

BIOECOLOGICAL FEATURES OF THE RED BOOK FAMILY LAMIACEAE AND MEASURES FOR THEIR PROTECTION*Ravshanova Muhabbat Khamrokulovna**Senior Lecturer, Navoi State University**Email: crassula18@mail.ru**Fatullayeva Gavkhar Khayrullo qizi**Student, Navoi State University*

Abstract: This article provides information about the unique structure of representatives of the Lamiaceae family included in the Red Book of Uzbekistan, the species in need of protection, and the measures for their conservation.

Keywords: Red Book, Lamiaceae family, species, medicinal, rare, endemic, essential oils, conservation.

Since ancient times, humans have used plant resources for various purposes. Plants are used for construction, food, medicine, fodder, and other needs.

However, the unsustainable and unplanned use of plant resources by humans has led to a decline in their numbers and diversity. As a result, some plant species are now on the verge of extinction. These plants are included in the endangered categories of the Red Book.

Several species of the Lamiaceae family have been listed in various categories of the Red Book based on their population in the wild. Among them are many rare and endemic species that require serious protection. As of the 2019 edition of the Red Book of Uzbekistan, 30 species of this family have been included.

Representatives of the Lamiaceae family are experiencing a decrease in numbers and range due to the destruction of natural habitats, overgrazing by livestock, being harvested for fodder, and their adaptation to specific soil conditions.

Most representatives of the Lamiaceae family are found in mountainous regions, typically growing at elevations up to 1200 meters above sea level. They thrive on loamy and gravelly soils, dry rocky and stony slopes, as well as in the lower and middle mountain zones characterized by eroded gravelly terrain. These species also occur in sparse juniper forests, in open areas dominated by a mix of grasses, weeds, tall herbaceous plants, and semi-shrubs. Additionally, they are often observed along mountain rivers, streams, and around springs within vegetation communities formed by saltworts and other species.

The decline in the population of these plants is attributed to several factors, including excessive livestock grazing, reduction of suitable habitats, poor seed germination, the construction of recreational facilities, and various technogenic impacts.

As medicinal plants, these species are often overharvested. Furthermore, people extract construction materials such as gravel and limestone from their habitats, which disrupts the soil composition necessary for their growth and reproduction. As a result, these species are unable to regenerate in altered environments, leading to a significant decrease in population size.

Due to intensive grazing, several Lamiaceae species — such as *Lagochilus inermis*, *Lagochilus olgae*, *Dracocephalum spinulosum*, *Scutellaria holosericea*, *Scutellaria mollis*, *Salvia zebrensis*, and others — have become extremely rare in recent years.

Plants of the Lamiaceae family typically have square-shaped stems and opposite, simple, sessile leaves. The stems and leaves are firm and covered with glandular trichomes that secrete essential oils. The flowers are arranged in cymose inflorescences and are zygomorphic. Seeds are generally endosperm-deficient and are pollinated by insects. Phylogenetically, the Lamiaceae family is closely related to the Asteraceae family but differs by the downward orientation of the embryonic root. Nearly all members of this family are rich in essential oils and lack latex canals or strongly toxic substances.

Some species of the Lamiaceae family are under protection. For instance, *Lagochilus olgae* Kamelin is preserved in the Nurota State Nature Reserve, while *Dracocephalum formosum* Gontsch. is protected in the Hisor State Nature Reserve. *Dracocephalum spinulosum* Popov is conserved in the Chatkal Biosphere Reserve, the Ugam-Chatkal Biosphere Reserve, and the Ugam-Chatkal National Nature Park.

However, species such as *Salvia margaritae* Botsch., *Salvia korolkovii* Regel et Schmalh., *Lagochilus vevedenskyi* Kamelin et Zuckerw., *Scutellaria holosericea* Gontsch. ex Juz., *Scutellaria guttata* Nevski ex Juz., and *Scutellaria colpodea* Nevski are currently not covered by any conservation strategies.

In order to ensure the protection of these Lamiaceae family species, the following steps are recommended:

- Conduct in-depth scientific studies of Lamiaceae species;
- Develop special programs for their propagation and restoration of their natural populations;
- Raise public awareness about these endangered species and promote careful, sustainable use;
- Strictly prohibit livestock grazing and exploitation of pastures in areas where these species grow;
- Identify declining species of the Lamiaceae family, locate their growing habitats, and ensure their protection;

Restore their populations within specially protected natural territories.

Preserving existing plant species in the wild, researching them, and improving the ecological condition of the environment are essential for maintaining the planet's biological diversity.

Therefore, studying, restoring, and conserving the Lamiaceae family plants—especially those listed in the Red Book but lacking conservation strategies—is of great practical importance, not only for humans but for nature as a whole.

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