

Svenning, J.-C., Fitzpatrick, M. C., Normand, S., Graham, C. H., Pearman, P. B., Iverson, L. R. and Skov, F. 2010. Geography, topography, and history affect realized-to-potential tree species richness patterns in Europe. – *Ecography* 33: 1070-1080.

Supplementary material

Ability of the paSDM and proSDM methods to predict naturalized populations

Because the paSDM and proSDM methods involved predicting the potential occurrence of each individual species (based on its native occurrence), their ability to suitable areas outside the native distribution can be evaluated by their ability to predict areas where a given species has naturalized after human introduction (cf. Svenning and Skov 2004). A caveat to this approach is that many species are only rarely planted into natural settings beyond their native range and therefore have had few opportunities for naturalizing. Hence, to gain some insight into the realism of the paSDM and proSDM estimates, we compared the predicted distribution to the naturalized distribution for three tree species in the AFE with the most naturalized occurrences (Fig. S1). It was readily apparent that our implementation of the paSDM approach, while predicting native presences and absences well, failed to predict the naturalized populations north and west of the native ranges, while the proSDM approach was able to predict these naturalized populations, although perhaps with some overestimation (Fig. S1). Similar results were apparent for many of the other study species as well (results not shown). Given the association between our ensemble method and the paSDM-based estimates, the ensemble approach must have been similarly compromised. The third quantile regression-based method was not amenable to a similar evaluation as it directly modeled species richness.

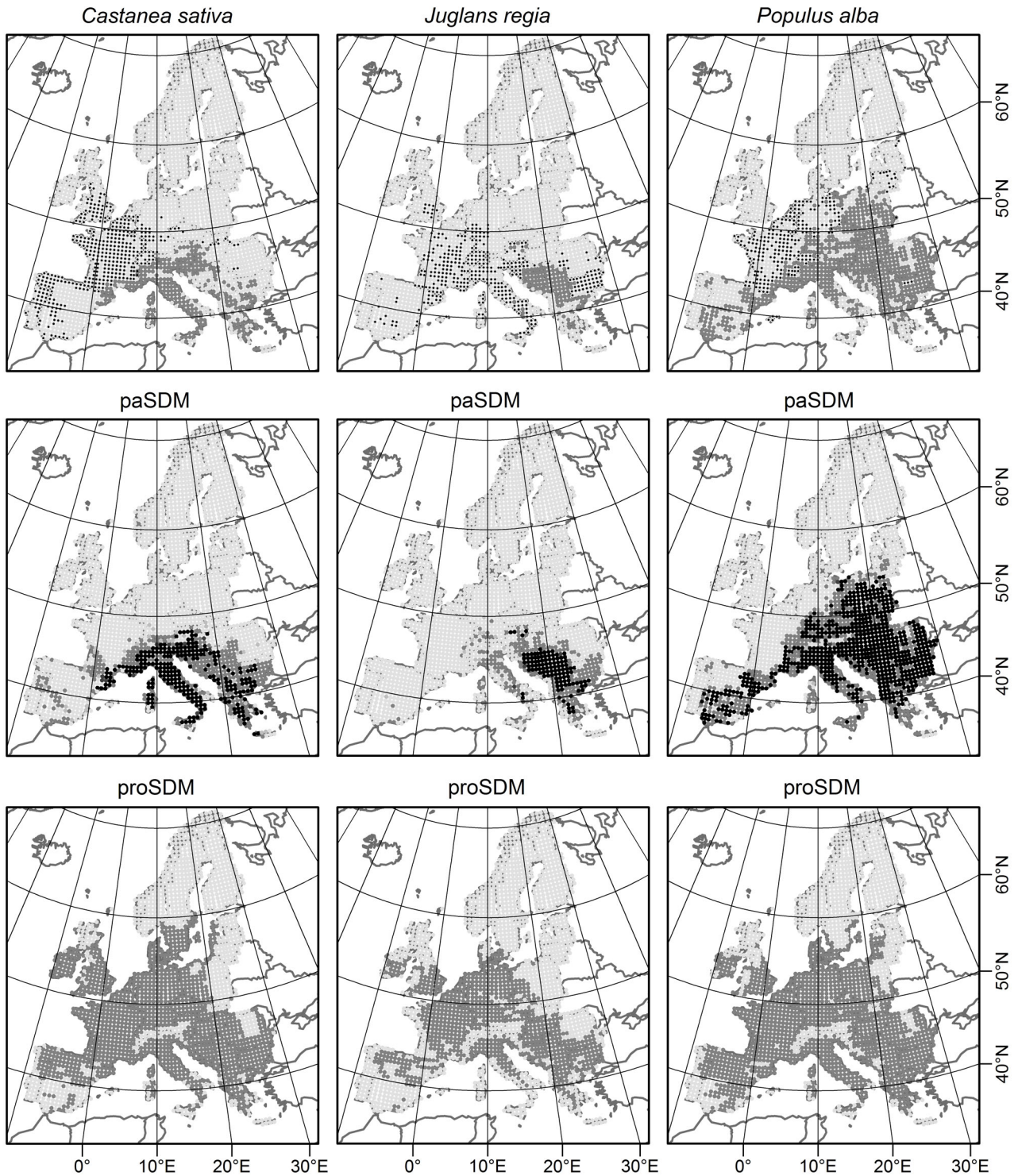


Figure S1. Distribution maps for the three tree species in Atlas Florae Europaeae with the most naturalized records. Top: observed distributions, with dark gray dots being native occurrences and small black dots being naturalized occurrences; only the former were used as the basis for the modeling. Middle: potential distributions according to the four species distribution models based on group discrimination algorithms for presence/absence data used for generating the R/P-paSDM estimates (darker colors indicate more models predicting potential presence; lightest gray = 0 and black = 4). Bottom: potential distributions according to species distribution models based on a profile technique (dark gray dots indicate potential presence).