

## *Aegilops uniaristata* Vis. (Poaceae): typification and occurrence in Croatia

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**Abstract** – After 88 years, occurrence of *Aegilops uniaristata* Vis. (Poaceae) in Croatian flora was confirmed and its distribution is supplemented by new localities. It has been confirmed and its distribution supplemented by new localities. Populations of a few specimens were found in southern Istria, in the vicinity of the small town of Bale, in the village of Krnica and on the Rt Kamenjak promontory, growing within dry Mediterranean grasslands. Based on herbarium revision a lectotype from Visiani's collection in herbarium PAD and an epitype from the herbarium W were designated.

**Keywords:** *Aegilops*, epitype, herbarium PAD, herbarium W, Istria, lectotype, Poaceae, rare species

### Introduction

The genus *Aegilops* L. (Poaceae) consists of more than 20 species and has been a widely studied genus among grasses since it was confirmed to have the secondary gene pool for cultivated wheat (VAN SLAGEREN 1994, BELKADI et al. 2003). Furthermore, in some approaches the genus *Triticum* L. is included in the genus *Aegilops*. The species of this genus are adapted to diverse disturbed and ruderal environments, pastures, dry grasslands, edges of cultivated fields (BELKADI et al. 2003), and are mainly distributed in Southwest and Central Asia and throughout the Mediterranean Basin (CABI et al. 2010).

In the flora of Croatia the genus *Aegilops* is represented by six species: *A. cylindrica* Host, *A. geniculata* Roth, *A. lorentii* Hochst., *A. neglecta* Req. ex Bertol., *A. triuncialis* L. and *A. uniaristata* Vis. (NIKOLIĆ 2014). *A. uniaristata* was described from the Zadar area as an annual species morphologically similar to *A. cylindrica* (VISANI 1852: 345). In Croatia this species is protected (ANONYMUS 2009) and it has the category of near threatened (NT) plant (NIKOLIĆ and TOPIĆ 2005). Morphologically *A. uniaristata* is easy to distinguish from

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other *Aegilops* species by the solitary awns on both glumes of its terminal spikelet (Fig. 1). *A. uniaristata* can be diploid and tetraploid ( $2n = 14, 28$ ) and with *A. comosa* Sm. in Sibth. et Sm. it belongs to the section *Comopyrum* (Jaub. & Spach) Zhuk. (TUTIN and HUMPHRIES 1980, WITCOMBE 1983, CABI 2010).

*Aegilops uniaristata* is distributed mainly in the Central and Eastern Mediterranean: Croatia, Bosnia and Herzegovina, Montenegro, Italy, Albania and Greece (PIGNATTI 1982, WITCOMBE 1983, VAN SLAGEREN 1994, PERRINO 2011, PERRINO et al. 2014, NIKOLIĆ 2014) while in Turkey it is probably extinct (CABI 2010). It grows within Mediterranean dry grasslands and sometimes on anthropogenic habitats especially at the border of olive groves (VAN SLAGEREN 1994, PERRINO 2011, PERRINO et al. 2014).

In the Croatian flora, according to literature data, *A. uniaristata* was previously known from Zadar (VISIANI 1852), from the wider area of Pula in southern Istria (FREYN 1878) and from the island of Plavnik in the Kvarner Archipelago (HORVATIĆ 1927). Several specimens deposited in herbarium ZA were collected in the period from 1872 to 1925 in Poreč, Rijeka, on the islands of Lošinj and Unije, from surroundings of Pula, and along the Kvarner Littoral. Since then, new localities have not been reported.



**Fig. 1.** Inflorescence of *Aegilops uniaristata* Vis. (photo by S. Bogdanović).

## Material and methods

Based on field surveys performed in Istria in 2012 and 2013, and on herbarium revisions, new insight regarding the distribution and occurrence of *A. uniaristata* along the Eastern Adriatic coast was provided. Herbarium specimens were studied in CNHM, NHMR, PAD, ZA, ZAGR, ZAHO, W, and VIRTUAL HERBARIA database. Abbreviations of herbaria follow THIERS (2014). Newly collected herbarium specimens of *A. uniaristata* from Istria are deposited in ZAGR and are accessible through Virtual ZAGR herbarium (BOGDANOVIĆ 2014).

Relevant taxonomic literature and determination keys were used for identification according to WITCOMBE (1983), VAN SLAGEREN (1994) and CABI (2010). A distribution map was generated using geocoded herbarium localities and literature data combined with the Flora Croatica Database (NIKOLIĆ 2014). Typification was performed in accordance with the ICN Code (MC NEILL et al. 2012).

