

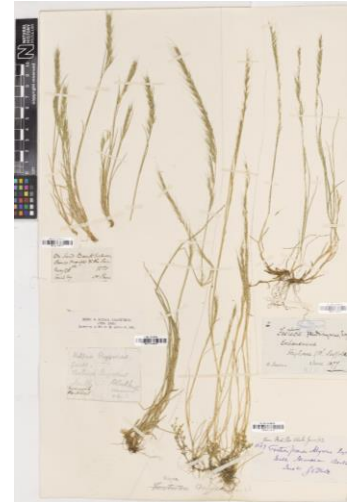
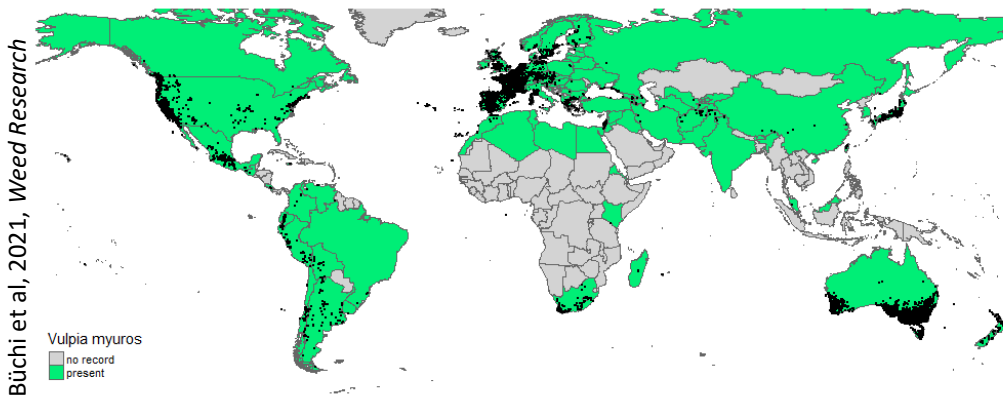
## 1. Introduction

Largely present in natural habitats, *Vulpia myuros* (rat's tail fescue) is a relatively new annual grass weed in cropping systems in Europe, especially in winter cereals and grasses, cultivated with reduced or no tillage. It can also be found in perennial systems (vineyards, orchards). Another species, *Vulpia bromoides* (squirrel-tail fescue), is also present in Europe but rarely seen in arable fields for the moment.



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## 2. Global distribution



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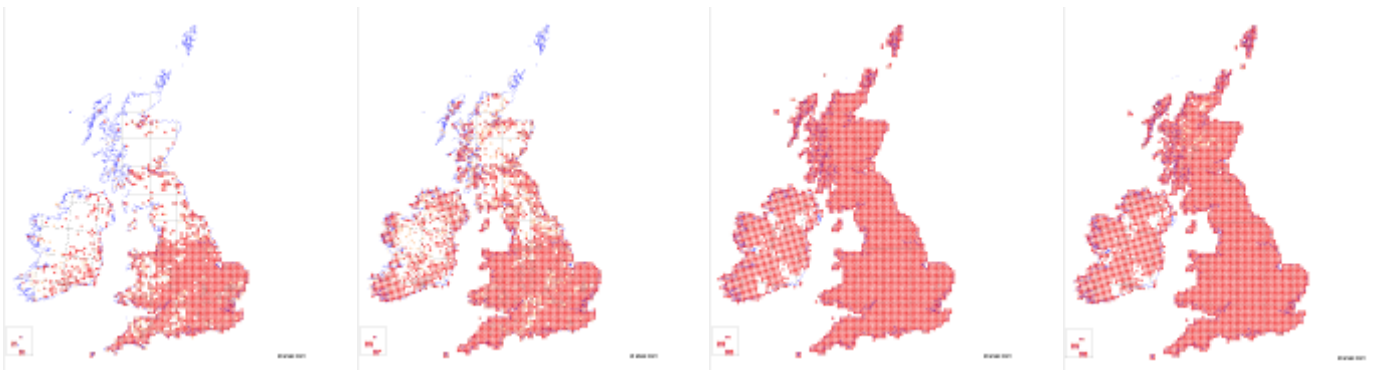
## 3. Distribution in the United Kingdom and Republic of Ireland

*Vulpia myuros*

*Vulpia bromoides*

*Festuca rubra*

*Lolium perenne*



©Online Atlas of the British and Irish Flora, 2021

## 4. Current and future impact

When established, *V. myuros* can have a high impact, reducing yield and contaminating forage and grass seed harvest. Contamination of fields probably occurs through seeds caught in the combine harvester or dispersal from the headland or uncultivated margins.

Climate change and a reduction of tillage could potentially favour this species in the near future.

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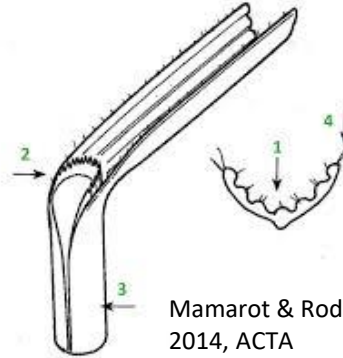
## 5. Identification

*Vulpia myuros* is difficult to identify at the vegetative stages, which means it can go unnoticed at early invasion stages, and suddenly appear to have invaded large areas.



