

Insects of PSRER as the Main but Least Studied Part of Animal Biodiversity

Anatoly Viktorovich Kulak, Entomologist, Candidate of Biological Science, Lead Researcher of the State Scientific and Production Association "Scientific and Practical Centre under the National Academy of Sciences of Belarus for Bioresources", Belarus

The material informs about the importance of studying the class of insects on the territory of PSRER.

On the territory of PSRER, targeted studies of the entire complex of insects and the overwhelming majority of its systematic groups have not been carried out. Even the most common forest, meadow and synanthropic species are often absent from the list of inhabitants. Data on the abundance of species and their distribution are minimal. There are no data on population dynamics at all. According to the published data, there is information on 754 species of insects belonging to 7 orders. The most complete but clearly insufficient lists are available only for two large orders: Hymenoptera (Hymenoptera) and Coleoptera, or beetles (Coleoptera). As a whole, in large orders, the studied species richness is no more than 10% of the number of species known in Belarus, which is an extremely small number. The south of Belarus, according to general biological rules, should be characterized by the greatest species richness in comparison with other territories of the country. A purposeful study of the diversity of insects in PSRER in a short period of several years would make it possible to replenish the list of animals in Belarus with dozens of new species. The poor knowledge of insects in PSRER is determined by its remoteness from the main scientific zoological centres of Belarus, its special regime (restriction) of visiting and radioactive contamination, to a lesser extent.

At the same time, in the viewpoint of studying the insect species diversity, PSRER is of a great scientific interest since it is the main passage for the entry of heat-loving species (especially steppe ones) to the territory of Belarus. In contrast to modern climatic changes, this process is favoured by the location and configuration of the territory, the relatively dry climate, the relative continuity of the environment along the Dnieper that has a meridional flow direction, a large number of abandoned farmland and wasteland with xerophilous vegetation, the absence of indigenous formations (primarily, forest ones) which could act as a local biocenotic barrier.

Removing the anthropogenic load from most of the territory of the Reserve contributes to the development of natural ecosystems and unprecedented restoration of the animal world. This territory will not be returned to economic use even in the long term. It should become a place for the preservation of the Red Book species of invertebrates. In this regard, it is promising to study their distribution, population dynamics and threats in the Reserve, to develop targeted environmental protection measures as well as to introduce other especially vulnerable Red Book species, or species of

high international protection status for their long-term preservation in Belarus.

On the other hand, there's an obvious need in carrying out in-depth study of the complex of insects such as forest pests and processes of the natural outbreak course of their reproduction, suppression of foci by entomophages and parasites. This is possible only if a part of the total forest area would be removed from service. Since artificially created young and middle-aged mono-dominant pine forests dominate among the forest stands in PSRER, they turned out to be extremely vulnerable in the context of increased aridity and the development of bark beetle foci. Taking into consideration the vulnerability of pine plantations, about 100 ha of hardwood tree species are created in PSRER annually. Therefore, it is important to regularly conduct in-depth study of the entomofauna in new plantations of hardwood tree species. The latter is relevant due to the fact that forest pathological supervision reveals only a few traditionally known pests while other species may become the primary pests in the new context. It is noteworthy that the appearance of the first breeding foci of such a pest as the American white butterfly was recorded precisely around the Reserve. It's likely that the entry path of the next heat-loving invasive pest ran through the PSRER.

It is proposed to study the biodiversity of insects in PSRER within the framework of international research field forums where subject-matter research sections will be formed. The purpose of the entomological section is to assess the biodiversity of insects on the territory of PSRER and to find out the impact of changes in the habitat on their populations so that we can understand the trends in ecosystem transformations, a phytosanitary situation in forests, and to justify the protection of vulnerable species. Research will cover all the main bio-geocenoses of the Reserve. The objects for research in 2022 are abandoned settlements.

Based on the results of the work, a comprehensive information manual will be compiled containing up-to-date information about the processes taking place on the territory of PSRER and including a section on the entomofauna.

Information about the Chernobyl accident is being studied in many international educational institutions. Particularly, it is included in the programmes of scientific, natural and environmental departments. However, many aspects of natural processes are still beyond the reach of both scientists and other people interested in this topic due to poor awareness of the exclusion zone and the information scattered across different information sources. Therefore, such a comprehensive information manual will be a popular educational product as a source of additional information about typical and the most unique biotopes, natural objects and processes occurring on the territory of the Reserve and covered with a veil of uncertainty and mystery. The manual will have several levels of the information presentation aimed at different categories of users.