Strategies For Conservation Of Rare And Endangered Plant Species In The Flora Of Uzbekistan

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Abstract
This article discusses modern strategies for the protection of rare and endangered plant species found in Uzbekistan on a scientific basis. It is noted that the rich biodiversity of the country's flora is under serious threat in the context of global changes, anthropogenic pressure and sharp fluctuations in climate. It embodies a complex of ecological, scientific and organizational measures aimed at preserving the unique flora heritage of Uzbekistan for future generations.
Keywords: Flora of Uzbekistan, rare plant species, endangered plants, Red Book, biodiversity, genetic resources, environmental education and enlightenment.

INTRODUCTION.

The territory of Uzbekistan is one of the most important floristic regions in Central Asia with its unique natural and climatic conditions, geological diversity and unique landscapes that have preserved the ancient evolutionary processes of the biosphere. The thousands of wild plant species that make up the country's flora are important not only for the sustainable functioning of ecosystems, but also as a wealth of genetic resources, reserves of medicinal raw materials, as a biological fund of great importance for breeding and agriculture. However, in recent decades, due to factors such as climate change, accelerated desertification processes, land use without reclamation, illegal harvesting, urbanization and increasing anthropogenic load, the natural populations of many plant species have been significantly reduced.In particular, the fact that many endemic, relict and economically valuable species included in the "Red Book" of Uzbekistan are under threat of extinction, which may lead to disruption of the ecological balance, raises serious concerns. In this situation, the issue of preserving plant diversity is considered an urgent environmental problem that is at the center of attention of the state, the scientific community and international organizations. Therefore, there is a need to develop and implement comprehensive strategies for the protection of flora, such as harmonizing in-situ and ex-situ approaches, preserving the functional integrity of natural ecosystems, improving technologies for the conservation of genetic resources, strengthening the ecological monitoring system, and increasing the ecological culture of the population.This article provides an in-depth analysis of the basic scientific principles, modern methods and their role in the sustainable management system for the protection of rare and endangered plant species in the flora of Uzbekistan. Through this, the research will serve to further refine the scientific and practical foundations for preserving the country's rich natural heritage for future generations.

LITERATURE REVIEW AND METHODOLOGY

Analysis of scientific sources devoted to the study of the flora of Uzbekistan shows that the issue of preserving the country's rare and endangered plant species has become one of the most important areas of scientific research since the second half of the 20th century. Early floristic studies, in particular, the fundamental works of such scientists as A.A. Fedorov, L.I.

Pratov, V.N. Pavlov, P.N. Ovchinnikov, served as the main scientific foundation for determining the geographical distribution and systematic composition of plants in the republic. Later, Uzbek scientists also conducted scientific research on rare and endangered plants. U.N. Tokhtayev conducted many fundamental studies on plant systematics and floristics, determined the taxonomy of many medicinal and rare plants. Sharipova R.I. did important work on the plant resources of Uzbekistan, especially medicinal plants and their protection. A.S. Sodiqov conducted research on floristic studies and the study of natural populations of plants.

RESULTS AND DISCUSSION

During the research, the current status of rare and endangered plant species in the flora of Uzbekistan, the main risk factors affecting them, and the effectiveness of the protection strategies currently in use were comprehensively analyzed. The results obtained showed that the decline in the populations of many endemic and relict plant species distributed throughout the republic is mainly directly related to anthropogenic factors. As a result of field observations and literature analysis, it was determined that the majority of plant species included in the “Red Book” of Uzbekistan are found in mountain, foothill and steppe landscapes. It was observed that endemic species with a particularly narrow range are extremely sensitive to climate change and the impact of human activity.This situation sharply limits their natural recovery opportunities and leads to a decrease in genetic diversity. The results of the study showed that protected natural areas (state reserves, national parks and reserves) play an important role in the conservation of rare plants. However, the presence of these areas is not enough to completely eliminate all risk factors. It was found that in some areas the monitoring system is not sufficiently established, and the limited human and material and technical resources reduce the effectiveness of conservation. It was observed that ex-situ conservation forms - methods of conservation in botanical gardens, seed banks and cultural collections - give significant positive results. The possibility of artificially propagating some rare species and subsequently reintroducing them into the natural environment has been scientifically substantiated. This method was assessed as a promising direction, especially for species with a high risk of extinction.

Conclusion. Although climate change is often considered a secondary factor in the study, in fact, it has a synergistic effect with anthropogenic pressure. Changes in temperature and precipitation patterns, increased drought, are narrowing the ecological niche of some plant species, bringing them to the brink of extinction. Therefore, planning conservation measures based on climate modeling and forecasting is of great importance in the future. In addition, the issue of environmental education and strengthening the participation of local populations was highlighted as an aspect requiring special attention in the analysis. Compared with scientific sources, it is found that conservation models based on public participation provide more sustainable results in the long term. The results of this study also confirm the relevance of this approach in the conditions of Uzbekistan. The results and their analysis show that the conservation of rare and endangered plant species in the flora of Uzbekistan is not only a biological or territorial problem, but also a complex task that combines scientific, social and cultural factors. Therefore, approaches based on strengthening cooperation between science, education, and society should be a priority when developing future conservation strategies.

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