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## Rare and Endangered Herbaceous Plants of Yardimli District

### Abstract

Botanical Gardens for Plant Conservation (ICBG), approximately 60,000 higher plant species worldwide or a quarter of the world's flora, may become extinct or be at risk of genetic erosion by the middle of this century. The list of rare and endangered plants found in various regions of the Republic of Azerbaijan is presented in the Red Book of the Republic of Azerbaijan (III edition), published in 2023. Among the rare and endangered species of flora in the III edition, 285 are herbaceous plants. In the III Red Book of Azerbaijan, published in 2023, 7 species of herbaceous plants were listed as rare and endangered in Yardimli region.

**Keywords:** *extinct, endangered plants, herbs, mesoxerophyte, anthropogenic factor*

### Introduction

To expand international cooperation in the field of biodiversity conservation, the Republic of Azerbaijan acceded to the UN Convention on Biological Diversity in 2000. The National Strategy and Action Plan for the implementation of the "National Strategy for the Protection and Sustainable Use of Biological Diversity in the Republic of Azerbaijan for 2017-2020" are aimed at implementing effective measures in this area and achieving concrete results. Therefore, the main reason for this study is to learn about the rare and endangered species of the Azerbaijan Republic (Mammadov, Salakhova, 2020).

### Research

In the III Red Book of Azerbaijan, published in 2023, 7 species of herbaceous plants were listed as rare and endangered in the Yardimli region. These plant species are representatives of the families of *Liliaceae* (*Fritillaria grandiflora* Grossh.), *Iridaceae* (*Gladiolus halophilus* Boiss. & Heldr.), *Iris medwedewii* Fomin, *Iris grossheimii* Woronow ex Grossh.), *Asparagaceae* (*Ornithogalum hyrcanum* Grossh.), *Orchidaceae* (*Steveniella satyrioides* Schltr.), *Caryophyllaceae* (*Silene talyschensis* Schishk.) (AR Red Book, 2023; Chase, 2016; APG IV 2013).

*Fritillaria grandiflora* Grossh - is a perennial bulbous herb. The bulb is not large, compressed, or bulbous. The stem is 35-50 cm high, bare. The leaves are alternate, lanceolate; the lower leaves are up to 1.5 cm wide, the upper ones are narrow. The flowers are very large, single. The inflorescence is wide, bell-shaped, and the leaflets are oblong, sharp, brown-red, and checkered. The capsule is axillary (Flora of Azerbaijan, 1952).

The flowering and fruiting period occurs in May. It reproduces by bulbs and seeds. It is also widespread in forests and rocky places. It is a xeromesophyte.

Found in the village of Daman, Yardimli district (Red Book of the ASSR, 1989). Limiting factors are related to anthropogenic (collection for decorative purposes) and zoogenic (trampling) factors (AR Red Book, 2023).

*Iris grossheimii* Woronow ex Grossh is a perennial herb, 3-10 cm high. The rhizome is short and creeping. The stem has one large flower spike. The leaves are gray-blue, narrowly linear, 2-3 mm wide, and sickle-shaped. The outer side of the inflorescence is bent down, 3.5-5 cm long, 2 cm wide, oblong, rounded-obtuse, the apex is hollow, bright gray, dark brown veined, the middle part is black, gray spotted, gradually turning into a nail, the surface is covered with dark purple, orange hairs (AR Red Book, 2013).

It is widespread in the mountains of Nakhchivan (Ordubad district, Soyugdag and Shikhyurdu mountains), Yardimli district and Deman village (Talibov et al., 2021; Ibrahimov 2022).

The limiting factor is anthropogenic (settlement, intensive grazing, collection, trampling). It is proposed to take control of the distribution areas, conduct regular monitoring, organize reservations in botanical gardens, and collect seeds (AR Red Book, 2023).

