

# Seed dispersal curves of *Epipactis atrorubens* in two forest types

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## Introduction

The minute orchid seeds are often thought to be practically unlimited in their dispersal. However, our present knowledge on orchid seed dispersal indicates dramatical decrease of seed rain with the distance from the mother plant. This conclusion is based on few studies of meadow species showing that impressive reports of long distance dispersal need to be regarded as extremely rare cases. In forest habitats, the dispersal efficiency of windborne seeds might be even lower due to restricted air movement.

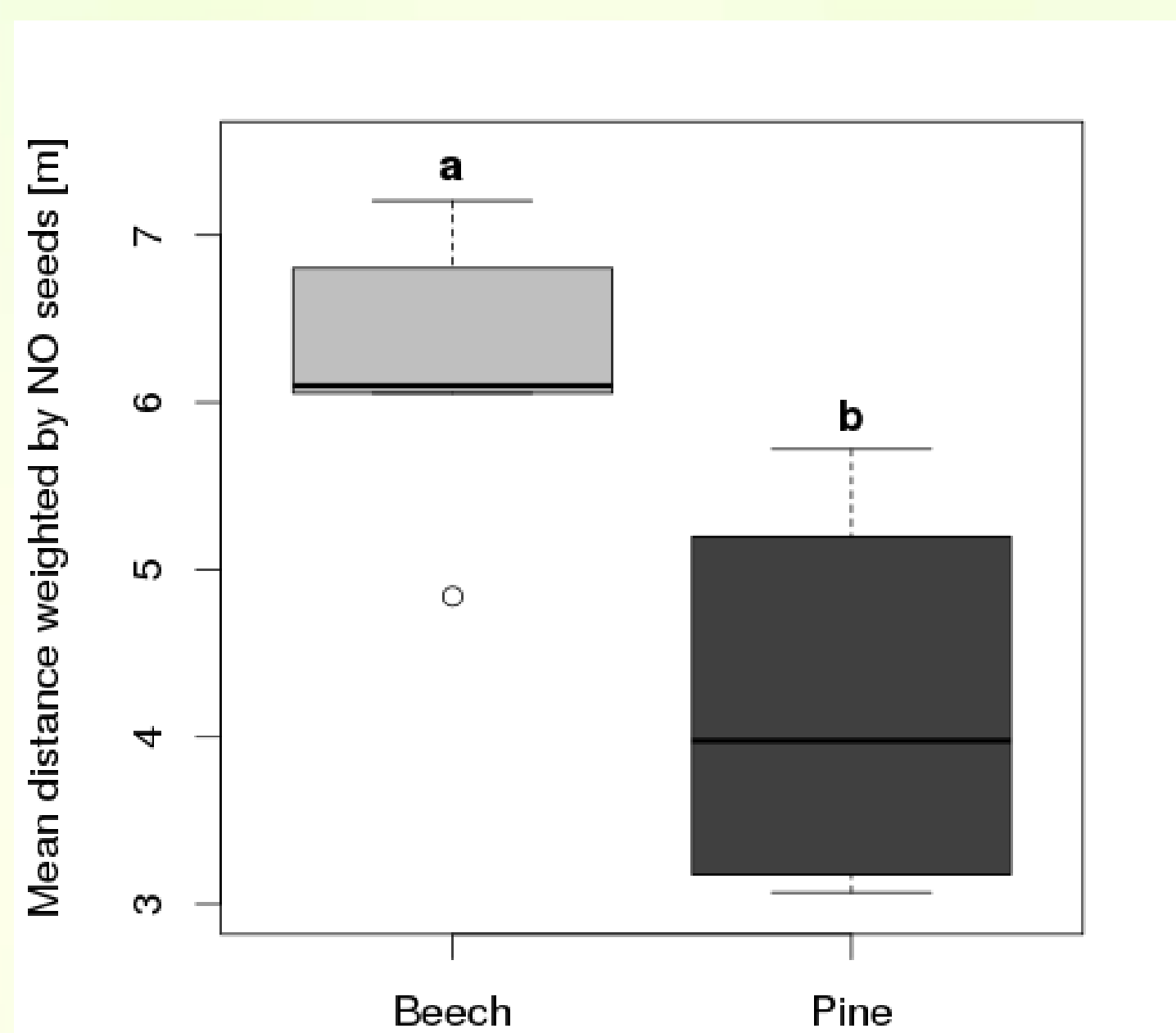
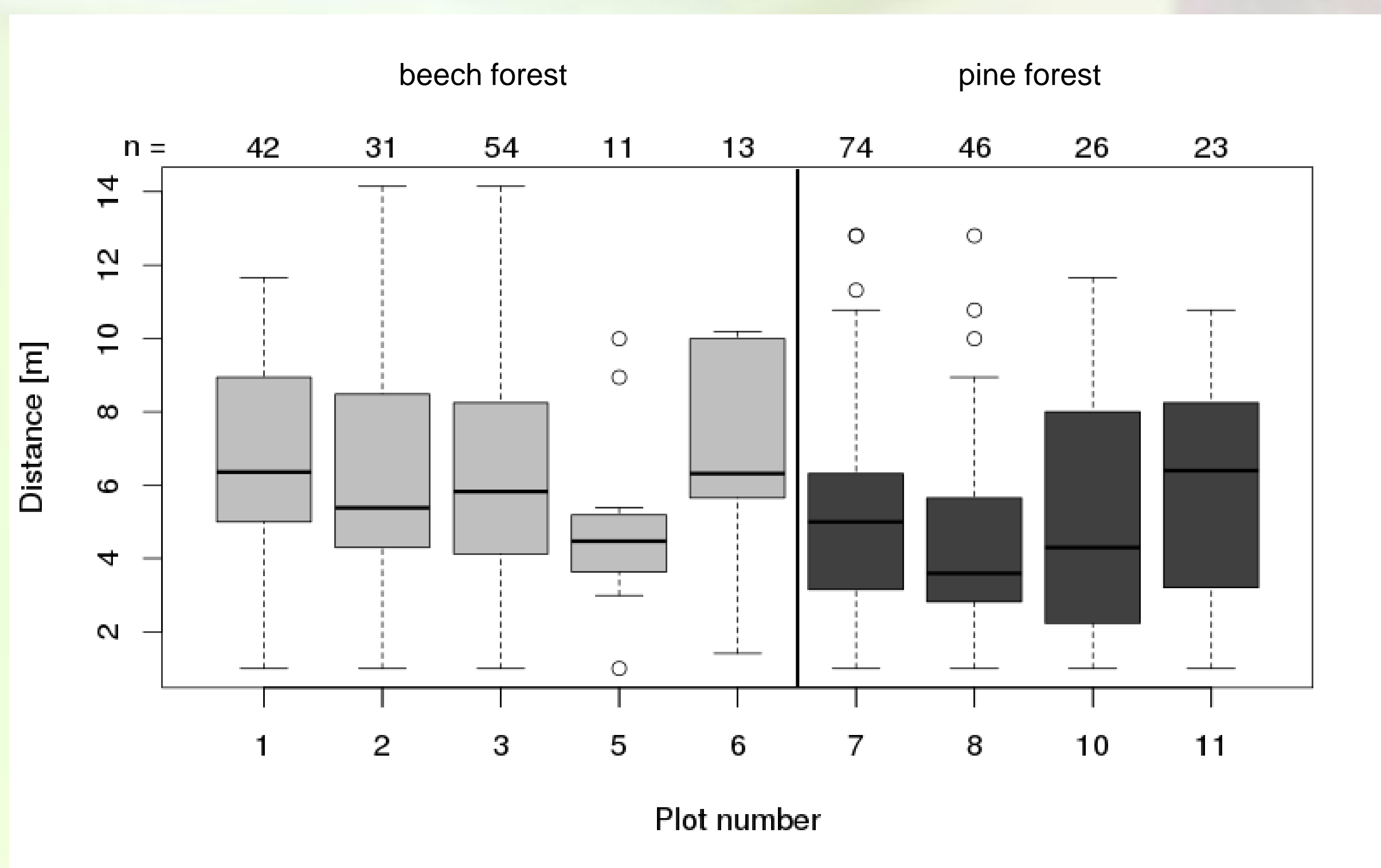
## Data collection



We investigated seed dispersal of *Epipactis atrorubens* in two forest types - beech and pine forests (each in two replicates). The seed traps (sticky Petri dishes, 140 mm) were regularly spaced in a 20x20 m network laid around investigated plants (3 plots per site). The seed traps were exposed for four weeks and then scored under stereomicroscope. Position of each trap was geo-referenced. Differences in seed dispersal curves between forest types were compared using the Mann-Whitney-Wilcoxon test.

