

***EPIPACTIS PERSICA* (ORCHIDACEAE), A NEW TAXON FOR THE FLORA OF KAZAKHSTAN, KYRGYZSTAN AND CHINA**

Serik A. Kubentayev^{1,*} , Petr G. Efimov² , Alexander V. Fateryga³ 

¹*Astana Botanical Garden, Kazakhstan*

*e-mail: kubserik@mail.ru

²*Komarov Botanical Institute of RAS, Russia*

³*T.I. Vyazemsky Karadag Scientific Station – Nature Reserve of RAS, Russia*

Received: 26.04.2024. Revised: 11.09.2024. Accepted: 20.09.2024.

The paper provides information about *Epipactis persica*, a new species for the flora of Kazakhstan, Kyrgyzstan and China. New localities of this species are based on herbarium material stored in herbarium collections AA, KUZ, LE, MW, NUR, and TASH, personal field records, and observations published on iNaturalist. Localities in Kazakhstan represent the northernmost records of *E. persica*, but its possible presence in Russian Siberia is discussed. In China, *E. persica* is currently reported based only on historical herbarium collections dated by 1877–1879.

Key words: Central Asia, Kazakh Altai, new records, orchids, Tarbagatai, Western Tien Shan

The genus *Epipactis* Zinn (Orchidaceae: Epidendroideae: Neottieae) is taxonomically one of the most complicated genera of orchids. The exact number of taxa in the genus *Epipactis* is still unclear, being estimated from 50 to 80 species worldwide according to various sources (Delforge, 2016; Fateryga & Fateryga, 2018; Łobas et al., 2021). Three *Epipactis* species were known in Kazakhstan, namely *E. atrorubens* (Hoffm.) Besser, *E. helleborine* (L.) Crantz, and *E. palustris* (L.) Crantz (Abdulina, 1998; Sumbembayev et al., 2020; Kubentayev et al., 2023). In Kyrgyzstan, the following three *Epipactis* species have been reported so far: *E. helleborine*, *E. palustris*, and *E. royleana* Lindl. (Lazkov & Sultanova, 2014). Ten species (*E. alata* Aver. & Efimov, *E. helleborine*, *E. humilior* (Tang & F.T.Wang) S.C.Chen & G.H.Zhu, *E. mairei* Schltr., *E. palustris*, *E. papillosa* Franch. & Sav., *E. royleana*, *E. tangutica* Schltr., *E. thunbergii* A.Gray, *E. veratrifolia* Boiss. & Hohen., and *E. xanthophaea* Schltr.) were known in China (Grubov, 1977; Wu et al., 2008; Efimov & Verkhovina, 2014).

Epipactis persica (Soó) Hausskn. ex Nannf. is a well-known species, belonging to the *E. helleborine* aggregate. It is autogamous (Fateryga & Ivanov, 2012; Sramkó et al., 2019). Its main habitats are deciduous and coniferous forests. *Epipactis persica* has been recorded in the Balkans, Crimea, the Caucasus, Western Asia (except south of the Arabian Peninsula), Central Asia (Tajikistan, Turkmenistan), and Southern Asia (Afghanistan, Pakistan) (Fateryga et al., 2020), and recently reported also from Uzbekistan (Verkhovina et al., 2024). The main characters distinguishing *E. per-*

sica from other related *Epipactis* species are leaves equal in length to internodes or only slightly exceeding them in length, almost glabrous or sparsely pubescent rachis of inflorescence and ovaries, epichilium with well-defined smooth tubercles at the base, and rostellum with well-developed, but not sticky viscidium (Fateryga et al., 2018).

As the result of an ongoing detailed taxonomic inventory of orchids of Kazakhstan, started in 2020, the following two species were added to the Kazakhstan flora: *Neottia cordata* (L.) Rich. and *Hammarbya paludosa* (L.) Kuntze (Kubentayev et al., 2021). Recently, Kubentayev et al. (2023) published a detailed review of all orchids of the northern part of Kazakhstan. In the course of taxonomic inventory of mountainous areas of southern and eastern Kazakhstan, we came across one more species, *Epipactis persica* (Fig. S2), which has not previously been reported for either Kazakhstan and Kyrgyzstan, nor China (Abdulina, 1998; Wu et al., 2008; Lazkov & Sultanova, 2014; Fateryga et al., 2020; Sumbembayev et al., 2020; Kubentayev et al., 2023). We analysed herbarium collections in AA, KUZ, LE, MW, NUR, and TASH, personal field records, and observations published on iNaturalist (Electronic Supplement 1). As the result, *Epipactis persica* proved to be widely distributed in Central Asia, and it also occurs in China (Xinjiang) (Fig. S1), from where only old (1877–1879) herbarium collections kept in LE are available.