*Iris medwedewii* Fomin is a perennial herb. The rhizome is short, creeping, and the stem is 5-12 cm high, with a single large flower spike. The leaves are gray-blue, narrowly linear, 2-3 mm wide. The spike leaves are lanceolate, pointed. The tube of the inflorescence is shorter than the ovary; the outer parts are linear-scapular, black-purple, 3-4 cm long, 10-13 mm wide; the inner ones are large, obovate, white or blue, with blue-purple veins. The segments of the column are yellowish-brown, spotted, and the segments are blunt, toothed (AR Red Book, 2013).

Flowering is in April, and fruiting is in May. It reproduces by rhizomes and seeds. It is widespread in the middle mountain belt on dry and stony slopes, in steppe meadows. It is a mesoxerophyte. It is an ornamental plant (AR Red Book, 2013).

It is distributed in the village of Gosmalian in the Lerik region and the village of Deman in the Yardimli region (AR Red Book, 2023).

As a result of anthropogenic factors (collection as an ornamental plant, grazing and trampling), its number has sharply decreased. It is proposed to protect its populations as micro-reserves, organize its reservations in botanical gardens, conduct genetic research at the population level, and collect its seeds.

*Gladiolus halophilus* Boiss. & Heldr is a perennial herb. Its bulbs are ovoid, with reticulate parallel fibers. The stem is 20-25 cm tall, thin, sometimes twisted, and greenish. The leaves are bluish, narrowly linear, pointed and veined. The flower group is a 2-sided, sometimes 1-sided, 4-6-flowered spike. The inflorescence is whitish-blue, wide, open, and the upper side is shorter than the other sides. The stamens are slightly shorter than the stamens (Flora of Azerbaijan, 1952), (AR Red Book, 2023).

Flowering occurs in May and fruiting occurs in June. Propagated by bulbs and seeds. Distributed in the lower mountain belt on dry slopes Xeromesophyte Central Lesser Caucasus, Southern Lesser Caucasus and Nakhchivan Mountains. (Kotam village of Sadarak district and Ordubad district), Yardimli district, Komani plateau (Red Book of the ASSR, 1989; Ibadullayeva 2011, 2021). Limiting factors are anthropogenic and zoogenic factors.

*Ornithogalum hyrcanum* Grossh is a perennial herb. The bulb is ovoid, 1 cm wide, 2 cm long. The height of the stem is 12-20 (26) cm. The leaves are 2-4 (6), broad, lanceolate, 5-12 (15) mm wide, pointed at the tip, longer than the stem. The flowers are 2-4 (6), densely oval. The inflorescence is lanceolate or ovate, oblong, with a broad light green stripe on the back, and the edges are shiny. The flowers are arranged in a raceme. The stamen is narrow, reaching the middle of the inflorescence. The column is shorter than the ovary. The capsule is wingless, evenly ribbed (Flora of Azerbaijan, 1952). The flowering and fruiting period occurs in May and June. It reproduces by bulbils. It is widespread in forests in the middle mountain belt. It is xerophytic and salt-tolerant (AR Red Book, 2023).

It is widespread in the Lankaran mountains, in the Arvana village of the Yardimli district.

Limiting factors are anthropogenic (gathering, intensive grazing, use of territories for agricultural and settlement purposes) and natural (susceptibility to the negative effects of changing climatic factors) factors. It is proposed to organize individual protection by fencing off the distribution areas, organizing its reservation in botanical gardens, ensuring the collection and restoration of its seeds and searching for new distribution areas.

*Steveniella satyrioides* Schltr is a perennial herb with an entire rhizome, 1.0-2.5 cm long. The stem is 20-40 cm high, with mostly oblong-oval, brown-green leaves with red-brown spots. The flower cluster is oblong, very dense, 10 (13)-40 cm long, with 5-18 (20) bent flowers. The cap is 7-10 mm long, red-green, and formed by three fused outer leaflets of the calyx. The lip is green-brown, reddish-brown at the base, the lateral lobes are rhomboid, the middle lobe is oblong-linear, 4-4.5 mm long (AR Red Book, 2013).

