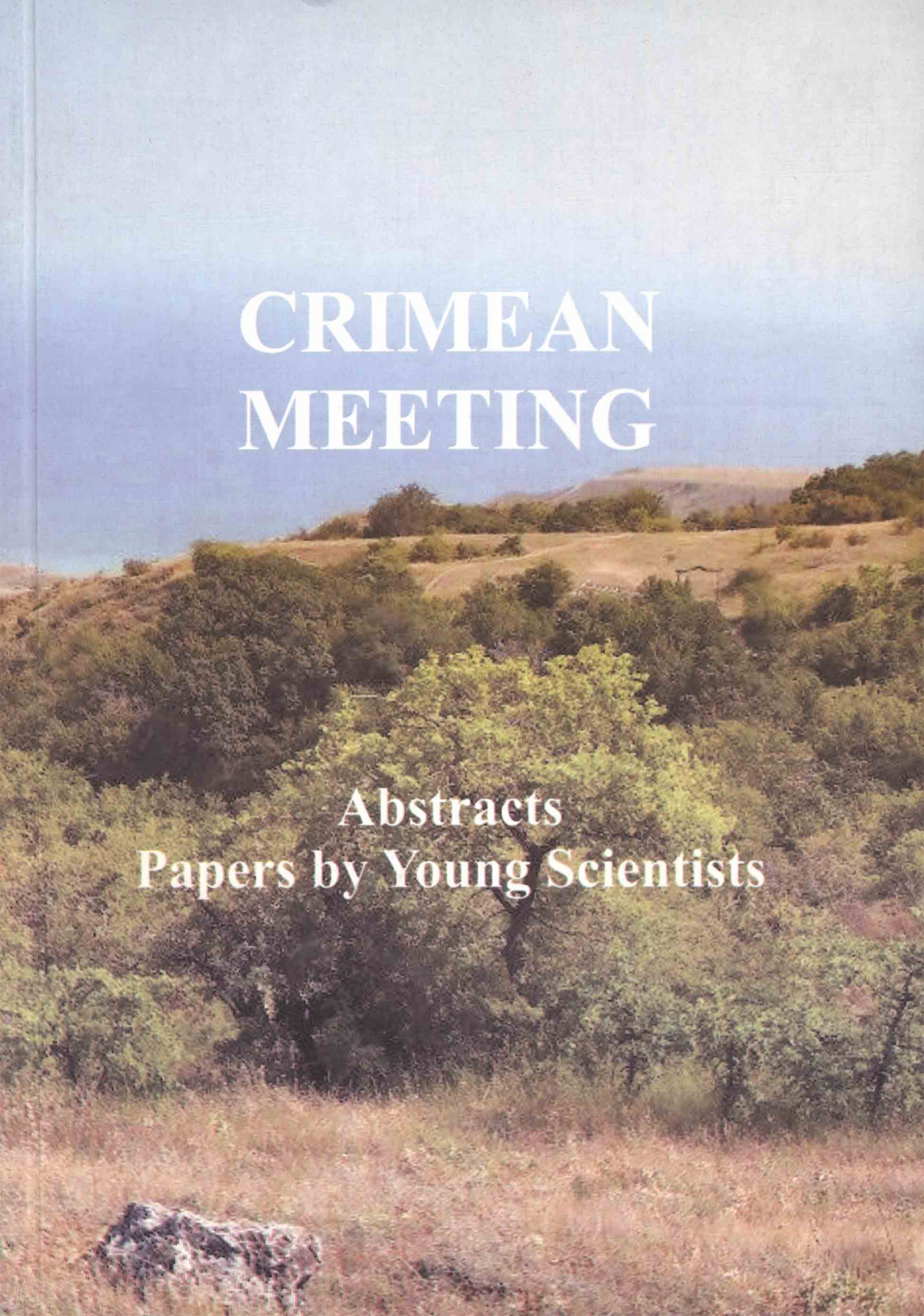
CRIMEAN MEETING



Abstracts
Papers by Young Scientists

Joint Institute for Nuclear Research

CRIMEAN MEETING

Third International Conference, Dedicated to
N. W. Timofeeff-Ressovsky
«MODERN PROBLEMS OF GENETICS, RADIOBIOLOGY, RADIOECOLOGY AND EVOLUTION»

Third Readings after V. I. Korogodin & V. A. Shevchenko

NATO Advanced Research Workshop
«RADIOBIOLOGICAL ISSUES
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ABSTRACTS

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DYNAMIC POLYMORPHISM OF FRUTICICOLA FRUTICUM (MÜLL.) AS ADAPTATION

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A hierarchic organization is characteristic of wildlife and its components. The rational hypothesis suggested by N. V. Timofeev-Ressovsky (1962) distinguishes four levels of life organization on the Earth having a single base of elementary structures and phenomena which underlies their specific features. According to darwinists, biogeocoenotic relations ("life struggle") are the motive power of the evolution. Life struggle is the evolution controlling mechanism. The control takes place in a biogeocoenosis, it depends on the relations between various specimens of a certain species and all non-organic and especially biotic factors facing them. Natural selection is only within a population and depends on its genetic structure and characteristics of individuals (Schmalhausen, 1973). The presence or absence on a shell of colour spiral bands (banding) is one of elementary colour systems of land snail shells. In genetically studied species this sign evidences of population polymorphism. For polymorphism, out of 25 thousand mollusks species only 14 species have been studied. It is important that in all the species studied the inheritance of banding was monogenous. Balanced polymorphism was stable in natural populations; colour type frequencies might exist for a long time; stabilizing selection was observed. Many-year studies of natural populations were made in 1968-2009 in the PreUrals (1-the preKama forest near Sarapul, 2- Bashkir steppe near Sterlitamak) and the TransUrals (the prePyshma forest, Sverdlovsk region, near Belsky settlement) in various biotopes. The effects of climate and fluctuating weather conditions in various years on the ratios of single-band (aa) and bandless (AA and Aa) morphs were found to be different in geographically different habitats. The effects were stronger in extreme habitats. Thus, the genetic variability of populations is realized by spatial and temporal variabilities, it is closely connected with the environment heterogeneity. A polymorphic population is less specialized than a monomorphic one, its greater genetic variability allowes to effectively use the environmental resources. The polymorphic structure significantly increases the population adaptive abilities. The investigations are partly supported by Federal program "Scientific and scientific-pedagogical personnel of innovative Russia (GK 02.740.11.0279)"