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***Agropyron pinifolium* Nevski (Poaceae): a new species record for the flora of Turkey**

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**Abstract**

An addition to the known Turkish grasses, *Agropyron pinifolium* Nevski (Poaceae) is recorded for the first time from Turkey. This new record is confined to Vize province in Kırklareli. An updated description and notes on ecology and phenology of the new record are also presented. In addition, distribution map and illustration of this new record from Turkey is given.

**Key words:** Poaceae, *Agropyron pinifolium* Nevski, new record, Turkey

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***Agropyron pinifolium* Nevski (Poaceae): Türkiye florası için yeni bir tür kaydı**

**Özet**

Bilinen Türkiye Buğdaygillerine ek olarak, *Agropyron pinifolium* Nevski (Poaceae) türü Türkiye'den ilk defa kaydedildi. Bu yeni kayıt Kırklareli ilinin Vize ilçesinde sınırlanmaktadır. Güncel bir betim ve bunun yanında türün ekolojisi ve fenolojisi üzerine notlar sunuldu. Ek olarak bu türe ait bir çizim ve dağılım haritası verildi.

**Anahtar kelimeler:** Buğdaygiller, *Agropyron pinifolium* Nevski,, yeni kayıt, Türkiye

**1. Introduction**

The taxonomy of *Agropyron* Gaertn. has been studied in different ways by various researchers. In a broad sense it was once thought to be one of the largest genera in the Triticeae, encompassing more than 100 species (Dewey, 1983). Nevski (1934) restricted *Agropyron* to perennial taxa with keeled glumes, a group of species referred to in English as the Crested Wheat grasses. He placed the other taxa in *Elytrigia* Desv, *Roegneria* C.Koch and *Elymus* L.. Subsequent works showed that members of *Agropyron* sensu Nevski are diploids, tetraploids, or hexaploids in which only the P genome is present) (Dewey and Asay, 1975; Dewey, 1983; Melderis, 1978; Assadi, 1995; Jensen et al., 2006; Genome designations as recommended by the International Triticeae Consortium; <http://herbarium.usu.edu/Triticeae/genmsymb.htm>). This narrow concept of *Agropyron* is now followed in most taxonomic works (e.g., Tzvelev, 1976; Melderis et al., 1980; Clayton and Renvoize, 1986; Wu et al., 2006; Barkworth et al., 2007; Cabi and Doğan, 2012). It is also supported by intergeneric crossing experiments (Assadi and Runemark, 1995). Much confusion prevails in regard to the number of species in *Agropyron*.

In the Flora of Turkey, Melderis (1985) recognized only one species, *A. cristatum* s.l. in *Agropyron* and subdivided it into two subspecies (subsp. *incanum* and subsp. *pectinatum*). He stated that subsp. *incanum* was confined to the high mountain steppes of East Anatolia whereas subsp. *pectinatum* grew throughout Turkey. *Agropyron cristatum* subsp. *pectinatum* was further divided into two varieties, one of which was var. *imbricatum* having pilose spikelets and the other one var. *pectinatum* having glabrous spikelets (Melderis, 1985).

Löve (1984) recognized another species from Turkey that he named *A. deweyi*. The seeds of this species were collected by J.R. Harlan in 1948 and cultivated in Evans Farm, Utah, U.S.A. He noted that this species might be a

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variant of *A. cristatum* that arose under cultivated conditions far from its native habitat. Baum et al. neotypified the species in 2008.

The authors carried out intensive field studies between 2010 and 2014 and collected huge amount of herbarium specimens of the tribe Poeae R.Br. Population size, phenological traits and ecological preferences were observed in the field (Davis and Heywood, 1973). During these field studies particular attention was paid to a *Agropyron* population collected from edge of Vize to Kıyıköy (A1 Kırklareli, A1 sensu Davis, 1965) in 2013. Upon closer examination and going through Flora of Turkey (Davis, 1985) and other relevant floras, such as Flora Orientalis (Boissier, 1884), Flora of Syria, Palestine and Sinai (Post, 1933), Flora of Iraq (Bor, 1968), Flora Iranica (Bor, 1970), and Grasses of the Soviet Union (Tzvelev, 1983), it was identified as *A. pinifolium*. This species was only known from Crimea and Caucasus (From Novorossiisk to Tuapse) so far.

