Boys and girls and plant-eaters:
Is herbivory sex-biased in *Mercurialis perennis*?

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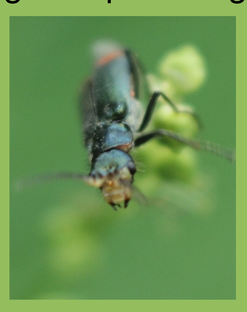
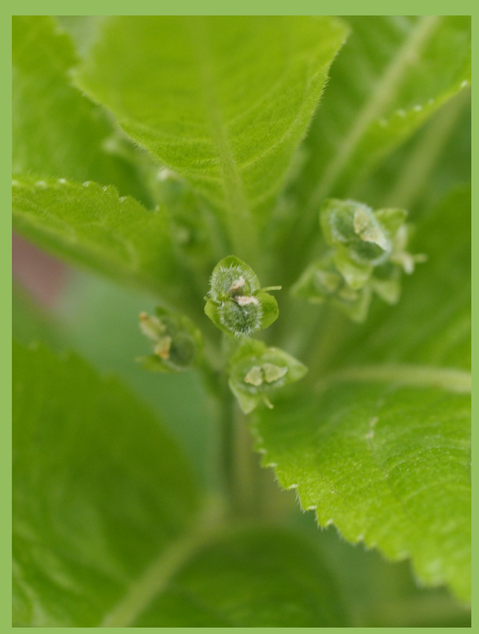
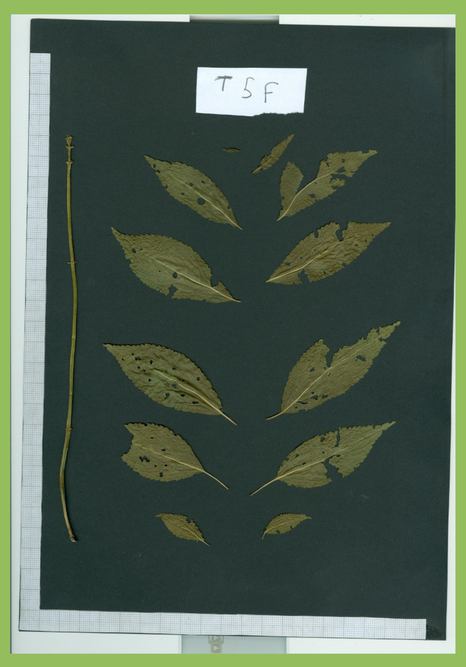
Sex-biased herbivory has been implicated as one of the driving forces in the evolution of dioecy. Different partitioning of resource sources and sinks in male and female plants allows different defense strategies. Along with constitutive and induced defences, plants can tolerate herbivore damage to a certain extent, and can ameliorate the pressure through changes in phenology and life history.



Gender-dimorphic species of genus *Mercurialis* are informative model systems in addressing questions in plant evolutionary ecology, including interactions with herbivores. For *Mercurialis annua*, the most commonly studied species of the genus, herbivore prefference for male plants has been demonstrated in experimental conditions.

The aim of this study was to explore the pattern of herbivore damage in natural populations of *Mercurialis perennis*, a dioecious perennial herb with wide geographic and altitudinal distribution.





Plants were sampled from a range of habitats in Serbia and herbarized. Dry leaves and stems were scanned. For each leaf, herbivore damage was scored on a 1 to 5 scale. For each plant, herbivory index was calculated by dividing the sum of leaf scores with the number of leaves. Natural logarithm of herbivory index was used for further analysis.

