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Festuca ankarica (Poaceae), a new species from Ankara (Türkiye)

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Festuca ankarica (Poaceae), Ankara (Türkiye)'dan yeni bir tür

Abstract: Some interesting *Festuca* (Poaceae) specimens with intravaginal and extravaginal vegetative shoots were collected from Ayaş District (Ankara Province, Türkiye). As a result of comprehensive review, it was determined that the specimens were similar *F. sclerophylla* known from Russia, Iran, and Türkiye, but different from this. Taking into account the differences detected, the specimens were presented to the scientific world as a new species and was named *Festuca ankarica*. The fact that the culms with extravaginal and intravaginal shoots (not with only extravaginal shoots), leaf sheaths closed to mount and glabrous (not open to mount and scabrous), ligule 5-7 mm long (not 2-4 mm long), leaf blade 12-22 cm long (not 45-60 cm long), upper glumes 1.8-2.2 mm wide (not 2.5-3 mm wide), lemma 1.3-1.8 mm wide (not 3-3.5 mm wide), anthers 5-6 mm long (not 4-4.5 mm long) are the most apparent attributes that separate *Festuca ankarica* from *F. sclerophylla*, that are a close taxon. Here is a detailed description of the new species, with illustrative photographs and some general ecological preferences.

Key words: *Festuca*, Loliinae, new species, Türkiye

Özet: Ayaş'tan (Ankara, Türkiye) intravajinal ve ekstrasvajinal vejetatif sürgünleri olan bazı ilginç *Festuca* (Poaceae) örnekleri toplandı. Kapsamlı inceleme sonucunda, örneklerin Rusya, İran ve Türkiye'den bilinen *F. sclerophylla*'ya benzediği, ancak ondan farklı olduğu tespit edildi. Tespit edilen farklılıklar dikkate alınarak, örnekler bilim dünyası için yeni bir tür olarak sunuldu ve *Festuca ankarica* olarak adlandırıldı. Gövdelerin intravajinal ve ekstrasvajinal sürgünlü (sadece ekstrasvajinal sürgünlü değil), yaprak kınlarının ağza doğru kapalı ve tüysüz (ağza doğru açık ve pürüzlü değil), ligulanın 5-7 mm uzunluğunda (2-4 mm değil), yaprak ayasının 12-22 cm uzunluğunda (45-60 cm değil), üst glumaların 1,8-2,2 mm genişliğinde (2,5-3 mm değil), lemmanın 1,3-1,8 mm genişliğinde (3-3,5 mm değil), anterlerin 5-6 mm uzunluğunda (4-4,5 mm değil) olması, *Festuca ankarica*'yı yakın takson olan *F. sclerophylla*'dan ayıran en belirgin özelliklerdir. Burada, yeni türün ayrıntılı bir tanımı, tanıtıcı fotoğrafları ve birkaç genel ekolojik tercihi verilmiştir.

Anahtar Kelimeler: *Festuca*, Loliinae, yeni tür, Türkiye

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1. Introduction

Poaceae Barnhart is one of the most prominent families, with 826 genera and 12,361 valid species described so far (WFO, 2025a). According to the latest data, the family is represented with 147 genera and 556 species in Türkiye (Cabi and Doğan, 2012; Cabi et al., 2013; 2015a; 2015b; 2018; Doğan et al., 2015; Cabi and Soreng, 2016; Terzioğlu & Özkan, 2020; Behçet and Yapar, 2021; Aykurt et al., 2022). *Festuca* L. s.l., with 686 valid species, is a globally recognized genus (Aykurt et al., 2022; WFO, 2025b). *Festuca* is also a genus including the most taxa in Türkiye and represented by 67 taxa connected to 6 sections. Approximately 42% of these taxa are endemic. Species of the genus mostly prefer rocky slopes, moist meadows or forest clearings as habitats (Markgraf-Dannenberg, 1985; Cabi and Doğan, 2012; Aykurt et al., 2022).