## 2. Materials and methods

The specimens were collected from Kırklareli: Vize to Kıyıköy, about 5 km from Vize, calcareous stony places, 41°59'25.7" N 27°8'22.73" E, 400 m, 16 June 2013, E.Cabi & E.Karabacak (Figure 3). Related herbarium specimens were studied in ANK, GAZI, ISTE, ISTF, VANF, E, K, and BM herbarium.

## 3. Results

### Taxonomy

**AGROPYRON** Gaertn., Novi Comment. Acad. Sci. Imp. Petrop. 14(1): 539 (1770). / **OTLAK AYRIĞI**

Syn. *Agropyrum* Roem. & Schult., Syst. Veg. 2: 750 (1817). *Australopyrum* (Tzvelev) Á.Löve, Feddes Repert. 95(7-8): 442 (1984).

Lectotype: *A. cristatum* (L.) Gaertn., To Nash: "N.L. Britton & A. Brown, Ill. Fl. N.U.S. ed. 2. 1: 283 (1913)".

*Agropyron pinifolium* Nevski, Trudy Sredne-Aziatsk. Gosud. Univ., Ser. 8b, Bot. 17: 57 1934. / **İbrelî ayrık** (Figure 1).

**Syn.:** *Agropyron sclerophyllum* (Novopokr.) Novopokr. Sci. J. Rostov-on-Don State Univ. 6: 39 1935. *Agropyron cristatum* subsp. *sclerophyllum* Novopokr. Uchen. Zap. Rostovsk. Univ. V. M. Molotova, Trudy Biol. Fak. 6: 39 1935. *A. karadaghense* Kotov Journ. Bot. Acad. Sci. Ukraine, 5(1): 32. 1948. *Agropyron cristatum* subsp. *pinifolium* (Nevski) Bondar ex Korovina Byull Vses Ord. Lenina Inst. Rast. N.I. Vavilov, 81: 35. 1978.

### Description

Caespitose perennial, Flowering shoots 15-24 cm. Sterile shoots forms dense mats with stems more or less thickened at base, and with numerous shortened sterile shoots up to 5 cm with distichously arranged, short, convolute and bent leaves. Cauline leaves linear, convolute. Spike up to 2.5 cm long and 1.4 cm wide, dense, rachis segments are visible. Spikelets 3-5 flowered. Glumes subequal, ovate-lanceolate with prominent keel and awn up to 4 mm long, tangled ciliate at keel. Lemma 5.5-6.5 cm long with an awn up to 4 mm long, glabrescent or scabrous. Palea nearly as long as the lemma, bidentate at the summit, sparsely ciliate on the keels (Figure 2).

Described from the vicinity of Gelendzhik. Type in Leningrad.

Flowers in May - July. Anemophilous. 2n=?

**Specimens examined.** Kırklareli: Vize to Kıyıköy, about 5 km from Vize, calcareous stony places, 41°59'25.7" N 27°8'22.73" E, 400 m, 16 June 2013, E.Cabi & E.Karabacak (Figure 3).

**Habitat and elevation in Turkey** - Calcareous stony places, woodlands' openings, 400 m. Flowering. May to July. It grows together with the following taxa *Stipa* sp., *Galium* sp., *Salvia* sp., *Poa* sp., *Catapodium* sp., *Bromus* sp. and *Aegilops* sp..