## Results and discussion

*Aegilops uniaristata* Vis., Fl. Dalm. 3: 345 (1852).

Homotypic synonyms: *Chennapyrum uniaristatum* (Vis.) Á. Löve, *Triticum uniaristatum* (Vis.) K. Richter.

Heterotypic synonyms: *Aegilops notarissii* Clementi, *Aegilops uniaristata* Steud. (nom. illeg.).  
 Species description: *A. uniaristata* is an annual species, with numerous stems, up to 40 cm height. Leaves are glabrous or shortly hairy, with glabrous sheaths or the lower patent-hairy. Spike subovoid rarely moniliform, tapering towards apex, 1–3.5 cm long (excl. awns), with usually 2–3 fertile spikelets and 2(–3) rudimentary spikelets. Each spikelet has one caryopsis and the whole spike breaking off as a unit at maturity. Lower glume of lowest spikelets is 6–8 mm long and 4–6 mm wide, awned or toothed. Glumes of apical spikelet with a flat 3–5 cm long awn without lateral teeth or awns, glumes of lateral spikelets distinctly ventricose, bifid into a sharp tooth and an increasing short awn towards apex. Awns are variable in number and length, often patent at maturity (Fig. 1).

Distribution in Croatia: Istria, Kvarner Archipelago and central Dalmatia (town of Zadar and the island of Hvar) (Fig. 2).

Our findings in Istria: the village of Krnica near the small town of Bale (vicinity of the town of Rovinj) and Rt Kamenjak promontory provide the first records of this species in the Croatian flora after 88 years. The area of distribution of *A. uniaristata* has been extended from Istria and Kvarner Archipelago to central Dalmatia because of one herbarium specimen from the island of Hvar found in W, while at the locus classicus in Zadar the species was not confirmed (Fig. 2). *A. uniaristata* seems to be more widespread along the Adriatic coasts of Italy and Croatia as concluded in PERRINO (2011) and PERRINO et al. (2014). Further findings of this rare species could be expected in similar habitats along Croatian coast and islands.

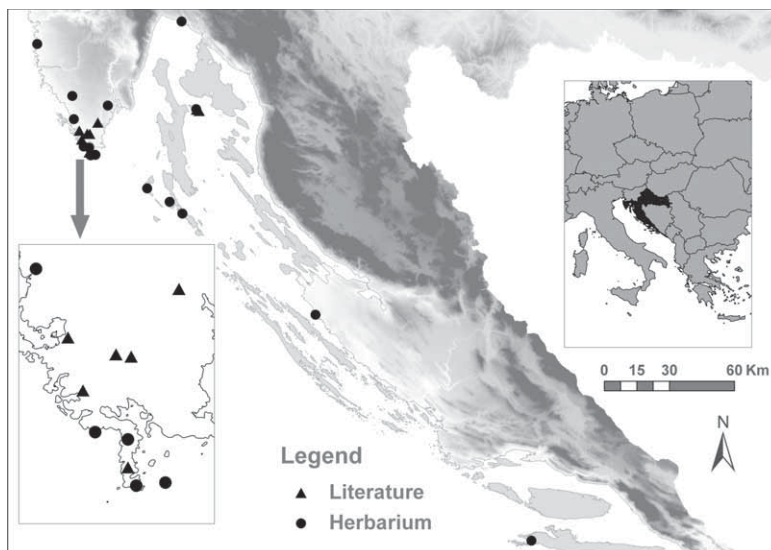


Fig. 2. Present distribution of *Aegilops uniaristata* Vis. in Croatia (▲ literature data, ● herbarium data).

### Typification

Research of original type material deposited in PAD and W enabled designation of a lectotype and an epitype in accordance with Art. 9.2 and Art. 9.8 of the ICN Code (Mc NEILL et al. 2012).

Lectotype: CROATIA. Circa Zara [Zadar], s. d., Alsch. [A. Alschinger] (lectotype here designated: PAD-H0028902) (Fig. 3, the right specimen).