Earlier, almost all of the above-mentioned *Epipactis persica* herbarium specimens were mis-determined as *E. helleborine*. According to our knowledge, only very few true *E. helleborine*

herbarium collections are known in Central Asia, giving evidence that *E. persica* largely displaces *E. helleborine* in this area. In Europe, in contrast with Central Asia, these species either co-occur or only *E. helleborine* is present.

According to the geographical distribution of *Epipactis persica* outlined in the present study, it may be supposed that this species also occurs in Russian Siberia, which needs further studies. In herbarium collections, we came across specimens similar to *E. persica* collected in the south parts of Altaysky Krai, Irkutsk Region, and the Republic of Buryatia. However, in Irkutsk Region and the Republic of Buryatia, another species, *E. tangutica*, superficially similar to *E. persica* was reported (Efimov & Verkhozina, 2014). *Epipactis persica* and *E. tangutica* are very similar when herbarium-dried, and their safe delimitation is often possible only in living state or being based on high-quality photographs. The population of *E. persica* discovered in Kazakhstan was small and included only 2–5 individuals. Additional data are needed for correct assessing the conservation status of *E. persica*. The existing data make the impression that *E. persica* is not very rare and we preliminary treat it as LC both in Kazakhstan and in Central Asia in general. Additionally, it should be noted that 28 of 36 known localities are situated within Protected Areas.

Acknowledgements

Research has been funded by the Science Committee of the Ministry of Science and Higher Education of the Republic of Kazakhstan (grant №AP19680161). The study is also a part of the state assignments of the Ministry of Science and Higher Education of the Russian Federation №124030100098-0 (for Alexander V. Fateryga) and №AAAA-A19-119031290052-1 (for Petr G. Efimov).

Supporting Information

Additional data for the paper of Kubentayev et al. (2024) may be found in the [Supporting Information](#).

