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Poster – Organisms in the Face of Climate Change: Discoveries and New Approaches

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ANTARCTIC MIDGE *BELGICA ANTARCTICA* (DIPTERA: CHIRONOMIDAE): SPECIES DISTRIBUTION AND SOME GENETIC FEATURES

The ecosystems of the Antarctic Peninsula are being seriously affected by emergence of invasive species and increased tourism activity in the region, underscoring the importance of monitoring of the local habitats. Antarctic midge *Belgica antarctica* Jacobs, 1900 (Diptera: Chironomidae) is endemic to the Antarctic Peninsula mainland and adjacent islands. Thorough studies of the variation of this species were not performed in past decades. Here, we report on *B. antarctica* collected in 2007–2021 (XII, XIV, XVI, XXIV, and XXV Ukrainian Antarctic Expeditions). The midge was recorded at 26 mainland localities on the Antarctic Peninsula and 212 localities on 55 nearest islands between -66.144000, -65.726972 (Cape Evensen, Stresher Peninsula) and -62.195750, -58.961278 (King George Island, South Shetland Islands). For islands 42 and 55 (Wilhelm archipelago, South Shetland Islands, Palmer archipelago and other Islands of West Coast of Graham Land), the antarctic midge was reported for the first time.

The genome of *Belgica antarctica* has also been sequenced. However, there is no consensus set of inversion markers that has ever been assigned to the species. Using the cytogenetic methods of isolation and analysis of polytene chromosomes from *B. antarctica* larvae, we found three heterozygous inversions located on the second (two heterozygous inversions) and third chromosomes (one heterozygous inversion) in the *B. antarctica* population from the cape of Wiencke Island, 500 m to SW from Port Lockroy. Data on chromosome composition and chromosome variability were similar to reports from the previous studies (Atchley and Davis 1979). We did not find a sex-linked inversion on chromosome III and heterozygous inversion on chromosome I, which was reported then. For the first time, we observed a bold heterochromatin disk on chromosome III telomere region. The three inversions have been preserved in the species for about 40 years confirm their adaptive value and stability against the habitat changes.

Also, we analyzed mitochondrial DNA haplotypes via COI gene sequencing in species collected around the *Vernadsky Station*. It is reported that all analyzed species specimens belong to haplotype

D. One of the sequences contained A->T substitution at position 598. Notably, this particular substitution was observed neither for D haplotype, nor for other haplotypes over the previous studies.