### Vegetative characteristics

- ❖ slender, 20-80 cm tall
- ❖ erect and mostly glabrous culm
- ❖ long fine leaves (1–3 mm wide)
- ❖ tightly folded prefoliation
- ❖ 5–7 pubescent veins with fine hairs (1 and 4)
- ❖ split leaf sheath (3), generally glabrous
- ❖ very short denticulate ligule (2) (0.2–0.4 mm)
- ❖ auricles absent



Mamarot & Rodriguez, 2014, ACTA

### Reproductive characteristics

- ❖ **inflorescence**: narrow dense one-sided panicle, curved at maturity
- ❖ 5–35 cm long, green to purplish in colour
- ❖ base often enclosed in the sheath of the uppermost leaf
- ❖ **spikelets (K)**: 5–12 mm long
- ❖ short stalks (<1 mm length)
- ❖ lower glume up to 0.4-2.5 mm long and upper glume 2.5–6.5 mm long
- ❖ 3–8 florets
- ❖ lemmas: 4.5–6.5 mm long
- ❖ **straight terminal awns of 5–15 mm length**
- ❖ **fruits**: 3.5–4.5 mm long



Cotton & Stace, 1977, Botaniska Notiser



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## 6. Comparison with other species

At the vegetative stage, *V. myuros* is frequently confused with other grass weeds, especially *Festuca rubra* and *Lolium perenne*, and natural hybrids with *F. rubra* can occur.

	Rat's tail fescue	Squirrel-tail fescue	Red fescue	Perennial ryegrass
Characteristics	<i>Vulpia myuros</i>	<i>Vulpia bromoides</i>	<i>Festuca rubra</i>	<i>Lolium perenne</i>
life cycle	annual	annual	perennial	perennial
root system	fibrous, no rhizome	fibrous, no rhizome	rhizome	no rhizome
auricle	absent	absent	absent	small if present
ligule	short, 0.2-0.4 mm	short, 0.2-0.4 mm	short, <0.5 mm	~1-2 mm
leaf blade	hairs on veins	hairs on veins	glabrous	glabrous
leaf sheet	split		not split	
inflorescence:				
general form	very contracted, linear	contracted to open	contracted to open	contracted to open
uppermost leaf sheet	enveloping panicle base	not enveloping	not enveloping	not enveloping
glume length	upper g. >> 2x lower g.	upper g. < 2x lower g.	upper g. < 2x lower g.	
terminal awn	5-15 mm long	5-15 mm long	0.7-3 mm long	absent



## 7. Ecology and Life cycle

### Ecology

- ❖ self-pollinating
- ❖ highly competitive
- ❖ shallow root system
- ❖ tolerant to
  - ❖ low soil fertility
  - ❖ slightly acidic conditions
  - ❖ drought

### Life cycle

- ❖ flowering: May-July
- ❖ high number of seeds produced (1000-2000 per plant)
- ❖ mostly autumn emergence
- ❖ low emergence of buried seeds
- ❖ 1-3 years survival in seed bank

germination				flowering							
S	O	N	D	J	F	M	A	M	J	J	A



## 8. Management

Naturally tolerant to some herbicide classes (ACCCase inhibitors: 'fops' and 'dims'), *Vulpia myuros* is difficult to control once dense swards are formed, especially if tillage is not practiced. It is thus paramount to identify *Vulpia* infestation at an early stage and intervene as soon as possible.



*Vulpia myuros* in a no-till wheat field

©Agroscope, 2015

### Cultural control

- ❖ tillage
- ❖ spring crops in the rotation
- ❖ less cereals in rotation
- ❖ cover crops cultivation
- ❖ stale seed bed in autumn
- ❖ delayed autumn sowing
- ❖ competitive crop varieties



©Agroscope, 2016

### Chemical control

In no-till systems, herbicides can help control *V. myuros* but an integrated management approach including some of the cultural control measures is recommended.

Pre-emergence herbicides are more effective than post-emergence, and the best results are obtained with sequential applications of several herbicides.

pre-drilling	glyphosate
pre-emergence	flufenacet / metribuzin
post-emergence	sulfonylurea (e.g. mesosulfuron, sulfosulfuron)
post-emergence	propryzamide (oilseed rape)

No evolved resistance to herbicides have been found in *V. myuros* yet, but recent cases of resistance to simazine have been shown in *V. bromoides* in Australia.



## 9. Illustrations



© Agroscope, 2015

*Vulpia myuros* in a no-till wheat field



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*Vulpia myuros* in a no-till wheat field

## Sources

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- ❖ Online Atlas of the British and Irish Flora, [www.brc.ac.uk/plantatlas](http://www.brc.ac.uk/plantatlas)
- ❖ The National Data and Information Center on the Swiss Flora, [www.infoflora.ch](http://www.infoflora.ch)

## Information and Contact

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