References

- Abdulina S.A. 1998. *Checklist of vascular plants of Kazakhstan*. Almaty. 187 p. [In Russian]
- Verkhozina A.V., Agafonov V.A., Ageeva A.M., Beshko N.Yu., Biryukov R.Yu., Bondareva V.V., Bykov N.I., Chernykh D.V., Chimitov D.G., Ebel A.L., Ebel T.V., Efremov A.N., Ershkova E.V., Esina I.G., Fateryga A.V., Fateryga V.V., Gaziev A.D., Glazunov V.A., Hoshimov H.R., Ibragimov A.J., Kapitonova O.A., Kazanovsky S.G., Kechaykin A.A., Khapugin A.A., Khapugina S.V., Khoreva M.G., Kipriyanova L.M., Kolesnikov R.A., Korobkov A.A., Kulagina M.A. et al. 2024. Findings to the flora of Russia and adjacent countries: new national and regional vascular plant records, 5. *Botanica Pacifica* 13(1): 67–92. DOI: 10.17581/bp.2024.13114
- Delforge P. 2016. *Orchidées d'Europe, d'Afrique du Nord et du Proche-Orient*. 4^e éd. Paris: Delachaux et Niestlé. 544 p.
- Efimov P.G., Verkhozina A.V. 2014. *Epipactis helleborine* var. *tangutica* (Orchidaceae), a new taxon for the flora of Russia and Middle Asia. *Botanicheskii Zhurnal* 99(1): 91–95. [In Russian]
- Fateryga A.V., Fateryga V.V. 2018. The genus *Epipactis* Zinn (Orchidaceae) in the flora of Russia. *Turczaninowia* 21(4): 19–34. DOI: 10.14258/turczaninowia.21.4.3 [In Russian]
- Fateryga A.V., Ivanov S.P. 2012. Pollination ecology of the species from the genus *Epipactis* (Orchidaceae) in the Crimea. *Optimization and Protection of Ecosystems* 6: 136–150. [In Russian]
- Fateryga A.V., Pavlenko A.V., Fateryga V.V. 2020. On taxonomic status of two species of orchids (Orchidaceae) from Turkmenistan. *Turczaninowia* 23(4): 65–71. DOI: 10.14258/turczaninowia.23.4.6
- Fateryga A.V., Popovich A.V., Fateryga V.V., Averyanova E.A., Kreutz C.A.J. 2018. New data on the genus *Epipactis* (Orchidaceae) in the North Caucasus with description of a new species. *Phytotaxa* 358(3): 278–288. DOI: 10.11646/phytotaxa.358.3.5
- Grubov V.I. 1977. Orchidaceae Juss. In: V.I. Grubov (Ed.): *Plantae Asiae Centralis*. Vol. 7. Leningrad: Nauka. P. 102–117. [In Russian]
- Kubentayev S.A., Efimov P.G., Alibekov D.T. 2021. Historical records of *Neottia cordata* and *Hammarbya paludosa*, new in the Kazakhstan flora. *Nature Conservation Research* 6(2): 103–105. DOI: 10.24189/ncr.2021.032
- Kubentayev S.A., Efimov P.G., Alibekov D.T., Kupriyanov A.N., Izbastina K.S., Khalymbetova A.E., Perezhogin Yu.V. 2023. Review of Orchidaceae of the northern part of Kazakhstan. *PhytoKeys* 229: 185–213. DOI: 10.3897/phytokeys.229.105457
- Lazkov G.A., Sultanova B.A. 2014. *Cadastre of the flora of Kyrgyzstan. Vascular plants*. Bishkek: PROON. 125 p. [In Russian]
- Łobas Z., Khapugin A., Żołubak E., Jakubska-Busse A. 2021. The *Epipactis helleborine* group (Orchidaceae): an overview of recent taxonomic changes, with an updated list of currently accepted taxa. *Plants* 10(9): 1839. DOI: 10.3390/plants10091839
- Sramkó G., Paun O., Brandrud M.K., Laczkó L., Molnár A.V., Bateman R.M. 2019. Iterative allogamy–autogamy transitions drive actual and incipient speciation during the ongoing evolutionary radiation within the orchid genus *Epipactis* (Orchidaceae). *Annals of Botany* 124(3): 481–497. DOI: 10.1093/aob/mcz103
- Sumbembayev A.A., Danilova A.N., Abugalieva S.I. 2020. List of Orchidaceae family of the Kazakhstan part of the Altai Mountains. *Experimental Biology* 82(1): 87–94. DOI: 10.26577/eb.2020.v82.i1.07 [In Russian]
- Wu Z.Y., Raven P.H., Hong D.Y. (Eds.). 2008. *Flora of China*. Vol. 11. Beijing: Science Press; Saint Louis: Missouri Botanical Garden Press. 622 p.

***EPIPACTIS PERSICA* (ORCHIDACEAE) – НОВЫЙ ТАКСОН ДЛЯ ФЛОРЫ КАЗАХСТАНА, КЫРГЫЗСТАНА И КИТАЯ**

С. А. Кубентаев^{1,*} , П. Г. Ефимов² , А. В. Фатерыга³ 

¹Астанинский ботанический сад, Казахстан

*e-mail: kubserik@mail.ru

²Ботанический институт имени В.Л. Комарова РАН, Россия

³Карадагская научная станция имени Т.И. Вяземского – природный заповедник РАН, Россия

В статье приведены сведения об *Epipactis persica* – новом виде для флоры Казахстана, Кыргызстана и Китая. Новые местонахождения этого вида основаны на гербарных материалах, хранящихся в AA, KUZ, LE, MW, NUR, and TASH, а также на материалах полевых исследований и наблюдений на iNaturalist. Установлено, что самая северная граница общего ареала *E. persica* находится в Казахстане, однако возможно его нахождение на юге Сибири в России. Из Китая *E. persica* приводится по историческим гербарным коллекциям, собранным в 1877–1879 гг., которые хранятся в LE.

Ключевые слова: Западный Тянь-Шань, Казахстанский Алтай, новые находки, орхидеи, Тарбагатай, Центральная Азия