BOTANY • KYRGYZSTAN

Rare and Endemic Angiosperms of Kyrgyzstan

Biodiversity of a mountainous country • species, habitats and conservation

Educational presentation • 15 slides



Why is Kyrgyzstan’s flora unique?

Mountains create many ecological niches

• The Tian Shan and Pamir-Alay ranges have distinct elevational zones.
• Steppes, forests, meadows, screes and cliffs can occur within short distances.
• Isolation of populations can contribute to the evolution of local species.
• Plants with narrow ranges are especially vulnerable.



Illustration of mountain flora

What does “endemic” mean?

An endemic species naturally occurs only in a limited region

An endemic is a plant whose natural range is restricted to a particular area.

A rare species occurs in few places or has small populations. Endemism and rarity are different concepts, but they can overlap in the same species.



Illustration of mountain flora

Angiosperms

Flowering plants are fundamental to terrestrial ecosystems

Their seeds develop from ovules enclosed in an ovary, which later develops into a fruit.

Angiosperms include onions, tulips, eremurus, irises, legumes and many other plants of mountain ecosystems.



Illustration of mountain flora

Where do rare species grow?

From dry foothills to high-mountain cliffs

• Foothills and dry slopes — species adapted to drought.
• Walnut-fruit forests and shrubs — plants of woodland edges.
• Subalpine and alpine meadows — species adapted to short growing seasons.
• Rocky screes and cliff crevices — narrowly specialized endemics.



Illustration of mountain flora

Zinaida’s Eremurus

Eremurus zenaidae • family Asphodelaceae

A rare ornamental perennial described from the Fergana Range. It is characterized by a tall, dense flower spike.

The Atlas of Endemic and Rare Plants of Kyrgyzstan lists it as endemic and included in the 2007 Red Book.



Illustration of mountain flora

Zoe’s Eremurus

Eremurus zoae • family Asphodelaceae

An eremurus with yellow flowers. It is known from the Kyrgyz Range and grows on gypsum outcrops and in dry plant communities.

The atlas lists the species as endemic to Kyrgyzstan and included in the 2007 Red Book.



Illustration of mountain flora

Alay onion

Allium alaicum • family Amaryllidaceae

A small bulbous plant with pinkish-purple flowers. Described from the Alay Range, it occurs in mountain habitats and natural plant communities.

Alliums are part of mountain plant communities and provide nectar for insects.



Illustration of mountain flora

Turkestan fumariola

Fumariola turkestanica • family Papaveraceae

A tiny annual plant with small yellow flowers, known from the Alay Range. It is associated with crevices in limestone cliffs.

Its specialized habitat makes the conservation of natural rocky areas especially important.



Illustration of mountain flora

Short-winged bladder-senna

Colutea brachyptera • family Fabaceae

A rare shrub known from the Alay and Fergana ranges. Its flowers are yellow, and its fruit is an inflated pod typical of the genus Colutea.

The plant is associated with clay soils and areas of variegated mountain rock.



Illustration of mountain flora

Rosette-leaved hare’s-ear

Bupleurum rosulare • family Apiaceae

A perennial recorded from the Kyrgyz and Talas ranges. It grows in rocky places, including juniper communities.

Its limited range and dependence on mountain habitats call for careful protection of natural populations.



Illustration of mountain flora

Eryngium-like seseli

Seseli eryngioides • family Apiaceae

A rare plant known from the Chatkal Range. It occurs on rocky sites among juniper thickets at elevations of about 2,500–3,000 m.

Small white flowers are arranged in compound umbels, a characteristic feature of Apiaceae.



Illustration of mountain flora

What threatens rare plants?

The main risks involve changes to natural habitats

- Picking flowers and digging up bulbs.
- Overgrazing and trampling.
- Road construction, development and extraction activities.
- Fires, drought and climate change.
- Illegal collection for sale or gardening.



Illustration of mountain flora

How can they be protected?

Protecting habitats is more effective than relying on bans alone

- Do not pick or dig up rare plants.
- Preserve natural slopes, meadows, forests and rocky habitats.
- Support protected areas and botanical research.
- Grow plants from seed for research only with appropriate permission.
- Report illegal trade in rare species.



Illustration of mountain flora

Conclusion and sources

Conserving flora is a shared responsibility

Rare and endemic flowering plants are part of Kyrgyzstan’s natural heritage. Their conservation requires research, protection of habitats and responsible human behaviour.

Sources:
• Lazkov G.A. & Umralina A.R., “Endemic and Rare Plants of Kyrgyzstan: Atlas” (2015).
• Red Book of the Kyrgyz Republic (2007).
• Botanical research of the National Academy of Sciences of the Kyrgyz Republic.

Note: Images are illustrative depictions of mountain flowering plants; they are not verified photographs of each named species.



Illustration of mountain flora