

Species Profile

Lilium akkusianum Gämperle

History and Taxonomy (Dr Jamie Compton)

Bull. Alpine Gard. Soc. Gr. Brit. 66(3): 380 (1998).

Lilium akkusianum was described from a few kilometres south of the town of Akkuş in Ordu province about 70 km from the Black Sea coast town of Ünye in northern Anatolia. It is the most recently described of the eight species of *Lilium* recognised in Turkey and the only other lily endemic to Turkey other than *Lilium ciliatum* P. H. Davis. It was discovered by two orchid specialists Heinz Werner Zaiss of Marloffstein and Ernst Gügel of Munich in July 1993 and was described by René Gämperle in 1998 following his visit to the locus classicus on 26 June 1996 (Gämperle, 1998: 379). During his visit to northern Turkey, Gämperle also discovered the lily in the adjacent Tokat province where it was found at ca. 900–1100 m among *Fagus orientalis* and *Rhododendron luteum* woodland flowering from mid-June to mid-July. The holotype is conserved in the herbarium of the Universität Zürich, Z-000027527. This can be found by entering the relevant information at this link: <https://www.herbarien.uzh.ch/en/belegsuche.html>

The other northern Anatolian endemic lily species *Lilium ciliatum* appears to have a close relationship to *L. akkusianum* according to analyses of RAPD (random amplified polymorphic DNA) fingerprinting data as well as from recent chloroplast and nuclear DNA sequence data (Ikinci *et al.*, 2006; Ikinci *et al.*, 2010; Ikinci 2011). This pair of species were shown to be quite distinct from the other lily species

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found in the Caucasus region and north-east Turkey, *Lilium armenum*, *L. artvinense*, *L. kesselringianum*, *L. monadelphum*, *L. ponticum* and *L. szovitsianum*. *Lilium ciliatum* shares several morphological characters with *L. akkusianum* notably the shape of the bulb and its scales, the tufted long white hairs on buds, pedicels and along the leaf margins, creamy to yellowish reflexed and more heavily blotched but much smaller flowers and the bright orange to cinnabar coloured pollen.

photograph © Assoc. Prof. Dr. Nursel İkinçi



Above and opposite, *Lilium akkusianum* flowering in its native Turkish woodland home where it flowers from early June to July.

References

- Gämperle, R. (1998). A new species of lily from Turkey. *Bull. Alpine Gard. Soc. Gr. Brit.* 66(3): 378-389.
- İkinçi, N., Oberprieler, C. & Güner, A. (2006). On the origins of European lilies: phylogenetic analysis of *Lilium* section Liriotypus (Liliaceae) using sequences of the nuclear ribosomal transcribed spacers. *Willdenowia* 36: 647-656.
- İkinçi, N. & Oberprieler, C. (2010). Genetic relationships among NE Turkish *Lilium* L. (Liliaceae) species based on Random Amplified Polymorphic DNA (RAPD) analysis. *Plant Systematics and Evolution* 284: 41-48.
- İkinçi, N. (2011). Molecular phylogeny and divergence times estimates of *Lilium* section Liriotypus (Liliaceae) based on plastid and nuclear ribosomal ITS DNA sequence data. *Turkish Journal of Botany* 35: 319-330.

Assoc. Prof Dr Nursel İkinçi has commented:

Different molecular studies confirmed that *Lilium akkusianum* R. Gämperle is a distinct species with close alliance to *L. ciliatum* P. H. Davis (İkinçi *et al.*, 2006; İkinçi & Oberprieler, 2010; İkinçi, 2011). These two Turkish endemics have a narrow distributional area and are phylogenetically youngest compared to other Turkish lilies. Type of leaf indumentum is extremely significant for the classification of Turkish lilies. *L. ciliatum* and *L. akkusianum* with long hairs in their leaf margins and on young flower buds can be easily distinguished from the rest of the Turkish species.

Identification key

1. Leaf margins and flower buds with long hairs; leaf veins beneath glabrous
2. Flowers small; tepals 35-50 mm long; perianth segments strongly recurved, touching and hiding the tube
..... *L. ciliatum*
2. Flowers large; tepals 65-90 mm long; perianth segments only slightly recurved, never touching the tube
..... *L. akkusianum*

References

- İkinci N. (2018). *Lilium* L. In: Güner A., Kandemir A., Menemen Y., Yıldırım H., Aslan S., Ekşi G., Güner I., Çimen AÖ (eds). *Resimli Türkiye Florası (Illustrated Flora of Turkey)*: 2: 785–799. ANG Vakfı Nezahat Gökyiğit Botanik Bahçesi Yayınları. İstanbul.
- İkinci, N. (2011). Molecular phylogeny and divergence times estimates of *Lilium* L. section *Liriotypus* Asch. et Graebn. (Liliaceae) based on plastid and nuclear ribosomal ITS DNA sequence data. *Turkish Journal of Botany* 35(4): 319–330.
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Distribution and Ecology (Assoc. Prof Dr Nursel İkinci)