During a botanical trip between Gökler and Erkeksu Neighborhoods (Ayaş, Ankara, Türkiye) in 2021, some *Festuca* specimens were encountered growing on marly slopes, attracting attention with their long culms and dense clusters appearance. Due to their bladeless leaves, the specimens were thought at first glance to belong to a familiar species *F. sclerophylla* Boiss. ex Bisch, which also grows in Türkiye (Markgraf-Dannenberg, 1985). Flowered specimens, which have adapted to the damp marl rocky

slopes, were collected around the end of June. It was decided at the conclusion of the investigation conducted and by considering the *Flora Iranica*, *Flora SSSR*, and *Flora of Turkey and the East Aegean Islands* that the specimens are a new species for the genus *Festuca* (Krechetovich and Bobrov, 1934; Bor, 1970; Markgraf-Dannenberg, 1980; 1985).

2. Materials and Method

Festuca specimens constituting the study material were collected in late June between Gökler and Erkeksu Neighborhoods, located on the foothills of Abdüsselam Mountain (Ayaş District, Ankara Province, Türkiye). In evaluating Ayaş specimens, relevant literature (Boissier, 1884; Krechetovich and Bobrov, 1934; Bor, 1970; Markgraf-Dannenberg, 1980; 1985) and herbarium materials preserved in ANK, E, P, and MW or their high-resolution photographs were used (Thiers, 2025). A stereo microscope and a mobile phone were used to examine and photograph the specimens, and a ruler with a precision of 0.5 mm was used for measurements.

3. Results

Festuca ankarica Hamzaoglu, **sp. nov.** (Figs. 1-3).

Type. TÜRKİYE. B4 Ankara: Ayaş, between Gökler and

Erkeksu Neighborhoods, 1.120 m a.s.l., 27 June 2021, marly rocky slopes, *E. Hamzaoglu* 7862 (holotype: GAZI; isotype: GAZI; ANK; HUB).

Diagnosis. *Festuca ankarica* is related to *F. sclerophylla*. It differs from *F. sclerophylla*, mainly by culms with extravaginal and intravaginal shoots (not with only extravaginal shoots), leaf sheaths closed to mount, glabrous (not open to mount, scabrous), ligule 5-7 mm long (not 2-4 mm long), leaf blade 12-22 cm long (not 45-60 cm long), upper glumes 1.8-2.2 mm wide (not 2.5-3 mm wide), lemma 1.3-1.8 mm wide (not 3-3.5 mm wide), anthers 5-6 mm long (not 4-4.5 mm long) (Table 1).

Description. Densely tufted perennial herb with extravaginal and intravaginal shoots. Culms 75-95 cm long, 3-5 mm diameter at base, erect, cylindrical, finely longitudinally striated, glabrous, smooth, 2-noded, covered by bladeless leaf sheaths. Leaves with sheaths closed to mount, glabrous, tubular, not sulcate, acuminate at apex, herbaceous, young sheaths greenish, old sheaths brownish, decaying into longitudinal fibres in lower portion, with 11-15 veins; auricles absent; ligule 5-7 mm, scarious, acuminate, lacerate at apex; leaf blade 12-22 cm long, erect or curved, \pm rigid, not pungent, flat or convolute when dry, linear or setaceous, up to 3 mm wide in extravaginal shoots, 1-2 mm wide in intravaginal shoots, sclerenchyma strands unequal, interrupted. Panicle 18-35 \times 10-20 cm, lax, broadly ovate, with 10-25 spikelets, axis antrorse-scarious, 2-4-noded, patent at anthesis. Spikelets greenish to straw-coloured, elliptic, 11-14 mm, laterally compressed, with 5-7 fertile florets, rachilla hairy. Glumes unequal, broadly scarious on margins, smooth or ciliate, scabrous to apex, acuminate; lower linear-lanceolate, 6-8 \times 1.4-1.7 mm, 1-veined; upper oblong-lanceolate, 6.5-8.5 \times 1.8-2.2 mm, 3-veined. Lemma 7-9 \times 1.3-1.8 mm, oblong-lanceolate, acute to acuminate, awned, with narrowly scarious margins, entirely scabrous, greenish or straw-coloured, 5-veined; awn up to 1 mm. Palea 6.5-8.2 \times 1.2-1.7 mm, subequal or somewhat shorter than lemma, bidentate, with 2 scabrous keels. Anthers 5-6 mm, linear, whitish, c. $2/3 \times$ palea. Ovary hairy at apex. Caryopsis hairy at apex, hilum linear.

