Title: Seed traits, terminal velocity and germination in sexual diploid and apomictic triploid *Hieracium alpinum* (Asteraceae): Are apomicts better dispersers?

Authors: Jindřich Chrtek, Matthias Hartmann, Viera Mrázová, Pavel Zdvořák, Michal Štefánek, Patrik Mráz

PII: S0367-2530(18)30014-8
DOI: https://doi.org/10.1016/j.flora.2018.01.003
Reference: FLORA 51228

To appear in:

Received date: 31-7-2017
Revised date: 6-1-2018
Accepted date: 9-1-2018

Please cite this article as: Chrtek, Jindřich, Hartmann, Matthias, Mrázová, Viera, Zdvořák, Pavel, Štefánek, Michal, Mráz, Patrik, Seed traits, terminal velocity and germination in sexual diploid and apomictic triploid Hieracium alpinum (Asteraceae): Are apomicts better dispersers?.Flora https://doi.org/10.1016/j.flora.2018.01.003

Seed traits, terminal velocity and germination in sexual diploid and apomictic triploid *Hieracium alpinum* (Asteraceae): Are apomicts better dispersers?

Jindřich Chrtek[a,b]*, Matthias Hartmann[a], Viera Mrázová[a,b], Pavel Zdvořák[a], Michal Štefánek[a] & Patrik Mráz[a]

[a]*Department of Botany, Charles University, Benátská 2, CZ-128 00 Prague, Czech Republic*

[b]*Institute of Botany of the Czech Academy of Sciences, CZ-252 43 Průhonice, Czech Republic*

*Corresponding author. Email: jindrich.chrtek@ibot.cas.cz

Highlights

- Seeds of sexual diploids and apomictic triploids of *Hieracium alpinum* were compared.
- The majority of traits of diploid and triploid seeds did not differ.
- Diploid seeds had slightly greater values of terminal velocity than triploid seeds.
- Diploid seeds had significantly higher germination rates when compared to triploid seeds.
- Terminal velocity was positively correlated with seed mass.

Abstract

In this study, we examined the effect of seed characteristics (seed weight, seed length, seed width, pappus length and pappus width) and ploidy level on seed terminal velocity and germination in *Hieracium alpinum*, an arcto-alpine anemochorous species with vicariant diploid sexual and triploid apomictic populations producing diploid and triploid seeds, respectively. Importantly, triploids occupy a considerably larger range than diploids, suggesting that they have better colonization abilities putatively mediated by increased dispersal potential of the former. In total, 970 seeds collected from 228 mother plants from 30 population across the distribution range were analysed. Diploid and triploid seeds did not differ significantly in most morphological traits, except for triploid seeds being wider. Terminal velocity was greater in diploid seeds compared to triploid seeds. This difference was not significant if a nested design (ploidy, population, mother plant) was used but significant if the population level was not