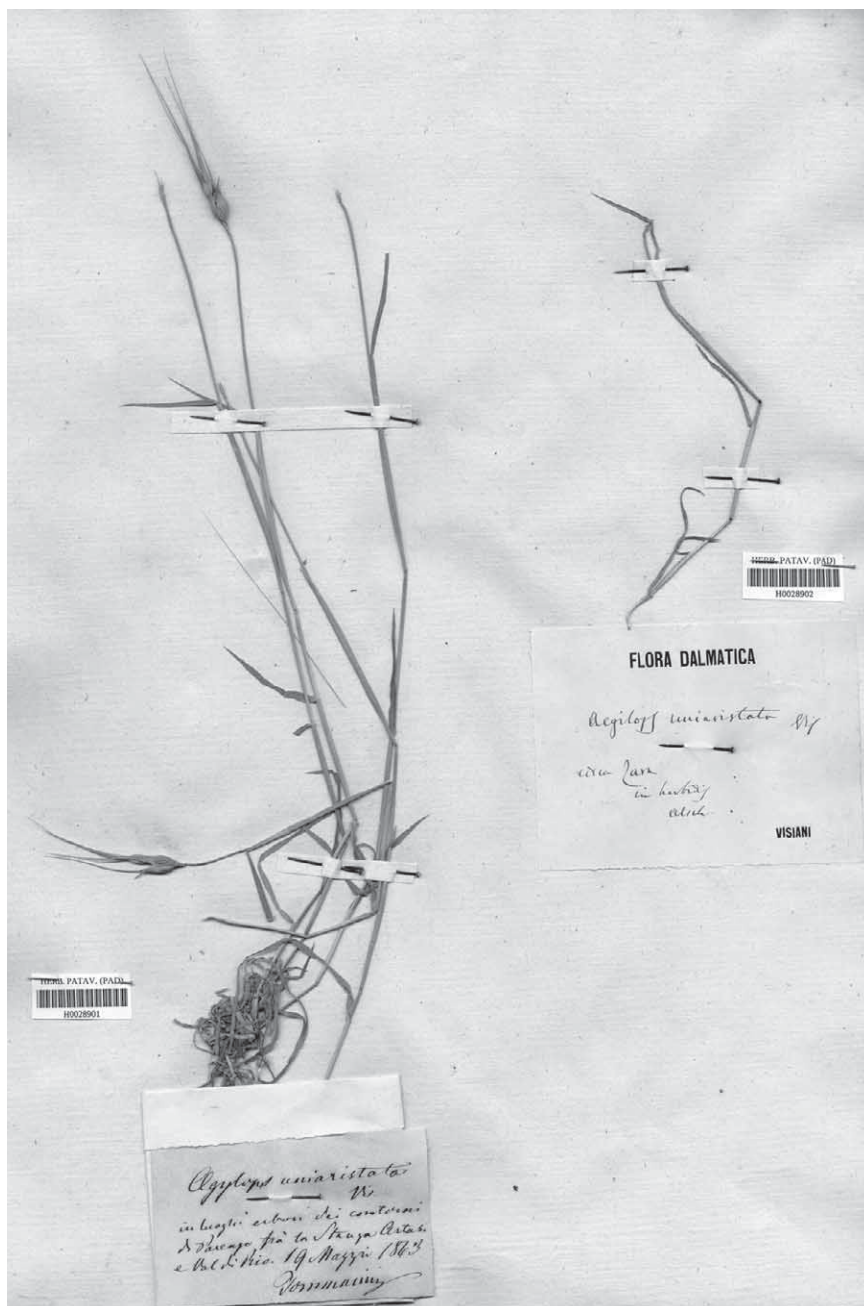
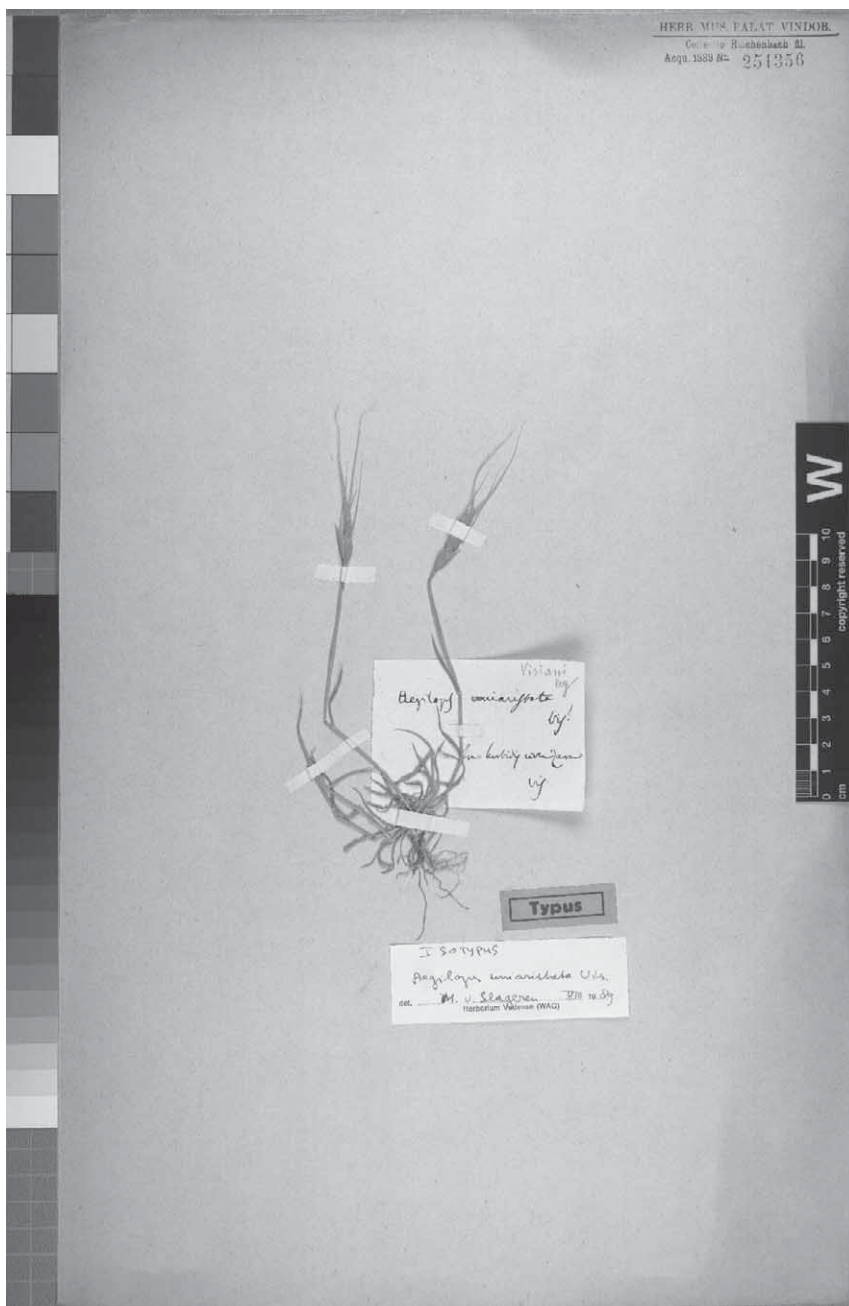


