14 Find the needle in the haystack: tracing the dispersal of small palatable tree seeds in European beech forests

Frederik Sachser¹, Ursula Nopp-Mayr¹, Iris Kempter², Christa Hausleithner³, Georg Gratzer¹

¹Institute of Forest Ecology, Department of Forest- and Soil Sciences, University of Natural Resources and Life Sciences, Vienna, Peter Jordan-Straße 82, A-1190 Vienna, Austria, frederik.sachser@boku.ac.at
²Institute of Wildlife Biology and Game Management, Department of Integrative Biology and Biodiversity Research, University of Natural Resources and Life Sciences, Vienna, Gregor-Mendel-Straße 33, A-1180 Vienna, Austria
³via donau Österreichische - Wasserstraßen-Gesellschaft mbH, Donau-City-Straße 1, A-1220 Vienna, Austria
⁴Government of Lower Austria, Department for Nature Conservation, Landhausplatz 1, A-3109 St. Pölten, Austria

Zoochory is of substantial importance for dispersal of palatable tree seeds. Besides primary dispersal, tree seeds might be detected by seed hoarding animals. Thereby, seeds might be either consumed or hoarded for later consumption. We analysed hoarding behaviour of small mammals in two different study areas in beech (Fagus sylvatica) dominated forests in Austria. Ground vegetation, terrain and predator guilds were comparable at both sites. Considering the relatively small dimensions of beechnuts we tested three different seed tagging methods: (1) wire threads with plastic flags fixed with solvent-free glue, (2) wire threads with plastic flags twisted around a beechnut, (3) and radio-transmitters fixed with solvent-free glue. We offered tagged as well as untagged seeds on experimental dishes to analyse seed removal rates. We did not find any difference in seed removal between different tags or untagged beechnuts. Nearly all seeds were removed within 25-35 days after exposure. However, transport distances differed between study areas and radio-tagged seeds generally experienced larger dispersal kernels with a maximum range of 60 m. Furthermore, seeds tagged with radio-transmitters were cached more frequently compared to flag-tagged seeds. In one study area, a higher quota of radio-tagged seeds could be recovered compared to flag-tagged seeds. We suggest to simultaneously use flag-tagged and radio-tagged seeds to obtain a realistic picture of dispersal kernels in situations with dense ground vegetation or irregular terrain.
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Editors:
Jens Jacob¹ and Jana Eccard²
¹Julius Kuehn Institute, Federal Research Centre for Cultivated Plants,
Institute for Plant Protection in Horticulture and Forests, Vertebrate Research,
Toppheideweg 88, 48161 Münster, Germany
²University of Potsdam, Institute of Biochemistry and Biology,
Animal Ecology Group, Maulbeerallee 1,
14469 Potsdam, Germany

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