

Genomic variation in Austrian and Leningrad populations of snail *Arianta arbustorum* L.

O. Bondareva^{1*}, A. Kasianov², N. Abramson¹

¹ Zoological Institute RAS, St.-Petersburg, Russia

² Vavilov institute of general genetics, Moscow, Russia

* e-mail: olga.v.bondareva@gmail.com

Key words: invasion, genetic paradox, *Arianta arbustorum* L., RNA-seq

Motivation and Aim: The invasion occurs in extremely short periods, which allows us to consider them as “natural experiments”, which provide a unique opportunity to observe the ecological and evolutionary processes in real time. Among the species of terrestrial ecosystems, one example of the extremely successful invasion of Russia in the North-West region of recent years is the tree snail *Arianta arbustorum* (Linneus, 1758).

Methods and Algorithms: In order to analyze the overall variability that potentially could lead to the success of *A. arbustorum* snail migration, we made a comparative analysis of single nucleotide polymorphisms (SNP calling) in transcripts of individuals from different populations: from Austria, which are part of the original range of *A. arbustorum*, and from the vicinity St. Petersburg, where this species was discovered relatively recently. We assembled a transcript using all samples with the following statistical parameters: Contig N50: 713, Median contig length: 372, Average contig: 564.45. After the functional annotation of the transcriptome with Transdecoder program, there were 54 thousand contiguous verified, which we used as a reference for the search for single nucleotide substitutions.

Results: The final analysis confirmed the much lower variability of individuals from the Leningrad Region in comparison with the Austrian population, that we showed before using *COI* partial sequence. The main characteristics of the substitutions remain unchanged between the populations – a much larger number of transitions than transversions, the prevalence of substitutions in the 3 positions of the codon compared with the replacement in other positions and the predominance of the number of synonymous substitutions over non-synonymous ones.

Conclusion: The data obtained during the meta-analysis confirm our hypothesis that the settlement of the Leningrad region occurred by a group of founders with low haplotypic variability, who then proceeded to expansive reproduction.

Acknowledgements: This study was conducted in Zoological Institute RAS under the research theme No. AAAA-A17-117042410167-2 and supported by the RFBR 16-34-00958 and RFBR 15-29-02526.