Collembola assemblages under the invasive *Senecio inaequidens* and the native *S. jacobaea*

De Bruyn Luc[1,2], Janssens Frans[2], Vanparys Valérie[3]

luc.debruyn@inbo.be

[1] Reserach Institute for nature and Forest (INBO), 1070 Brussel, Belgium

[2] Evolutionary Ecology, University of Antwerp, 2020 Antwerpen, Belgium

[3] Genetics, Reproduction & Populations, U.Catholique de Louvain, 1348 Louvain-la-Neuve, Belgium

Introduction

Exotic-species invasions are among the most important global-scale problems facing natural ecosystems. Here we study the effects of the invasive Narrow-leaved Ragwort, *Senecio inaequidens* on the soil inhabiting Collembola fauna. We compare the Collembola assemblage with that of the congeneric indigenous Tansy Ragwort, *S. jacobaea*.

Senecio inaequidens

Introduced from South Africa in Europe since 1889
Short-lived perennial pioneer of dry habitats.

Senecio jacobaea

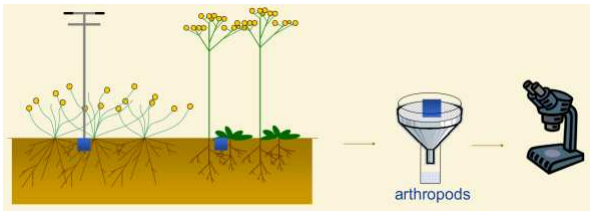
Biennial (to perennial); common in various types of grassland

Study site

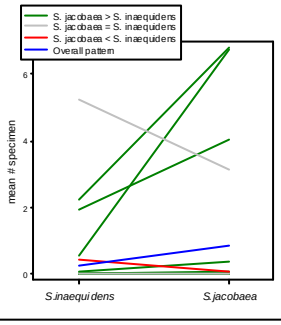
Sandy wildland in Antwerp. 3-year old community dominated by *S. inaequidens* and *S. jacobaea*. 3 Zones: Zone I = dominated by *S. inaequidens*, Zone J = dominated bij *S. jacobaea*, Zone M = mixed stand.

Sample design

- In each zone 4 pairs of one mature *S. inaequidens* and one mature *S. jacobaea*, approximately 1 m apart.
- Under each plant one core sample (diameter 8 cm, depth 5 cm)
- Samples taken in October
- Soil organisms extracted with Berlese-Tulgren apparatus
- Data analyses with general and generalised mixed models

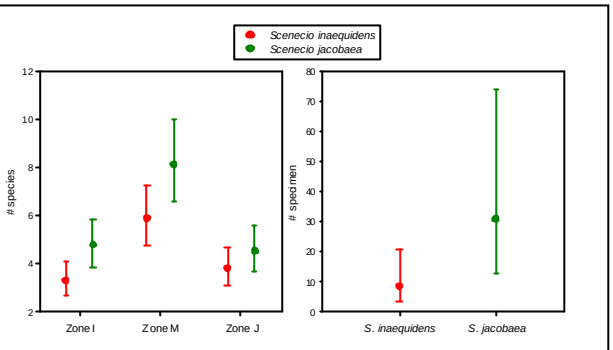


	# specimen		Significant difference (p)	
	S. inaequidens	*S. jacobaea*	Zone	*Senecio* species
Arrhopalites caecus		8	NS	<0.001
Friesea mirabilis	1	12	NS	<0.001
Hemisotoma thermophila	19	65	NS	<0.001
Isotomodes productus	13	288	0.001	<0.001
Lanocyrtus cyaneus	3	13	0.002	0.009
Lanocyrtus lanuginosus	13	39	<0.001	<0.001
Parisotoma notabilis	94	515	<0.001	<0.001
Sphaeridia pumilis	34	52	0.008	0.05
Tullbergia krausbaueri	1	30	NS	<0.001
Entomobrya multifasciata	13	2	NS	0.003
Brachystomella parvula	16	22	0.01	NS
Sminthurinus elegans	70	76	<0.001	NS
Entomobrya sp.	2	2	--	--
Isotoma anglicana	3	6	--	--
Isotoma viridis	1	1	--	--
Megalothorax minimus		1	--	--
Micranurida pygmaea	1		--	--
Orchesella villosa	2		--	--
Pseudosinella alba		2	--	--
Overall trend			NS	0.004



Species response

- 9 species had significantly higher densities under the native *S. jacobaea*
- 1 species had higher density under *S. inaequidens*
- For 2 species there was no difference
- Overall densities were higher under *S. jacobaea*



Diversity indices

- Zone M harbored significantly more species (p = 0.02) and there was a tendency that there were more species under *S. jacobaea* (p = 0.09)
- The total number of specimen collected under *S. jacobaea* was significantly higher than under *S. inaequidens*
- There were no significant differences in the calculated diversity indexes (Shannon, Simpson, Pilou eveness)