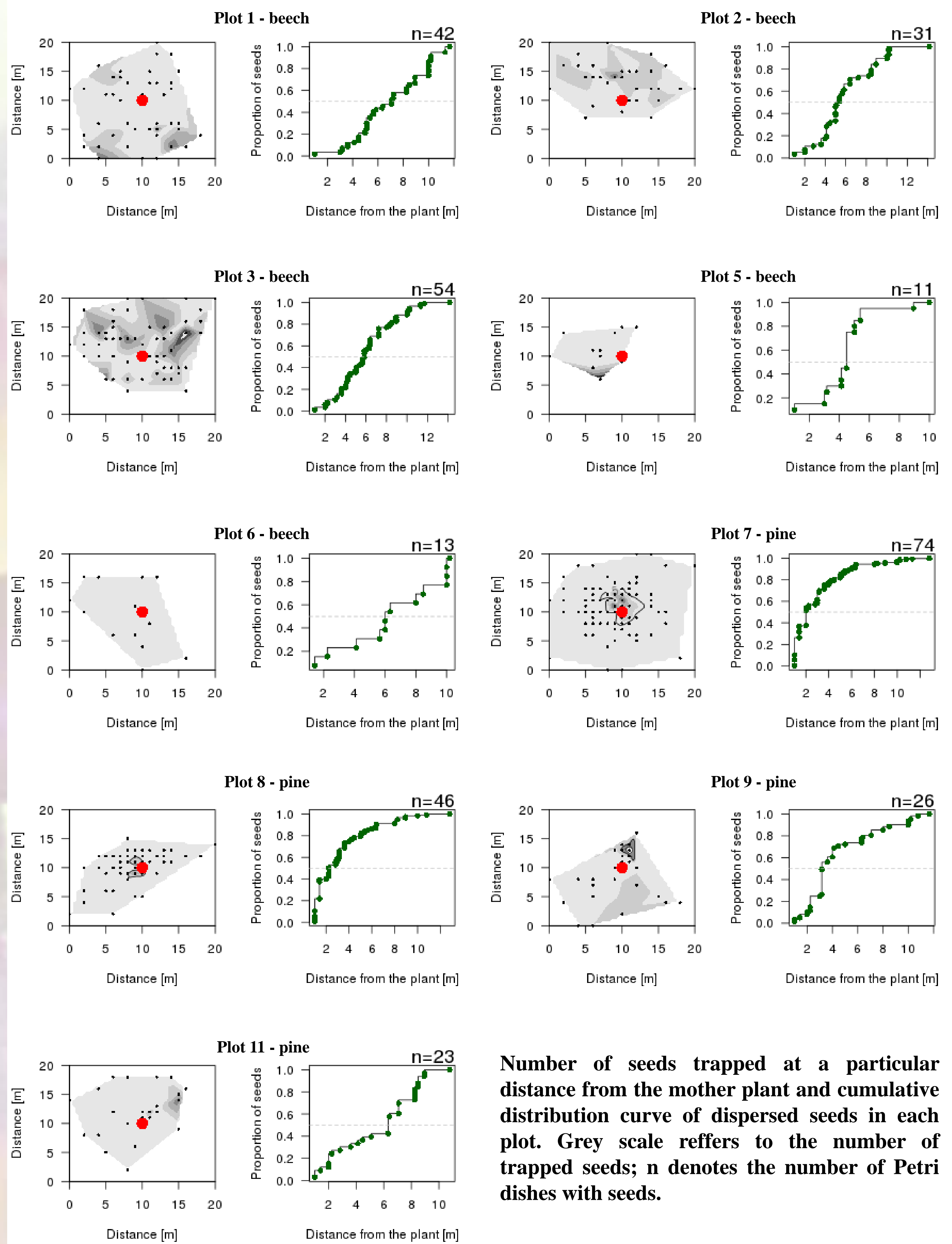
## Results

The majority of seeds were found up to 6 or 7 m from the mother plants. Comparison of seeds dispersal curves between forest types suggested significantly wider dispersal ranges in the beech than pine forests. In distance up to 6 m from the mother plant, we found 53% of all seeds in the beech forest, whereas in the pine forest, it was 85 % of all seeds. The maximal distance was almost identical in both forest types.