Flowering is in April, and fruiting is in June. It is widespread in the foothills, lower and middle mountain belts, in forests, forest glades, bushes, and mesophytic mountain meadows that arise after the forest. It is widespread in the Kish village of Sheki region, around Gelarsen-Gorarsen fortress, east of the Greater Caucasus, Lankaran mountains (Astara and Lankaran regions), Shinabend village of Yardimli region, and Lerik region, around Orandchay (AR Red Book, 2023).

The limiting factors are anthropogenic (grazing, trampling and collection) and natural (strong dependence on the habitat and sensitivity to the negative impact of changing climate factors). Partially protected in the Shahdag National Park. It is proposed to fence off other known habitats, conduct regular monitoring, organize reservations in botanical gardens and create micro-reserves.

*Silene talyschensis* Schishk. is an annual herb. Its stems are 20-25 cm high. The basal leaves are small, oblong, obovate, blunt, and petiolate. The upper leaves are sessile. The flowers located on the branches are unilateral, sessile, and are horizontally bent during flowering. The calyx is 10-12 mm long, covered with cylindrical hairs. The capsule is 6-7 (8) mm long, broadly ovoid. The seeds are 1.5-2 mm long, black (Flora of Azerbaijan, 1952).

Flowering and fruiting occur in May-July. It reproduces by seeds, is drought-resistant and photophilous. It is a component of mountain-xerophyte groups. It is found on dry, gravelly slopes in the middle mountain belt (AR Red Book, 2023).

## Conclusion

It is distributed in the center of the Lesser Caucasus (Garghabazar village, Fuzuli region), Yardimli region, Orand village, Lerik region, Nakhchivan mountains (Bichenak village, Shahbuz region), and Nakhchivan plain (Ordubad region) (Flora of Azerbaijan, 1952; Askerov, 2011). The limiting factor is anthropogenic (trampling, grazing) factors.

## References

1. Academy of Sciences of the Azerbaijan SSR. (1950–1961). *Flora of Azer* (Vols. 1–8)
2. Ministry of Ecology and Natural Resources of the Republic of Azerbaijan. (2023). *Red book of the Republic of Azerbaijan* (3rd ed.). Baku.
3. Ministry of Ecology and Natural Resources of the Republic of Azerbaijan. (2013). *Red book of the Republic of Azerbaijan: Rare and endangered species of plants and mu* (2nd ed.). B
4. Talibov, T., & Ibrahimov, A. (2010). *Red book of the Nakhchivan Autonomous Republic* (Vol. 2: Higher spore, gymnosperm and angiosperm plants). Nakhchivan: Ajami NPB.
5. Adigozalov, B. M., Alekperov, U. K., Musayev, M. A., et al. (Eds.). (1989). *Rare and endangered animal and plant species*. Baku: Ishig.
6. Mammadov, T. S., & Salakhova, E. Kh. (2020). Resistance to the environmental factors of *Berberis L.* species. *Agricultural & Veterinary Sciences*, 4, 138–143.
7. Askerov, A. M. (2011). *Synopsis of the flora of Azerbaijan*. Baku: Science.
8. Ibadullayeva, S., Movsumova, N., Gasymov, H., & Mamedli, T. (2011). Protection of some rare and endangered vegetable plants in the flora of the Nakhchivan AR. *International Journal of Biodiversity and Conservation*, 3(6), 224–229.
9. Ibadullayeva, S. J., & Huseynova, I. M. (2021). An overview of the plant diversity of Azerbaijan. In *Biodiversity, conservation and sustainability in Asia* (Vol. 1: Prospects and challenges in West Asia and Caucasus, pp. 431–478). Springer.
10. Ibrahimov, A. (2022). *Biodiversity, conservation and sustainability in Asia*. Springer.
11. Chase, M. W., Christenhusz, M. J. M., Fay, M. F., et al. (2016). An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG IV. *Botanical Journal of the Linnean Society*, 181(1), 1–20. <https://doi.org/10.1111/boj.12385>
12. The Plant List. (2013). *The plant list* [Database]. <http://www.theplantlist.org/>

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