Fig. 3. Lectotype of *Aegilops uniaristata* Vis. deposited in PAD, the right specimen (reproduced with permission).

Epitype: CROATIA. Circa Zara [Zadar], s. d., s. n. (epitype here designated: W-Rchb. 1889-0251356) (Fig. 4).



**Fig. 4.** Epitype of *Aegilops uniaristata* Vis. deposited in W (© Naturhistorisches Museum Wien, reproduced with permission).

The sterile specimen that we have selected, from the general collection in PAD (PAD-H0028902) fully corresponds to the protologue (*»in herbidis circa Zara, unde communicavit Prof. Alschinger«*). The label is in Visiani's handwriting. The lectotype is mounted on the same sheet as another, later specimen (PAD-H0028901, Fig. 3, left specimen). What appeared to be a fruiting duplicate is available from Visiani's main collection (*Herbarium Dalmaticum* in PAD, PAD-HD00406), but unfortunately the spikelets conserved in the envelope pinned to the herbarium sheet clearly do not belong to the genus *Aegilops* and were certainly attached there by mistake. That specimen, therefore, does not correspond with the protologue and could not be selected as type. Since the spike is fundamental for the morphological identification of this species, we designate, as an epitype, a second specimen by Visiani, in W (W-Rchb. 1889-0251356), which was incorrectly recognised as an isotype by M. Van Slageren (WAG), in 1989. This specimen was not suitable as lectotype since it cannot be shown to have been collected by Alschinger as cited in the protologue.

