395 p. (In Russ.).

Timofeev P.A. 1980. Lesa Yakutii [Forests of Yakutia]. Yakutsk. 152 p. (In Russ.).

Troeva E.I. 2005. Ekologicheskaya otsenka rastitel'nosti senokosov i pastbishch Tsentral'noy Yakutii [Ecological assessment of vegetation of hayfields and pastures of Central Yakutia]. Diss. kand. biol. nauk. Yakutsk. 164 p. (In Russ.).

Troeva E.I., Isaev A.P., Cherosov M.M., Karpov N.S. 2010. The Far North: Plant Biodiversity and Ecology of Yakutia. – In: Plant and vegetation. Vol. 3. Dordrecht, Heidelberg, London, New York. 390 p.

Trufanova E.P. 1967. Tsetkovye rasteniya vodoyemov Yakutii i ikh khozyaystvennoe ispol'zovanie [Flowering plants of water bodies of Yakutia and their economic use]. – In: Lyubite i okhranyayte prirodu Yakutii. Yakutsk. P. 139–149 (In Russ.).

Vinogradova Yu.K., Antonova L.A., Darman G.F., Devyatova E.A., Kotenko O.V., Kudryavtseva E.P., Lesik E.V. (Aistova), Marchuk E.A., Nikolin E.G., Prokopenko S.V., Rubtsova T.A., Khoreva M.G., Chernyagina O.A., Chubar' E.A., Sheyko V.V., Krestov P.V. 2021. Chernaya kniga flory Dal'nego Vostoka: invazionnye vidy rasteniy v ekosistemakh Dal'nevostochnogo Federal'nogo Okruga [The Black Data Book of the Flora of the Far East: Invasive Plant Species in the Ecosystems of the Far Eastern Federal District]. Moscow. 510 p. (In Russ.).

Yadovitye i vrednye rasteniya Sibiri. 2009. [Poisonous and harmful plants of Siberia]. Novosibirsk. 168 p. (In Russ.).

Zakharova V.I. 2014. Raznoobrazie sosudistykh rasteniy Central'noy Yakutii [Diversity of vascular plants in Central Yakutia]. Novosibirsk. 180 p. (In Russ.).