

**POPULATION VARIABILITY OF *PULSATILLA PATENS* s. l. (RANUNCULACEAE)**

**IN THE VYATKA RIVER BASIN**

© *N. Yu. Egorova*,<sup>1</sup> *T. L. Egoshina*,<sup>1,\*</sup> *O. E. Sushentsov*<sup>2</sup>

<sup>1</sup>Professor B. M. Zhitkov Russian Research Institute of Game Management and Fur Farming, Kirov, Russia

<sup>2</sup>Botanical Garden of Ural Department of Russian Academy of Sciences, Ekaterinburg, Russia

\*E-mail: etl@inbox.ru

REFERENCES

1. Bakin O. V., Rogova T. V., Sitnikov A. P. 2000. Sosudistye rasteniya Tatarstana [Vascular plants of Tatarstan]. Kazan. 496 p. (In Russian)
2. Tarasova E. M. 2005. Flora Gosudarstvennogo prirodnogo zakaznika «Bylina» [Flora of the State nature reserve «Bylina»]. Kirov. 248 p. (In Russian)
3. Baranova O. G. 2000. Kartoskhemy rasprostraneniya redkikh rasteniy v Vyatsko-Kamskom mezhdurechye [Map chart of rare plants distribution in Vyatka-Kama interflow]. Izhevsk. 182 p. (In Russian)
4. Baranova O. G., Puzyrev A. N. 2012. Konspekt flory Udmurtskoy Respubliki (Sosudistye rasteniya) [Synopsis of flora of the Udmurt Republic (Vascular plants)]. Izhevsk. 212 p. (In Russian)
5. Krasnaya kniga Respubliki Tatarstan: Zhivotnye, rasteniya, griby. 1995. [The Red Data Book of the Republic of Tatarstan: Animals, plants, fungi]. Kazan. 453 p. (In Russian)
6. Krasnaya kniga Arkhangelskoy oblasti. 2008. [The Red Data Book of Arkhangelsk region]. Arkhangelsk. 351 p. (In Russian)
7. Krasnaya kniga Respubliki Komi: Redkiye i nakhodyashchiesya pod ugrosoy ischeznoheniya vide rasteniy i zhivotnykh. 2009. [The Red Data Book of the Komi Republic: rare and endangered species of plants and animals]. Syktyvkar. 791 p. (In Russian)
8. Krasnaya kniga Kostromskoy oblasti. 2009. [The Red Data Book of Kostroma region]. Kostroma. 387 p. (In Russian)
9. Krasnaya kniga Respubliki Mariy El. Tom «Rasteniya. Griby». 2012. [The Red Data Book of the Mari El Republic. Volume «Plants. Fungi»]. Yoshkar-Ola. 324 p. (In Russian)
10. Krasnaya kniga Kirovskoy oblasti. 2014. [The Red Data Book of Kirov region]. Kirov. 336 p. (In Russian)
11. Krasnaya kniga Udmurtskoy Respubliki. 2012. [The Red Data Book of the Udmurtian Republic]. Cheboksary. 458 p. (In Russian)
12. The IUCN Red List of Threatened Species (version 2012.1) / 2001 Categories & Criteria (version 3.1). [http://www.iucnredlist.org/static/categories\\_criteria\\_3\\_1#categories](http://www.iucnredlist.org/static/categories_criteria_3_1#categories).

