

- brates. Molecular Marine Biology and Biotechnology. V. 3. P. 294.
- Hebert P., Cywinski A., Shelley L. Ball S.T., de Waard J.R.* 2003. Biological identifications through DNA barcodes. Proceedings of the Royal Society London B: Biological Sciences. V. 270. P. 313.
<https://doi.org/10.1098/rspb.2002.2218>
- Karmokov M.K.* 2019. Karyotype characteristics, chromosomal polymorphism and gene *COI* sequences of *Chironomus heteropilicornis* Wüller, 1996 (Diptera, Chironomidae) from the South Caucasus. Comparative Cytogenetics. V. 13. P. 339.
<https://doi.org/10.3897/CompCytogen.v13i4.35572>
- Keyl H.-G.* 1962. Chromosomenrevolution bei *Chironomus*. II. Chromosomenumbauten und phylogenetische Beziehungen der Arten. Chromosoma. V. 13. P. 464.
<https://doi.org/10.1007/BF00327342>
- Kiknadze I.I., Istomina A.G., Golygina V.V., Gunderina L.I.* 2016. Karyotypes of Palearctic and Holarctic species of the genus *Chironomus* [Electronic resource] / [Russian Academy of Sciences, Siberian Branch, Federal Research Center Institute of Cytology and Genetics. Novosibirsk: Academic Publishing House "GEO". 489 p. <https://elibrary.ru/item.asp?id=27246690>
- Petrova N.A., Zhirov S.V.* 2017. Karyotype characteristics of *Chironomus fraternus* Wüller and *Ch. beljaninae* Wüller (Diptera, Chironomidae) from Northern Russia. Entomol. Rev. V. 97. P. 730.
<https://doi.org/10.1134/S0013873817060033>
- Polukonova N.V., Djomin A.G., Mugue N.S., Shaikevich A.E.* 2009. Comparison of *Chironomus usenicus* and *Chironomus curabilis* with species of the group *plumosus* (Diptera) inferred from the mitochondrial DNA Gene *COI* and by the polytene chromosomes banding pattern. Russ. J. Genet. V. 45. P. 899.
<https://doi.org/10.1134/S102279540908002X>
- Ronquist F., Huelsenbeck J.P.* 2003. MRBAYES 3: Bayesian phylogenetic inference under mixed models. Bioinformatics. V. 19. P. 1572.
- Ronquist F., Teslenko M., van der Mark P., Ayres D.L., Darling A., Hohna S., Larget B., Liu L., Suchard M.A., Huelsenbeck J.P.* 2012. MrBayes 3.2: efficient Bayesian phylogenetic inference and model choice across a large model space. Systematic Biology. V. 61. P. 539.
<https://doi.org/10.1093/sysbio/sys029>
- Proulx I., Martin J., Carew M., Hare L.* 2013. Using various lines of evidence to identify *Chironomus* species (Diptera: Chironomidae) in eastern Canadian lakes. Zootaxa. V. 3741. P. 401.
<https://doi.org/10.11646/zootaxa.3741.4.1>
- Tamura K., Stecher G., Peterson D., Filipski A., Kumar S.* 2013. MEGA6: Molecular Evolutionary Genetics Analysis version 6.0. Mol. Biol. Evol. V. 30. P. 2725.
<https://doi.org/10.1093/molbev/mst197>
- Wüller W.F.* 1973. Revision der Gattung *Chironomus* Meig. III. Europäische Arten des thummi-Komplexes. Archiv für Hydrobiologie. V. 72. P. 356.
- Wüller W.F.* 1991. *Chironomus fraternus* sp. n. and *C. beljaninae* sp. n., sympatric sister species of the aberratus group in Fennoscandian reservoirs. Entomol. Fennica. V. 2. P. 97.

Karyotype and *COI* Gene Sequences of *Chironomus sororius* Wüller 1973 (Diptera, Chironomidae) from the Pechora River Delta

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Larva *Chironomus sororius* Wüller, 1973 was found in the European part of Russia and beyond the Arctic Circle, in the delta of the Pechora River for the first time. Nine inversion variants of chromosome arms determined: sorA1, sorB2, sorB3, sorC2, sorD1, sorE1, sorF1, sorF2 and sorG1. The additional B-chromosomes are absent. A nucleotide sequence of the 584-nucleotide *COI* gene region was obtained. Bayesian inference showed that the species belongs to the group *Chironomus aberratus*, and closely related to *Ch. sororius* from Western Siberia (Novosibirsk). The estimated genetic *p*-distance between obtained sequence and *Ch. sororius* from Novosibirsk was about 1%, which is much lower than the commonly accepted threshold of 3% for species of genus *Chironomus* Meigen, 1803. By analyzing two *COI* sequences from the GenBank of unidentified *Chironomus* species from Canada, the genetic distances were above the threshold value (3.8% and 7.8%), and they probably belong to this group of species.

Keywords: Diptera, Chironomidae, *Chironomus sororius*, *COI*, DNA-barcode, karyotype, Pechora river