**Distribution outside Turkey** -West Transcaucasia, Crimea.



Figure 1. *Agropyron pinifolium* (=ibreli ayrık) in its habitat

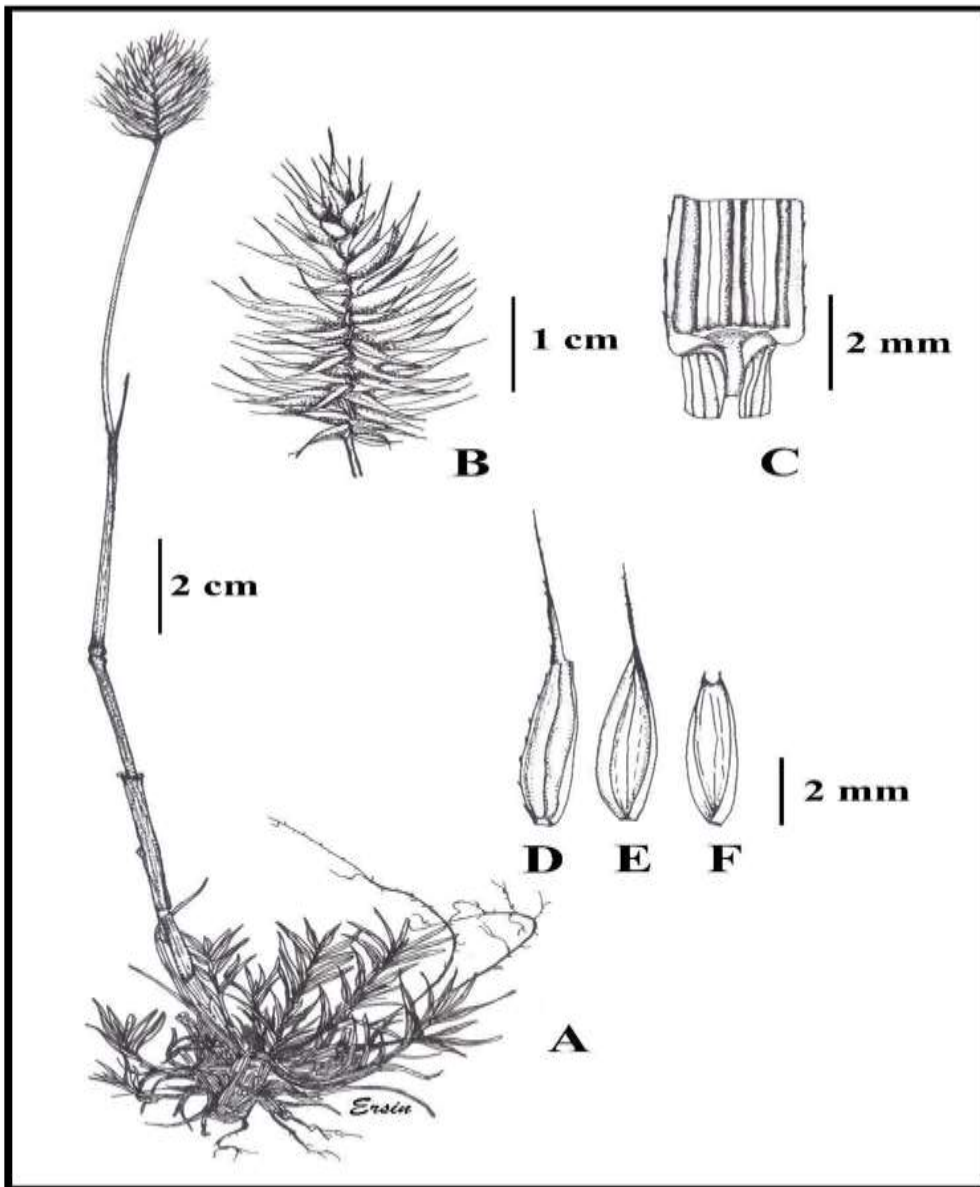


Figure 2. *Agropyron pinifolium* (=ibreli ayrık). **A**, a general view of the species; **B**, spike; **C**, leaf detail; **D**, glume; **E**, lemma; **F**, palea. Illustrated by E.Karabacak from materials at NAKU and CBB.



Figure 3. The distribution map of *Agropyron pinifolium* (●) in Turkey

**Use and economic value.** - Forage grass.

Intensive studies in literature, herbaria and databases for identifying the specimens have been revealed that the identification is correct and it is a new record for the Flora of Turkey.

The herbarium specimens of *A. pinifolium* from Turkey are deposited at the herbaria of NAKU, CBB, and NGBB.

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