

## × *Festulpia stacei* (Poaceae): a hybrid between *Festuca rubra* and *Vulpia myuros*

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### Abstract

A new hybrid between *Festuca rubra* L. and *Vulpia myuros* (L.) C.C.Gmel., × *Festulpia stacei* Krahulec **nothospecies nov.**, is described. Characters distinguishing it from its parental species are given, as well as its known distribution. New localities across central and western Europe are to be expected, because *Vulpia myuros* has been spreading in man-made habitats during recent decades.

**Keywords:** *Vulpia* spread; hybridisation

### Introduction

The genera *Vulpia* C.C.Gmel. and *Festuca* L. (especially *Festuca* sect. *Aulaxyper* Dumort.) are closely related, and recently *Vulpia* has been included in *Festuca*, e.g., by Soreng *et al.* (2022). Close relationships are reflected in the fact that species from the *F. rubra* L. aggregate hybridise with different *Vulpia* species. The nothogenus × *Festulpia* Melderis ex Stace & R.Cotton was described by Stace & Cotton (1974); Clive Stace and his students have since paid attention to various aspects of their hybridisation.

Until now, the following nothospecies were known (Stace *et al.*, 2015):  
× *F. hubbardii* Stace & R.Cotton (*F. rubra* × *V. fasciculata* (Forssk.) Fritsch)  
× *F. melderisii* Stace & R.Cotton (*F. arenaria* Osbeck × *V. fasciculata*)  
*F. rubra* × *V. bromoides* (L.) Gray  
*F. rubra* × *V. myuros* (L.) C.C.Gmel.

Several years ago, I found a specimen of the hybrid between *Festuca rubra* and *Vulpia myuros* in the Herbarium of the Museum of Western Bohemia (**PL**). Because this was the first case of this hybrid being found in Czechia, we published a more detailed description of it (Krahulec & Nesvadbová, 2007).

In the past, *V. myuros* occurred in seminatural habitats, on shallow soil with open canopy grasslands used usually as pastures. With the decline of these habitats due to the decrease of grazing and landscape eutrophication, it became included in the Red List of threatened flora of the Czech Republic (Holub & Procházka, 2000). But from the beginning of the 1980s it started to spread in ruderal habitats, in towns, along roads, on field margins and along railways and in railway stations (Crawley, 2021; Kaplan *et al.*, 2019). *Festuca rubra* is a common species growing in various habitats. For this reason, both species often occur together in the same habitats, and

it is probable that they will hybridise. Indeed, the hybrid found in Italy occurred along a railway line. For that reason, I decided to describe formally the hybrid between these species.