13. Rastitelnye resursy SSSR: Tsvetkovye rasteniya, ikh khimicheskii sostav, ispolzovanie; Semeystva Magnoliaceae–Limoniaceae. 1984. [Plant resources of the USSR: Flowering plants, their chemical compounds, using; Fam. Magnoliaceae–Lobeliaceae]. Leningrad. P. 80–81. (In Russian)
14. Dikorastushchie poleznye rasteniya Rossii. 2001. [Wild-growing useful plants of Russia]. St. Petersburg. P. 466–467. (In Russian)
15. Rastitelnye resursy Rossii i sopredelnykh gosudarstv: tsvetkovye rasteniya, ikh komponentnyy sostav i biologicheskaya aktivnost. 2008. T. 1. Semeystva Magnoliaceae–Juglandaceae, Moraceae, Cannabiaceae, Urticaceae. [Plant resources of Russia and adjacent states: flowering plants and their component composition and biological activity. Vol. 1. Family Magnoliaceae–Juglandaceae, Moraceae, Cannabiaceae, Urticaceae.]. St. Petersburg. P. 52. (In Russian)
16. Nikitina S. V., Denisova L. V., Vakhrameeva M. G. 1978. Rock lily. Biologicheskaya flora Moskovskoy oblasti. Moscow. Vol. 4. P. 79–85. (In Russian)
17. Baranova O. G. 2002. Mestnaya flora Udmurtii: analiz, konspekt, okhrana [Local flora of Udmurtia: analysis, synopsis, protection]. Izhevsk. 199 p. (In Russian)
18. Pavlova T. A. 1990. Prostrelnik raskrytyy (*Pulsatilla patens* (L.) Mill.) v prirode i kulture [Rock lily (*Pulsatilla patens* (L.) Mill.) in nature and culture]. Novosibirsk. 79 p. (In Russian)
19. Yuzepchuk S. V. 1937. Rock lily – *Pulsatilla* Adans. Flora SSSR. Moscow; Leningrad. Vol. 7. P. 285–307. (In Russian)
20. Petrovskiy V. V. 1971. *Pulsatilla*. Arkticheskaya flora. Leningrad. Iss. 6. P. 170–175. (In Russian)
21. Gufranova I. B. 1988. *Pulsatilla* Mill. – Rock lily. Opredelitel vysshikh rasteniy Bashkirskoy ASSR. Sem. Onocleaceae–Fumariaceae. Moscow. P. 294. (In Russian)
22. Timonina S. A. 1993. *Pulsatilla* Miller – Rock lily. Flora Sibiri. Novosibirsk. Vol. 6. P. 149–155. (In Russian)
23. Tsvelev N. N. 2001. Genus *Pulsatilla* Mill. Flora Vostochnoy Evropy. St. Petersburg. Vol. 10. P. 85–94. (In Russian)
24. Sushentsov O. E. 2007. Population structure of *Pulsatilla* (Ranunculaceae) species in the Urals]. — Botanicheskiy zhurnal. 92(4): 493–505. (In Russian)
25. Tsibanova N. A. 1976. Life cycle and age structure of *Pulsatilla patens* (L.) Mill. (Ranunculaceae) coenopopulations in northern steppe. — Botanicheskiy zhurnal. 61(9): 1272–1277. (In Russian)
26. Rysina G. P. 1981. To biology of rock lily in Moscow region. — Bulletin MOIP. Otdel biologiya. 86(3): 129–134. (In Russian)
27. Sergievskaya L. P. 1964. *Pulsatilla* Adans. Rock lily. Flora Zapadnoy Sibiri. Tomsk. Vol. 12, pt 2. P. 328–329. (In Russian)
28. Ishmuratova M. M., Surovtseva Yu. V. 2003. Variability of *Pulsatilla patens* (L.) Mill. in Bashkirian Transurals. In: Itogi biologicheskikh issledovaniy v 2001. Ufa. Iss. 7. P. 231–233. (In Russian)
29. Sushentsov O. E. 2008. Sistemicheskii sostav, horologiya i struktura populyatsii vidov roda

- Pulsatilla* Mill. (Ranunculaceae Juss.) v Uralskom regione: Avtoref. dis. ... kand. biol. nauk [Systematic composition, chorology and structure of populations of genus *Pulsatilla* Mill. (Ranunculaceae Juss.) species in the Ural region: Auth. Abstr. Cand. Sci. (Biology) Diss.]. Kazan. 20 p. (In Russian)
30. Mirkin B. M., Naumova L. G. 1998. Nauka o rastitelnosti (istoriya i sostoyanie osnovnykh kontseptsiy) [Plant science (history and status of basic concepts)]. Ufa. 413 p. (In Russian)
  31. Metody izhucheniya lesnykh soobshchestv. 2002. [Methods of studying of forest communities]. St. Petersburg. 240 p. (In Russian)
  32. Ellenberg H. 1974. Zeigerwerte der Gefasspflanzen Mitteleuropas. Gottingen. 97 S.
  33. Afifi A., Azen S. 1982. Statisticheskiy analiz: podkhod s ispolzovaniem EVM [Statistical analysis: a computer oriented approach]. Moscow. 488 p. (In Russian)
  34. Ayvazyan S. A. 1989. Prikladnaya statistika i snizhenie razmernosti [Applied statistics and dimensions decrease]. Moscow. 606 p. (In Russian)
  35. Quinn G. P., Keough M. J. 2002. Experimental design and data analysis for biologist. Cambridge. 537 p.
  36. Lakin G. F. 1980. Biometriya [Biometry]. Moscow. 293 p. (In Russian)
  37. Ovesnov S. A. 1997. Konspekt flory Permskoy oblasti [Synopsis of Perm region flora]. Perm. 252 p. (In Russian)
  38. Juśkiewicz-Swaczyna B., Choszcz D. 2012. Effect of habitat quality on the structure of populations of *Pulsatilla patens* (L.) Mill. (Ranunculaceae) – rare and endangered species in European flora. — Pol. J. Ecol. 60(3): 567–576.