### *Specimina visa*

In total forty two herbarium specimens were consulted and studied from CNHM, NHMR, PAD, ZA, ZAGR, ZAHO and W:

**CROATIA:** Plavnik, 14.06.1925, S. Horvatić (ZA14867); Flora Lussinensis, Unija-Polje, 22.05.1912, A. Haračić (ZA14868); Flora Lussinensis, Unie, Polje, illeg., 22.05.1912, A. Haračić (ZA14862); Cigale, 24.05.1897, A. Haračić (ZA14864); Cigale, 24.05.1897, A. Haračić (ZA14872); Flora Lussinensis, illeg. Cigale, 12.06.1891, A. Haračić (ZA14861); Flora Lussinensis, Blatina, strada tur. che conduce in Slatina, 15.06.1890, A. Haračić (ZA14863); Kod Rieke, 06.1872, Lj. Rossi (ZA14871); Istriae-australis circa Parentians, M.G.S. Tommasini (ZA14865); Im Val bandon b. Pola, 28.08.1872, E. Hackel (ZA14866); Istria. Austria, prope oppidum Parentium, 06.1884, C. Marchesetti (ZA14869); Istria, Is. Fenera pr. Promontore, 06.1893, C. Marchesetti (ZA14870); Istra, okolica mjesta Bale, uz cestu, 30.05.2012, S. Bogdanović & I. Ljubičić (ZAGR33401); Istra, Premantura, Rt Kamenjak, 30.05.2013, S. Bogdanović & I. Ljubičić (ZAGR33402); Hrvatska, Istra, Gornji Kamenjak, Rt Bumbište-Crvene stine, suhi travnjak, 30.05.2012, S. Bogdanović & I. Ljubičić (ZAGR31701); Hrvatska, Istra, Krnica, 28.05.2014, I. Vitasović Kosić & M. Britvec (ZAGR36459); Isola di Lesina, Dalmazia, s.d., Anonymous coll. (W1974-0008324); Macchien-Mte Foibor, Pola, 08.06.1901, K. Untchj (W1949-0004005); Auf Grasplätzen um Parengo und sonst hie und da in Südistrien, 05.19##, M.G.S. de Tommasini (W1940-0021473); Istrien, Straßenränder am Monte Grande bei Pola, 08.06.1909, E. Korb (W1951-0002571); Austria, Isria, in graminosis prope oppidum Parentium, 06.1884, C. von Marchesetti (W1887-0001937); Auf Wiesen um Pola, Rovigno, 05.1863, M.G.S. de Tommasini (W-Hackel 1916-0013598); In herbidis Istria australis circa Parenzo, 05.1863, M.G.S. de Tommasini (W1912-0020319); Istria. Is. Fenera pr. Promontore, 1898, C. von Marchesetti (W1900-0003890); In herbidis circa Zara, s.d., R. de Visiani (W-Rchb. 1889-0251356); Val Bandon b. Pola, 20.05.1872, E. Hackel (W-Hackel 1916-0013599); Auf einem Grabplatz des Prato grande bei Pola, 08.06.1880, E. Witting (W1887-0006684); Flora Lussinensis, Blatine, 12.06.1891, A. Haračić (W1927-0017653); Istria. In pratis apricis ad mare prope Parentium, s.d., C. von Marchesetti (W 1887-0006685); Ad Parnzo, in graminosis, 05.1863, M.G.S. de Tommasini (W0001020); Istrien, An Straßenrändern auf der Insel Brioni maggiore, 13.06.1909. E. Korb (W1951-0002570); Sull'isola di Unie, Quarnero, 23.06.1843,

M.G.S. de Tommasini (PAD-HD00405); Circa Zara, s.d., A. Alschinger (PAD-HD00405); Zara, s.d., M.G.S. de Tommasini (PAD-HD00404); contorni di Parenzo, frà la Stanza Artori e Val del Rio, 19.05.1843, M.G.S. de Tommasini (PAD-H0028901); circa Zara, s.d., A. Alschinger (PAD-H0028902).

**GREECE:** Constatinople. Lieux herbeux près de Zékériékény, 02.06.21901, G.V. Aznavour (W1974-0008547); Flora de Constantinople. Lieux herbeux près de Zékériékény, 06.02.1901, G.V. Aznavour (W1902-0010391); Insel Kérkira (Nom. Kerkíras). Talsenke sündlich von der Brücke der Straße Paleokastrítsa-Kérkira, 22,-4 km S(-SSE) Skriperó, Niederung unweit der Straße, 09.05.2000, W. Gutermann et al. 34636 (W2006-0015228); Insel Kérkira (Nom. Kerkíras). Hügelland S Giannádes: an der Fahrpiste knapp 1 km in Richtung Ermónes, 15.05.2000, W. Gutermann et al. 34942 (W2006-0015231); Erimanthos, s.d., I. Trinajstić (CNHM26920).

**ITALY:** Leucaspidè prope Tarentum in saxosis, 19.05.1881, H. Groves (W-Hackel 1916-0013597).

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