× *Festulpia stacei*, **nothospecies nov.**

*Festuca rubra* L. × *Vulpia myuros* (L.) C.C.Gmel

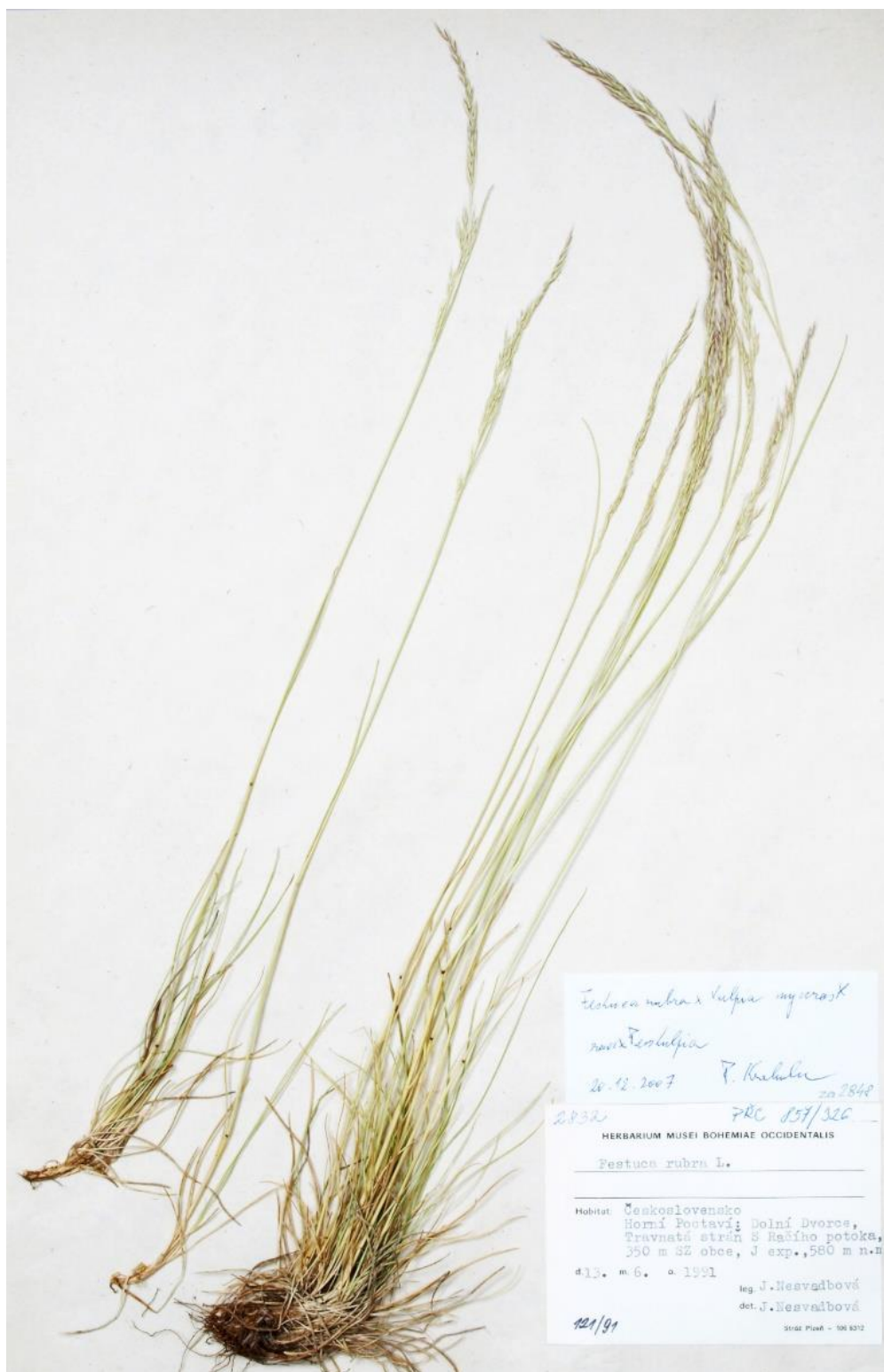
Description (Fig. 1 in Krahulec & Nesvadbová, 2007, where more details are given): A tussock perennial; tillers intravaginal, consisting of culms and sterile tillers. Leaves narrow (*Festuca*-like); anatomy closer to *F. rubra* (Fig. 2 in Krahulec & Nesvadbová, 2007) or intermediate (Ardenghi *et al.*, 2011). Culms covered by leaf sheath up to the panicle. Panicle relatively long, its branches uneven and short in lower part, in upper part short, some with solitary spikelets (*Vulpia*-like). Spikelets short, with (2–) 3 flowers. Flowers sterile, lacking a caryopsis. Glumes unequal, the upper on average 1.5 × as long as the lower. Awns c.3 mm long. Stamens three, hidden between lemma and palea. Anthers 1.05–1.10 mm long, indehiscent.

**TYPE:** Československo, Horní Pootaví: Dolní Dvorce travnatá stráň S Račího potoka, 350 m SZ obce, J. exp. [Československo (at present Czech Republic) SW part of the Czech Republic: Sušice, Dolní Dvorce: grassland slope N of the Račí potok stream, 350 m NW of the village of Dolní Dvorce], 49°10'25" N, 13°32'8" E, 13 June 1991. Leg. J. Nesvadbová. Herbarium of the Museum of Western Bohemia (**PL**).

## Discussion

Benoit (1958) was the first to publish a record of this hybrid, reporting on a plant found at Arthog, Merioneth, Wales, in 1957. Since then about ten further records have been made in scattered localities in England and Wales, north to southwest Yorkshire. The earliest known record, however, is from Monmouth, Wales, collected (but not identified) by E. Nelmes in 1951 (specimen in **K**) (Stace & Al-Bermani, 1989). On the European continent, apart from the Czech specimen described here and by Krahulec & Nesvadbová (2007), it has been found in the Netherlands in 1978 by E.J. Weeda (specimens in **L** and **LTR**) and in Italy in 2009 (Ardenghi *et al.* 2011), but it is almost certainly under-recorded.

*Festuca rubra* represents a species with great variation, with many partly described and undescribed variants growing in many habitat types (Cope & Gray, 2009). It is probably the main reason for the rather high variation of the *Festulpia* hybrid as shown in Table 1. This table summarises all the data available from the plants both from the field and from artificial crosses.