Etymology. The naming of the newly described species was inspired by the name of Ankara, the capital of Türkiye, where the specimens of the species were collected.

Proposed vernacular name. Ankara Yumağı (Turkish), Ankara Fescue (English).

Phenology. Flowering (blooming) time: mid-June to end-July; fruiting time: mid-July to end-August.

Habitat, ecology and distribution. Specimens of *Festuca ankarica* were collected between Gökler and Erkeksu Neighborhoods (Ayaş District, Ankara Province). In the observations, it was determined that the specimens belonging to the species grow on marly rocky slopes, approximately 950 to 1.150 m a.s.l. It is possible that the specimens belonging to the species grow on other marly rocky slopes around Ayaş District (Ankara Province, Türkiye), but more detailed field observations are needed on this subject. In light of the available data, it can be said that *Festuca ankarica* is endemic to Türkiye and, considering its distribution area, it is located in the Irano-Turanian phytogeographic region.



Figure 1. Habit, habitat, inflorescence and underground part in *Festuca ankarica*.



Figure 2. Holotype of *Festuca ankarica*.

IUCN Conservation assessment. According to the available data, *Festuca ankarica* is a species only known



Figure 3. The leaf and flower parts of *Festuca ankarica*. A: leaf cross-sections [A1: conduplicate leaf (slightly opened in cross-section), A2: flat leaf], B: ligule, C: spikelet, D: glumes, E: lemma, F: palea, G: pistil and a single stamen (scale bar: A1: 1 mm, A2-G: 3 mm).

Table 1. Diagnostic differences between *Festuca ankarica* and *F. sclerophylla*.

Characters	<i>F. ankarica</i>	<i>F. sclerophylla</i>
Culms	with intravaginal and extravaginal shoots, 2-noded	with only extravaginal shoots, 3-noded
Leaf sheaths	closed to mount, glabrous	open to mount, scabrous
Ligule	5-7 mm long, acuminate	2-4 mm long, acute
Leaf blade	12-22 cm long, up to 3 mm wide in extravaginal shoots, 1-2 mm wide in intravaginal shoots	45-60 cm long, 3-4 mm wide
Upper glumes	oblong-lanceolate, 1.8-2.2 mm wide	ovate-acuminate, 2.5-3 mm wide
Lemma	1.3-1.8 mm wide, narrowly scarious margins	3-3.5 mm wide, broadly scarious margins
Anthers	5-6 mm long	4-4.5 mm long
Habitat	marly rocky slopes, 950-1.150 m a.s.l.	rocky slopes and screes, 1.500-3.500 m a.s.l.

from the type locality. Approximately 200 individuals were counted having independent roots in the type locality. The species grows in the marly rock slopes between Gökler and Erkeksu Neighborhoods (Ayaş, Ankara). When the areas where the species could be grown are considered, it is estimated that *Festuca ankarica* showed a distribution on an area smaller than 5.000 km². There are small settlements and agricultural areas in the close surroundings of the individuals belonging to the species. Currently, the most critical threat to the species is the recent conversion of its habitat into agricultural areas or "hobby gardens", which has become a trend recently. When the existing or envisaged threats are evaluated together, the species being known from only one addresses at present (area of life less than 10 km²) and the breadth of the area of distribution calculated (less than 5.000 km²), it was decided that it would be suitable to propose the *Endangered* [EN B1ab(i)] classification for the extinction risk of the taxon (IUCN, 2025).