Lilium akkusianum is endemic to Turkey, growing in the Central Black Sea Region. Initially known from only the type locality in Ordu, in recent years new occurrences

photograph © Assoc. Prof Dr Nursel İkinci



were recorded from the neighboring provinces, namely Amasya, Ordu, Tokat and probably Samsun (I have seen only the photograph of a fruiting lily from this region). *L. akkusianum* occupies the westernmost border of geographical distribution of the north eastern Turkish *Lilium* species which includes all Turkish species except *L. martagon* and *L. candidum*. *Lilium akkusianum* does not grow sympatrically with other *Lilium* species.



photograph © Dr Paul Christian

The species can be found at an altitude of 1,100–1,450 m under mesophytic forests with the dominant tree species being *Fagus orientalis*. The populations are more vigorous when they grow in clearings of such forests. Additionally, it can also grow under *Quercus*, *Pinus*, and *Fagus* mixed forests. In some of its habitats *Taxus baccata*, *Lonicera* spp., *Prunus laurocerasus*, *Sambucus nigra* and *S. ebulus* accompany *Fagus orientalis*. It occupies an area where precipitation is not so high as in further eastern Black Sea regions.

This endemic species is in the endangered (EN) category because the extent of its occurrence is only approximately 2,500 km². Although the species is recorded from three provinces, the populations are very local and small. In recent years, with increasing sharing of pictures of the species from its native habitats on social media, collection by amateurs as ornamental plants has brought additional pressure on populations.

Bulb

The large ovoid to elliptic bulb of *Lilium akkusianum* typically has a circumference of ca. 20 cm with a diameter of about 6 cm, but it can be larger. The numerous scales, which are creamy white, are narrowly ovate-lanceolate with acute apices measuring 32–40 mm long and 5–7 mm wide.

Stem and leaves

The smooth, yellowish-green stem is rooting at the base and is usually between 80 and 150 cm tall, although plants can reach 180 cm when well



photograph © Mel Herbert

This bulb, photographed in situ in West Wales, measured around 7 cm in diameter and went on to produce two flowers in the following summer.



photograph © Dr. Paul Christman



photograph © Mel Herbert

grown. It carries numerous sessile leaves which are alternate or scattered and become narrower up the stem. The lower ones being ovate to lanceolate with obtuse tips and measuring 8.6–14 cm long by 1.5–2.8(–3.5) mm wide whilst the middle leaves are lanceolate to very linear-lanceolate with acute apices and 7–20 mm wide, 6.5–15.5 cm long. The leaf veins are glabrous but the margins and leaf bases have long lanate hairs. However, the lower leaves are almost glabrous with the indumentum increasing towards the upper leaves.

Buds and flowers

The racemose inflorescence usually carries between one and six flowers but up to 12 or even more have been recorded. Leaf-like floral bracts subtend the pedicels. These are sessile, narrowly ovate-lanceolate with very acute tips and measure 35–75 mm long by 3–11 mm wide. Their margins and base with long lanate hairs.

The pendulous flower buds are a shiny cream or greenish-yellow, strongly lanate, especially at the apex. The base is greenish or sometimes, but rarely, purplish.

The pedicels, which are light green and slightly drooping, are 1.8–10 cm long. They carry nodding to pendulous flowers with slightly to strongly recurved tepals. The outer ones, 69–90 mm long and 10–22 mm wide, being lanceolate, sometimes spatulate, tapered below and with obtuse apices whilst the inner are lanceolate and 65–82 mm long by 14–26 mm wide. These floral segments are ivory-white, with a darker central line, sometimes lightly speckled with brownish-purple or chocolate spots and the tips bear long lanate hairs. The throat is faintly coloured greenish or lemon yellow inside towards the base.

Closer inspection reveals smooth, olive to light green nectaries. Light whitish-green filaments, which are about 45–60 mm long, carry orange or orange-red anthers with orange pollen. The cylindric ovary and the style are also whitish-green, the former being 10–22 mm long. A trilobed, light yellowish-green or sometimes purple tinged stigma is held at the end of the 42–52 mm long style.

Seed Capsule

The fruit is a cylindric capsule about 3–5 cm long and 2 cm in diameter.



photograph © Mel Herbert

Lilium akkusianum well established in a raised bed in West Wales.

Seed and Germination

The seeds of *Lilium akkusianum* are dark brown and have a narrow membranous margin. Like other Caucasian lilies the germination is of the delayed hypogeal type with the first leaves appearing in the spring following a warm and then cold cycle. Subsequent growth is generally rather slow with at least five years to first flowering.

Cultivation

Bulbs of this wonderful Caucasian lily are almost impossible to obtain commercially and are, in any case, difficult to establish. Anyone aspiring to see the truly beautiful white flowers adorning their garden are best advised to seek to obtain seed from one of the exchanges and to raise their own plants.

In Wales, young plants planted out as a whole undisturbed potful into an improved clayey loam appeared to settle down into their growing positions but only a small number reached maturity and they didn't survive as flowering plants for more than a few years. Others planted out into a raised bed with a mix of coarse grit, composted bark and ericaceous compost at the same time did much better and are still alive and flowering annually some 12 years later.

A grower in Scotland also reported that youngsters planted out into a raised bed of well drained compost in their third year did very well. These plants and those in Wales are protected from excess winter wet with sheets of plastic.

Members' contributions

Many thanks to the following growers who contributed observations, photographs and comments for this Species Profile: Steve Garvie, Mel Herbert.