**Figure 1. Holotype of × *Festulopia stacei*, reproduced with permission of the Herbarium of the Museum of Western Bohemia, Plzeň (PL).**

**Table 1. Values of morphological characters of  $\times$  *Festulpia stacei* summarised from published papers**

	<b>Spikelet length (mm)</b>	<b>Panicle length (cm)</b>	<b>No. of florets</b>	<b>Lower glume length (mm)</b>	<b>Upper glume length (mm)</b>	<b>Lower glume /Upper glume ratio</b>	<b>Lemma length (mm)</b>	<b>Awn length (mm)</b>	<b>Anther length (mm)</b>
Krahulec & Nesvadbová (2007)	8.64 $\pm$ 1.07	12.55 $\pm$ 1.05	2.83 $\pm$ 0.37	2.48 $\pm$ 0.21	4.17 $\pm$ 0.18	0.5 – 0.64	4.81 $\pm$ 0.53	3.17 $\pm$ 0.16	
Ardenghi et al. (2011)	7.29 $\pm$ 1.45	8.62 $\pm$ 4.15	1.50 $\pm$ 0.53	3.26 $\pm$ 0.57	4.68 $\pm$ 0.65		5.32 $\pm$ 0.52	1.79 $\pm$ 0.44	
Ainscough et al. (1986) – Table 1				1.5 – 3.3	3.2 – 5.0	0.48 – 0.7	4.5 – 6.2	3.0 – 6.0	0.6 – 1.5
Stace & Al-Bermani (1988)				1.6 – 2.1	3.7 – 4.7	0.47 – 0.64	4.2 – 5.0	3.7 – 5.9	1.0 – 1.4
Barker & Stace (1994)				1.3 – 2.2	3.2 – 4.3	0.45 – 0.6	4.7 – 6.4	1.8 – 3.7	1.0 – 1.2
Ainscough et al. (1986) – Table 4									
Arthog 1957				2.4 – 3.2	3.7 – 4.7	0.6 – 0.7	5.3 – 5.6	3.6 – 4.3	0.8 – 1.0
Arthog 1970				2.0 – 2.4	4.0 – 4.6	0.5 – 0.55	4.6 – 5.5	3.2 – 4.2	1.0 – 1.1
Stockport				1.5 – 3.0	3.2 – 4.5	0.48 – 0.67	4.5 – 5.0	3.5 – 4.5	0.6 – 0.9
Snettisham				2.0 – 3.3	4.0 – 5.0	0.5 – 0.67	5.5 – 6.2	3.0 – 6.0	1.0 – 1.3
Holland				2.3 – 3.0	3.9 – 4.4	0.57 – 0.68	5.5 – 6.1	3.6 – 4.4	1.3 – 1.5

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## References

- Ainscough, M.M., Barker, C.M. & Stace, C.A. 1986. Natural hybrids between *Festuca* and species of *Vulpia* section *Vulpia*. *Watsonia* 16:143-151.
- Ardenghi, N.M.G., Parolo, G. & Foggi, B. 2011. Intergeneric hybrid *Festuca rubra* × *Vulpia myuros* in Italy. *Webbia* 66(1):77-84.
- Barker, C.M. & Stace, C.A. 1984. Hybridization in the genera *Vulpia* and *Festuca* (Poaceae): the characteristics of artificial hybrids. *Nord. J. Bot.* 4:289-302.
- Benoit, P.M. 1958. A new hybrid grass. *Proceedings of the Botanical Society of the British Isles* 3:85-86.
- Cope, T. & Gray, A. 2009. *Grasses of the British Isles*. BSBI Handbook No. 13. London: Botanical Society of the British Isles.
- Crawley, M.J. 2021. The rise of *Vulpia myuros* (Poaceae) and the impact of cultivation-timing on plant community structure. *British & Irish Botany* 3(3):362-372.
- Holub, J. & Procházka, F. 2000. Red List of vascular plants of the Czech Republic – 2000. *Preslia* 72:187-230.
- Kaplan, Z., Danihelka, J., Chrtek, J. jun., Kirschner, J., Kubát, K., Štech, M. & Štěpánek, J., eds. 2019. *Klíč ke květeně České republiky*. [Key to the flora of the Czech Republic]. 2nd ed. Praha: Academia.
- Krahulec, F. & Nesvadbová, J. 2007. Intergeneric hybrid *Festuca rubra* × *Vulpia myuros* in the Czech Republic. *Preslia* 79:63-68.
- Soreng, J.E., Peterson, P.M., Zuloaga, F.O., Romaschenko, K., Clark, L.G., Teisher, J.K., Gillespie, L.J., Barberá, P., Welker, C.A.D., Kellog, E.A., Li, D-Z. & Davidse, G. 2022. A worldwide phylogenetic classification of the Poaceae (Gramineae) III: An update. *Journal of Systematics and Evolution* 60(3):476- 521. [online] [accessed 4 August 2025]. Available at: <<https://doi.org/10.1111/jse.12847>>
- Stace, C.A., Preston, C.D. & Pearman, D.A. 2015. *Hybrid flora of the British Isles*. Bristol: Botanical Society of Britain & Ireland.
- Stace, C.A. & Al-Bermani, K.K.A. 1988. Earliest records for two × *Festulopia* combinations. *Watsonia* 17:363-364.
- Stace, C.A. & Cotton, R. 1974. Hybrids between *Festuca rubra* L. *sensu lato* and *Vulpia membranacea* (L.) Dum. *Watsonia* 10:119-138.

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