



SCAR 2022

Antarctica in a Changing World

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ABSTRACT BOOK



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Antarctica in a Changing World



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**Ministry of Earth Sciences
Government of India**



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PARALLEL SESSIONS

PHYSICAL SCIENCES

**Astronomy and geo-space
observations from Antarctica**

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Accepted as: Oral Presentation

Abstract No : 471

Belgica antarctica (Diptera: Chironomidae) as a natural model organism in Antarctica

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Antarctic terrestrial ecosystems host a relatively small number of species. As a result, they are extremely sensitive to climate changes and other influences. The endemic Antarctic insect, *Belgica antarctica* is particularly interesting, especially in the context of its potential use as a model organism for studying the influence of climate changes. *Belgica antarctica* was sampled between 2007 and 2021 during Ukrainian Antarctic Expeditions and was recorded at mainland locations on the Antarctic Peninsula and on various islands between Cape Evensen, the Stresher Peninsula and King George Island, South Shetland Islands. For some of these locations, we provide the first formal records. Our study documented the first detailed photomicrographic images and descriptions of the fourth-instar larval head capsule and posterior parapods. To assess possible sexual dimorphism, we used unsupervised analyses (PCA and hierarchical clustering). Our data suggest that the selected morphometric features were highly cross-correlated and did not differentiate sex in the sampled larvae. Data on chromosome numbers and variability were similar to reports from previous studies, which indicate the continued presence of specific inversions over a 40-year period and imply they play an adaptive role in Antarctica. We also analyzed mitochondrial DNA haplotypes via COI gene fragment sequencing in individuals collected in the Argentine Islands. All analyzed individuals belonged to haplotype D. One of the sequences contained an A->T substitution at position 598 (JQ672705.1). Finally, we analyzed pooled-seq whole-genome sequencing data and identified 44 bacterial taxa potentially associated with *B. antarctica*.

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