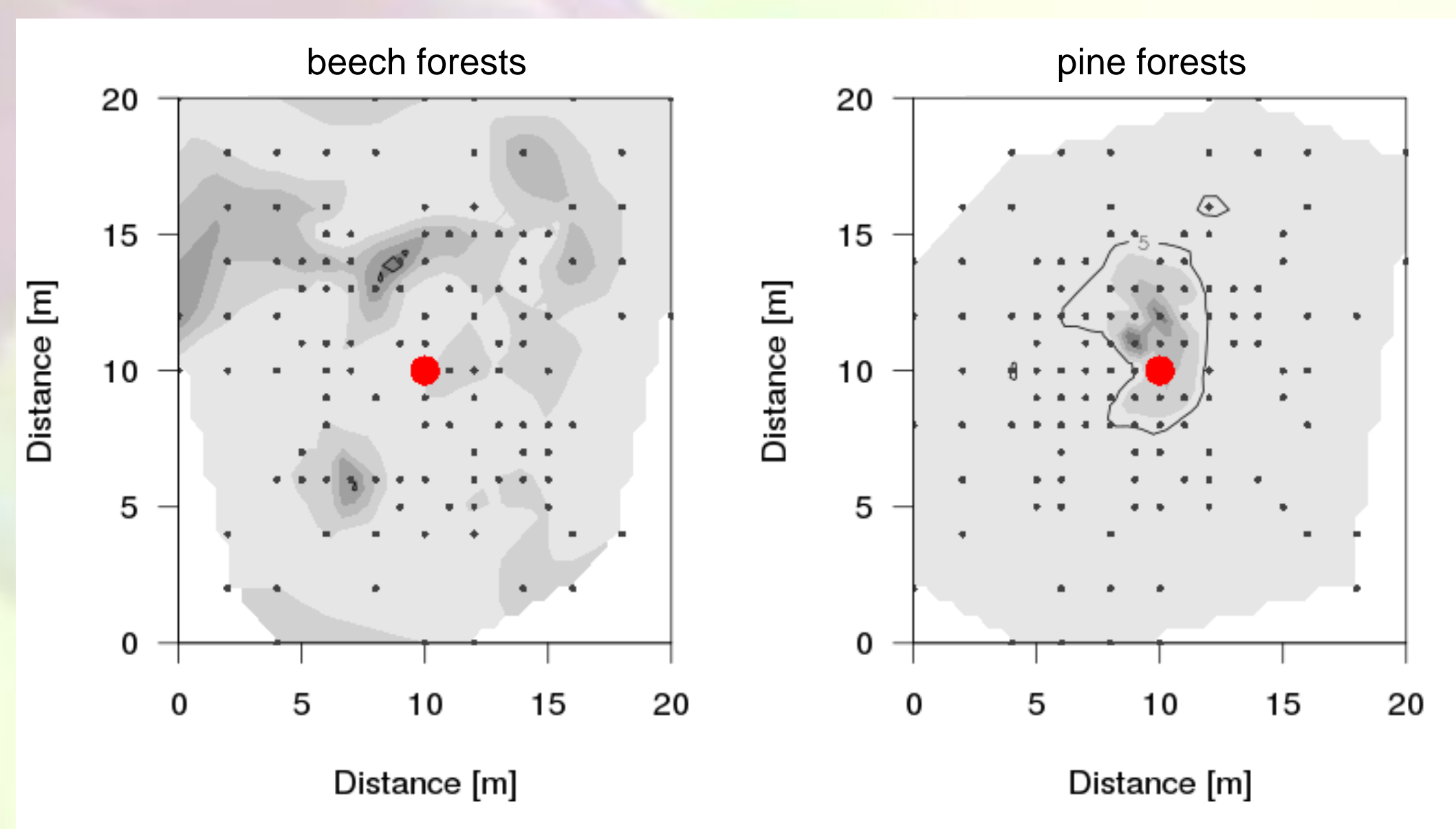


Box and whiskers plot of distances of non-empty petri dishes from the focal plants.

Box and whiskers plot of the mean distances weighted by the number of seeds. Letters denotes significant differences ( $W=19$ ,  $p=0.032$ ) between forests.

