

Spread of rust fungi in clonal plants of *Vinca minor*

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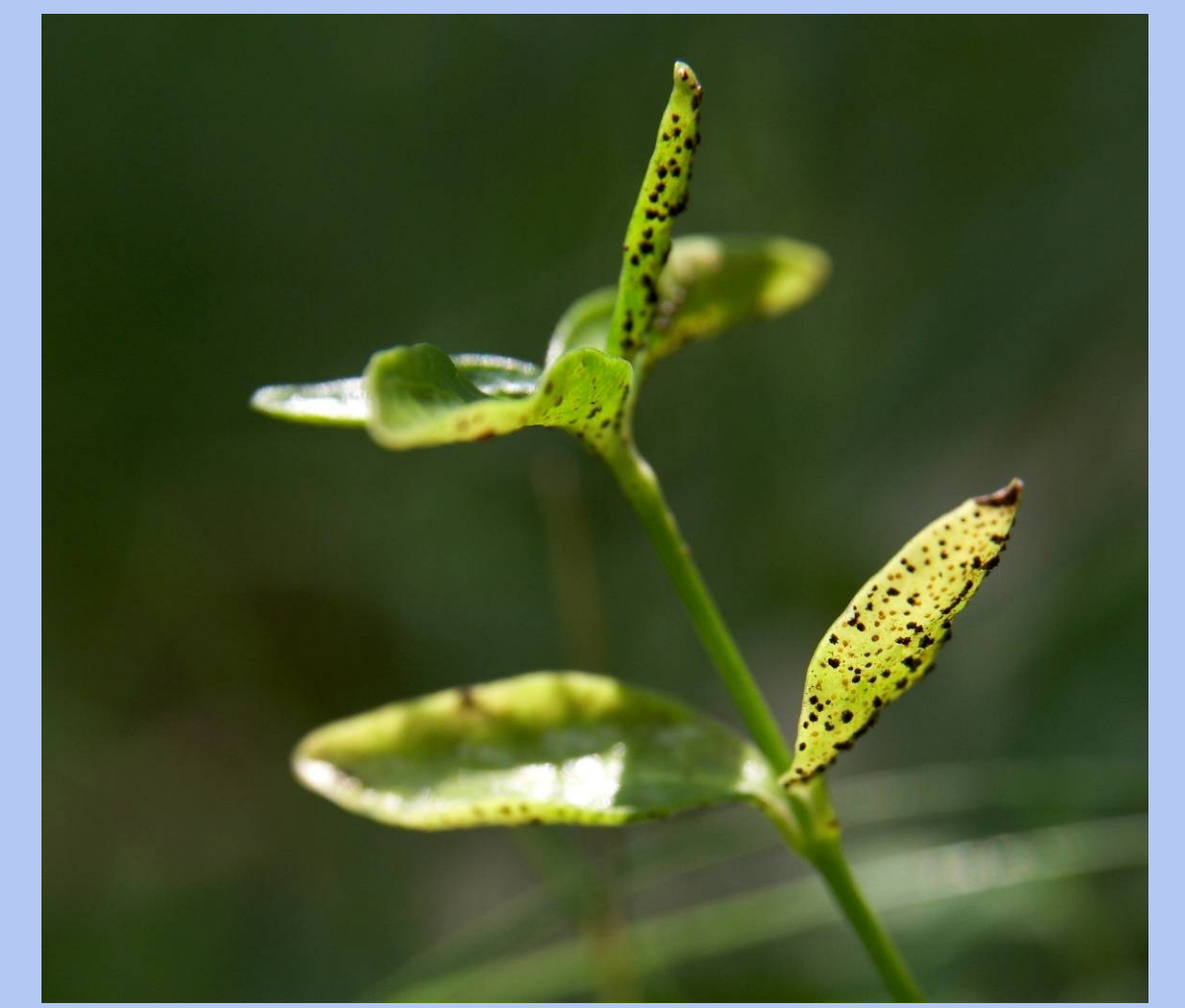
Clonal plants vs. systemic pathogens

- could the systemic pathogens cause selection against clonality because of internal spread?
- or is the clonal growth effective escape strategy in all clonal plants?
- how fast does the disease spread through the spacers vs. how effective is infection by spores?

we start to explore this study system:



Vinca minor



Puccinia cribrata



Slovenian mountains

infected plants:

- clumped
- vertical growth
- yellow leaves
- production of teliospores only (microcyclic)



healthy plants:

- long spacers
- horizontal growth

Results:

healthy shoots

infected shoots

	df	F	Sig.
plot	4	2.24	0.07
fragment	26	0.99	0.49
infected shoots	1	63.89	0.00
this years:			
healthy w. 5cm	4	6.41	0.00
infected w. 5 cm	7	2.74	0.01
healthy 5–10 cm	2	1.53	0.22
infected 5–10 cm	3	3.10	0.03
last years:			
healthy w. 5cm	6	15.09	0.00
infected w. 5 cm	4	3.31	0.01
healthy 5–10 cm	2	0.48	0.62
infected 5–10 cm	3	1.67	0.18

	df	F	Sig.
plot	4	1.46	0.22
fragment	26	1.26	0.21
healthy shoots	1	63.89	0.00
this years:			
healthy w. 5cm	4	2.01	0.10
infected w. 5 cm	7	3.50	0.00
healthy 5–10 cm	2	2.73	0.07
infected 5–10 cm	3	1.85	0.14
last years:			
healthy w. 5cm	6	3.12	0.01
infected w. 5 cm	4	13.52	0.00
healthy 5–10 cm	2	0.19	0.83
infected 5–10 cm	3	6.58	0.00

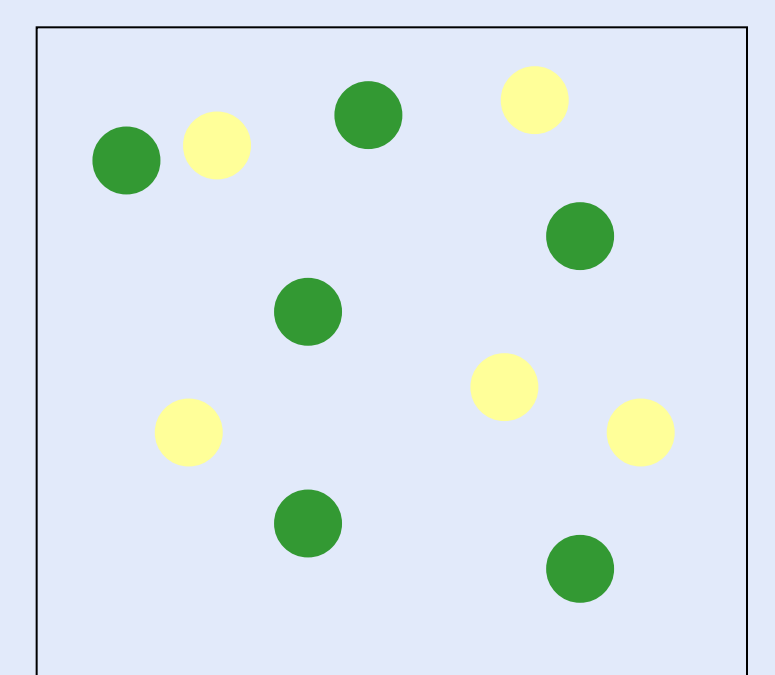
• there were no correlations with ramets farther than 10 cm

Conclusions (so far)

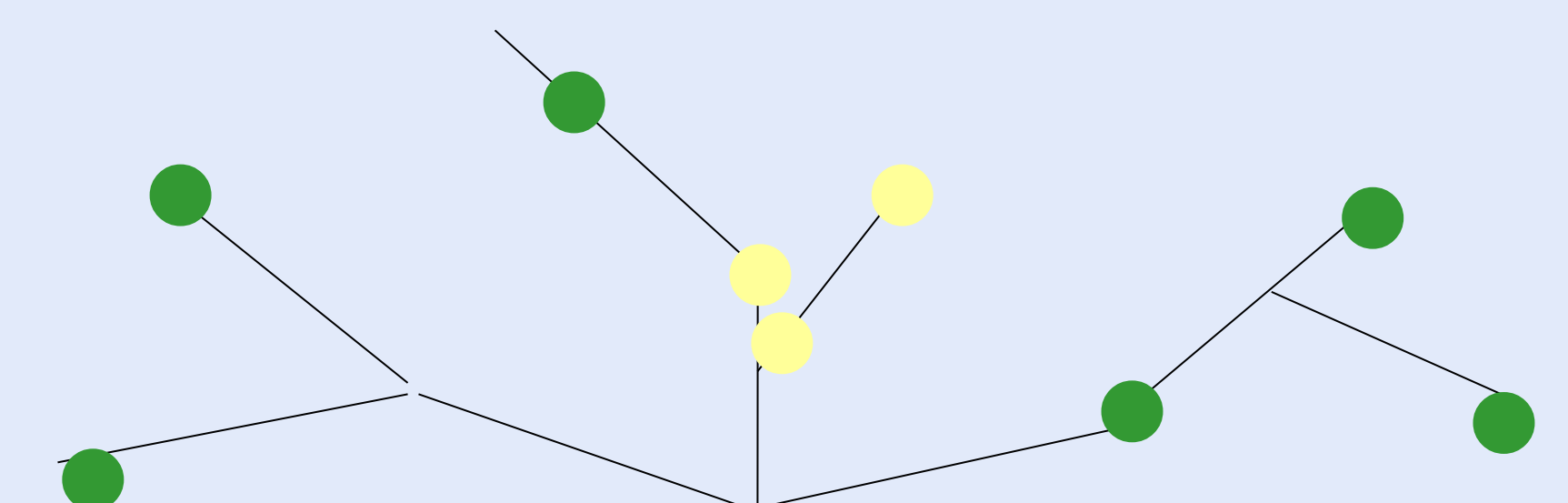
- the **healthy** plants are negatively influenced by infected plants in the vicinity (the infected clumps function as translocation sinks)
- **infected** plants are supported by healthy plants and the infection can spread up to 10 cm a year through the plant, healthy plants grow spacers up to 20 cm a year
- infected plants are significantly **higher** – probably to spread the teliospores (7.5 vs. 11.7 cm in the field)
- in **infection experiment** in the garden we observed 5–15% of healthy plants being infected by telia (but the potential probably strongly depends on amount of the leaves with teliospores)
- there are genetic differences in spacer length and growth speed – there's potential for selection
- infected plants are preferred by slugs (pers. obs.)

