

Molecular detection of weed seeds in granivorous carabid beetles



Corinna Wallinger¹, Rebecca Mayer¹, Dave Bohan², Sandrine Petit², Michael Traugott¹

¹ University of Innsbruck, Institute of Ecology, Technikerstr. 25, 6020 Innsbruck, Austria

² INRA Centre Dijon, France, Pôle Ecologie des Communautés et Durabilité de Systèmes Agricoles, France

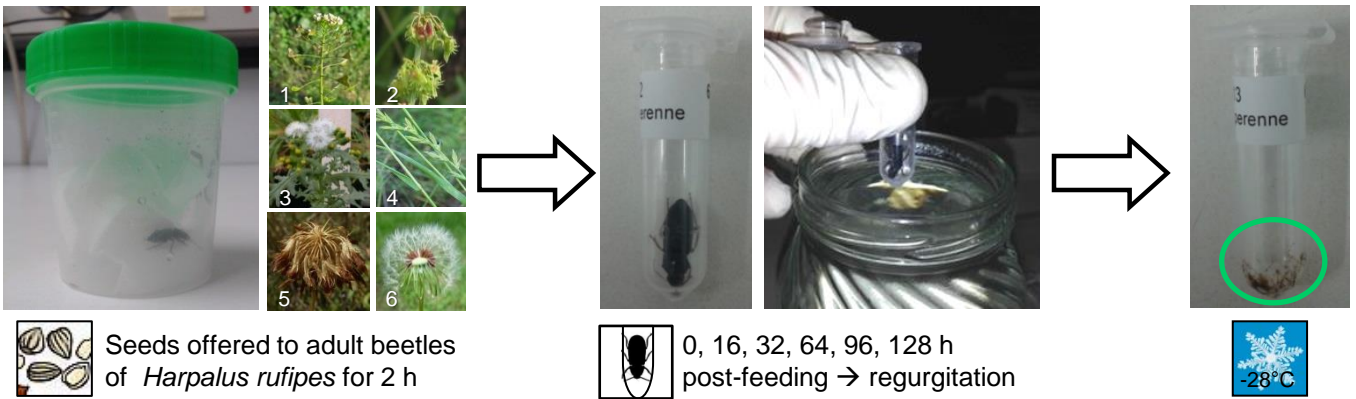
background

Carabids consume substantial numbers of weed seeds thus delivering an important ecosystem service in agricultural land. However, it is difficult to identify which specific seeds are consumed in the field.

molecular approach

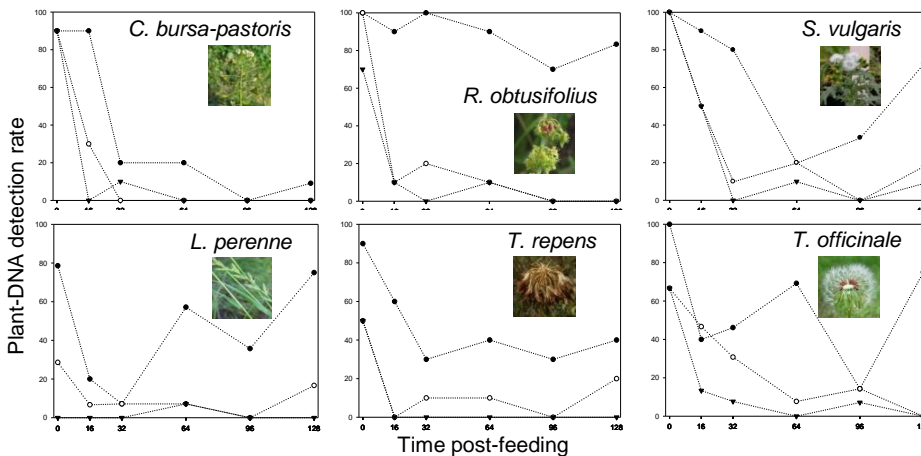
Use of general plant primers targeting the plastid *trnT-trnF* region amplifying three fragments of different length for detection of seed DNA in carabid regurgitates.

feeding experiments



Offered seed species: 1 *Capsella bursa-pastoris*, 2 *Rumex obtusifolius*, 3 *Senecio vulgaris*, 4 *Lolium perenne*, 5 *Trifolium repens*, 6 *Taraxacum officinale*.

results & outlook



Molecular detection of seed predation offers the opportunity to unravel mechanisms underlying in-field diet choice in granivorous carabid beetles

Seed consumption can be detected up to 128 h post-feeding

Detection time is extended for short DNA fragments compared to longer ones

Acknowledgements: We thank Matthias Labeck and Markus Neurauder, two trainees financed by the Austrian Research Promotion Agency FFG, for support in field and experimental work. The project was funded by the Mountain Agriculture Research Unit and a PhD scholarship of the University of Innsbruck granted to R. Mayer.