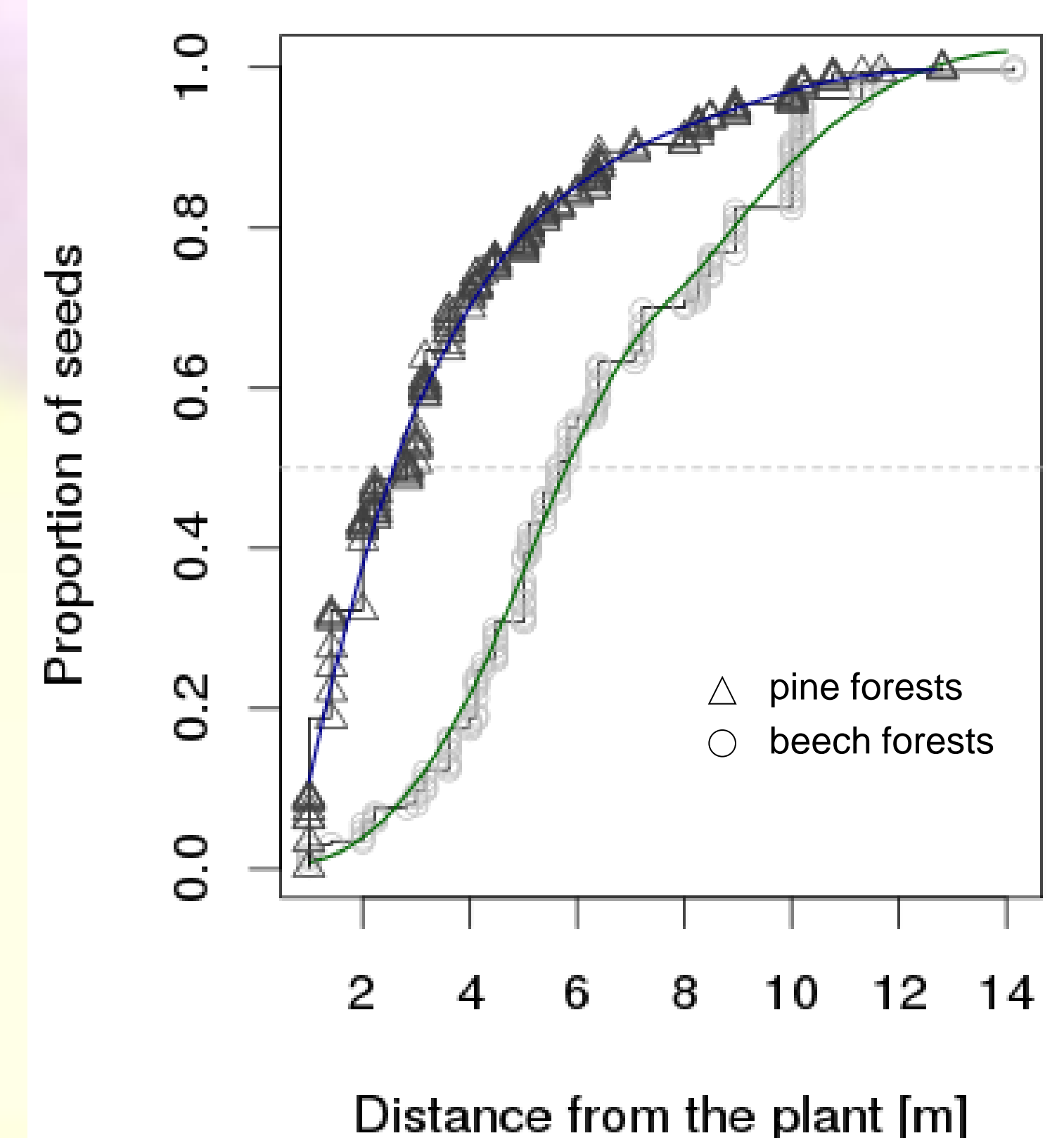


Number of seeds trapped at a particular distance from the mother plant and cumulative distribution curve of dispersed seeds in each plot. Grey scale refers to the number of trapped seeds; n denotes the number of Petri dishes with seeds.



Total number of seeds trapped in two forest types. Grey scale refers to the number of trapped seeds.

Cumulative distribution curves of dispersed seeds in two forest types. Lines were fitted by loess smoother.



## Summary

- There is significant difference in seed dispersion curves between beech and pine forests.
- Mean dispersal distance is larger in the beech forest, however maximal distance is almost identical for both forest types.
- 50 % of seeds landed at a distance less than 2 and 6 m from the mother plant in the pine and beech forests, respectively.