Additional specimens examined. *Festuca sclerophylla*. **TÜRKİYE. B6 Sivas:** Şarkışla, Beyyurdu village, 1.650 m a.s.l., 19 July 1979, *T.Ekim & A.Düzenli* 5798 (ANK!); **B7 Erzinçan:** Keşiş Dağ, above Cimin [Üzümlü], 1.900-2.100 m a.s.l., 26 July 1957, *P.H.Davis* 31768 & *I.Hedge* (E, E00407366!, virtual image; ANK!); **B8 Erzurum:** Pasinler to Horasan, 1.650 m a.s.l., 12 June 1957, *P.H.Davis* 29388 & *I.Hedge* (E, E00407367!, virtual image); **B9 Van:** Başkale, İspiriz Dağ, 3.500 m a.s.l., 31 July 1954, *P.H.Davis* 23755 & *O.Polunin* (E, E00407361!, virtual image; ANK!), *ibid.*, 2.600 m a.s.l., *P.H.Davis* 23617 & *O.Polunin* (E, E00407368!, virtual image; ANK!); 24 km side of Tahir Pass, 2.350 m a.s.l., 24 July 1966, *P.H.Davis* 47305 (E, E00407364!, virtual image). **IRAN. Montes Elburz:** inter Shemshak et jugum Dizin, 2.900 m a.s.l., 25 June 1977, *K.H.Rechinger* 57220 (E, E00377579!, virtual image); **Mazandaran:** 2 km from İleka, near road to Nisind, 14 August 1963, *N.Jardine* 878 (E, E00377578!, virtual image); **Tehran:** the southern range of Elburz

mountains, just above the village Darakeh, 1.700-2.100 m a.s.l., 18 June 1972, *R.Alava 10579* (E, E00377580!, virtual image); **Kerman**: in regio alpine montis Kuh i Dschupar, 3.000 m a.s.l., 10 June 1892, *J.Bornmüller 4952* (P, P02617878!, virtual image). **AZERBAIJAN. Norashen**: Ahura, 1.240 m a.s.l., 19 May 1947, *A.A.Grossheim, I.Iljinskaja & M.E.Kirpichnikov s.n.* (E, E00377573!, virtual image); Tanderya, 11 May 1947, *A.A.Grossheim, I.Iljinskaja & M.E.Kirpichnikov s.n.* (E, E00377575!, virtual image). **RUSSIA. Ossetia**: Ad viam osseticam militarem inter p.p. Mizur et Puzal, July 1901, *B.Marcowicz s.n.* (MW, MW0649452!, virtual image); **Dagestan**: Botlikh District, near the village of Andi, 1.940 m a.s.l. 15 July 2013, *A.S.Zernov 8151* (MW, MW0649455!, virtual image).

4. Discussions

Leucopoa (Griseb.) Tzvelev is a small subgenus, represented by a few species. This subgenus has some unique morphological characters. For example, the base of the culms is covered with bladeless sheaths (Figs. 1 and 2), auricle absent, and glumes scarious at least in the upper part (Alexeev, 1977; Markgraf-Dannenberg, 1980). The

morphological characters of the specimens collected from Ayaş (Ankara) are similar to the species belonging to this subgenus.

The first comprehensive information in Türkiye about the genus *Festuca* was included in Volume 9 of the work titled *Flora of Turkey and the East Aegean Islands* (Markgraf-Dannenberg, 1985). Accordingly, it belongs to the sect. *Leucopoa* (i.e. subgen. *Leucopoa*), and one species (*F. sclerophylla*) of this section grows in Türkiye. In the *Festuca ankarica*, the leaf sheaths closed to mount and glabrous (not open to mount and scabrous), the ligule 5-7 mm long and acuminate at apex (not 2-4 mm long and acute at apex), the leaf blades 12-22 cm long (not 45-60 cm long), the upper glumes oblong-lanceolate and 1.8-2.2 mm wide (not ovate-acuminate and 2.5-3 mm wide). As a result, when the descriptions and herbaria specimens were examined, it was understood that *Festuca ankarica*, vegetative and generative characters, was different from *F. sclerophylla* (Table 1, Fig. 3).

Conflict of Interest

Author has declared no conflict of interest.

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