Methods:

1st year:
we made permanent plots with all ramets marked as healthy or infected

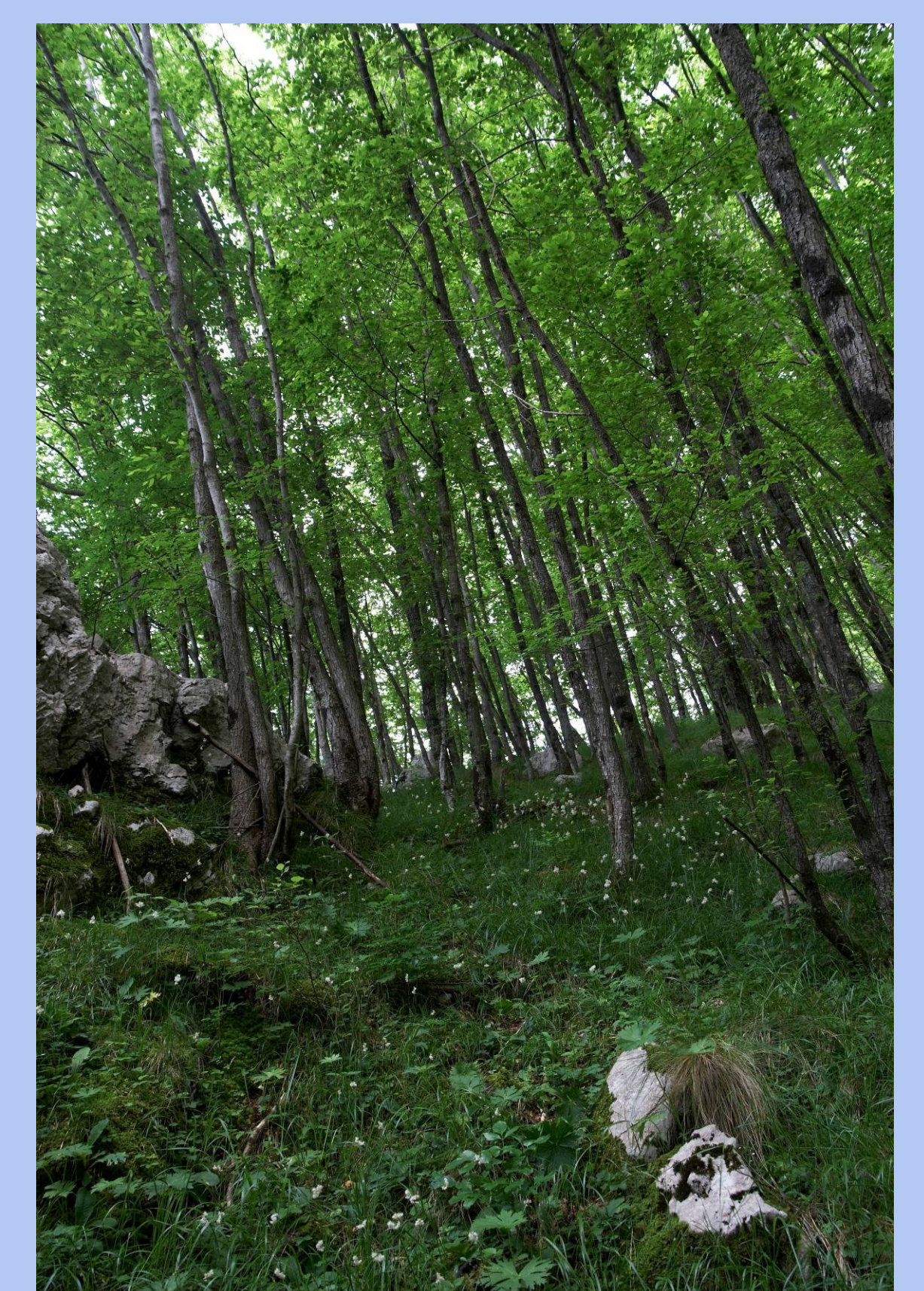


2nd year:
we dug out the plots, separated the fragments and counted all new ramets/shoots and marked the positions of last years ramets



we computed distances for all ramets within each fragment

transferred infected plant



Ostrya forest (the locality)