

ZEBRA MUSSEL IN NATURAL ECOSYSTEMS OF BELARUS

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Introduction. A problem of invasion of alien animal species on the territory of many countries is indicated. The introduction of alien species is directly related to the environmental and economic safety of the country. The list of problems and patterns of the invasive process caused by the introduction of river dreissen was considered.

Materials and methods. Analytical review of literature data.

Results. In recent decades, invasive species of animals that are harmful elements of the fauna and flora, have been observed in Belarus. The activation of the invasive process is associated with global warming, which is explained by the penetration of alien species from more southern latitudes and the increase in commodity relations between countries. Therefore, there is a global environmental problem recognized all over the world (Hulme, 2017).

With a small population, an alien species does not have a visible impact on the environment, but when they reach a high level, the impact can have a global scale up to the extinction of native species and loss of biodiversity. Then the species exclude from the category of and belong "alien" to the category of the "invasive".

The importance of the studying and predicting invasive processes in the fact that Belarus has an invasive corridor through which Ponto-Caspian species enter Belarus and further into the Baltic Sea basin (Galil, Nehring & Panov, 2007).

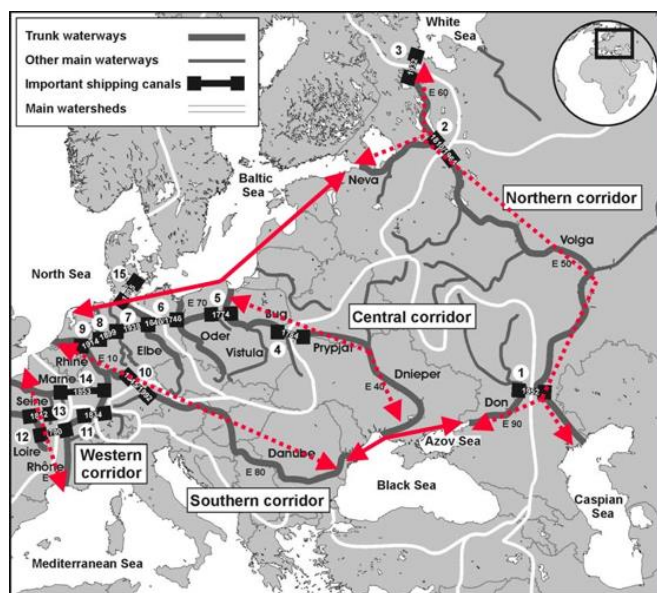


Fig. European invasive corridors (<https://vunivere.ru/work96941>)

Many alien species have high plasticity, which gives them the opportunity for introduction to a new ecosystem, a high reproduction rate, which allows them to increase the number of individuals, quickly and a high competitive ability, which leads to the displacement of native species. One such species is zebra mussel (*Dreissena polymorpha*), that is included in the hundred most harmful invasive species of the planet. This mussel lives at depths of up to 10 m, and has the ability to create serious disturbances in the using of pipelines and water vessels. Individuals overgrow structures, forming druses. This phenomenon significantly worsens the quality of work and equipment operation (Burlakova, 1998).

A zebra mussel occurs in most reservoirs and watercourses of Belarus so it causes the need for periodic cleaning of drains and pipes. Also, the massive development of alien species

can lead to the restructuring of ecosystems. For example, due to the invasion of the river *Dreissena* in lake Naroch, the development of phyto- and zooplankton has decreased.

Conclusion. Reproduction of an invasive species can be limited in the initial stages, when the number is small. Monitoring, hot spot detection, and early warning systems are the most effective ways to control alien species. Invasion of alien species is an irreversible process that has the ability to increase as a result of human activity. Many invasive processes have unpredictable consequences. However, if we know the patterns of the invasive process, we can estimate expected effects of invasions (Semenchenko, 2016).

References

Hulme P.E. 2017. Climate change and biological invasions: evidence, expectations, and response options. *Biological Reviews*, **92** (3): 1297–1313.

Galil, B.S., Nehring S. & Panov V. 2007. Waterways as Invasion Highways – Impact of Climate Change and Globalization. *Ecological Studies*, **193**: 59–74.

Burlakova L.E. 1998. *Ekologiya mollyuska Dreissena polymorpha (Pallas) i yego rol' v strukture i funktsionirovanii vodnykh ekosistem* [Ecology of *Dreissena polymorpha* Pallas and its role in the structure and functioning of aquatic ecosystems]. Thesis PhD. Institute of Zoology of the National Academy of Sciences of Belarus. Minsk. 18 p. (In Russian)

Alekhovich A.V., Buga S.V., Drobenkov S.M., Zhorov D.G., Makarenko A.I., Petrov D.L., Rizevsky V.K., Roginsky A.S., Rybkina T.N., Sautkin F.V., Semenchenko V.P., Sinchuk A.V. & Yanuta G.G. 2016. *Chernaya kniga invazivnykh vidov zhivotnykh Belarusi* [The black book of invasive animals of Belarus]. Minsk: Belaruskaya navuka. 105 p. (In Russian).

Invasions of alien animal species on the territory of Belarus [online]. <https://vunivere.ru/work96941>. [updated 9 September 2017; viewed 14 December 2020]. (In Russian).