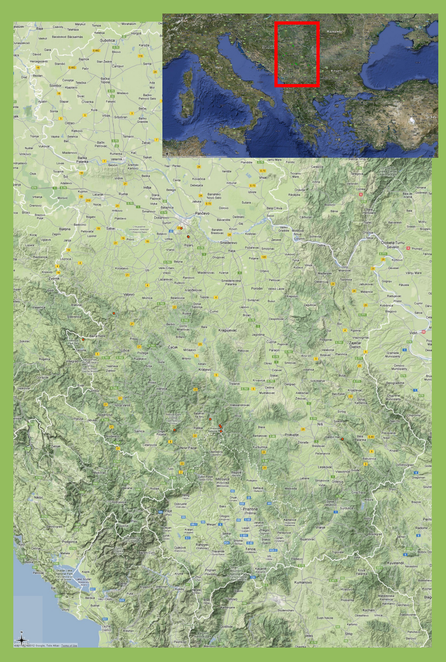
1:
No damage

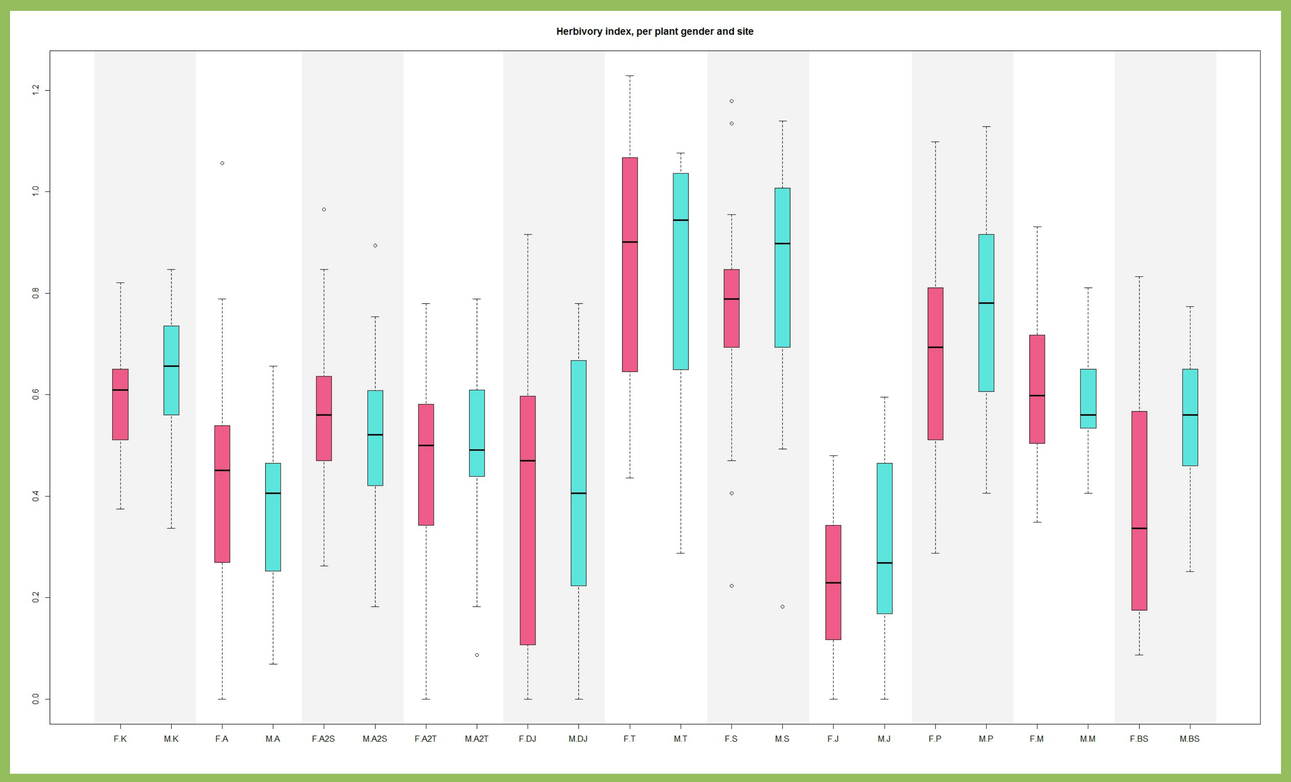
2:
Slight damage

3:
Intermediate damage

4:
Heavy damage

5:
Severe damage



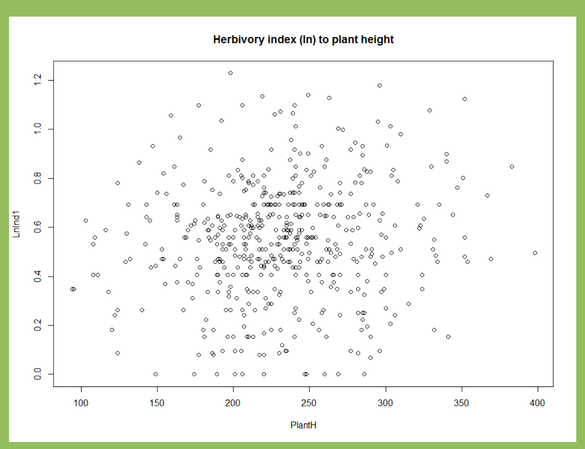


Our results do not confirm the pattern of male-biased herbivory in natural conditions.

The variance of herbivore damage between the sexes among the habitats was large, with highly significant effect of site, and non significant effects of sex and sex-site interaction.

Factorial ANOVA, Herbivory index (ln), Sex and site as factors:

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Sex	1	0.001	0.0011	0.032	0.859
Site	10	10.666	1.0666	30.599	<2e-16***
Sex:Site	10	0.373	0.0373	1.071	0.383
Residuals	495	17.255	0.0349		



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